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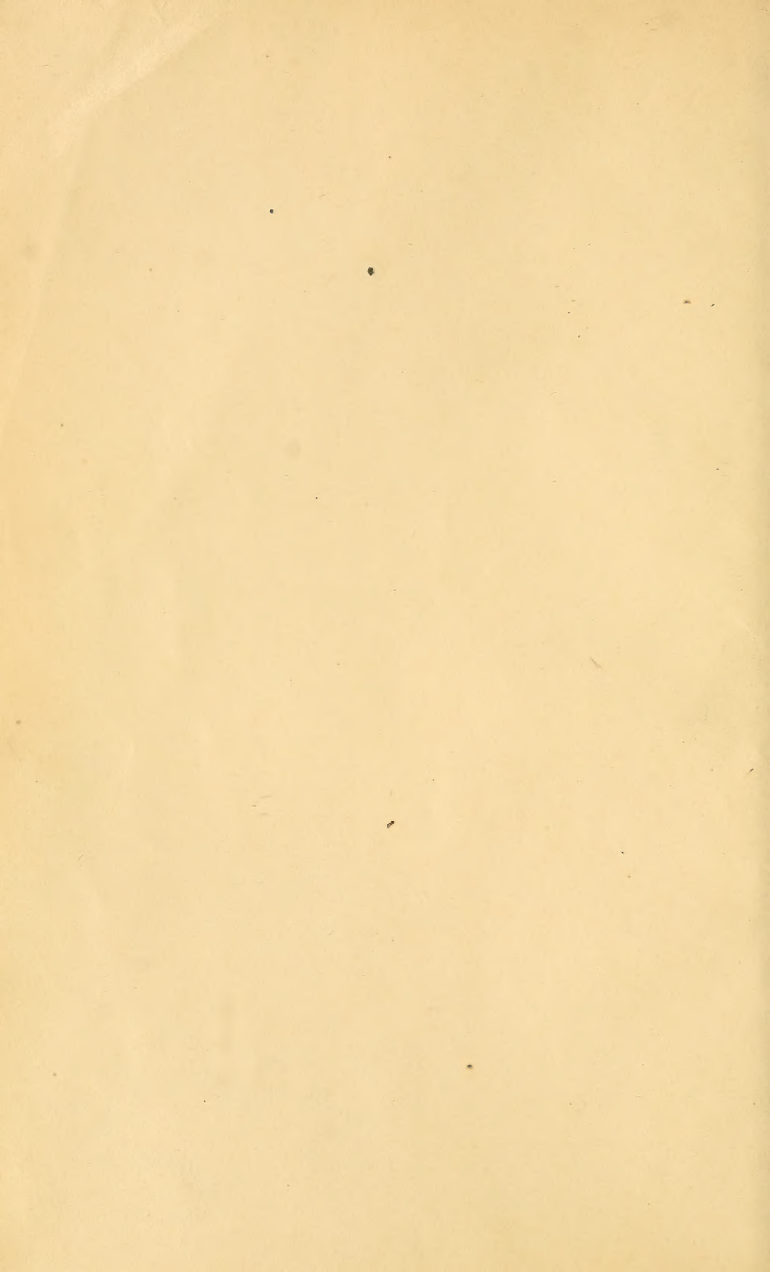




