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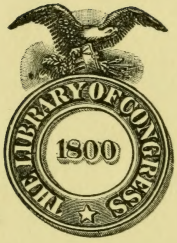
JUST PLAIN CHICKEN TALK

W. C. De LAPP



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JUST PLAIN

CHICKEN TALK

By WILLIAM COULTAS De LAPP

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Pasadena, Calif.

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INTRODUCTION

Just plain chicken talk is the title of this book and just a plain everyday poultry man wrote it. The idea of writing a book had never occurred to the author, but after talking and explaining chickens to hundreds of men and women engaged in this particular business he was led at their earnest solicitation to set forth his ideas and the ideas of others with whom he has come in contact. In the following pages the author has simply tried, with no attempt at fine phraseology and detailed theory, to explain what he knows about poultry. This book is based upon practical chicken knowledge by practical people with no attempt to offer any plan or suggestion which cannot be practically carried out.

There is a prevailing idea that there are many failures in the poultry business. This is the wrong impression. Of those who take up the business as a means of livelihood, there are no more failures than in any other vocation. To be sure there have been some large failures, but this has been mostly due to lack of experience, or perhaps they have had some ideas as to the feeding, housing, etc., that they wanted to carry out at the expense of their pocketbook. It most certainly is experience that counts, or at least it pays to follow the advice of one who has had experience and made a success of the business. I would not think of entering the dressmaking business without some knowledge or experience, yet we have heard of failures on this account in the poultry business. Don't ever think that because you have read of the success of others who have had years of experience, that with money you can accomplish more than they. Money at the spur of the moment will not do any great amount of good. If you had the equivalent in a flock of good birds and experience or knowledge, you would be in a position to succeed. I would rather have knowledge and experience than money to start in the poultry business, though both are necessary in their respective places. Even with knowledge, you will find so many little things that only experience can teach. Many wish to start in the poultry business, but have no funds. Never get discouraged, because if you have nerve

you will succeed. If you can't start with a few birds, get a setting of eggs from a good laying strain. It is the eggs that make the hens pay. Bend your every effort toward the egg laying function. It is up to you to make her lay. If you succeed you need not ask, "Why have I failed?"

Commercial egg farming is considered generally to be more profitable than any other branch of poultry keeping. But it requires care, regularity, and close attention for every day in the year. It seems that I make so many trips to the hen house with feed, etc., throughout the day and am always sure that they have plenty of fresh water, but **every time** I come back well supplied with eggs. If neglected for a single day, you are liable to send the hens into the molt and away goes your egg production for four or five weeks. To some, the care of poultry is monotonous. The work is the same from day to day and does not differ much from month to month, but the work requires our best attention. There is always something coming up that requires study. There is surely enough uncertainty in the business to keep one wondering how things are going to turn out. The main source of profit is from eggs, either hatching or for the market, also in small flocks for table use. Every effort should be bent toward a large production of eggs, especially in the winter months. There is no money in mongrels. The strain is of much more importance than the breed. A hen lacking vim, vigor, and vitality, will not make a good egg machine. Some hens are so inbred that they will not pay for their keep. Also the kind, amount of feed, and the method of feeding has a great deal to do with egg production. A hen to be a good layer must be well fed. I once knew of a successful poultry man to feed corn until they would tire of it, then he would change to something else and continue these changes until he had exhausted the list of grains when he would start on the corn again. He said that it was the change that they wanted and that was what made them lay. They will never tire of a mash fed every day with a grain fed in the litter. If a hen is going to lay,—well, she must be sent to the roost with a full crop. If you are changing the feed, work from one into the other gradually, but I rather disagree with the man who fed first one thing and then the other. System is the word that I apply to the poultry game, for system is what pays. Have you ever gone into the hen house when the fowls have gone to roost and examined some of the crops of some of the hens? If a hen's crop is empty you may be sure

that she is not a laying hen and "by the way," this is a good method of culling. Take her out and find what is the matter with her. If she is sick, get her out of there. She may be lousy, which a great many times is the case. A good mash is wheat bran, 2 parts; shorts, 1 part; linseed meal, 1 part; beef scrap, 1 part; corn meal, 1 part; and alfalfa meal, 1 part. Another good mash is 2 sacks of bran, 2 sacks rolled barley, 25 pounds fish meal, 8 pounds ground bone, 25 pounds feed meal, 13½ pounds soy bean meal, 10 ounces of salt. It may be a little added work to see that the fowls have a full crop at night, but such attention will yield its full reward in eggs. It is very important to always bear in mind that the foundation of any poultry flock is the well bred chick. There is vastly more to the chicken business besides building fine houses, throwing out the grain, and gathering the eggs. It is a business that requires hard work and lots of patience besides a little money to start with.

To the many hundreds of poultry men and women who have been kind to me in aiding me in my work, this book is respectfully dedicated. Also due credit and acknowledgment is given to our government in the agricultural department, to other manufacturers of poultry products, also mill men, and to our universities who are doing a great work in this line. My own practical experience, careful study and research work has also been a big factor in producing this book.

William Coultas De Lapp.

Pasadena, California, 1922.

EXPERIENCE NECESSARY

It must be remembered that actual practical experience is very necessary. Also that an ounce of experience is worth one pound of theory. You can save considerable money, disappointment, and much loss by knowing the causes of success and failures in others. Profit by the experience of other people as well as by your own.

In entering the poultry business, the very essential thing is a good foundation for your flock in the way of absolutely good stock. Not altogether bred from a hen that will lay 300 eggs and better for a year, because it must be remembered that a hen that will lay 330 to 350 eggs a year is about

one in three million and the best breeders in the land have found that to establish a flock from too high prestige birds usually results in disappointment. A chicken hatched from a 300 egg hen or better, really has not the vitality and the laying capacity that a chicken hatched from a flock averaging from 180 to 250 per year has.

The question is,

WHEN DOES IT PAY TO INCUBATE EGGS?

This question is often asked as to whether it pays to incubate eggs out of so-called hatching season. From my own experience, I am prepared to say that I think it **does** pay and have a great many reasons for saying so. First, eggs which are produced during summer months would not bring as much as the winter eggs if sold at ordinary market prices, so that not so much is risked when you put them into an incubator and if only a small percent of the eggs are reaped from them, the net results will be greater.

As we all know, July and August are trying months for young chicks, yet it is possible to feed and care for them so that there is but the ordinary loss. The second reason for incubating continually is so that you will have pullets of different ages coming into maturity in succession and so being able to get eggs at all times of the year. Dairy men use this method of getting milk. By having new milch cows from time to time they will thus be able to supply customers with milk every day in the year, and if you have a private egg trade, your customers will appreciate the fact of getting fresh eggs at all seasons and plenty of them. A third reason is that your interest in the work is kept up. There is a fascination for things that have life and especially so with eggs, and little chicks have a way of keeping one over the borderland of uncertainty. This very fact keeps us interested in our work which never grows monotonous as so many other things do, nor does the interest lag as the chicks become quite healthy. To the real honest-to-goodness fancier, the study of birds as they develop becomes more full of interest at each new set of birds. If you watch their growth and development, you will find yourself forming an opinion of the relative value of different fowls and if you are familiar with requirements of the standard of perfection, you will keep comparing them as they grow and come near to maturity,

for this is the way you will be constantly educating yourself in reference to fowls.

Some chickens are culls from the beginning because of stuntedness, color, or plumage. Birds with some of these defects may be disposed of as they will not do to use for breeders and the cost of their keep will be more than they are worth and yet there are some that keep them for the first season's egg production only and then dispose of them for table use. You should learn to cull with a merciless hand and cull every day in the year, throwing out everything not of the highest type as found in the standard of perfection.

THE HATCHING OF CHICKS WITH INCUBATORS

It is certain without a doubt that most incubators would bring better results if the incubator itself was understood. It is more often the fault of the operator than of the machine. Almost any machine if properly handled so as to hold the fairly even temperature and if operated according to instructions, will give good service. To insure good hatches, one must go farther back than the incubator. Many a poor hatch is taken off in a good machine simply because the breeder does not understand his flock or rather does not understand how to feed them and the machine immediately is condemned as a poor one and satisfactory incubation is simply a failure when as a matter of fact, such eggs would hatch no better under a hen. To begin with, all heavy food should be mixed with greens, and corn is fed to advantage in the litter. The real object of this is to get the flock's muscles into play and promote circulation. Not only do you gain in the number of eggs but your birds will show vim, vigor, and vitality. It is as effective to male birds as female because it increases circulation and actually keeps the birds warmer. How many have noticed people in colder climates throw their arms about to increase the circulation? Likewise it stimulates the appetite and your birds are given a great quantity of food which gives energy and makes eggs. Eggs from overfed birds are not apt to give many chicks, but you must do more than feed greens and corn. Too much corn is especially dangerous. Great quantities of good greens should be fed. If your birds like it dry in hoppers, by all means keep them filled up but put good proportion in mash—⅓ or ½ will do no harm. Barley, sudan grass, clover, alfalfa are all good and make an excellent tonic. If clover can be

obtained, it is fine for it contains lime which is very good. By all means feed sprouted oats sometime, somehow, and somewhere. Any food that will stimulate that part of the body that needs it, without injury, is a most valuable asset. Sprouted oats particularly fills the bill, hence it becomes a necessity for one to feed it. It is only after one has tried the eggs that one really appreciates the value of sprouted oats. Some sort of animal food must also be used, therefore our winter flock has to content themselves with good clean beef scraps or fish meal made from the heads and livers of fish. Ground bone is advocated as a good egg producer also. The main thing is to go by results because it is the results we are after.

Now with the former in mind, the next thing is how to run the machine. Any machine will do much better work at 50° temperature with a variation of 2° or 3° than in a room of 70° in days and 60° at night. If the thermostat is regulated to operate, the damper at 103° in a room temperature of 70° and the room temperature drops to 60° at night, then it will require more fuel or the damper will remain closed during the night. It is therefore pretty evident that a uniform temperature outside the machine will keep the temperature inside also uniform. The thermostat can take care of 2° to 5° change very well, but when you expect it to take care of a change of 10° without more fuel, you are asking entirely too much. The unheated basement is an ideal place because of the constant flow of fresh air. The natural moisture in the air is the only moisture that is beneficial to the unhatched chicks also. If the eggs are fairly fresh when set, say not over ten days old, the ventilation of the machine well taken care of, and sufficient humidity in the air, the question of applying moisture need never enter the operator's mind. Applied moisture weakens those of the stronger chicks that would have come out anyway. It is far better to sprinkle the floor around the machine and thus make the air more humid, than to apply moisture on the inside of the case.

To apply moisture it must be done in such a manner as to mix with the atmosphere. Therefore we must apply hot or even scalding water to produce vapor which would quickly condense and pass away. Put a pan of boiling water into a fifty-egg machine and in a short while you have enough vapor to give every chick a turkish bath. If you open the incubator and take the pan out, you are liable to lose half of your chicks. Not only that, but as soon as the water is put

in, the mercury in the thermometer goes up and the damper over the lamp will rise as high as the lever will allow it to go. In ten seconds an apparent rise of 10 to 15°, while in reality the actual temperature of the unhatched chick is gradually dropping until, when things are fairly normal, your temperature has dropped between 1 and 2°. Simply adjust the thermostat to 103° again as cold or warm water will lower the temperature and do no good.

Applying moisture is always accompanied by a chill, therefore dipping the eggs singly in a pan of lukewarm water should be discouraged. If under the aforesaid conditions, a few chicks are not able to crack the shell, the egg can be quickly removed, opened and replaced, with some success.

Eggs over ten or twelve days old evaporate very rapidly, so it is better to have them rather under than over ten days old. Eggs three and four days old are excellent and you cannot get them too fresh for incubating.

When storing, the eggs should lie on their sides except when being shipped on a train or otherwise, and then they should stand on the small end. For a period of seven or eight days, it matters little whether they are turned daily or not.

Some people make a hard job of incubating while others do it with comparative ease. If attending to all the needs systematically, they are by no means a burden. The time required depends entirely on the quickness of the operator.

An empty chamber will register a little higher than one which contains some matter that will retain heat, so the machine should register a fraction over 103° before the eggs are put in. After the eggs are put in, the machine should be left alone. Be sure that your thermostat has been working for 36 hours. After two or three days, turn the eggs twice daily and after the fifth or sixth day, three times daily. Turning and stirring should continue regularly until the eighteenth night, after which time the eggs should be left alone so as to get right side up and give the chick a chance to get right side up also. The temperature should remain at 103° or a little over. At pipping time, the temperature should be 104° or even a half degree higher because of the moisture given off by the chicks which always reduces the temperature.

Do not open the machine to see how the chicks are hatching. Even if a chick can be saved by opening the shell, it is better for the novice to let the machine remain closed till after the chicks are hatched. Only hatchable eggs can give

a good hatch. If the machine is operated correctly, it will do the work, provided it is given the right material to work with. Fifty chicks from fifty eggs are possible, but the average is much below this. If thirteen fertile eggs out of fifteen, hatch ten or eleven chicks on an average, you are doing well. This is from 70 to 80% of all eggs incubated. This, however, is possible, and by not aiming too high, you will not be so apt to be disappointed later on.

CLEANING UP AFTER THE CARPENTERS

This matter should be carefully attended to as a great many small nails, tacks, etc., are dropped on the floors and in the yard and if they are not picked up by the poultry keeper, the chicks will pick them up for them. Upon examining the gizzards and intestines of little chickens that die, you will find them pierced by small sharp nails and tacks which naturally causes the death of the fowls.

WATER PROOFING CEMENT FLOORS

Mix one quart of epsom salts to each barrel of water used in mixing this cement, is a good way of water proofing cement. Also if the floors have already been laid, they may be water proofed by applying a good coat of asphalt paint.

THE BUILDING OF A REAL PROFITABLE POULTRY BUSINESS—HANDLING THE CHICKS

The time is at hand when the chicks are with us again and the work of caring for them makes short days for busy people. One never realizes just how much care and work it takes to raise a lot of chicks and one who actually has done it, admits that it is no easy matter. It is a simple matter to visit a poultry yard with thousands of little chicks and the host shows us about with no notice of the work that is piling up. You do not notice the work but only the many chicks and the smiling face of the poultry man. In reality, there is lots to do at that very minute. Invariably, work is there and when you are gone he will work with every increased vigor till the work is done.

The chicks should be let rest for a time after they are hatched and dried off. It is nature's way. She has provided the little chick with food enough for four or five days. It is not wise to wait till this is gone, however, but food should

be given after the chick is from 48 to 72 hours old, to make it strong and give heat and vigor. This does not mean that this food should be forced into the chicken. Remember that the yolk of the egg is also in the right place. If the little chick does not care to eat, do not force the food down its throat. Now there are many ways of feeding little chicks and I have prepared a formulae which I have worked out and which you will notice spoken of in this book. There is no one way of feeding that is the one and only way. There are many poultry men and hence many ways of feeding little chicks, but whatever you use, do not give them too much and do not give them food that will sour in the crop. Do not give them any mash till ten days to two weeks old and then only for one hour a day, one half hour at a time. A little chick, like a baby, should be fed little and often. Make them scratch for food and the exercise will be a benefit to them. In the matter of giving them greens, do not give until six days old and then a little of fine cut clover and tender greens. Avoid giving too much. Do not feed lettuce to excess as it makes them dopey. Little chicks are sometimes affected in this way. It may not be one particular trouble but a combination of troubles: Over feeding is one thing, wet concrete floors for another; board floors are much better, as concrete floors are cold always. To put them right on a hard floor, the results are that they do not get the spring to their legs when walking and running. If you live in the country and are used to walking on anything but cement and then go to the city and walk on cement sidewalks, my how your feet and legs do hurt. What is the trouble? Just the same as with the baby chicks. They need to be on soft ground or where there is some resiliency. The ideal way is to have the brooder house so that if the weather permits, you can let them out on the soft dirt.

A little chick, until it is eight weeks old, should be fed five times a day and only what can be cleaned up at a single meal. No whole grains of wheat should be given and once a day a little good beef scrap should be given so that they will all get some of it. They should have plenty of room with good ventilation.

It is always a good plan to keep chicks of a size together even if of different ages. There are always some chicks ahead of the others. If you have arrangements so that you can do it, it is a splendid plan to keep these together for reasons that are present with small chicks because the larger

ones peck the smaller ones and the little fellows run away and do not eat and therefore their growth is retarded. The little chicks, as they grow older, should have just as good care as when they are small. There is a tendency with all of us to neglect growing birds after they have passed the trying time or danger point, but neglect means trouble and plenty of it. The pullets should be set for early maturity and cockrels for market or for selling stock. There should be a marked difference in feeding from an economic standpoint. Good care and attention will bring results that will be highly satisfactory to the one just beginning in the poultry business.