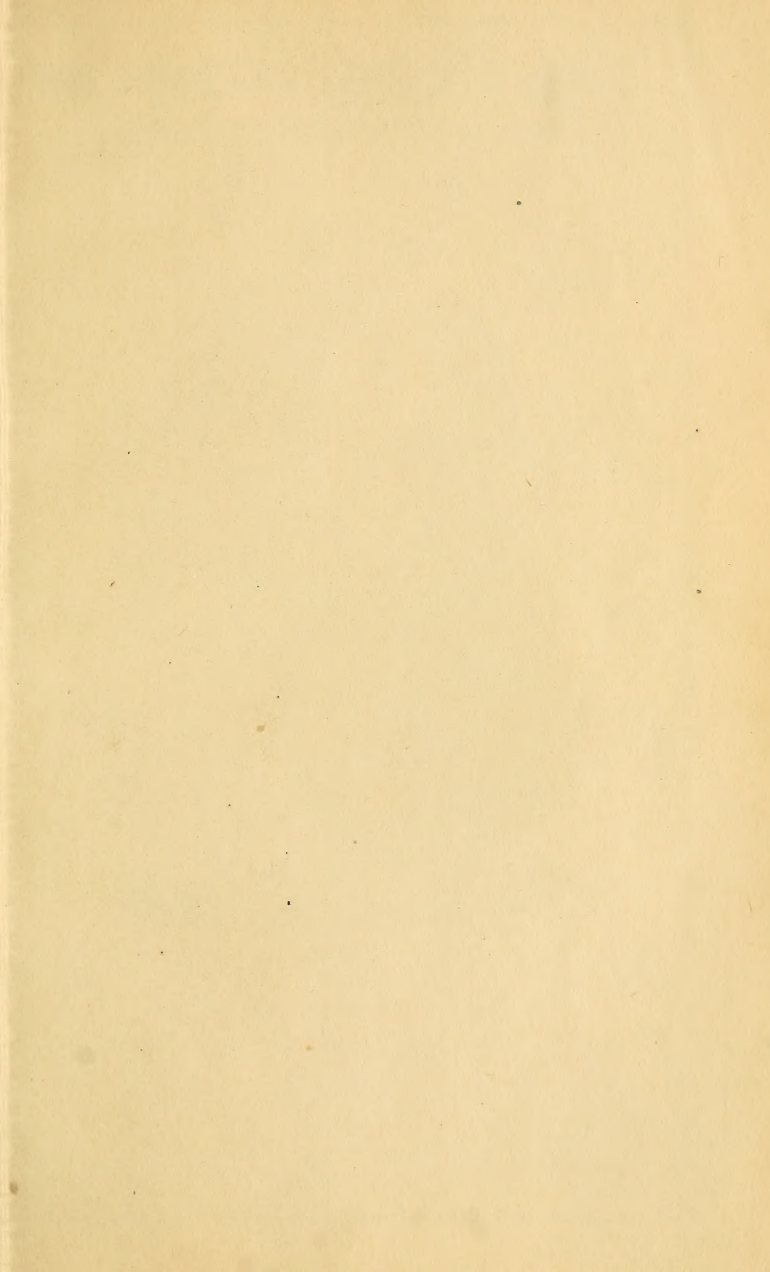


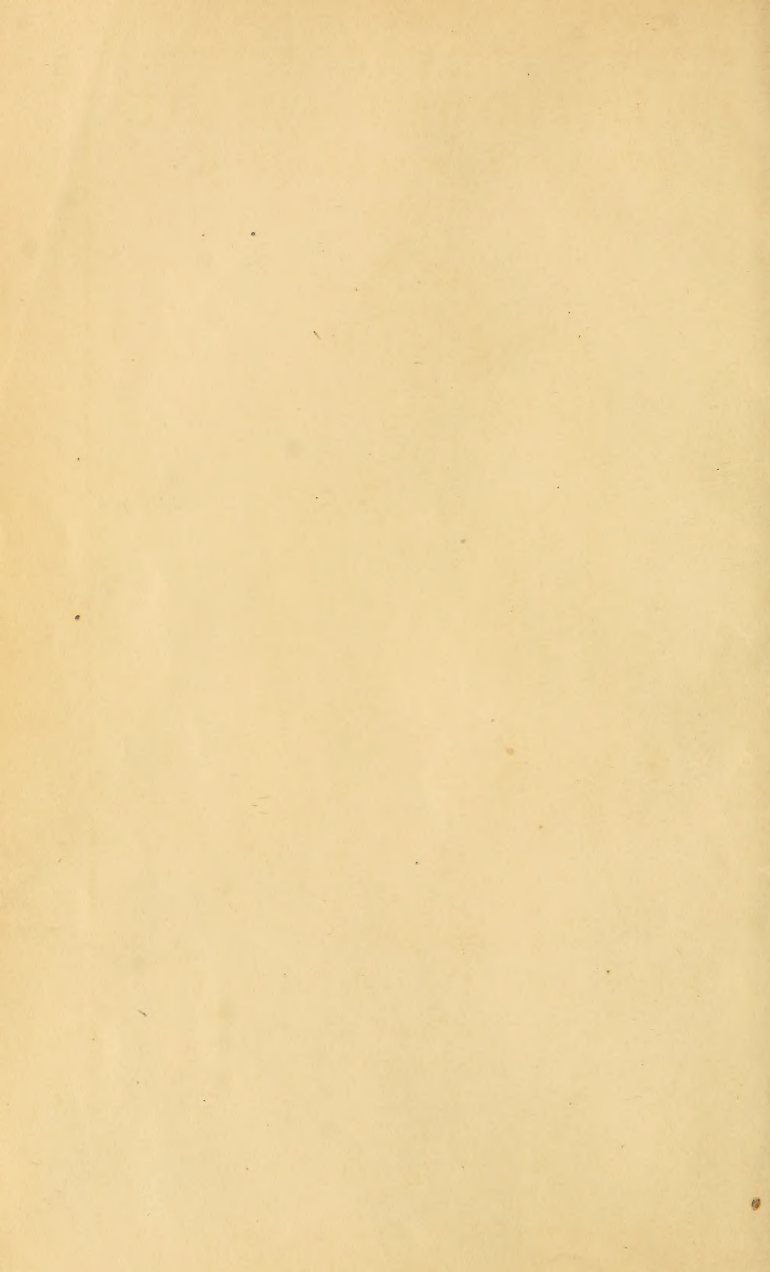










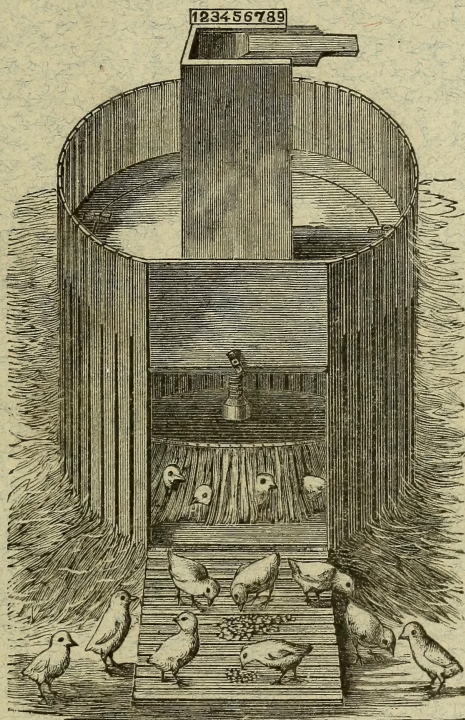




# THE POULTRY YARD and MARKET,

A Practical Treatise on Galliniculture,

AND DESCRIPTION OF A NEW PROCESS FOR



## HATCHING EGGS AND RAISING POULTRY

By means of Horse Manure,

By Prof. A. CORBETT, Inventor.

1876.

ORANGE JUDD COMPANY,  
245 Broadway, New York.









Prof. H. Cebal

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## Raising Poultry

BY MEANS OF HORSE MANURE,

FOR WHICH

GOLD AND BRONZE MEDALS AND SEVERAL DIPLOMAS  
HAVE BEEN AWARDED BY STATE AND COUNTY  
FAIRS AND THE AMERICAN INSTITUTE  
TO THE INVENTOR,

*Adelphi*  
**PROF. A. CORBETT,**

*14*  
Author of several Works on Gallinoculture.

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1876.

ORANGE JUDD COMPANY:

245 BROADWAY, NEW YORK.

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## NOTE.

The new process for hatching eggs and raising poultry by means of horse manure, described in this book, has received the best indorsement by the most competent and leading newspapers, and the following awards were given to its author :

GOLD MEDAL, as a Special Premium awarded by the Queens County Agricultural Society, 1874.

BRONZE MEDAL, and Diploma, by the American Institute, 1875.

First Premium and Certificate of Merit were given by the New York State Fair Association, at Rochester, 1874.

First Premium for Incubator, and First Premium for Artificial Mother and Diploma, awarded by the Queens County Agricultural Society, 1874.

First Premium for Incubator, was awarded in Albany, by the Agricultural and Arts Association, 1874.

First Premium as an Artificial Mother, was also awarded by the Agricultural and Arts Association, at Albany, 1874.

First Premium and Diploma of highest merit, were given to this Apparatus by the Saratoga County Agricultural Society, 1874.

First Premium as Incubator, with Diploma, for the Artificial Mother attached, awarded by the Suffolk County Agricultural Society, 1874.

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## INTRODUCTION.

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“There is nothing new under the sun,” says Solomon the Wise, so that artificial incubations is also not a new thing, although little practiced. In the most ancient times the Egyptians knew the art of hatching eggs without placing them under hens. These enlightened and wise people who had found every means to make life easy and pleasant only because they had sought it through agriculture, yet possessed several ideas which we have not yet discovered, and almost now despair to find out, and it is only by direct observation and according to the harmonious laws of nature that such discoveries are made. It is hardly necessary to call the attention of the public to the manner in which birds set on their eggs. And every one knows, also, that there are some birds (hens for instance) which not only hatch out eggs that they have not laid, but even those also of other species.

These peculiarities in revealing themselves to our notice have naturally led us to think there should be, perhaps, a means to obtain broods independent of the hen, since her intervention has been already shown to be insignificant, and without any regard to the species. This our apparatus does accomplish. I was convinced

of the possibility of it on reflecting that even the sun could take the place of the bird—as it serves in some instances to hatch out eggs, we know. Thus the crocodile, turtle and the ostrich bury their eggs in the sand, and it is the warmth of the sun that hatches the young ones. The example of the ostrich, especially, appears to be conclusive, and, therefore, I believe that if the sun could hatch out the eggs of the ostrich it would not be impossible to have a like success with other eggs by applying artificial heat.

To-day the Museum of Natural History, in Paris, exhibits to the view of amateurs and the curious, enormous serpents born in hot-houses by the artificial incubation of their eggs.

Nothing, in fact, is easier, says an author named Parmentier, than to create the art of hatching eggs without the aid of the hen. It only consists in imitating the process that chance has indicated to man and simplifies itself to this, to choose a place where the eggs can receive the same temperature that they would have under the bird that laid the eggs, and during the time that would be required to hatch them under her wings.

## ARTIFICIAL INCUBATION.

### Its Origin and its Antiquity.

The art of artificially hatching hens' eggs has been known in Egypt and China for centuries. In Egypt the invention is attributed to the ancient priests of Isis. According to some historians, Isis and Ceres are the same benignant princes who reigned once over Egypt. According to others the art of agriculture is personified under these names, and she was represented with a garland of ears of corn on her head, holding a lighted torch in one hand and in the other a poppy, which was sacred to her.

The priests of the temple of Isis, in Egypt as well as in Celt, appear especially to have been employed in agriculture and rural economy. The importance of this seems to have deserved a like institution since they studied this great science and extended its principles under the name of the goddess Ceres, who was the divine guardian of the fields and every kind of nature's produce.

Whatever it was it seems certain that the prosperity of the ancient kingdoms of Egypt, Damascus, Palestina, Jerusalem and Samaria was, in a great measure, due to the benefits they derived from the artificial hatching of hens' eggs.

The ovens, or hatching places of the Egyptians, called in the country *ma-mals*, and which were very numerous in the kingdoms before mentioned, are now only in existence in Mansoura, in the village of Berma, situated in the Delta of the Nil. The latest historians



give the name of Behamians to all the inhabitants of five or six villages, of which Berma is the chief and centre, and where the ovens are most numerous. The inhabitants of these villages are the only ones who to-day have preserved the hereditary industry of directing these ovens.