FEEDING BABY CHICKS

A baby chick, like an infant, should be fed little and often. From 48 to 72 hours should elapse before a baby chick should be fed, but as soon as they are placed in the brooder house, fresh water with the chill taken off, should be placed before them. Also fine sand placed on the floors is good for them to pick up. The first feed should consist of fine cut wheat, steel cut oats, and feed meal, placed on a board and by tapping with the fingers on the board, the little chicks will be taught to eat. Also at this time, place before them in special fountains, sour milk or buttermilk and also let them have water to drink. Feed them five times a day until they are eight weeks old; four times a day until they are twelve weeks old; then feed the pullets three times a day until they are six months old, a growing mash and other feeds that will give them strength and promote their growth. The feed for a baby chick until it is eight weeks old is, first—the fine ground wheat, steel cut oats, and feed meal. Second feed of the day—same as first with rolled oats, a few handfuls rubbed in the hands and mixed with the first feed. The rolled oats should not be fed until after the first day. Third and fifth feeds are the same as the first. Keep this up for ten days or two weeks then you substitute for one hour only each day at intervals of ½ hour a chick mash composed of equal parts by weight of ground hulled barley, fish meal and feed meal. This is to take the place of the third feed each day. Avoid overfeeding and feed them only what they will clean up. Greens should not be given until the chick is six days old, then in small quantities at first, gradually giving them more. Give tender greens and avoid too much fiber. Do not feed crumbly mash. Overfeeding will cause leg weak-

ness. One should not begin feeding mash too early. However fine bran and shorts may be left before them all the time from the very beginning. Feed sour milk or buttermilk in crocks only and not in tin or galvanized vessels.

HATCH EGGS FROM HEAVY PRODUCING HENS

Eggs for hatching should be from heavy producing hens. Gather them several times a day. Be sure that they do not get chilled or handled roughly. Never use a soiled egg or one that has been washed. Keep eggs intended for hatching in a temperature of from 50 to 60° and in a dry place.

Experiments indicate that fresh eggs produce much more vigorous chicks than do the eggs that have been kept for some time before being put in the incubator.

Feed your flock at the same time every day. Regularity produces best results.

PLANT SUNFLOWERS AND GREEN FEED

Plant a crop of sunflowers, wheat and oats in a fenced-in portion of the hen yard. Protect these with a wire fence until the sunflowers are well up and the hens cannot harm them. The sunflowers will provide excellent shade for the hens during the summer, and in the fall they will enjoy the sunflower seed. The wheat and oats will be valuable green food.

Keep plenty of clean fresh drinking water in front of the chickens all of the tims. Change the water several times a day. This tends to prevent the spreading of disease, and increases egg production.

DO NOT FEED BABY CHICKENS COARSE GRIT

In the matter of feeding little chickens coarse grit, the Author has observed that coarse grit has a decided tendency to cut the gizzard which is very tender. It is far better to feed very fine sifted or quick sand which will not injure them in the least. The coarse grit may be fed after the little chickens are three weeks old.

TO ELIMINATE STICK-TITE FLEAS FROM POULTRY HOUSES, YARDS, ETC.

Dissolve 4 lbs. of dairy salt in 8 gallons of boiling water. When cooled, add one lb. can of Red Seal Lye. Apply with a whitewash brush or spray pump. If you have sufficient

room, transfer your chickens from one yard to another and alternately flood them with water. Great care must be taken in using water to see that the houses, runs and yards dry out sufficiently before the chickens are put into them.

A FORMULA FOR THE FEEDING OF BROILERS FOR THE EARLY MARKET

Mixture No. 1

One part feed meal.
One part cotton seed meal
One part coacoanut meal
One part rolled oats.

After this mix together the following:

One part laying mash.
One part bran.
One half part of Mixture No. 1.
One half part of corn meal.
Five percent beef scraps.
Five percent charcoal.

Salt well, but avoid using too much at a time; the idea is to get the chickens to eat and drink as much as possible.

Mix to a crumbly consistency and add one part of alfalfa meal. Great care must be used in feeding salt.

THE SPECIAL CULLING AND FEEDING OF PULLETS FOR EGG PRODUCTION

It is the rule of many successful poultrymen to always give pullets a chance their first year, but after many years study and experience I have found that it really pays to cull pullets. I would not cull them until they are about six months old. At that time first pick out those that are maturing the fastest and feed them in the ordinary way that you would feed a pullet just beginning to lay. Now the seconds should be placed in separate runs and gradually forced for egg production. You will find that by doing this both firsts and seconds will come into their own much quicker and you will have a flock of much better hens than if they were kept together. Those pullets that you will throw out entirely should be weak or immature birds, crownecks, runts and all those of low vitality.

These may be placed in small runs and fattened for the

market. If you wish to keep a really high productive flock of birds that will produce for five or six years, which by the way is much cheaper than buying pullets every year, or even raising them, be careful of your feeding and the use of lights. Keep the mites out of the houses, the lice off of their bodies, and the worms out of their bodies. Be gentle with them from the very beginning and raise them to be tame. It is a splendid plan to always make your presence known when passing from one house or run to another. Also strangers entering your premises should be requested to use great care is not frightening the birds. Many millions of eggs are scared out of poultry flocks every year when a little good judgment in the management and care of poultry flocks would obviate this trouble.

CHICKS HATCHED EARLY ARE MOST PROFITABLE

Late hatched chicks are not so profitable as those hatched early. Chickens hatched in March or the early part of April will be laying in five months or less, with proper care. Whereas chickens hatched one month later will not lay until six and one-half or seven months old. This means two months extra feeding without returns.

Better layers and better broilers are obtained from March and early pullets as they have more vitality, are more hardy and are better able to withstand the cold weather than May hatched pullets. Early hatched pullets make better winter layers when eggs bring handsome profits. Early hatched broilers are worth more per pound than from the May hatched.

Cull out weak chicks as they are a constant source of expense and danger. They are always the first to become infected with parasites or to contract diseases which may spread to the healthier chicks in the flock. A chick which is decidedly lacking in vigor should be killed. It is of no value in itself and is a constant menace to the flock. Be on the lookout for choice breeding stock from the time the chicks are hatched and continue till they are fully grown. When certain chicks are noticeably more vigorous and make more rapid growth than the remainder, they should be marked. A satisfactory way of marking is with a celluloid band around the leg or a punch through the web of the foot.

Chick mortality is especially high because the little birds frequently are not sufficiently strong to throw off disease.

Drinking fountains are the most common source for the spread of disease. They should be therefore sterilized with scalding water and Gold Dust Twins at least once a day, preferably twice a day during hot weather. They should be so arranged that chicks cannot get their feet in the water. Diseased chicks should always be destroyed. White diarrhoea is the most prevalent disease among chicks, and can be absolutely eliminated by the white diarrhoea remedy found elsewhere in this book. It materially affects the later profits and must be carefully watched during the first few weeks after incubation. Whenever chicks show symptoms of white diarrhoea, they should be removed, the location of the run changed, and the drinking fountains thoroughly disinfected. It pays to burn the dead bodies of any chicks that have white diarrhoea. Other diseases that should be watched for are gape worms and leg weakness. Turn to the medical section in this book and familiarize yourself with the best preventative for diseases prevalent among baby chicks. Do not let your baby chicks get chilled. On the other hand, do not sweat them. Keep the heat uniform, say from about 80 to 82° to start with, gradually cutting down the heat as the chickens grow. Give them all the free range possible and encourage plenty of exercise. Provide them with plenty of shade. See that there is plenty of ventilation but no drafts. If the weather is such that the little chicks cannot get out of doors on the ground the first week, throw fresh earth in one part of the brooder room where the chicks can get on it a part of the day. Three weeks straight on a hard floor will usually cause leg weakness to develop. Remember that chicks need exercise. If the weather is dry, the little chicks should be allowed to make use of the outside yard when they are from 10 to 12 days old. Keep the yard small at first, a few feet square. Increase the range every four or five days until the chicks are able to find their way from the yard to the hover, then allow them free range during the whole day. It is a good practice to make use of a peculiar call or whistle each time that you feed the little chicks in order that they will associate that call with feeding time and this will facilitate calling them into the house.

Little chicks should be culled as soon as the sex can be determined. Cockrels should be separated and placed in separate yards so that those of about the same age can run together. If any of the cockrels are to be saved for breeding, place leg bands on those that mature rapidly and remember

that the first cockrels to crow are the birds that will make the best breeders. Discard any birds that have crooked keels or marked defects. All cockrels that are not set aside as possible breeders should be fattened and sold as soon as possible. They should not be given free range but should be kept in relatively small yards where they cannot work off their weight.

CAPONIZING

In certain sections of the country caponizing is quite popular. It is not difficult to learn how to caponize, though in sections where it is common, poultry raisers seldom do it themselves, but employ a veterinarian who goes from ranch to ranch, making a nominal charge per bird. Any one who is interested in caponizing should send for Farmer's Bulletin No. 849, issued by the United States Department of Agriculture.

MARKETING

The price for cockrels depends largely upon the dates they are sent to market. The quicker they can be fattened and shipped, the higher price they will bring. Whether birds are shipped alive or dressed, they should be sorted for weight and appearance. Birds of the same size, weight, breed, and color present a much better appearance.

THE CULLING OF PULLETS

One of the most important factors in poultry profits is the proper culling of pullets. They are the future layers and laying capacity depends to quite an extent on natural vigor. It never pays to keep and feed a runt. Separate all pullets that do not develop and feather out rapidly. Poorly feathered birds, those with crooked keels, dull eyes, or any defects, should be fattened and sold. Heavy layers are industrious even when young. The bird that is quick to get a worm when one is thrown in the yard, is the bird to save. Slow, awkward, listless, sleepy, or ill shaped pullets, should be disposed of quickly. Avoid crowding. A few carefully selected birds in a house that provides plenty of room will yield larger returns than a large number of average pullets.

To build up a good constitution for heavy laying in later life, pullets should have free range during the summer. If they can have the run of a large yard or an orchard where

there is plenty of shade and abundant food, they will come into the fall laying houses ready for business. Always keep pullets of the same age together. Be absolutely sure that the quarters are roomy so that the birds are not crowded at night. Encourage roosting by having plenty of roosts in a well ventilated but not drafty house. Constantly weed out birds that lack vigor or do not develop rapidly. Clean houses and clean yards are essential to healthy, quick development of pullets. Clean the houses as often as possible. Keep the inside of the houses well disinfected. Be sure to get your pullets into the laying houses early, before the egg laying season begins. Otherwise a drop in the egg yield will occur and a fall molt will be encouraged. Any sudden change in feeding or management is liable to throw the birds into a false molt and seriously interfere with winter egg production.

THE BEST RATION IS THE CHEAPEST

Some people still do not realize that cheap feed is the most expensive in the end. The far seeing poultry raiser realizes that it is results, not price, that counts. The average farm hen lays only 72 eggs per year and in many localities the average is much lower. The average commercial hen lays about 140 to 160 eggs per year. This is an average and not the maximum because many hens eat more than others. Seventy pounds of feed a year is figured as an average for each hen or less than three quarters of the feed for the maintenance of the body and a hen consuming this amount should lay more than 150 eggs a year. A difference of 7 eggs per hen per year will pay a difference of $10 per ton in the price of feed. This does not seem possible but it is the truth. At the $10 a ton difference in the cost of feed, it costs only 35c more per hen per year to feed the best. At 60c per dozen or 5c each, it takes seven eggs to pay the difference. At 48c per dozen, or 4c each, it takes only 9 eggs to pay the difference. Even at 36c per dozen, or 3c each, it takes only 12 eggs per hen per year or one egg more per month to pay the difference of $10 per ton in the price of feed. It is by planting the best seed that you get the richest harvest. The far seeing poultry raiser uses only the best rations, and reaps the maximum profits.

Every poultry raiser is interested in maximum production at minimum cost, but very few of them realize that

the first cost does not determine the value of the feed. The true measure of value is the cost per dozen of the eggs produced.

There is more money in chickens than ever, if they are properly culled and properly fed. But there is less money in them if they are not culled and not properly fed. After you are through with her, the hen is now worth three or four times as much for food as formerly.

SLACKERS EAT UP PROFITS

It pays to feed the bird that lays—not the slacker. Non-layers eat up the profits. Failure to weed them out may make your flock an expense instead of a source of income. The success of any flock, large or small, hinges upon getting the most eggs at the smallest cost. The first step is to cull your flock. Every bird that is not capable of producing enough eggs to show a profit over the cost of its board must go. Approximately forty per cent of the hens can be culled without lowering the profitable egg yield.

As a general rule, it is an easy matter to recognize the characteristic features of a laying hen, which enables you, whenever you are selecting birds for the table or market, to eliminate the slackers from your flock.

Fundamental laws govern all forms of animal life including poultry. By looking at certain lines, an experienced dairyman can pick out the heaviest milkers in the herd, and an expert feeder can pick out a good steer for fattening purposes. Judging poultry is a little more difficult, because the feathers conceal the lines of the body.

There are some general features of the good egg laying type which may be determined at a glance, such as scarlet comb and wattles when laying, brilliant eyes, feet and legs well balanced at the end of the laying year, crop full and distended at night, and toe nails usually short and worn off. By the following tests you can systematically eliminate slackers from your flock and build up your profits.

Examine the birds of your flock early in the morning, before they leave the roosts. By feeling the egg inside the bird's body you can determine whether she will lay that day. Repeat this test three or four mornings, and the majority of your best layers will be discovered.

Also keep a record of your death rate and everything else pertaining to profit and loss. In order to get an accurate

percentage of profit, there must be an accurate record of both receipts and expenditures. This same thing applies to the operation of the plant in ever particular. There are many phases of the work and each should be kept track of if you are to know the details of your work. If you have several pens of birds, you should know how many eggs are taken from each pen daily. In this way you will be able to tell at a glance the most productive pen. If they are all the same breed, you will be able to pick out a good breeding pen in this way. Otherwise, if now and then you have a pen that is not up to the standard, you can dispose of them to the butcher and thus rid yourself of an unprofitable lot of birds. If you have several breeds, you can in this way make comparisons in egg productions and when you take up your records at the end of the month or season, you can readily tell which has been the most productive under similar circumstances. In this way you might be able to pick out a variety with which you might do well. There are some breeds which seem to appeal more strongly to one's particular taste and these birds receive the best attention and their wants and needs are made a standard by which the needs of the other birds are measured. Then, it might be possible that you would want to know the relative merits of the various pens of birds, but you will want an individual record of each hen or pullet you have. If you are running a trap nest plant, you will be in a position to do this and by the aid of a suitable book for the purpose, there may be kept a record of each hen which will tell the story at the end of the month. In this way you can pick out the pen of the most productive birds and mate them with the best mate. From this well mated pen, you will probably obtain good results. A careful breeder will also want to keep accounts of the various hatches and the mating from which they came. This will give you much valuable information at another breeding and mating time and you will be in a position to know which birds you selected for the various matings. Then there are the receipts and expenditures accounts or records which show the actual cost of operating the plant and also the returns therefrom. These will give you the standing of the plant from a financial standpoint as well as from a standpoint to know what you are doing. With such records ever before you, there is but little danger of going astray in any way. Facts and figures give you the whole story and you can make your own deductions, for there is but one way to do a thing and that is

the right way, if you expect to succeed as you would like to succeed.