On research I find that the ovens of Egypt alone in olden times hatched out annually one hundred millions of chickens; even to-day the ma-mals of the Behamians still hatch out annually thirty millions, but history is silent upon the kind of nourishment given to these chickens. But one will say, how is it that so flourishing and prosperous a business has for the most part disappeared from these countries, and is only found to-day in a small and limited province of the Egyptian Delta? I cannot account for it any more than that these countries have become barren and depopulated, which once, according to history, were fertile and inhabited, and of the destruction of towns and cities of which the ruins still exist and bear witness to their ancient splendor.

To the Emperor Constantine is attributed a memoir upon the artificial incubation of the Egyptian ovens, so much did he consider the multiplication of every kind of poultry to the welfare of the nation.

Another memoir on the same subject is attributed to Democrates, the ancient philosopher who was in the habit of crying with joy on beholding the beauties of nature in opposition to his companion, Heraclites, who always laughed at the same.

Plinus, the naturalist, and Diodorus, of Sicily, speak in their writings of the great benefits a nation would receive from this method.

The history of the Egyptian ma-mals and the Chi-

nese boxes (these are only for hatching duck eggs) was brought into Europe by the Pastor Juan Gonzales, of Mendoce, in Spain, and translated into French in 1600 by Luc de la Porte.

Before Gonzales' times historians had spoken of the Egyptian ovens, and amongst them Aristot, but these had only written from traditions, whilst at Florence and at Naples they have already built these ovens or kilns.

In the year 1415 Charles VII built some à Amboise in France, and Francis I., at Montrichard about the year 1540. These undertakings probably met with but little success, because these ovens were built according to hearsay or tradition. One of the Florentine dukes sent for an Egyptian director, and they say that this man succeeded well. Francis I also followed the same plan and met with a like success ; but, notwithstanding this, it was abandoned later. A physician of Nanterre, named Bonnemain, is the first since 1777 to establish hatching ovens, which communicated their heat to the eggs by means of the circulation in tubes of hot water. Bonnemain tried every expedient, and, after several unsuccessful attempts, started an establishment at No. 4 Rue des Deux Portes, in Paris, and where he had these ovens sufficiently large, that he hatched out one thousand a day. He is often accused of exaggeration, but nevertheless history records the fact that he had chickens all the year round, and that he supplied the Imperial Court of France in all seasons, and that the public markets were overstocked with his birds. The disastrous events of 1814 were the ruin of this fine establishment. Bonnemain published a pamphlet in 1816 giving a description of his ovens regulated by

fire, and he said his method was the result of fifty years' deep meditation and trials.

In this pamphlet he does not give the key of his method, but asks for subscriptions to buy his ovens, and to induce amateurs to try it, he gives statistics of the profit each hatching gave every year.

Bonnemain, moreover, assures us that he did obtain this success during fifteen years, and it was only after his establishment was ruined by the invading armies that he asks for aid and assistance from the government, capitalists, and amateurs; but all failed him, either from disdain, want of confidence, or from political motives.

The price of his boxes was very high, the small ones costing \$2 00 an egg, and large ones 75 cents. His fire regulator was considered a very useful invention.

Martial Bonnes, mathematical professor and astronomer in the observatory at Toulouse, wanted the government to send a commission to Egypt to introduce the art of making these ovens or machines for hatching chickens, and to bring back at the same time experienced Behamians to manage these ovens, etc.

Another author, under the same administration of the Haut Rhin, I find has published also a book explaining to the government the great importance of this importation to France. He says: "I would like to see these men and their machines enter France and establish themselves in the palaces of our king;" and then he adds: "The enemies of this enterprise will at first scoff at and ridicule the project of hatching chickens artificially, and will have a thousand stories to tell of these hens' eggs, the quality of their flesh, etc.; but all these pleasantries ought not to discourage the undertaking, and they will pass away as smoke."



I can only join my good wishes to the hopes of these men—true friends to the prosperity of their country and to the welfare of every one, which would result in the multiplication of poultry yards.

I will now relate the attempts that have been made of this kind by my contemporaries, and the success they have met with.

In 1844, Mr. Bir, a merchant of Courbevoie, near Paris, sent to the exhibition of that year, a box for hatching, containing 60 eggs.

In 1848 Mr. Vallie, keeper of the serpent gallery at the museum of the Jardin des Plantes, at Paris, sent also to the exhibition of that year, an incubator to hatch out 100 eggs.