A FEW PRACTICAL POULTRY POINTERS AS PRACTICED BY PROGRESSIVE POULTRY PEOPLE

From time to time you have had the science of poultry feeding considered, especially along chemical or theoretical lines. However, a few hints on feeding, etc., may be acceptable at this time. One and all of us who keep poultry must follow certain well defined rules and regulations and yet a definite set of rules cannot be laid down that will apply at all times and in all climates and conditions. There are, however, a few simple rules to which we must pay attention if we are to attain to any measure of success in the poultry industry. With the present high cost of feed and the growing competition, one must use extra care and systematic management in order to avoid the beaten track to disappointment and defeat. There are two points of importance in the successful management of poultry, whether the flock be large or small: first, the necessity of procuring really good stock; second, the careful management of the fowls. These two essential points are well illustrated by a row boat. What would you think of a person who started out to row across a river or lake in a row boat with but one oar. He or she would make a great many ciphers but very little progress. The two oars representing a good stock and good management, are absolutely necessary if we are to progress toward the goal of success and these two will procure the right kind of ciphers, that is to say—eggs. If your market product is eggs, you should feed egg producing food and it will be necessary to know the elements contained in these. As in feeding cattle, certain foods will produce more milk than others—so with poultry. Some foods will prove not only more economical but will produce eggs both in quantity and quality and will be economy in the true sense of the word. Almost all the food used for live stock, including poultry, may be classed under two heads:

Carbon	**Protein**
Elements: Heat	Elements: Blood
Energy	Bone
Vitality	Flesh and Feather producing ingredients.
Fat	

The carbonaceous foods are those that contain a large proportion of the fat or starch element and supply heat, energy and vitality. It follows that more of this food is needed in the winter than in the summer, especially in the colder climates. Nature itself has made provision for this to some extent as the yellow corn of the north is much more carbonaceous than the white corn of the south. I mention corn because it contains a large percentage of carbon or starch. A good substitute for corn would be buckwheat and fat meat and this change or variety would be much relished by your birds. The nitrogeneous foods commonly referred to as those containing protein, are the foods that go to provide nourishment for the growth of the fowl's body, making blood, bone, flesh, muscle, sinew, and feathers. If you feed nothing but corn, your stock will become fat and lazy and very few eggs will be procured but with properly balanced ration, feeding the right proportion of carbon and protein and a variety of different foods, the stock will be maintained in a good healthy condition and the result will be a good full egg basket. The accompanying table gives an analysis of the various foods commonly used for poultry:

	Gross Contents Percentages		Composition of dry matter in % of the whole				
Foods	Water	Dry Matter	Fiber	Ash	Protein	Carbo hydrate	Fat
Field Corn	10.9	89.1	1.9	1.5	10.4	70.3	5.0
Cracked Corn	12.3	87.7	....	1.3	8.6	73.9	3.9
Corn Meal	15.0	85.0	1.9	1.4	9.2	68.7	3.8
Gluten Meal	9.6	90.4	1.6	0.7	29.4	52.4	6.3
Wheat	10.5	89.5	1.8	1.8	11.9	71.9	2.1
Wheat Screenings	11.6	88.4	4.9	2.9	12.5	65.1	3.0
Wheat Bran	11.9	88.9	0.9	5.8	15.4	53.9	4.0
Wheat Middlings	12.1	87.9	4.6	3.3	15.6	60.4	4.0
Dry Bread	31.2	68.8	....	....	6.9	44.2	0.5
Oats	11.0	89.0	9.5	3.0	11.8	59.7	5.0
Oat Meal	7.9	92.1	0.9	2.0	14.7	67.4	7.1
Oat Bran	7.7	92.3	19.3	3.7	7.1	57.9	2.3
Oat Middlings	9.2	90.8	3.8	3.2	20.0	56.2	7.6
Barley	10.9	89.1	2.7	2.4	12.4	69.8	1.8
Buckwheat	12.6	87.4	8.7	2.0	10.0	64.5	2.2
" Middlings	13.2	86.8	4.1	4.8	28.9	41.9	7.1
" Bran	14.0	86.0	14.1	3.4	17.1	46.4	4.4
Rye	11.6	88.4	1.7	1.9	10.6	72.5	1.7
Rye Bran	11.6	88.4	3.5	3.6	14.7	63.8	2.8
Millet	13.5	86.5	9.5	3.0	12.7	58.0	3.3
Flax Seed	11.8	88.2	7.9	3.4	21.7	19.6	35.6
Linseed Meal—new	10.1	89.9	9.5	5.8	33.2	38.4	3.0
Cotton Seed Meal	8.2	91.8	5.6	7.2	42.3	23.6	13.1
Sunflower Seeds	8.0	92.0	28.5	3.0	13.0	23.9	23.6
Rice	12.4	87.6	1.2	1.4	7.4	79.2	0.4

Red Clover	15.3	84.7	24.8	6.2	12.3	38.1	3.3
White Clover	9.7	90.3	24.1	8.3	15.7	38.3	2.9
Alfalfa	8.4	91.6	25.0	7.4	14.3	42.7	2.2
Green Grass Clippings	76.4	23.6	4.1	2.4	2.3	13.8	1.0
Cabbage	90.5	9.5	1.5	1.4	2.4	3.9	0.4
Lettuce	95.9	4.1	0.5	0.8	1.0	1.0	0.2
Spinach	92.4	7.6	0.7	1.9	2.1	2.4	0.5
Peas	13.4	86.8	6.4	2.4	22.4	52.6	3.0
White Field Beans	15.0	85.0	3.2	3.1	20.4	56.7	1.6
Tomatoes	91.3	8.7	0.7	0.7	1.0	5.8	0.5
Apples	84.1	15.9	0.9	0.2	0.2	14.3	0.3
Cucumbers	96.0	4.0	0.7	0.5	0.8	1.8	0.2
White Ptatoes	78.9	21.1	0.6	1.0	2.1	17.3	0.1
Red Beets	88.5	11.5	0.9	1.0	1.5	8.0	0.1
Mangel Wurzels	90.9	9.1	0.9	1.1	1.4	5.5	0.2
Turnips	90.5	9.5	1.2	0.8	1.1	6.2	0.2
Carrots	88.6	11.4	1.3	1.0	1.1	7.6	0.4
Onions	87.6	12.4	0.7	0.6	1.4	9.4	0.3
Peanuts, Hulled	10.9	89.1	3.1	3.8	31.5	46.9	3.8
Whole Milk	87.2	12.8	....	....	3.5	4.8	3.7
Skim Milk, Separated	90.6	9.4	....	....	2.9	5.2	0.3
Buttermilk	90.1	9.9	....	....	3.9	4.0	1.0
Beef Scrap	1.3	98.7	....	8.0	58.0	....	32.9
Pork Scrap	0.8	99.2	....	2.2	57.4	....	39.6
Dried Blood	6.7	93.3	....	6.6	65.1	5.3	16.3
Green Beans	6.9	93.1	....	24.5	22.3	....	16.3

It will readily be seen that corn contains one part protein to twelve parts of carbon, thus it is known as a wide ration having a large amount of heat and fat producing qualities with only one twelfth of the blood, bone, flesh, and muscle producing element. The other extreme is to be found in albumen which contains seven and six-tenths percent of protein to one of carbon. This is what is known as a narrow ration. A one sided diet, as it were, containing a large percentage of protein with very little carbon or heat and life producing qualities. The happy medium known as the balanced ration, would be about one part protein to five parts carbon. This is about the composition of oats, showing the great value of it as a food for the laying hen, but hens, like mankind, must have a variety of food to produce the best results. Then the different breeds must be considered. It would not do to feed a race horse as you would feed a work horse. The Leghorns and Minorcas are parallels of the race horse of the poultry world, being more active and requiring more carbon than the Asiatic and American breed such as the Orpintons, Plymouth Rocks, Langshangs, Rhode Island Reds, Brahmas, and Wyandottes. We must take into account also the conditions in which the flocks are kept. The birds confined to small runs will require much less feed than a

flock on large runs and the food must be prepared so as to be more easily digested and assimilated. To feed a laying hen corn in midsummer would be like a person wearing an overcoat on a July day, but the corn may be allowed in cold weather and an extra allowance in extremely cold weather. In zero weather the fowls may be allowed all the corn they can eat for their evening meal. To produce eggs, however, in abundance, in cold weather you must not deny the hens their share of protein. Also if you will look over the list of foods, you will be able to pick out the necessary variety. It will be necessary for health as well as egg production to supply alfalfa, barley, clover, and sudan grass, or better still sprouted oats, as they contain considerable nitrogen in liquid form, aiding digestion and exercising the digestive organs as well as purifying the blood. You will note the great value of beets as a variety in winter to aid in the digestion of the more concentrated foods. To give corn alone, even in the coldest weather, would produce a case of indigestion. The green foods and vegetables must be combined with the corn so as to give the necessary bulk and a sufficient amount of nitrogen. Also plenty of fresh water must be given for food results. In extremely cold weather, the chill should be taken off the water. Another important point is the supply of lime, a considerable portion of which is essential for the production of eggs as well as for the production of bone and feathers in the growing stock. Lime is found in large quantities in cut clover, alfalfa, and wheat bran, there being a sufficiency of lime to form the shell, also a considerable portion of the white of an egg. Therefore cut clover is one of the most valuable of foods for the laying hen as well as for the growing stock. To those people living in sections where it is difficult to obtain meat scraps and bone, I would suggest as a good substitute, that you keep a rabbitry. Either rabbits or hares will provide clean meat and soft bone for your stock and one hare per day will supply a large flock with the necessary supply. This will also be inexpensive as your hares will consume almost any kind of food, even weeds, and convert same into tender healthy meat for your birds. By stewing the meat and using the liquid to mix up your mash, grinding the bones and feeding the meat to your flock at the rate of one pound to twenty hens a day, you will have an inexpensive, wholesome, egg producing, muscle making, and shell forming material. The same may be given to the growing stock in quantities, varying according to their ages, with de-

cided benefit. This would also prove to be better than green cut bone because it is rich in protein and not so likely to cause worms and intestinal trouble. Feed small grains in straw litter and keep the hens scratching for a living. In the morning, throw in the litter equal parts of cracked corn, wheat, whole barley, oats, and milo. Use extra corn at night in cold weather. At noon feed green food and vegetables. Have before them a constant supply of oyster shell, grit, and charcoal. Carefulness and good judgment in feeding will insure good health and an abundant supply of eggs all the year round. Provision should always be made for scratch pens inside the house so that the hard grain may be buried out of sight. The fowls will get more exercise and scratching and the litter will keep their feet and legs in good condition. When thus treated, there will never be any trouble with leg weakness. Oft times we hear numerous complaints about hens not laying in the winter. Especially is this true in colder climates. Some people seem to think that because their hens are thoroughbreds they should lay no matter under what conditions they are kept. Some think that because they purchased their hens or eggs from a breeder that advertised "bred to lay" or a winter laying strain, and paid an enormous sum for same, that they should lay in winter regardless of conditions. Well, how about feeding for winter eggs? A great many people pick out the easiest way and stick by it and swear by it. It runs something like this: light feed of whole oats in the litter and dry mash, hopper open all day. Scratch feed at night. Clean water. Shell and grit before them at all times. Very easy! I feed fresh cut green bones, all they will eat, not twice a week but every day, provided, however, that you are not raising rabbits for this purpose as spoken of before. At 2 o'clock, steamed or sprouted oats and there is nothing that they like any better. At 4 o'clock give the scratch feed spoken of before, what they will clean up in 20 minutes. This plan of feeding gives plenty of eggs, healthy hens, strong chicks, and is not overly expensive. I am more than liberal with good clean straw—oat if obtainable, for the litter. Houses opened up well on the south side curtained with burlap to hold out the storms is good and also the dropping boards should be kept well covered with sifted ashes or lime and Lice Powder. I believe one of the best methods of obtaining winter eggs is to make all food as appetizing as possible, as I believe the more food consumed, the more eggs will you get. The profit on poultry

depends on the breeder. Some people condemn a breed that others have won success with. It requires a long time for the apprentice to become skilled. It requires four years to become an efficient army officer and it requires a great many years to become skilled in any profession. Still, men and women invest their cash in the poultry business, build fine poultry houses, buy several large incubators and brooders, and all the latest appliances that absolutely guarantee to give satisfaction or money refunded. Then the selfsame person must hire help to do laborous work and hire a manager to look after the help. Now just imagine the position the proprietor is in if he does not know whether the help or the manager are doing as they should do. Still his money is invested. If you are not ambitious and willing to work hard early and late, Sundays and holidays, if you are not careful and patient and painstaking, and willing to sit tight and wait for returns, willing to take the ups and downs of the business and be cheerful, then for goodness sake stay out of the poultry business. Go in if you will, if you think you possess the necessary qualifications, and go in at the bottom and grow up with the business. Otherwise you had better let it alone.

If you find that your method of feeding is not productive of good results, try some other way. Often a change of food helps the appetite and starts the bird in a way for egg production, but should you change the mash or manner of feeding, work gradually out of one into the other. It certainly is the only thing to do, but many poultry keepers wonder why their birds do not lay and yet keep on with the same old system of feeding, care, etc. To the beginner—we hear so much about protein and nitrogeneous food that we should not attempt to feed exclusively of foods containing a high percentage of these things as such a diet will result in bowel trouble and a dirtorted system. A balanced ration should contain both the carbonaceous and nitrogeneous matter. Many amateur poultry keepers are anxious the same as a commercial egg keeper to get eggs during the late fall and early winter so as to catch the high prices paid for them at that time. They wonder why they cannot get eggs in quantities during these months. Now this is the way it is done: Get the chicks hatched out in March or the fore part of April, thereby avoiding the neck and tail molt which the chicks hatched in January and February are very apt to have. They should be cared for as well as you know how and pullets forced for development and maturity but not too

fast. If they begin laying earlier than six months old, switch them from one pen to another and avoid feeding a high protein food until they are ready to lay. Then they will begin to lay during October and November, in time to catch the best prices paid for eggs, although some poultry people prefer to let them lay as soon as they will.

While a good layer will not get overly fat, yet if constantly fed fat foods, there is that possibility. It is better not to go to the extreme in under or over feeding. A happy medium is the thing and when you have reached this you may feel that you have come to the economic as well as the satisfactory feeding basis. There is one thing certain and true with poultry keeping and that is that if people are to attain success they must give their poultry proper care and attention. There is always quick response to proper feeding and good care and vice versa to poor feeding and care. You may have a fine flock of young stock, doing fine and growing rapidly, and if you let up on the good care you have been giving them, you will soon find out that they will very shortly begin looking very poorly. It is within the power of every poultry keeper to have his birds in A-1 condition at all times.

It is well to be remembered that there are certain things necssary for the making of eggs. It is up to us to furnish this raw material and the trusting hen will do the rest. However, she cannot furnish the supply of egg making material when shut up in a poultry house. For the formation of the shell she will need lime. This can be supplied by having oyster shell forever before her. For the white or albumen, she will need the protein found in oats, wheat, barley, and alfalfa. For the yolk, she will want some fat such as corn, buckwheat, etc. These things having been furnished, the hen will turn out the egg as well as though she were out where she could pick them up herself.

The fertile egg problem is one that confronts the breeder. Strict attention should be paid to the males in each pen to see that they are active and are in a good state of health. If you are not feeding some green food, you are making a great mistake as this helps to produce fertile eggs. Especially should lots of sprouted oats be fed as this is the most excellent green food and productive of fertile eggs. Do not allow the sprouts to grow too long but feed when it is about an inch or so high, then you will get all the good in the root, the oat, and the green shoot. To build up a good strain of poultry, you must begin by breeding from healthy fowls. A

fowl that has ever been sick should not be used for breeding purposes. Sickness not only shows a weak constitution but indicates one that never will be back to its normal condition. So by breeding year after year from good healthy stock, you will build up a strain of birds that will be able to throw off disease even when in its presence. A hardy vigorous bird is one of the best means of success that you could possibly have. Be careful not to mate up too many hens with the male bird if you wish the highest percentage of fertility. Ten hens with a male bird are enough for the heavier breed while twice that number may be used with the lighter breeds. It is not always the feeding that causes unfertility but lack of good judgment in mating. Carefully look your pens over and note whether or not certain males are vigorous and active and then note the number of birds in each pen. A large vigorous male will be all right with a dozen or so birds where one less vigorous would do with only two or three hens. If you wish to obtain more pullets from your hatching eggs than males, increase the number of breeding hens per male and vice versa. Avoid always in breeding from pullets. Nothing but a mature hen should be used in breeding pens. I would not advise breeding to a hen under 18 months old, using cockrels never under 10 months old; a year is better. The older a male bird, the less vigorous he becomes and naturally should be placed with the less number of hens. The longer one is in the poultry business and engaged in mating and breeding, the more he or she will find how much there is to the work. There are depths of which you never dreamed. To the outsider who thinks poultry work is a small occupation, has but little conception of what the work is and never stops to realize how much thinking and planning the poultryman has to do in order to accomplish results. Many people expect too great things from hatching eggs. If they have paid a moderate price, they cannot expect to get all show birds from the eggs, even if you are to get the best eggs possible, laid by show birds of national reputation, you will find some of the chicks hatched from the eggs to be culls. They cannot throw show birds from every egg laid. On a large poultry plant the trained eye of the fancier can note the poor ones and they become broilers at a very early age. While it is not always possible to tell the best at an early age, yet glaring defects can be noticed easily. During the breeding time of the year, a medium course in the feeding of breeding stock insures the best possible results. A male or

female over fat is not in the condition for breeding. This same fact has been reiterated time and again—hundreds of times, and yet we find many breeders ignoring it. We see their hens loaded with fat until they almost drag on the ground. The consequent result is complaints of weak chicks or eggs failing to hatch. There are various other causes to account for this, but even with physical and organic perfections as a natural inheritance of the fowl, the accumulation of fat in the male and female is beyond doubt antagonistic to good breeding. In the management of fowl stock, it is absolutely necessary to have both the males and females of every breeding pen neither too lean nor too fat, neither starved nor stuffed, but a happy medium, or in other words, a fine condition is to be secured. A condition that will not interfere with the sprightliness and habitual movements and exercise of the birds. A condition that approximates the natural one which will leave the bird free from any organic impediment through fat. It should be of the character and condition of the athlete. In other words, it should be actively personified without any lack of sustaining power. Therefore see to your breeding stock. If you find certain ones lacking in flesh, get such birds all in one yard to themselves if possible and put the feed to them stronger. Those that seem too fat and heavy should be collected and their rations cut down for them. If a male should fail to have enough flesh for vigor, nail a can to the wall of the house high enough so that the hen cannot reach it to eat. Keep feed in this at all times so that he may be able to go to it and eat whether it is feeding time or not. In this manner you may be able to keep him up in flesh with the rest of the flock. A little good management on your part will help to keep all the stock in the best of producing condition. A smooth plumage is a pretty good indication of good health of the bird. The one with rough plumage is very apt to have some trouble. When lice and mites are at work you will find the feathers sticking out all over the bird. Especially at the head will you find lice when the short feathers stick up. Look the birds over very carefully and you will undoubtedly discover them. This may best be accomplished by placing the forefinger of the left hand on the back of the chicken, fingers pointing toward the head, three fingers under the left wing, the thumb under the right wing. Stand with your back toward the sun, letting the light come over your left shoulder. Now with the right index finger, hold against the feathers, gently turning them

back one by one. This method can be used on any part of the hen's body where lice may be found. Keep a watchful eye on the plumage of your bird. This with the comb gives one an opportunity to get at the cause of the trouble before the birds are really down and out.

Speaking of soft shell eggs—Soft shelled eggs are not always an indication that you are not giving enough oyster shell and lime to make shell, but that the birds are fed too much fattening foods. They are over fat and are being forced for egg production. The result is that the eggs come before there is time to cover them with the lime or shell. Do not allow the birds to get too fat. With some breeds this is practically impossible, but with some of the heavier breeds it is likely to occur where rich fattening foods are given.

If you use ordinary store boxes for shipping fowls, be absolutely sure that there are no nails driven through the boxes at the bottom. Many times these escape unnoticed, with the result that some of the birds are cut by the sharp points. Care should be taken in tacking shipping cards on the coops and boxes containing birds either for fancy purposes or for market. Do not drive the tacks through holding the card to the boards so the combs might get a severe cut which would make much trouble.

Ordinarily a hen outlives her productive period in three years, and you are a gainer by sending her to market, though I know of flocks from three to five years old that have been carefully culled month after month, that are still producing. I know of one hen, a cross breed between a brown leghorn and barred rock, that produced 120 eggs in her eleventh year and she is still going. It is a whole lot more costly to replace hens than it is to keep them over. Of course this only applies to laying hens. Cull at all times and do not keep slackers, loafers, and non-producers in your flock. It is generally supposed that with each successive year, the number of eggs laid by a hen is lessened, but a good deal depends on the way the flock is managed. If you permit your pullets to begin laying at four and four and one-half months old and feed them high protein foods in too large quantities and put the electric lights on them in the winter time at 3 o'clock in the morning, you'll surely blow them up. Now and then there is a phenomenal hen that will be productive for several years, but as a rule four years is about the limit, although as I have said before, there are many exceptions and these hens make excellent breeders.

To prevent the males tearing out the feathers on the backs of the females during the breeding season is quite a problem where there are but few females with the males. I suggest, as the best plan, to have one male serve several pens of birds, taking them out at night and placing them in a different pen. Even if he is in each pen every third day, it will be sufficient where there are but few birds in a pen.

In the selection of breeding pens, the proper basis upon which to work in building up your poultry business is that of selecting your breeders. If you will but breed year after year from the best of your birds and from the most perfect specimens, you will soon have a strain that can be depended upon for breeding true to color, shape, size, etc. It is well known that all the chicks that are hatched will not come up to the standard, but it is also well known that pure bred birds carefully selected and mated will bring a large percent of good specimens. There will be fewer culls when great care is taken in the selection of the breeders. When the breeding season is approaching, it is well for everyone, especially beginners, to be mating up their breeding pens. Do not wait too long to do this but have them in shape early. Get them acquainted with one another and there will be but little fighting among them when you want the eggs for hatching purposes. If you have a Standard of Perfection (which by the way you should have), look up and read very carefully what it calls for in birds of your breed and variety. Note the disqualifications and requirements, then you can look your breeding birds over with some degree of intelligence. You can tell the disqualified specimens and these can be discarded at once without further consideration. Those that are left can then be considered for their good qualities. Here and there you may find one that measured up pretty well to the standard. These you should put at once into the breeding pen then by strict process of elimination you can pick out the best of the flock to go with them. These birds will constitute the best pen that you have. If you have enough birds in this pen to supply your needs during the hatching season you will not have to pick out a second breeding pen. Personally I do not like seconds in the breeding pen. I would either have the best in the flock or none at all. I would much rather raise but a few birds from a selected pen of breeders than to raise a lot from several inferior pens of birds. Now you will want a male bird to go with them. If you have an old cock bird of known value, you can mate him with these females

that you have selected. If you do not, and want to use a young cockerel, see to it that it is an early hatched one, if you are going to attempt any winter incubating, otherwise it will make no difference. Select a vigorous bird of the type which you wish to breed and one that will conform to your requirements. I say to your requirements because many times there will be male birds that to others might not seem good enough but if you are a good breeder you can sometimes select better birds than if you went by any set of rules. I recall one particularly beautiful male bird of a variety that I was interested in that did not in my estimation come up to the standard and yet was a handsome bird and called forth exclamations of admiration from everyone who saw him. Now I wouldn't have had him for a gift to head a pen of breeders for me. I want to breed true to type and all that, but I have my own ideas as to what constitutes a good bird. The male bird should be selected after much care and deliberation. Select the type that has good lung capacity, that does not stand up too straight and one that possesses vim, vigor, and vitality. After you have made your selections of the females and the male that will form your breeding pen, you will want to decide upon a location for them in your poultry house. If you use the old style continuous house, give the breeding pen one of the best places in the house. Possibly a place near the entrance would be most suitable. If the door opens direct upon the birds, I would not advise placing them in the first apartment but in the next one. There might be a possibility of a draft upon them, especially if you are going in and coming out frequently. Sometimes it is advisable to use the first apartment for a place for feed, etc. This will give you a convenient place for these necessary things and it will not give the cold air a chance to blow in on your birds. If you use the smaller houses, such as the colony houses, select one or two that will be sheltered from the wind as much as possible, and that will be convenient for frequent attention. These birds should be housed in as good a place as you have for them. They should receive the best of attention, for from these birds you are to get the eggs for hatching out your next season's chicks. You want to do all in your power to make these birds happy and contented for the unhappy birds never lay an egg and you want a goodly supply of eggs from these selected breeders. Give them all the various foods you can, not excepting green food. If you are in a position to sprout oats, do it and you will be well

repaid for your trouble, for this makes for fertile eggs. Selection and good care will make a productive breeding pen. Remember you cannot get something out of nothing, so it pays to look carefully to the breeders, for this is the foundation of your flock.

Does it pay to doctor the sick fowls? This is a question that is often asked—whether or not it is profitable to doctor sick fowls. It all depends upon the birds and what their condition is. If I possessed a very valuable bird that was sick, I should endeavor to bring it out of the condition. While it is true that such a bird should not be used to breed from, yet it would remain a very valuable show bird and if it entirely recovers will be still good for that purpose. On the other hand if I saw an approaching cold or some disorder just creeping in, I would make a big effort to stop the trouble before it progressed any further. Of course when a bird is very sick with some communicable disease, the best thing to do is to kill and burn it. To the poultry keeper who is watchful and careful of his birds, it is no task to perceive the approaching trouble. If now and then you hear a bird sneeze or rattle a little in the throat, you may make up your mind that there is a cold there alright. If you can lay your hands on the bird, give it a two grain quinine pill and put it by itself until cured. If you will give such a pill for three nights in succession and then give a dose of castor oil—about two teaspoonsful, you will stop the trouble undoubtedly. During the colder weather, the birds are very apt to suffer from colds, more or less, and we sometimes wonder where they catch them. We wonder the same thing about ourselves, and the bird does not try to take care of its health like we do. A little draft of air here or there will do the trick in a short time. It is well to look over the poultry house thoroughly and see if there are any such places. Prevention is about the best way of doctoring the bird if I may call it that. If one is careful about the litter to see that it is kept dry and clean, it will mean much. It is, however, a good plan to have some of the various remedies on hand so that in case you have some particular trouble among your birds, you can give them something at once. I visited a place one time where they never kept a thing in the line of home medicines in the house and they were miles from a town where they could get such things if they needed them. When you need a simple remedy, you need it badly and it is the same way with your birds. If they get sick, they need the medicine

right away. Be prepared for emergencies by having various remedies on hand. Preparedness and prevention are two pretty good words to go by in the poultry business.

THE INCLOSED SYSTEM VERSUS THE OPEN YARD

It is generally conceded that hens kept by the enclosed system will lay more eggs and consume less food than those kept in open yards. But it must be understood that if one is raising hens for breeding stock, that to obtain vim, vigor, and vitality and produce good layers, the open yard system **must** be used. If the enclosed system is used for breeding stock, it is impossible to obtain good, strong, healthy, vigorous birds where the enclosed system is used. Another thing that should not be done to breeding hens is to ever put the lights on them, because there is no doubt about it but that the lights do lower a hen's vitality inasmuch as she is compelled to lay more eggs than she would otherwise, in the same length of time. The more exercise and free range that a breeding hen has, the stronger, healthier and better chickens she will produce. Also the same is true of the cock birds. Furnish your breeding pens with good dirt wallows, keep them free from mites, lice, and intestinal worms, and feed them the very best balanced ration obtainable and keep them working all the time, and in doing this one will obtain more hatchable eggs than in any other method that you might pursue. Never breed from anything but mature hens and vigorous cock birds if you expect to succeed in the breeding game.

In addition to the enclosed system, a sun parlor, dusting place, and catching pen may be added by constructing in the rear of the house a small enclosure about four feet wide and thirty inches high, made from ¾ by 3 inch material, covered with wire netting, one half of frame being put on hinges. The chickens may be admitted to this inclosure by a small door operated from the front of the house by the use of a cord and pulley arrangement. This will also be found convenient for use while cleaning the dropping boards, floors, and doing other work that one finds necessary to be done inside the house. This may be done without interfering or frightening the chickens.

A FEW THINGS ONE SHOULD KNOW

It is the care of the poultry that pays. You cannot raise chickens and lice together any more than you can raise a garden and chickens together. A hen cannot successfully combat lice and at the same time lay the maximum amount of eggs. If we human beings had one louse on us, it would be one too many and it is the same with poultry and there is no more fundamental reason why poultry should have lice any more than a human being, and if our hens make for us a living or bring us in profits, it is at least up to us to give them a decent night's sleep. Another thing is, if we as human being were subjected to the same treatment we deal out to our poultry flocks, there wouldn't be much enthusiasm when it came to working or making a living for our family.

THE GLEANING OF THE EGGS

If you are running a commercial egg farm or breeding fancy stock, the eggs should be gathered at least twice daily for this reason: all eggs laid before one o'clock in the day are laid by strong, healthy and industrious hens and are always of the most uniform size and shape, free from defective shells, etc., whereas the eggs laid after one o'clock in the day for the most part are small, ill shapen, and soft shelled. You will find that you will save at least one half the time and labor expended in sorting the eggs and that the eggs may be freer from dirt and other causes that go to contaminate an egg. Also if you have any egg eaters in your flock, they have less chance to pursue their nefarious practice. Taking it all in all, a great many dollars will be saved in the course of a few months if you practice this method of picking up the eggs. Time and labor are the essence of all things. Then why throw your time away and labor also in this case when these may be saved by pursuing the wise course in this particular line of business in the matter of sorting, etc. The eggs picked up before one o'clock in the day are always better for hatching as well as for market value.

IF A CHICKEN

If a chicken has cholera, the first symptom is a yellowish coloration on that part of the excrement which is secreted by the kidneys and which in health is nearly or perfectly white. Soon there is diarrhoea, the droppings consisting of

the whitish or yellowish secretions of the kidneys, mixed with considerable mucus and a small quantity of intestinal contents which may have a yellowish, brownish, or greenish color. There is considerable fever, and soon after the bird is attacked, it loses its lively appearance, separates itself from the flock, appears dull, dejected, and sleepy. It no longer searches for food, but sits with the head drawn down to the body or turned backward and resting about the feathers in the wing. The plumage soon loses its brilliance, the wings droop, the appetite is diminished, and the thirst increased; the comb and wattles may be dark bluish red from engorgement with poorly oxiginated blood, or they may be pale and bloodless on account of the congestion of the internal organs, especially the liver. The affected birds soon become very weak, drowsy, and often sleep so soundly during the last day or two of their lives that it is difficult to rouse them. If made to move, they stagger forward for a few steps only and in an uncertain manner and with dragging wings. The crop is usually distended with food and apparently paralyzed, and feathers about the vent are soiled and sometimes pasted together with excrement. As death approaches the weight and the strength of the bird rapidly diminish, it breathes with difficulty, sits with beak open, and the breathing may be heard at some distance. Finally the weakness is such that the beak is rested upon the ground and a little later the bird falls over on one side, makes a few convulsive movements, and dies.

In the very acute cases, no symptoms are seen; the bird may be found dead under the roosts, or they may fall at the feed trough and die in a few minutes. The cholera-like disease often occurs in a chronic form which may follow an acute attack of the disease or may be chronic from the first. This form is characterized by a continually increasing weakness, loss of weight, and, finally, an exhaustive diarrhoea. Sometimes one or more joints of the wings or feet swell, the birds become very lame, and later the swellings break and discharge a creamy or cheesy mass which contains large numbers of germs.

These diseases may destroy the greater part of a flock in a week and then disappear, or they may linger for months, only occasionally killing a bird. The time between exposure to the contagion and the appearance of symptoms is from 2 to 5 days, and the duration of the disease is from 24 to 10 days.

The most characteristic changes seen after death are red spots on the surface of the heart, which gives it the appearance of having been sprinkled with blood, congestion and enlargement of the liver, and swelling of the spleen.

If a chicken has apoplexy, a disease of the brain caused by the rupture of one of the blood vessels, the bird is attacked suddenly and falls down, apparently dead or nearly so. The usual cause is too high feeding, but it may also be due to some other provocation, such as sudden fright, violent exertion, or straining in laying eggs. Fowls are sometimes found dead on the nest or under the perches. There is usually no previous warning, and so in most cases treatment is impossible, as the bird usually dies almost immediately. When, however, the sufferer is still alive, pierce a vein on the underside of the wing and let it bleed freely. This will reduce the pressure on the brain and often result in a cure. The bird should then be kept on a limited diet for some time in order to reduce the surplus fat. As preventative measures, regulate the diet and give plenty of exercise.

If a chicken has vertigo, which is a disease of the brain and may be regarded as a minor kind of apoplexy, the bird shows giddiness, throwing its head upward, backward, or to one side. The gait is uncertain and staggering, the sufferer often running around in a circle. Sometimes the bird falls to the ground, fluttering and making convulsive movements with the legs . The bird can often be revived by holding its head under a stream of cold water. After this keep the bird in a cool and shady place for some time and regulate the diet. If a chicken has bronchitis, a cold accompanied by a rattle in the throat or by a cough, and may be caused by exposure to dampness or cold temperature or by drafts of air, the removal of the cause and good care will result in a cure. Inhalation of steam or vapor from boiling water has been found beneficial. Giving a teaspoonful of equal parts of cider vinegar and water has proven succssful in some cases.

If a chicken has contagious catarrh or roup, the first symptoms of this disease are similar to those of simple catarrh, but as the disease advances there is often swelling of the sides of the head and the nostrils become closed with thick mucus, causing the bird to breathe through the mouth. If the swellings contain pus, they should be opened with a sharp instrument, the contents removed, and the wound treated with a mild antiseptic, such as 2% solution of carbolic acid. The application of kerosene mixed with an equal

part of olive oil has given good results in many cases. When a fowl has a bad case of roup, it is usually better to kill it, unless especially valuable.

If a chicken has pip, which is a condition of the tongue caused by some such ailment as a cold, which compels the bird to breathe through the mouth, the continual passing of air over the tongue causes it to become dry, hard, and scaly, especially about the tip. The best remedy is to remove the cause, also wet the tongue two or three times a day with a mixture of glycerine and water, equal parts.

If a chicken has bumble foot, which is caused by bruises on the bottom of the foot, and is often due to the fowl's having to fly from rather high perches and alighting on hard and uneven surfaces, remove the cause by lowering the perches. Remove the corn and paint with iodine but if the foot is swollen and the swelling is filled with pus, it should be lanced and the pus permitted to escape. The wound should then be washed out with a 2% carbolic-acid solution or Pearson's Creolin and wrapped with a piece of cloth.

If a chicken is egg-bound, which is an irritation of the oviduct, causing the membrane to become dry and deficient in its normal lubrication, an abnormally large egg, or a too fat condition of the hen may cause difficulty in expelling an egg from the body and produce the condition known as egg-bound. If the egg remains in the oviduct for a considerable length of time inflammation is produced, which finally develops into decomposition of the tissues and results in death. Fowls when egg bound are restless, going frequently on the nest, showing a desire to lay, and in general, giving evidence of being in distress. Later they become dull and listless, remaining in this condition until death, if not relieved. The egg can usually be felt in the posterior portion of the abdomen. If the trouble is early discovered, inject a small quantity of oil into the vent, and gently try to work the egg out. If this treatment is unsuccessful, hold the lower part of the body in warm water for half an hour, or until the parts are relaxed; then treat as above. It may be necessary to break the egg, allow the contents to escape, and remove the shell in pieces. After removal of the egg, give soft cooling feed.

Occasionally difficulty in laying an egg causes prolapsus or eversion of the oviduct. When this occurs the oviduct is partially turned inside out and protrudes from the vent. If the egg causing the trouble has not been expelled, remove it,

wash the exposed portion of the oviduct with warm water, apply carbolated vaseline or lard, and return to its normal position by gentle pressure. In addition, it is well to give the fowl 3 to 5 drops of fluid extract of ergot.

If a chicken has chicken pox, which is invariably accompanied by diptheritic roup and canker, the first symptoms are: a watery eye and an eruption appears as round, oblong, or irregularly shaped nodules from the size of a pinhead to that of a pea or a hazelnut. They are seen especially about the beak and nostrils and on the comb, the eyelids, the wattles, and the ear lobes. In some individuals, and particularly in pigeons, the eruption is more generalized and is found on the skin of other parts of the body, as the neck, under the wings, on the rump, and about the vent. Here the nodules may become larger than on the head.

The nodules begin as small red or reddish-gray deposits with a shiny surface, and gradually enlarge, while the color changes to a yellowish, brownish, or dark brown, and the surface dries and becomes shriveled, uneven, and warty in appearance. Owing to the number of nodules and the extension of the inflammation, large patches of skin become thickened and covered with hard, dry crusts, closing the nasal openings or the eyelids and making it difficult even to open the beak.

In the milder cases the eruption is limited to the head, the nodules are distinct and small, and the general health of the affected bird does not suffer. The nodules soon dry, heal, and shrink; the crusts become loosened and fall off, and there is rapid recovery. In the more malignant cases the eruption is generalized over the surface of the body, the nodules are larger, and there is a diffuse inflammation and thickening of large areas of skin. If the crusts are rubbed or scratched off by the fowls, there occurs from the ulcerous surface a discharge at first watery, but later thick, yellowish and viscid, which soils the feathers and, if abundant, gives off a disagreeable odor. This type of the disease is accompanied with fever, rapid loss of flesh, and prostration, and frequently causes the death of the victim. In the most malignant cases the eruption extends to the mucous membrane of the eyes, nostrils, and mouth, causing a diphtheritic inflammation that is generally fatal.

If a chicken goes light, it may be caused from any one of the following: mites, lice, intestinal worms, tuberculosis, or cholera.

If a chicken has tuberculosis the symptoms are: lack of life, emaciation with indications of indigestion, but there is in tuberculosis a decided rise in temperature and, during the last stages, violent diarrhoea. It is not possible to outline the symptoms so surely you can absolutely rely upon them in diagnosing the disease. It is a germ disease, and a bacteriologist only could give a definite opinion after examination, but this is not possible or practical for many poultrymen. A post mortem examination will usually reveal tubercules and nodules throughout the liver and covering many of the internal membranes. When, however, you find any of the fowls "going light," as it is called, that are showing rapid and extreme emaciation, with the above symptoms, take no chances, but kill them at once.

If a chicken has gapes, the first symptoms are a slight cough; then, as the irritation becomes more acute, and the worms grow larger, it causes the gaping which gives the disease its name. This is usually accompanied by more or less sneezing, difficulty in swallowing, breathing, etc. Inasmuch as the symptoms of this disease are very much like those of bronchitis and pneumonia, you should be absolutely certain of the presence of gapes before starting to treat the fowls. This is best learned by examining the dead birds. After opening the windpipe with a sharp knife, cutting lengthwise, examine its lining and see if you can detect any worms there. A magnifying glass will be found helpful. In little chicks, the diagnosis is not usually difficult, as the constant gaping is almost a sure indication, but older fowls may gape because of some obstruction or from various other causes. Besides this, in pneumonia or bronchitis there is a rise in temperature, which is not true of gapes in its earlier stages.

If a chicken is crop-bound, the first symptom is a loss of appetite or an effort of the bird to swallow without being able to do so. The crop is seen to be very large and much distended with contents which are more or less firmly packed together. If permitted to continue, the condition becomes aggrevated, the breathing difficult, and death may result.

The contents of the crop may sometimes be removed by forcing the bird to swallow a teaspoonful or more of sweet oil, then massaging the lower part of the gullet if it contains food, or, if not, the part of the crop nearest to the gullet, until a part of the contents are softened and may be pressed toward the head. This is made easier by holding the

bird head downward. By continued manipulation the greater part of the material may be removed. The bird should not be permitted to eat for several hours after it is relieved.

If a chicken has limber-neck, which in reality is not a disease, but is a symptom of several diseases which are characterized by a paralysis of the muscles of the neck, which makes it impossible for the bird to raise its head from the ground. This condition is due to the absorption of poisons from the intestines, which act upon the nervous system and cause paralysis. It is generally associated with indigestion or the eating of moldy grain or putrid meat or with intestinal worms. What this disease really is, is ptomaine poisoning.

The best treatment is to give a full dose of purgative medicine—that is, 50 or 60 grains of Epsom salts or 3 or 4 teaspoonsful of castor oil for a grown fowl. Often the birds will be cured within 24 hours. In case they are not better within 3 or 4 days it is not advisable to keep them.

If a chicken has coccidiosis the symptoms are: dullness, weakness, sleepiness, diarrhoea, and loss of weight, although the birds retain their appetites for a considerable time. In many cases the symptoms are diarrhoea, with loss of weight, and after a time apparent recovery, though germs continue to multiply in the intestines and to be spread with the droppings for several months afterwards. Fowls affected in this manner may die suddenly without previously showing any serious symptoms. Young chicks frequently void bloody droppings, and the bowel contents are bloody.

Adult fowls have considerable powers of resistance to this parasite, and the disease with them is more frequently seen in a chronic form.

If a chicken has blackhead, which disease is more frequently found in young turkeys, commonly called poults which are from 2 weeks to 3 or 4 months old, in the more acute cases turkeys usually die in about two or three weeks, but generally the progress of the disease is slower and they live a longer time.

If a chicken has gout usually the joints of the feet are most frequently affected, although the wing joints may also be involved. At first the joints are swollen and painful. Later the lesions form into nodular, tumor-like growths which vary in size and may be either hard or fluctuating. Frequently the swellings burst, discharging a yellowish, turbid material containing urates. The bird avoids walking as

much as possible and remains in a sitting position. The general health becomes affected, and emaciation gradually occurs, with weakness and frequently diarrhoea.

When great numbers in the flock develop symptoms, the diet should be taken care of and corrected if necessary. Often a reduction in the quantity of meat scrap and an increase in the green feed will prevent further cases. The entire flock should receive a dose of Epsom salts, one-third teaspoonful to each adult bird: 3% Epsom salts fed in dry mash is better.

If a chicken has worms, it is indicated by coral red droppings, the chicken becomes weak, and usually goes light. Sixty percent of chickens usually have worms after they are ten weeks old, and the worst destruction to the flock generally comes between this age and one year old.

COCCIDIOSIS IN POULTRY FLOCKS

When the disease first makes its appearance, take the mash away from them for two days. Feed sour or semi-solid buttermilk in large quantities until noon of each day, then let them have water to drink as usual. Also feed fine charcoal so as to color the droppings dark to prevent the chickens from eating same. Keep plenty of litter on floors so that droppings will be hidden from sight. Disinfect runs, etc., well. Wash drinking crocks in Gold Dust Twins and hot water at least once a day: or disinfect them with lysol. If the disease shows no sign of abating at the end of two days, then begin the use of Zinc Sulpho Carbolate (Zinc Phenol Sulphonate)—one level teaspoonful to each gallon of drinking water, but do not use the sour milk or semi-solid buttermilk at the same time that the Zinc Sulpho Carbolate is used, using this three days on and three days off until the disease is cured.

Coccidiosis, like many other diseases, in a way is preventable, though some authorities maintain that it may be and is transmitted from the parent stock. It is a wonderful plan to avoid over-heating of the little chicks, also overfeeding. The disease usually puts in an appearance after the little chicks are three weeks old and is indicated by bloody droppings and the chickens become listless and drop their wings. Unless the disease is checked in its early stages, it is apt to wipe out almost the entire flock.

Avoid feeding Red Dog flour or any chick mash containing

it, as it is a great many times responsible for the starting of bowel trouble.

CROUP IN POULTRY FLOCKS

This may sound odd or "phunny" to say that chickens have croup, but it is nevertheless true. I have met with a great many cases in poultry flocks that I would call croup and I treated several birds so affected by mixing one part of peroxide of hydrogen to two parts of water, giving them a teaspoonful and the next morning they were alright. It does the bird no harm whatever and no one needs to be afraid to use it on valuable birds. I thought that this would be worth telling to the poultry public. I have never had a case similar in birds of my own raising. There were no drafts in these poultry houses and I don't know where the birds got it, but they had it just the same. I examined them for roup but it was not roup. The birds simply began to cough and gasp as a child would choke with the croup, so I'll say it was croup and if your chickens are ever affected in this manner, try this remedy and I'm sure you will be surprised to see how quickly they will be cured.

THE MAKING AND KEEPING OF POULTRY RECORDS

The most successful poultry plants in operation today are those whose managers have an accurate data concerning the business. There are certain things that **must** be known and likewise certain records that **must** be kept if success is to be obtained. In order to know the profit that has been made during a certain length of time, there must be known the cost of everything, including feed, labor, supplies, etc. Also there must be the receipts from eggs, broilers, culls, etc.

PROTECTING POULTRY FLOCKS

A good way to protect poultry flocks from disease and increase the egg yield is to pin grain sacks on the fence or corrals on the windward side and keep them well sprayed with a good disinfecting spray.

There is more accomplished by preventing diseases, mites and lice in poultry flocks than there is to get rid of these conditions once the fowls become afflicted with them. It is the care of the chicken that pays and unless one uses every effort they will not succeed as well as they should. Spraying,

hand doping, and mixing dope in the feed with the idea of ridding fowls of vermin will not suffice.

CAUSES AND PREVENTION OF LEG WEAKNESS IN POULTRY FLOCKS

To the inquiries of many poultrymen and women as to what causes, how to prevent, and how to cure leg weakness in poultry, will say that this is usually caused by forcing the growth of the chick too rapidly. Especially is this the case with broilers. Another frequent cause is the improper temperature in the brooder. Where there is too much bottom heat, this trouble will be encountered. Also it is sometimes caused by worms; and again it is found in cases of metallic poisoning, birds losing entire control of their legs.

The name is a good indication of the nature of the trouble. The fowl walks and stands with difficulty, and it may sit down while eating. This is sometimes taken for rheumatism, but in leg weakness the shank remains soft, while in rheumatism it drys up and becomes contracted. If the cause is improper heat in the brooder, change it; if improper feeding, build up the proper health by discontinuing heavy carbonaceous food, such as cornmeal, cracked corn, etc., and give wheat bran, Canadian peas, boiled beans, together with meat meal and a goodly supply of alfalfa meal in a crumbly mash. Also put rusty nails or old iron in the drinking water. If you have any old horseshoes lying around the premises, put one in each drinking crock. Cut down the food supply in general as overfeeding is the most frequent cause. In the case of metallic poisoning, give milk in place of drinking water, the first thing in the morning. Always using crocks in the place of any galvanized vessel and let them have water afterwards.

A splendid tonic to feed your chickens once or twice a week which is found elsewhere in this book, is the following: Mix together 9 lbs. of flour of sulphur, 5 lbs. Epsom salts, 3 lbs. bi-carbonate of soda, 3 lbs. copperas (Iron Sulphates). Feed 1 lb. of this mixture to every 100 hens mixed in a crumbly mash, using cold water, fed twice a week.

Prevention. Do not confine chicks in a small yard but allow free range. Plenty of fresh air is necessary. The brooder house should be kept warm, but have plenty of fresh air. Do not use a bottom heated brooder. Keep plenty of litter on the floor. Let the chickens out on the ground as soon as the weather is warm, but not so long as they will become chilled.

Isolate all affected birds and feed the entire flock as directed. Provide plenty of litter for the chickens to scratch in. Also provide fine grit, oyster shell and ground bone. Be careful and do not overfeed, but feed all they will eat. Give milk in any form. Give all the green feed they will eat. Keep plenty of clean fresh water on hand. Drinking crocks should be disinfected at least once a day. Any good washing powder and hot water will answer the purpose: or lysol is a very good thing to use for disinfecting.

POULTRY PROFITS

Poultry raising like any other business can be made profitable if one will only apply themselves. Under present high food costs, no one can afford to be without a few hens in the back yard or on the farm and commercial egg farming on a large scale is a most wonderful business. When scientifically handled, the cost of keeping a hen for a year is not great while the egg yield of well managed flocks produces a handsome profit. The secret of profits from poultry raising is found in three words—weed, breed, and feed. Weed out the non-layers, breed for heavy producers, feed the elements necessary for vigorous growth and profitable egg production. Hit or miss methods invariably lead to failure. Follow the simple rules of common sense and you are sure of profit. Let your hens help reduce the high cost of your living and increase your bank roll accordingly.

Always breed from hens and not pullets. Experiments show that chicks hatched from eggs of mature hens are stronger and more vigorous than those hatched from pullets' eggs. Never use a half-grown cockrel for breeding purposes. A cockrel should not be used under ten months old and if the best fertility in eggs is to be had, stud the cockrels. The best results are obtained by separating the breeders into pens and alternating with the cockrels, taking the one out every two weeks and putting in a fresh bird.

PREMATURE MOULTING OF POULTRY FLOCKS

During the season of 1921 a great many flocks moulted prematurely, due to the untoward weather conditions, the spring being attended by cold late rains which produced the same effect on the birds as consistent dipping would do. There seems to have been no way of preventing this condi-

tion although these poultry peoples who were using the enclosed system, having been the least affected. This goes to strengthen the argument of not allowing chickens outside during cold, foggy, or rainy weather. Also this condition manifesting itself at the end of a laying season found the hen especially in a generally run down condition due to the heavy strain attended upon the winter's heavy laying. This is another argument as regards to judicial use of lights being placed on the hens during the laying season. To guard against a reoccurrence of this, one should strive to maintain all the vitality and laying strength possible by keeping mites, lice, and intestinal worms under control, everything thoroughly disinfected and by not using lights any longer than to give the hen a fourteen hour day, thereby conserving her strength to meet any such emergency.

In throwing out early moulters, a great deal of care and good judgment must be used. It is in a measure true that the early moulters should be thrown out, but nevertheless there are a great many early moulters that will stage a quick come back so it is up to the person doing the culling to exercise great care in culling, giving a good hen the benefit of the doubt rather than throw her out.

THROWING OUT THE MOULTERS

It has been the practice heretofore by a great many poultrymen and demonstrators, to cull out the early moulter, that is to say the hen that would moult or begin to moult before September 1st. Many a good hen is sent to the market that should have been kept in the flock as a good producer on account of having been thrown out as an early moulter. Especially the season of 1921 if one adhered strictly to this rule there wouldn't be many layers left after culling, on account of the cold wet spring that we had throughout the West. Also the putting on of the lights has a great deal to do in reducing the vitality of the hens and when in a weakened condition, she is more apt to go into the moult not only from this cause but from ill feeding, lice, and mites. Give the honest-to-goodness hens a chance and they will make good. Do not condemn them when they start to slip and throw them out of the flock when you yourself are to blame. If not you, then it is a cinch that the weather conditions of 1921 were certainly against the

poultry game. It is highly proper that we should throw out the real culls and thereby reduce our feed bills and increase the egg yield as everyone realizes that a cull hen is good for nothing else but to breed vermin and eat up feed, but one should make every allowance for the really good hen. It certainly costs more to raise pullets to take the place of hens than it does to give the good hen a chance. If we paid more attention to the breeding of good foundation stock and to take just a little bit better care of the hen, we would not have so many culls as is the case at the present time. It is really easier and far more profitable to pay a little stricter attention to the elimination of lice from the chickens' bodies, mites from the houses and coops, and worms from their bodies, than it is to neglect these three things which cause 95% of all the grief in the poultry business.

THE ART OF CULLING THE POULTRY FLOCK

Always cull in the day time. While the Hogan System is all O. K. to prove by, there are many ways of distinguishing a laying hen.

First of all, a great deal may be told by the head. The head of a laying leghorn hen resembles very closely a sketch of same on a pumpkin seed,—short beak, large red comb and wattles, avoiding crow necks. Also the hen should have a long back and slanting tail, not too thick through the thighs, medium—neither long nor short legs. A hen may be judged like a steer—a great deal is told by experience.

Cull these hens,—sick, weak, lacking vigor, inactive, poor eaters, molted or started to molt before September 1st unless they show good qualities, with small puckered dry vents, hard dull colored combs, with thick or coarse stiff pelvic bones, pelvic bones close together, small spread between pelvic bones and rear end of keel, and full hard small abdomen. In breeds with yellow skin and shanks, the discarded hens should also show yellow or medium yellow shanks, and yellow beaks and vents. Also a white leghorn hen, when she is not laying and is otherwise a non-producer, has yellow beak and shanks; the same is true when the breeding cock is a Rhode Island Red.

Save these hens,—healthy, strong, vigorous, alert, active, good eaters, not moulting or just beginning to molt in Sep-

tember or October, with large moist vent, with large bright red combs, thin pliable pelvic bones well spread apart, wide spread between pelvic bones and rear end of keel, and large soft pliable abdomen. In breeds with yellow skins, the shanks of hens saved should also show pale or white shanks and pale or white beaks and vents.

A systematic culling of the flock, based upon six factors should be used: vitality, moult, body capacity, pelvic bones, pigmentation, and the crop.

First: Vitality. This is judged from an examination of the keel, breast, and head. A bird that lacks vitality is listless and mopes, its keel is shrunken, its breast does not indicate vitality, and it has a small crusty comb, and long beak, and dull eyes. On the other hand, the high producing hen is plump about the keel, her breast is firm, indicating vitality; she has brilliant, prominent eyes, large comb free of scales, and a short well curved beak, and a good shaped head.

Second: Moult. The high producing hen will moult rapidly and late in the season, while the low producer will moult slowly and early. Under ordinary conditions, a hen that has completed, or is well into the moult in July or August, should be discarded from the flock. The hen that is just beginning to moult in September or October should be retained as a desirable layer and possible breeder. The late moulting hen will be characterized in the fall by broken and threadbare plumage. The early moulting hen will have clean, new plumage, and a full coat of new feathers, by this time.

Third: Body Capacity. This indicates ability to digest and assimilate large quantities of feed. Place your hand across the intestinal regions, index finger pressing up against the pelvic bones, which terminate on each side of the vent, and the small finger resting down against the end of the keel, which terminates at a distance between the pelvic bones. The abdomen at this point should be full, soft and pliable, but not baggy to such an extent that it drops below the point of keel. It should not bend too abruptly upward, nor be firm with fat deposit. The capacity of a good layer ranges from four to six fingers in distance from the pelvic bones to the keel. One or two finger capacity birds should be culled out, though it pays sometimes to keep a hen with a good three finger capacity if she is otherwise O. K.

Fourth: Pelvic Bones: The pelvic bones should be straight, far apart, and ranging in thickness from 1-16 to 3-8 of an inch. Thick inflexible and crooked pelvic bones indicate

poor layers. The distance between the pelvic bones has a direct bearing on the amount of energy which must be spent in the act of laying. In judging the thickness of pelvic bones, include gristle and skin.

Fifth: Pigmentation. (Applies to yellow-legged breeds only.) There is a close relationship between the laying activities of fowls and the amount of yellow pigment in their bodies. If the bird, after being in the laying pen for a considerable length of time, has a yellow vent, beak and legs, it is fair to assume that she is a slacker and should be culled. Do not attempt to cull on the strength of vent color alone. Pale legged birds are usually heavy layers.

Sixth: The Crop Test. It is advisable to visit the hen house after all the birds have gone to roost, following up a rather heavy feed at night, and make a careful note of all birds with light crops. These are usually the poor producers unless temporarily out of condition, while those with full distended crops are of the industrious type and, if the pelvic bones are thin and pliable, are usually heavy layers.

A check may be made by the use of leg bands, numbering those with empty crops or with partially empty crops as you find them. It is a good plan to remove them from the flock at this time and ascertain the cause of the trouble.

Another good plan for testing out a hen for laying is to visit the hen house in the early morning before daylight. Remove birds singly from the perches and make this test: turn the bird with the right side down, the shanks or legs in your right hand, the back resting on the palm and fingers of the left hand. Slip the fingers of the left hand under the bird's body, until the fingers touch the pelvic bones, then gently but firmly press the tips of the fingers into the sides of the bird's body, and up under the pelvic bones toward the back. If an egg is present it will be felt as a hard lump. When learning, results can be checked by pushing the forefinger into the vent of the hen, and up the oviduct until the egg is felt. This method is valuable for culling non-layers and selecting breeders.

To further supplement the work of culling the following chart gives a good idea of the characteristics of the productive and non-productive types, and what they signify: The good-laying and productive type is indicated first by the head —neat, fine and feminine with no coarse feature or indication of beefiness. The poor laying and unproductive type

usually has a head that is long, snaky and usually lacking in fineness.

Good	Poor
Comb and Wattles: Scarlet red when laying. Usually large for the breed and of fine texture.	Small, shriveled up, with whitish scurf over surface. Usually small for the breed.
Eyes: Brilliant and prominent.	Dull, sunken, listless; indicates lack of vitality.
Beak and Legs: Beak and legs well bleached out indicate a past egg laying performance of four or more months.	Yellow, never bleached, unless bred from R. I. R. stock.
Crop at Night: Full and distended.	Very light.
Breast: Very plump and broad.	Sunken and narrow.
Abdomen: Soft and flexible, but not baggy; 4 to 6 fingers capacity.	Very firm and small; 1 to 2 fingers capacity or less.
Pelvic Bones: Thin, straight, far apart, flexible, limiting thickness not over 3/8 inch. Less preferable.	Thick, rigid and close together.
Back: Broad and long.	Narrow.
Plumage: Ragged and worn but closely feathered.	Loose feathering. No indications of industrious wear.
Toe Nails. Usually short and worn off.	Very long.

Be sure and get rid of your slackers. When **did** you cull your flock last? Swat the slackers persistently and weed out the boarders. It is the only way to make your flock yield maximum profits with a minimum outlay.

American breeds, such as Plymouth Rocks, Wyandottes, Rhode Island Reds, Buckeyes and Dominiques, are considered the best general utility type for the average American

farmer, because they can be brought to a high production in eggs and also furnish a desirable carcass for the table. The English breeds are also of a good general utility type.

The Mediterranean breeds, such as Leghorns, Minorcas, Anconas, and Andalusians, are the best breeds where high egg production is the object. They are seldom bred for meat.

The Langshan, Brahma, and Cochin are the typical representatives of the Asiatic class. These birds are heavier and are usually bred for meat purposes. They can also be brought to a fair egg production by scientific feeding and breeding.

To catch birds for testing, build a crate about 4x4x2. Place a door at the top for removing the hens, and an opening on one end with a slide door that may be dropped to confine the birds. Place the end of the crate with the slide door against the opening in the house, and run birds into crate.

REMEDY FOR LOCAL APPLICATION FOR ROUP

Three tablespoonsful of lard, 2 tablespoonsful kerosene, 1 tablespoonful of glycerine, 2 drops of 5% solution of carbolic acid. Apply to head and wattles in early stages.

FOR ROUP OR CONTAGIOUS CATARRH

Keep the chickens in a well ventilated house, but dry, warm, and free from drafts of air. When cold first develops, separate the sick from the healthy birds and dip heads of sick fowls in a solution of a pinch of permanganate of potash to a quart of lukewarm water twice a day until the fowl gets well, or a handful of table salt to each quart of warm water in the same manner is a good remedy.

For advanced stages, use a local remedy about the head: Analgesic Balm or Vicks Vapo Rub. Keep premises well disinfected and drinking crocks clean. What will lay on a dime of Permanganate of Potash to each gallon of drinking water should be used to prevent the spread of Roup.

Roup like chicken pox is preventable in a way, if poultry raisers would only exercise the same prudence and care with their flocks that they take of themselves, there would be less numbers quit the business and more success would attend their efforts. When roup has gained headway enough in a flock where the heads of fowls become swollen, it is better to kill such birds and bury them, or better still, burn their bodies. Roup like a great many other diseases of poul-

try, is carried from one place to another by birds, by other fowls brought into the flock, or from other birds in the show room. Also pigeons carry disease, such as Coccidiosis, etc. Keep your yards, coops, and premises well disinfected with any good disinfecting spray, always avoiding using water with same. Also keep houses free from drafts of air and dampness and keep them well ventilated. Roup like every other disease in poultry flocks is easier to prevent than to cure.

REMOVE THE CAUSE

It is important to remove the cause of the disease, since while this continues to act, a cure is impossible. For instance: in cold or roup which usually result from exposure or dampness, filthy quarters, or cold draughts of air, remove the patient to dry, clean quarters, with plenty of fresh air, free from draughts. If the disease is caused by bacteria, clean the place and disinfect thoroughly.

SANITARY REQUIREMENTS

To meet with success in the poultry business, disinfecting of premises **must** be practiced. It will prevent disease, especially where a large number of birds are kept on limited grounds. On farms where chickens are kept on unlimited range, the loss from disease is insignificant, but in the intensive poultry yard where there is comparatively little range, proper sanitation must be enforced.

Twenty-five chickens will make one ton of manure in the course of one year, so you can readily see the importance of proper sanitation.

ADMITTING DRAUGHTS OF AIR TO POULTRY HOUSES AND YARDS

The writer in his various travels about the state of California has found in many poultry flocks colds and roupy conditions, and maintains that draughts of air and cold winds along with dampness is the main cause of this condition. It has been the opinion of a great many poultry men and women throughout the state, that it is perfectly natural for their poultry flocks at certain times of the year to have colds and likewise roup. If one would but exercise care and judgemnt in the building and maintaining of poultry houses

and yards, the egg yield would be larger and a great deal of grief and likewise discouragement and failures avoided in the poultry business.

It is one thing to allow the chickens to run wild and roost outside in trees, etc., and another thing to house them up in an improperly ventilated house where cold draughts of air will surely affect the birds if great care is not taken to avoid same.

Never use water to spray with for one thing, and if you will take notice, especially in the afternoon, which way the prevailing wind comes from and protect your chickens accordingly, you will have healthier flocks as a whole. Where there are open yards, a good plan is to tack sacks around the fences and keep them well sprayed with a disinfecting spray. This will be of a great benefit. As a rule it is best to face the poultry house to the south if this can be conveniently done.

With the inclosed system, you can protect your chickens from cold drafts of air and winds in any manner which might suggest itself in the way of construction of houses. More good chickens are killed in the manner discussed than in any other manner and likewise more eggs are lost.

WHY CHICKENS HAVE CHICKEN POX AND DIPTHERITIC ROUP

To begin with, some poultry men argue that chicken pox, like small pox and other contagious and infectious diseases, is carried through the air. If this is true, and it probably is, then a very good plan, though it may seem like mollycoddling a chicken, is this: where the open yard system is practiced, use jute sacks tacked around the yards, or rather the ends fastened together, which can be done easily by passing a nail over the wire in the fence and through the sack. After this is done, spray the sacks thoroughly with any good disinfecting spray, always avoiding water. Also this will be found to be very beneficial to poultry flocks, acting as a windbreak.

Some argue that chicken pox, which in reality is bird pox, or to be exact small pox, of chicken flocks. It is carried by birds which fly from one yard to the other. Also it may be carried on the clothing or shoes of persons or more probably by sacks brought from the feed yard which have previously been gathered from some poultryman's feed house where possibly some chicken afflicted with the disease has been. The only thing to be done by any one entering the poultry

yard, or better still, leaving the yards, is to either scrape off their shoes which might have picked up the droppings, or disinfect their shoes which any thoughtful person entering one's premises would do.

Diphtheritic roup is a sort of companionable disease of bird pox and may be cured by injecting into the nostrils of the chicken with a short hard rubber syringe. Also the throat of the bird may be swabbed out, using a pledget of cotton on an applicator. Use the following formulae: 1 pint of high grade salad oil, ½ pint kerosene; ½ pint U. S. P. turpentine, and 2 squares of Gum Camphor. First put the oil in an open glass fruit jar. Set on a thin piece of wood like a cigar box lid, in cold water and set over the fire until the water comes to a boil, thereby heating the oil. Shake same occasionally until it is dissolved, then put in turpentine and kerosene and it is ready for use; also the gum camphor is soluable in the turpentine. This is an A-1 remedy and can't be beaten. Also in the event of bird pox, take 1 tablespoonful of cream of tartar and pour over this 1 pint of boiling water. When cold put this in ½ gallon of drinking water and give to chickens to drink. Both diseases are more preventable than curable.

Dampness a great many times is caused by using water in spray which one should **positively** not do. Use nothing but a good oil spray which may be made by using one gallon of crank case oil, 1 quart of crude carbolic acid or sheep dip, and thin same down with distillate, kerosene or coal oil tops. Remember that it is the disinfecting part of the game that counts. Also drafts of air must be avoided in poultry houses, and as must is imperative in law, it must be done in this case.

Now as to the drinking crocks. Disinfect drinking crocks at noon each day. This is done by washing them out with hot water and Pearson's Creolin, or Gold Dust Twins. Also spray the houses thoroughly at least three times a week until the disease disappears. The additional runs also should be limed and sprayed. Potassium Permanganate may be placed in the drinking water to prevent the roupy condition or rather the contagion from spreading. Use an amount that will lie on the surface of a dime to each gallon of drinking water. Also if one cares to doctor their chickens by hand, the warts or pox may be softened by using Carbolated Vaseline and Pearson's Creolin. The Diphtheritic roup remedy will take care of the canker in the throat but if it does not, remove the canker with a small piece of wire or a crochet

hook and paint same with Pearson's Creolin or tincture of iron. The pox will not come in the eyes if split in the roof of the mouth and nostrils are kept clean. The whole thing is, it is "the care of the chicken that pays."

PROCESSING BARLEY FOR CHICKEN FEED

To avoid having green mold accumulate on the barley as it is dampened, if you will but use ¾ of a tablespoonful of Parke Davis & Company's Kreso Dip to each 20 gallons of fresh water, it will be prevented.

The barley should be put in a tub or vat with an outlet at the bottom and should be kept under water for 24 hours, then drain and take out and put in trays similar to fruit trays with numerous small holes in the bottom to admit water running through. Throw sacks over barley and run fresh water through it twice a day for four days. One should be very careful to keep barley covered with water the first day and do not use any more Kreso Dip than is advocated. It is claimed by some that this manner of treating barley is also good to eliminate worms in poultry flocks.

Another splendid method of processing barley is to take one teaspoonful of Formaldahyde to each three gallons of water. Use same methods as in using Kreso Dip. One poultry man with a flock of some 1800 birds used this method and found it to be very efficient and also had very little illness in the flock and the egg yield from this same flock was far above the average.

WHY HENS DO NOT LAY MORE EGGS

Since the days when hens first began, this has been a much mooted question. To begin with, it is the strain of the bird that tells the whole story, plus good management, good housing, good feed, and the care of the bird. It has come to the point where there is too much inbreeding, cross breeding, etc., that the stock has become run down. The introduction of White Rocks, White Minorcas, Black Minorcas, and other breeds crossed has simply produced "white chickens" and not laying hens, and we now find a larger percentage of culls or non-producers than ever before. Another thing, a great many hatcheries in their anxiety to supply the trade with baby chicks, have hatched from pullet eggs, with no

regard as to mating, and no idea in mind but producing numbers of chickens in place of quality.

To be successful in the producing of laying Leghorn stock, new blood should be constantly introduced from the best and highest bred Leghorn chickens obtainable. A genuine Leghorn hen will consume less feed and lay more eggs than the so-called cross breeds of white chickens.

There are three contributary causes which cut down the number of eggs produced by a hen—mites, lice, and intestinal worms. Any one of these three or the three combined, will cut down a hen's vitality, and consequently her egg production.

Mites are strictly a house proposition and any good spray may be used to eradicate the same. Avoid using water in poultry houses, as a chicken cannot stand dampness. A good spray may be made by using 1 gallon crank case oil, obtained from any garage or filling station, combined with one quart of crude carbolic acid or sheep dip. The whole amount may be thinned down with kerosene, distillate, or keronese tops. After spraying the roosts, before the spray soaks in, lime and any good lice powder may be scattered over the perches and dropping boards.

Lice contribute more to the downfall of a hen than any other of the three causes mentioned, and the best way to prevent lice is to start when the chickens are young by making a good dirt wallow, composed of fine loose dirt, lime, and a goodly sprinkling of good lice powder. Cover this mixture with loose dirt and keep the same damp, but not wet, thereby inducing the hen to use it freely, as they will use a damp place in preference to any other. Also a handful of good lice powder should be mixed with the nesting, after spraying nests once a month and using sawdust or shavings. Also any good lice powder placed in jute sacks may be hung sufficiently low over the runways where the chickens go in and out the houses, that it will touch their backs in passing under.

Intestinal worms are indicated, as explained before, in poultry flocks by pinkish red droppings, and general weakness of the chickens. Sixty per cent of all young stock are supposed to have them. An excellent remedy may be used consisting of 3½ pounds of Epsom Salts, 2½ pounds of tobacco dust, and a large tablespoonful of U. S. P. turpentine, mixed thoroughly in 100 pounds of dry mash. Starve the chickens one half day and place this mixture in the hoppers,

pouring over it sour milk or semi-solid buttermilk to kill the taste of the tobacco. Repeat in ten days, then every six months and repeat.

In addition, feed for laying hens should consist of a well balanced mash with a high animal protein and plenty of green feed. The morning meal should consists of any good scratch feed thrown in a litter or buried in the earth, so that they must work to obtain same. Dry mash should be left before them at all times. The evening meal should consist of scratch feed, principally wheat if obtainable, with cracked corn or milo throughout the winter. Give them what they will clean up in twenty minutes, which is sufficient for a feed. As to green feed—barley in the winter time and sudan grass in the summer time, make the very best greens, although clover, alfalfa, mangel beets, kale, cabbage, lettuce, lawn clippings, and many other greens may be used. Feed greens twice a day.

The houses should be kept well ventilated, but free from draughts of air, and also the houses at all times should be thoroughly disinfected. Drinking crocks should be kept thoroughly clean and chickens should not be allowed to drink out of dirty pools.

It is alright to put electric lights on chickens in winter time, but these should not be turned on too early in the morning. Four o'clock is early enough.

Now as to culling—many people are carrying in their poultry flocks at least ten percent absolute culls, which are non-producers, also slackers, and loafers. It is a good plan to cull every month in the year, that is to say, take out those hens that are not producing. Anyone with a trained eye can pick a cull hen out of a flock at any time during the year. A general culling should take place about the middle of September and save only capacity hens. Early molters will make good layers later on but it does not pay to carry a hen that is a liability rather than an asset with the consequent high price of feed that would otherwise be consumed by hens producing a goodly number of eggs. I would not keep any hen in the flock that would not produce 140 eggs per year.

THE CARE OF THE CHICKEN

The person who goes into the poultry business thinking that all will be a pathway of roses, makes a tremendous mistake. There are many shoals and rocks that are hidden from

the sight that you will run up against and you may count yourself fortunate if you are not completely swamped. However, these troubles only make one more careful and give the experience that is not easily forgotten. The one who is apt to become discouraged should fortify themselves against such things and take them with as light a heart as possible. Stick right on the job till it is finished and you are bound to come out alright.

Do not force fowls to drink unclean water. You will look into the drinking fountain or jar and say that they have water, but are you careful to note the quality of the water? Very many times the chickens will not drink the water in their fount even if they will will drink out of a mud puddle. Put in fresh clean water and note how quickly they will go for it. Crocks should be used wherever possible and the drinking crocks should be cleaned at least once a day. Preferably one may use any good cleanser or Pearson's Creolin is a very good disinfectant to use.

Now as to the feeding. Learn the food or the best combinations of foods, that is to say mash, grains, greens, etc., best adapted to the breed of chicken, to climatic conditions, etc. Everyone knows that too much corn fed in a warm climate is much more injurious to chickens than if fed in the winter time or in a cold climate. A good system of feeding is to throw the grain in a clean litter at night and make them work for their breakfast. Leave a good mash before them at all times and if one is favorable to the feeding of wet mash, whole milk—soured or semi-solid buttermilk which does not contain a preservative, mixed with the mash is very good. Also feeding of processed barley, oats, etc., is an excellent feed and will partially take the place of green feeds.

The very best green feeds are barley, sudan grass, alfalfa, etc., but after all if it were possible to obtain clover for greens cut in quarter inch length, this is decidedly the very best green feed. You will be surprised to learn the very great quantity of this that your chickens will eat. It is about as valuable a food as you can give them. It is very rich in protein and besides this contains potash, soda, and prosphorous acid, making it a splendid food for poultry. The birds are very eager for it and by once trying them with this and discovering how well they take it, you will never be without your clover hay for the chickens.

The evening meal should contain a good scratch food which may be improved in cold weather by the heating of the grain which will help to increase the egg production and the hens are sure to like it. Scatter well and what they will pick up in 20 minutes will be sufficient. Don't let anybody go to bed hungry and without a drink of good clean water. In addition to this, the housing of the poultry is something that **must** be looked after very carefully. Avoid drafts of air, dampness, and untoward conditions and above all, practice cleanliness. Clean the dropping boards as often as possible. Keep the houses well sprayed with a good disinfecting spray but always avoid using water. Also avoid overcrowding at any stage of the game. If your chickens are housed in small coops about your place, see to it that they are up on good dry ground. If placed on low spots, the water from every rain will run in and make the place damp. When placing the coops, place them high and dry. It is a good plan to fill the dirt end of the coop so that it will be higher than the outside dirt.

A well cared for, well bred bird is a thing of beauty and a joy forever. You can tell the difference between a poorly and well bred bird almost at a glance. Almost any novice can tell the difference. It pays to breed good stock so long as you have to have them around you, and it doesn't cost any more to raise a thoroughbred than it does a scrub and you will derive much personal satisfaction in seeing good stock. Besides, the monetary consideration is something to be thought of.

Making a success in poultry work is determined in a large measure by the man or woman taking it up. One cannot tell beforehand whether or not they can readily adapt themselves to the work. By starting on a small scale and moving slowly, this can be determined without a loss of a good deal of time or money.

IMPOSSIBLE FOR A HEN TO LAY HALF AN EGG

In dressing a hen, one frequently finds a bunch of little egg yolks. The natural assumption is that the hen is about ready to lay, but frequently this is not the case. A hen cannot lay half an egg. If feed is largely grain she gets an abundance of yolk-forming elements but little with which to make whites. She therefore makes a lot of little yolks which are eventually absorbed back into the system if white-forming

elements are not supplied to complete the eggs. This tends to make her fat and further interferes with egg production.

The egg yield depends to a very large extent on the proper balance of white-forming and yolk-forming elements. Any single grain or combination of grains does not provide sufficient white-forming nutrients to balance the yolks. White-forming elements are also used for blood, lean meat, nerves and feathers, and so when provided in small quantities, frequently are not available for eggs. Unless you feed the proper balance of both elements above body maintenance, you cannot get the best results.

Three-fourths of the food eaten by the average hen is used for maintenance of her body. This leaves one-fourth for the production of eggs. The number of eggs the poultry raiser gets, depends on the amount of yolk-making and white-making material contained in the one-fourth. If this one-fourth is all yolk-making material or all white-making material, you won't get any eggs, for a hen can't lay a yolk without a white or a white without a yolk.

The following table shows the number of yolks and whites it is possible to produce from 100 lbs. of each of the ingredients mentioned:

	Yolks	Whites
Corn	255	134
Kaffir	254	125
Wheat	242	182
Barley	203	145
(Average 25 lbs. of each)	239	147

As a hen cannot lay half an egg it is seen that a mixture of these grains can produce only 147 eggs, though there are elements for 239 yolks.

A balanced ration for laying hens is a scientific blending of suitable ingredients in the correct proportions to make the greatest equal number of white and yolks above the body maintenance of the hen without waste. Heavy layers will produce more eggs from the same amount of feed.

SELECTION OF BREED

It is generally said that the breed to keep is the breed that has the strongest appeal to you personally. Then you will have the greatest possible interest in your flock and give them the best attention and care.

For the average backyard or general farm poultry raiser, the American or English breeds are most generally favored. These classes include Plymouth Rock, Wyandotte, Java, Dominique, Rhode Island Red, Buckeye, and Orpington. These breeds will lay brown shelled eggs. The American breeds have yellow skins and shanks free from feathers. The Orpington, which is of English origin, has a white skin.

Any of these breeds can be brought to high egg production by scientific breeding and feeding, although they are not of the natural egg type. They are more desirable for the table than the egg type. It is the strain that counts.

The birds of Mediterranean origin are best suited for the production of white-shelled eggs. They are seldom bred for meat, but are generally favored for production of eggs on a commercial scale. The most typical representatives of this class are: Leghorn, Minorca, Ancona, and Andalusian.

The egg breeds are nervous in temperament, and generally make poor sitters. It is always better to use artificial incubation when fowls of this type are kept.

The Langshan, Brahma, and Cochin are the typical representatives of the meat type. These are often kept as general purpose birds and can be brought to fair egg production by careful breeding and scientific feeding. They are heavier and larger than either the general purpose or egg breeds. They lay brown eggs and have feathers on their shanks.

In selecting the individual birds for breeders, pay particular attention to the male bird at the head of the flock. He must be standard bred. A standard-bred male at the head of a mongrel flock will improve the quality of the stock materially. A mongrel male will produce no improvement in quality whatsoever.

If you raise your own flock keep your eyes open for breeders from time to time for hatching. The bird that always is first to get food thrown into the yard, the cockrel that crows first, and the hens that are last to roost and first off the roost in the morning, are the types of birds to select for breeders. Mate the vigorous prepotent sons of an exceptionally heavy layer with prepotent females of known laying ability. Mate cocks with mature pullets or mature cockerels with hens.

Never inbreed. Even if you have to borrow a rooster from one of the neighbors, do so and get some new blood in your flock. Pure-bred poultry pays in cash, opportunities and satisfaction.

The care and management of the breeding stock, both male and female, should be such as to produce birds of strong constitution and vigor. The males should be removed from the breeding pens at the end of the breeding season and not returned until the following season. Place the males in a pen with a good range during the summer and provide a warm dry sunny and well-ventilated house during the winter.

Do not allow males to run with pullets until they are fully matured. Never allow males and females to run together during the hot summer weather or during the moult.

Allow your males intended for breeders to run with females occasionally to prevent them from becoming sterile. If male birds are kept together all the time, they develop bad habits. Keep the male bird by himself when moulting. Keep his quarters comfortable and dry and feed him. Do not allow the male to develop long, sharp spurs. Saw them off.

In general the number of hens usually mated to a single male is as follows for the respective classes: Asiatics, eight to ten; American, English and French, ten to fifteen; Mediterranean, fifteen to twenty-five.

START THE CHICKS OUT RIGHT

The main factor in a brooder is uniform heat which is 80 to 82° to start with: five feet from the source of the heat. The chicks should be allowed to search for the temperature that suits them best. After the fifth day, they should have free range of the whole brooder floor. Little chicks should be started right. Little chicks should have plenty of exercise and they love to scratch in a litter.

Spring is a good time to begin poultry raising. Start with a few general purpose birds and with the best eggs that you can buy. This will insure success and profit. The runt never pays its board bill. Undersized chicks that mature slowly, frequently are caused by neglect of the parent stock.

The rapid growth of your poultry is dependent upon vigorous physical condition. Examine the heads of the chicks two or three days after hatching. If hen hatched and lice are found, rub a little ointment (made by mixing lard and Perfection Lice Powder together) on the head and under the throat. Dust the setting hen pinch method with W. C. De Lapp's Perfection Lice Powder when taking her off the nest.

Keep birds of different ages in separate runs.

AVOID HEATING FEEDS

During the summer avoid heating feeds, such as corn. Also avoid decayed scraps from the table, decayed fruits, etc., that might cause diarrhoea. Keep the houses clean and renew nesting material frequently.

Plant a bed of lettuce for growing fowls and feed the lettuce fresh.

SUNLIGHT

During the winter months, give your poultry the advantage of all the sunlight that you can. There is no better disinfectant or tonic. The larger and more plentiful the windows, the better. Arrange and care for your poultry house so that lice, mites and all filth and dampness will be eliminated.

Give your poultry plenty of fresh air, but beware of drafts. Remove from the flock those birds which commence to wheeze, or make a sniffling sound at night.

HEATING CHICKENS WITH THEIR OWN BODY HEAT

Ventilation is one thing and heating pure fresh air is another: remember that you cannot heat foul air: the idea is to always keep the air pure but warm, not hot for baby chicks, and, for growing fowls look well to your ventilating system, always keeping in mind to not over heat nor, on the other hand, do not chill. Keep the heat uniform and the chickens comfortable.

IN THE MATTER OF RETURNING EMPTY GRAIN SACKS

To the writer's mind, this is one of the worst evils attendant upon the poultry business. Many are the thousands of dollars that are lost each year by poultry flocks coming down with chickenpox, diphtheritic roup, coccidiosis, cholera, etc., which are traceable directly to the evil of returning grain sacks to the mills to be filled.

In a plant where there are any of the aforementioned diseases, which are both contagious and infectious, these diseases are easily traceable to such sources. And the quicker the manufacturers and distributors of feeds and the poultrymen awaken to this fact, the better everybody concerned will be off. Not that anyone is particularly careless in the matter,

but how easy it is for these diseases to be carried from one poultry ranch to another through the medium of the grain sack. Sounds reasonable, doesn't it? Also mites and lice and chicken ticks, or chicken bedbugs as they are sometimes called, which are all a curse to the poultry business, may be carried in the same manner.

It is a better plan to take the empty grain sacks and pin them or tack them on the windward side of your poultry yard, and spray them with a good disinfecting spray, made after the following formula: One gallon of crank case or crude oil, one quart of crude carbolic acid, creosote oil or sheep dip and two gallons of kerosene distillate or coal oil tops. The crank case oil may be obtained from any garage, filling station, or taken from your own auto or tractor. It doesn't cost much and is one of the best things in the world to use around a poultry yard, or to put mites out of business with.

This article is not written with the idea of antagonizing anyone or to interfere in any way with anybody's business, but is based upon real honest to goodness facts, obtained from practical observation and experience.

The moral of this article is: Do not return empty grain sacks, and thereby save yourself and your neighbor a multitude of worry, and lots of expense.

A FEW REMEDIES, FEED MASHES, SUGGESTIONS, ETC., FOR THE CARE OF POULTRY

TO ELIMINATE WORMS IN POULTRY FLOCKS

Stir one pint of prescription turpentine in five gallons of wheat and just before the regular grain is fed in the afternoon and the chickens are hungry, scatter a few handfuls on the ground so that each chicken will have a chance to get a **few** grains **only.** The idea is not to feed them too much at any one time. Repeat this in ten days, then every six months and repeat. Follow this treatment up with a 3% dose of Epsom salts given in the mash. Scatter slacked or hydrated lime over the ground and turn it under so as to kill the eggs of the worms as they live in the ground quite a period. Always keep houses, runways, coops, drinking crocks and everything thoroughly disinfected in and about the premises. This remedy will not affect a laying hen as regards to

the producing of the egg yield. It is economical and takes the place of any and all methods of eliminating worms from poultry flocks by the use of tobacco, vermifuge, and other concoctions and emulsions sold for such purposes. One pint of turpentine which costs you only about 40c will treat about 500 birds twice. This should not be fed, however, to chickens under ten weeks old.

FRICK'S REMEDY AND TONIC FOR CHICKEN POX (BIRD POX)

Ten pounds of Dairy Salt, 2½ pounds ground Jamaica Ginger, 10 pounds Flour of Sulphur, 6 pounds Baking Soda, 2 pounds Carbonate of Magnesia, 10 pounds Sodium (pulverized nitrate, 10 pounds powdered Copperas (Iron Sulphates), 10 pounds Epsom Salts, 50 pounds Charcoal (fine), 50 pounds fine ground bone, granulated.

The charcoal may be omitted if desired; the manner of treatment with the above remedy is, in the event of a threatened outbreak of the disease, mix 5 pounds in 200 pounds of dry mash, or to make them eat it better, make it a crumbly mash. In the event that a flock has it or rather gets it, feed: First feed for 500 hens, 20 pounds in 200 pounds of mash: Second Feed, 15 pounds in 200 pounds of mash for 500 hens. Then feed 6 pounds in 200 pounds of mash for 500 hens. By this time the disease should have disappeared, these feeds fed in rotation.

One thing must be understood, that disinfecting runs, houses, etc., keeping drinking vessels filled with clean water, is necessary. Paint the pox with Pearson's Creolin or tincture of iron.

W. C. DE LAPP'S SPECIAL REMEDY FOR THE PREVENTION AND CONTROL OF CHICKEN POX (BIRD POX), DIPHTHERITIC ROUP AND CANKER COMBINED

In the first place, Chickenpox, and all kindred diseases are in the atmosphere, and are carried by the wind, as well as on the clothing and shoes of persons entering a poultry plant. It may be, and is sometimes carried by grain sacks which have been on the ranches where birds are afflicted with the disease, also it may be introduced by the bringing

in of other birds afflicted by the disease, or from the showroom. Any good protection on the windward side of the poultry plant should be looked to. For instance, the placing of grain sacks, or burlap, on the windward side and keeping the same sprayed with any good disinfecting spray, is certainly a good thing. In anticipation of the disease, or when it first makes its appearance in a flock of birds, the following remedy or remedies, may be resorted to.

Dissolve one tablespoonful of cream of tartar in one pint of boiling water and put this in the drinking water, proportionately, one pint to one half gallon of water. Do this the first thing in the morning, so they will get the benefit of it. The idea is to put enough of the cream of tartar water out so that each chicken will receive its full share. Keep this up until the disease is cured. The number of chickens served with the cream of tartar water depends on the amount that each chicken drinks. It being understood that it is not necessary to designate how many chickens should be served with each one half gallon of drinking water. This remedy is also good as a tonic and may be used as such when chickens are in a run down condition. Also, in anticipation of an outbreak of chickenpox, this remedy may be resorted to with beneficial effects. In measuring the cream of tartar, sixty-four tablespoonsful are contained in one pound. It has been suggested by some that Epsom salts be used in connection with this remedy, but to the writer's mind, this is absolutely unnecessary, as the cream of tartar will do the work without the aid of the Epsom salts, although the salts are a good thing to give in the treatment of almost any kind of disease in poultry flocks. Cream of tartar is a carthartic, diuretic and a refrigerant and can be depended on to do the work intended for it if properly used. If you wish to amplify the work of the cream of tartar, carbonate of magnesia may be resorted to, using about 2%, that is to say, about 2 pounds to every 100 pounds of dry mash, mixed thoroughly.

Next, take out of the flock all those chickens that have a watery eye, and inject through the nostrils with a small urethral syringe (this syringe may be purchased at any druggist for about 35 cents) the following: One pint of salad oil, one half pint of prescription turpentine, one half pint of kerosene, and two ounces of gum camphor. The gum camphor is soluble in the turpentine. In the event of canker in the mouth and throat, first remove the canker with a sterilized crochet hook and apply to denuded spots Pearson's Cre-

olin or tincture of iron. This may also be applied to the warts or pox in the place of iodine.

Keep runs, yards, houses, etc., thoroughly disinfected and drinking crocks clean. The drinking crocks may be disinfected with lysol. Vaccination of the fowls afflicted has been recommended by certain of our universities, but to the writer's mind this does not give satisfactory results, although by some it has been practiced with success. The above treatment of chickenpox, etc., may be amplified by the thorough spraying of houses, runs, coops, etc. And before the spray soaks in, mix either air-slaked or hydrated lime and W. C. De Lapp's Perfection Lice Powder, 50-50. And scatter this mixture well over everything, and you will be surprised to see how quickly the disease will disappear.

This article is written to emphasize what has already been written on this subject in this book and as this disease is almost universal too much can not be learned regarding it.

SCALEY LEGS

For scaley legs use one pint of raw Linseed oil and ½ pint of kerosene and a few drops of crude carbolic acid. Dip feet of the fowl in this mixture but avoid getting it on the feathers.

FOR BLACKHEAD IN CHICKENS AND TURKEYS

Sulphur, 5 grains. Copperas (Sulphates of Iron), 1 grain.
or—
Copperas (Sulphates of Iron), 1 grain; Sallicylate of Soda, 1 grain.

These remedies should be preceded and followed by a dose of castor oil or Epsom salts.

Another good remedy is any good brand of liver pills: to small birds ½ a pill; to older ones a whole one.

CATARRH OF CROP

Hold chicken's head downward and gently press contents of crop out. Dissolve one grain of Sallicylate acid in an ounce of water and give three teaspoonsful at once. Feed carefully with hard grains and do not feed wet mash.

FOR WHITE DIARRHOEA IN BABY CHICKS

A tablespoonful of ground Jamaica Ginger in a quart of boiling water. When cool, add a tablespoonful of Baking Soda. Use three teaspoonsful to each quart of drinking water. This is also good as a tonic for hens. Buttermilk is also a sure cure for Diarrhoea, but do not over do it.

A TONIC FOR POULTRY

One pound Sassafras bark, I pound Oxide of Iron (red). Boil in 5 gallons of water. When cool stir in 1 tablespoonful of permanganate of potash. Seal in jugs or jars. Use ½ pint of this mixture to every 3 gallons of drinking water and use 3 or 4 days at a time as occasion demands.

FOR GAPES IN CHICKENS

If only a few are troubled, most of them may be saved by removing the worms from the windpipes of the chickens with a horse hair or fine wire. They may be put into a brooder, where they can be more quickly treated. Sprinkle air slaked lime and pulverized sulphur on the cloth cover of the brooder. When the chicks move about in the brooder, the lime and sulphur is sifted through the cloth, causing the chicks to inhale a little of it during the night. A very little of the lime and sulphur should be used at a time so as not to smother the chicks. The same treatment is also good for colds, canker, etc. Another good remedy is to mix a few drops of turpentine with the feed, but avoid giving too much.

CHOLERA

For Cholera in poultry, give 2 to 4 teaspoonsful of a ½% carbolic solution twice a day to each bird. This is made by adding one part of the 5% solution of carbolic acid to 9 parts water.

FOR DISINFECTING USE

Six ounces of crude carbolic acid to each gallon of white-wash for poultry houses.

A GOOD TONIC, STRENGTH, AND EGG PRODUCER

One pound Red Indian Gum, 1½ pints U. S. P. turpentine, 1½ pints refined linseed, olive, and cotton seed oils mixed. First add oils to gum, then add 50% of water and mix with

an egg beater. Cotton seed oil in the same quantity may be substituted for the olive oil, but one must remember in feeding cotton seed oil, when we reach the quantity of 4%, the eggs produced by the hens at this time, will not keep as well in cold storage. One gallon of this tonic should be mixed with one ton of mash to be fed to hens; for little chickens over 4 weeks old use only ½ pint to a ton of mash. It has been an argument or rather a question with a great many poultry men and women whether cotton seed oil is responsible for the dark yolk in the egg, or whether too much alfalfa green is the real cause of the egg yolk turning dark. If one will balance their ration with cracked Indian corn, which has a tendency to color the yolk of the egg yellow, this may be avoided. Yet this is a question still to be decided.

GOING LIGHT

There are five different causes for chickens going light—lice, mites, intestinal worms, tuberculosis, and cholera. First determine the cause and treat the fowl accordingly. Examine the body for lice—the perches also for mites—and the droppings for intestinal worms. Cholera is determined by a slimy greenish dropping.

TO PREVENT SPREAD OF ROUP

What will lay on a dime of Permanganate of Potash to each gallon of drinking water should be used to prevent the spread of Roup.

GROWING MASH FOR BABY CHICKS AFTER 10 WEEKS OLD

Leave before them at all times: Two parts by weight each —Bran and Middlings. One part—Corn or Feed Meal, 10% sifted Beef Scraps. Mix with regular laying mash, equal parts by weight.

TONICS

No. 1.

Pulverized gentian, one lb.
" ginger, one-fourth lb.
" salt petre, one-fourth lb.
" copperas (iron sulphates), one-fourth lb.
" nux vomica, one-fourth lb.

Mix this in 500 lbs. of dry mash and feed as long as desired as a tonic.

No. 2.

Sulphur, nine lbs.
Epsom Salts, five lbs.
Bicarbonate of Soda, three lbs.
Pdw. Copperas (Iron Sulphates), three lbs.
Dampen with cold water and feed one pound to every one hundred hens in the mash twice a week.

HEN MASH

500 lbs. fine Bran, 100 lbs. Cracked Corn, 100 lbs. Shorts, 100 lbs. Soy Bean Meal, 50 lbs. fine sifted Beef Scraps, 50 lbs. Bone Meal.

MOULTING MASH

100 lbs. Bran, 25 lbs. Sulphur, 10 lbs. Ground Sunflower Seed, 10 lbs. Oil Cake Meal, 25 lbs. Feed Meal (corn), 2 lbs. fine Charcoal. Feed this mash 50-50 with any good laying mash during the moult.

STANDARD MASH FOR LAYING HENS

600 lbs. Bran, 400 lbs. Corn Meal, 100 lbs. Cocoanut Meal, 300 lbs. ground Wheat, 100 lbs. ground Hulled Oats, 100 lbs. Meat Meal or Blood Meal, 50 lbs. Ground Soy Bean Meal, 200 lbs. Darling's or Crolie's Beef Scraps, 100 lbs. fine Bone, 50 lbs. Charcoal (fine), 20 lbs. Salt.

HEN MASHES

No. 1

Two sacks Bran, 2 sacks Rolled Barley, 53* pounds Fish Meal A-1, 8 lbs. Ground Bone, 13½ lbs. Soy Bean Meal, 10 oz. Salt.

No. 2

1000 lbs. Bran, 300 lbs. ground Wheat, 300 lbs. Middlings, 400 lbs. Crolie's or Darling's H. P. Beef Scraps, 100 lbs. Oil Cake Meal, 100 lbs. ground Bone, 50 lbs. fine ground Charcoal, 10 lbs. fine Salt.

DUCK MASH

20 sacks Bran, 3 sacks Darling's or Crolie's Beef Scraps, 2 sacks Cotton Seed Meal, 4 sacks ground Egyptian Corn, and feed with this 50% green Alfalfa.

FEEDING TURKEYS

Do not feed until 48 hours old. First feed hard boiled eggs. For one week, corn bread and chopped onions with greens should be fed. Feed at all times from the beginning, cottage cheese mixed with a little red pepper and boiled rice mixed with bran. Let the rice be boiled until dry. The main thing is brooding. Weather permitting, allow them to run outside. Permit them to have access to fine gravel. They should be given baby chick food the same as chickens with rolled oats rubbed in same. The first few weeks and after that, the mixed grains and sour milk should be fed. Peanuts are also a wonderful thing for fattenting turkeys for the market and they also must be supplied with greens the same as the chickens.

It must be kept in mind that the main thing with baby turkeys is to see that they are kept comfortably warm and like a baby chick, feed them five times a day, always avoiding overfeeding. The same diligent care must be applied to the raising of baby turkeys as baby chicks, it being remembered that they cannot stand as much as a chick. Let them have free range.

MASH FOR BABY CHICKS

Another good baby chick mash may be made of ground milo, fine corn, and wheat—equal parts by weight combined with ½ beef scrap, ¼ fine bone and ¼ fine charcoal.

THE BROODING OF BABY CHICKS

In addition to feeding baby chickens, great care must be taken in brooding. They should not be kept too warm—80 to 82° of heat from the beginning is enough. Also avoid sweating. Do not allow them to chill, however, and as the chicks continue to grow, after a few days, gradually cut down the heat. Of course a great deal depends on the climate. Another thing in the care of the baby chicks is toe picking, which may be prevented by using blue calsomine on the brooder house windows, so as to throw a shade on their

little feet or fine cut alfalfa or litter may be placed on the floors and in the runways so the toe nails will not be exposed to view. Another good thing is to mix Bon Ami, blueing and water together, and paint windows.

THE FEEDING OF LAYING HENS

In feeding laying hens, the first feed in the morning should be thrown in a litter, compelling the hens to work for same. A good laying mash should be left before them all the time. Use great care in feeding wet or crumbly mashes for this will cause intestinal trouble. The evening feed should consist principally of wheat. During the winter time, or cool weather, a little corn should be added. Greens should be given twice a day. The best greens are barley in the winter time and soudan grass in the summer time. The latter should be planted in rows as a matter of convenience both for irrigating and cutting. Most any kind of greens are good, but the two mentioned are the best. Among other greens for feed may be classed kale, beets, lettuce, alfalfa, cabbage, clover, and lawn clippings. Mangel beets hung on a nail a few inches from the ground, compelling the hen to jump for same, not only gives them exercise but furnishes a good ration.

Good clean drinking water must always be provided, served in crocks if convenient if you expect to obtain the best results either for health or laying.

SPECIES OF MITES AND LICE COMMONLY KNOWN TO POULTRY FLOCKS

The seven common species of lice are the head louse, body louse, shaft louse, wing louse, fluff louse, hen louse (large—sometimes called the chicken bed bug), depluming or itchy mite, and brown louse which is not often found. There is also a hen flea, sticktite flea, red mite, and scaly leg mite. The four latter breed in the soil and in the houses, nests, etc., while the lice breed on the hen.

DISEASE CAUSES FAILURES

One of the most serious obstacles to profitable poultry keeping is the effect of disease in arresting the productive activity of the flock and in decreasing its numbers. More failures in the poultry business are traceable to disease than

any other cause. Mites, lice and intestinal worms cause low vitality and low vitality brings on disease with its consequent losses.

HUMANE MEDICAL TREATMENT

It is well known that the body of a chicken, as all observation proves, is similar to that of man. The body of a chicken is composed of similar elements, has similar organs acting in the same way, similar propensities, but the mental faculties are less fully developed. It is important to bear this in mind because a chicken requires the same intelligent treatment as man and should receive humane treatment as it feels pain the same as man.

ANALYSIS OF BODY

Analysis shows that the body of a chicken, weighing 5 pounds, is composed of 2 pounds 12 ounces of water and 2 pounds 4 ounces of solid matter. The more important ones are as follows: Oxygen, Nitrogen (all gases) with Carbon, Phosphorous, Sulphur, Calcium, Sodium, Magnesium, Iron, Copper, etc. This ratio is found in man.

MEDICAL TREATMENT

In the treatment of sick birds, medicines should not be administered blindly, but on the contrary there should be a clear idea before the remedy is selected, of what is to be accomplished, otherwise more harm than good will result. Thus if a bird is troubled with diarrhoea, do not give medicine for constipation.

It is more than futile to attempt to prescribe for every symptom. It is the underlying cause which must be sought out and treated and the patient will soon recover from the other disorders. A bird free from sickness should never receive medical treatment.

ANTAGONISM

It is imperative that medicinies should not be administered that are antagonistic, that is: drugs that are opposed to each other in their physiological effects. Thus mixing Potassium Permanganate with other organic matter gives up part of its oxygen, thereby losing its color and is no longer active.

W. C. DE LAPP'S SPECIAL TONICS FOR POULTRY

One gallon of this tonic should be mixed with one ton of mash, to be fed when needed.

No. 1.

I lb. Pulverized Gentian.
¼ lb. Ground Jamaica Ginger.
¼ lb. Pulverized Salt Petre.
¼ lb. Copperas (Iron Sulphates).

An ounce to a gallon of feed.

No. 2.

10 oz. Ground Mustard.
8 oz. Foengreed.
1 oz. Ground Jamaica Ginger.
5 oz. Oil Cake Meal.
4 oz. Flour of Sulphur.
1 oz. Capsicum.
3 oz. Bone Meal.
3 oz. Fine Ground Oyster Shell.
3 oz. Precipitated Chalk.
1 oz. Magnesia Sulphate.

One tablespoonful to one quart of feed, three times a week.

No. 3.

1 pound Sassafrac Bark, 1 pound Oxide of Iron (Red). Boil in 5 gallons of water. When cool stir in 1 tablespoonful of Permanganate of Potash; seal in jugs or jars; use ½ pint of this mixture to every 2 gallons of drinking water; use this 3 or 4 days at a time as occasion demands.

No. 4.

9 lbs. Flour of Sulphur.
5 lbs. Epsom Salts.
3 lbs. Bicarbonate of Soda.
3 lbs. Powdered Copperas (Iron Sulphates).

Feed 1 pound to every 100 hens in the mash—dampened with cold water.

No. 5.

10 lbs. Dairy Salt.
2½ lbs. Jamaica Ginger.
10 lbs. Flour of Sulphur.
6 lbs. Baking Soda.
2 lbs. Carbonate of Magnesia.
10 lbs. Sodium pulverized nitrate.

10 lbs. Powdered Copperas (Iron Sulphates)
10 lbs. Epsom Salts.
50 lbs. Charcoal (fine).
50 lbs. Fine Ground Bone.

Mix 5 lbs. to 200 lbs. dry mash for 500 hens.

A GOOD TONIC FOR HENS

One-half teaspoon of Venetian Red to each hen in mash once a week.

FOR WARTS AND POX—AN ADDITIONAL REMEDY

Dissolve 1½ oz. of Boric Acid to 1 oz. of Biborate of Soda in a quart of warm water. For Chicken Pox apply to denuded tissues with medicine dropper or pledget of cotton. Also a 2% solution of Creolin or Lysol may be used.

For canker put Chlorate of Potash in drinking water or use Flour of Sulphur in the mouth and after removing the canker paint with iodine or use 1/10 iodine and 9/10 gylcerine. This may be applied by stripping a feather almost to the end or using the same as the swab.

ALL IN ONE FEED—IS IT RIGHT OR WRONG?

The idea of an all in one feed is not entirely new, and there are a great many arguments pro and con, as regards the same. To the writer's mind, an all in one feed is O. K. under certain conditions and circumstances, but it furnishes a wide and varied latitude of using up everything that goes to make up a feed for poultry, as it were, a sort of potpouri. Personally, I would prefer to feed poultry in a **regular** way, that is to say, whether young or old, feed a balanced ration, according to the size of the flock, the housing conditions, whether enclosed or free range. Every poultry keeper knows that a breeding hen should be fed differently and handled different from a straight commercial hen. Also the lighter breeds can handle more animal protein than the heavier breeds, etc., etc. Also in the matter of greens, you positively must know the amount of animal protein being fed to feed greens intelligently to poultry.

In concluding this book, the writer hopes that to those who have read it, that much good has come to them. The idea in writing this book was for the uplifting of the poultry business in particular and the helping of all persons engaged in the same. This work will probably be supplemented at some future time by other books written with the idea of keeping abreast with the times.

W. C. DE LAPP.

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