These two boxes, made after Bonnemain's model, but much smaller, were heated with lamps. Mr. Vallie even admitted that his box was not fit to be used on a large scale, but only as a piece of furniture for amateurs and the curious. About the same time, however, appeared the great incubator of Messrs. Adrien, Jr., & Tricoche, who founded an establishment at Vaugirard. In 1853 Mr. Cantallo established an institution of numerous incubators, and, according to the English papers, these are all heated with lamps, and he sends a large quantity of poultry to the London market annually.

Dr. Preterre, dentist, of New York, has also devoted much of his time to artificial incubation; I have seen and met him at the Farmers' Club at the Cooper Institute, New York; and in March, 1874, he exhibited several chickens which were hatched artificially by steam and also by means of horse manure.

A great many certificates have been presented. There are also several patented incubators in the Uni-

ted States. Some have the lamp on the top, others have it on the sides ; all have more or less pipes holding mercury or alcohol.

I believe I have now exhausted all my information about recent incubators, and have posted my readers in all that has been done in this line, and he can now form some idea of the different experiences that have been made to arrive at a practical and paying machine, for it is not enough to hatch eggs, but it must be done with profit ; for if, to obtain a few chickens, you must spend more than they are worth, or more than they will sell for, the thing is a failure ; and I have never heard that any great success has been attained by machines heated by lamps. One can easily understand that those persons who wish to engage in the raising of poultry, are much embarrassed, and hesitate before risking their money in an enterprise in which the best means to carry it out are still being looked for. Thus does it happen that, after due reflection and deep study, I have decided to found my establishment, and, before investing \$40,000 in a poultry establishment, I certainly ought to thoroughly understand what I am undertaking, and even better than any other. I ought to be most interested in finding the most advantageous manner of applying artificial incubation. My first plan was to follow the natural raising of hens, etc., for, like many others, I had only a weak reliance on the present machines, for I have seen them in operation both in Paris and London ; but both proprietors told me that they did not believe it would be practicable on a large scale ; for an establishment that would contain 60 artificial hatching boxes in operation ought to have 120 lamps burning night and day with kerosene ; and there was great danger, to say nothing of the difficulty of

directing to an equal height such a number of wicks to give to each incubator an equal warmth. And how much money would it not cost daily for kerosene ?

These considerations, added to those of the necessary expense required to buy these machines, were a very serious objection to me, and I was forced to reject this system, without condemning it, however. I bought several machines to try them ; those that gave me the greatest returns were kept in operation for a time ; but from one only a small percentage, and from another I never could obtain a single hatching, and thus it was that I did not spend much time with such expensive toys, and, at the same time, with such little profit. I still continued to look for some other way of arriving at the desired end, and to see if it was not possible to obtain practical and commercial results, for, if it was once found, I had before me an important affair ; with my organization I could take care of any quantity of chickens that I could hatch. I then bought every book that treated of incubation, and you can judge my surprise, when I found that each author recommended particularly a different machine. It was not long before I discovered that these recommendations were only complimentary, for I had already one of the machines thus strongly recommended by one author, and from which it was impossible to obtain the birth or hatching of a single chicken. But what struck me most was that only a few of them spoke of Reaumur's system, amongst which is Burnham, who mentions in his work, at page 124, that Mr. Manowry, at Mouy, had adopted Reaumur's system.

However, not being able to let him pass without mention, the greater number ingenuously say that he did obtain some success, but they take good care not to

give any explanation ; this is easily understood, as they would have injured their favorite. Our astonishment changes into indignation when we read that these authors, who were so reserved about the celebrated Reaumur, were lavish in their praises of the sellers of the boxes without value (the rotten work of some tinsmith), who, perhaps, had money enough to buy the good will of the writer.

Mr. Reaumur was a clever French naturalist and author of several works, memoirs of great value, and several of his treatises are well known, and the best that were written before Buffon's time ; and, in consequence of these works, was made a member of the Royal Academy of Sciences in Paris, where he read his first paper on St. Martin's Day, 1747, when the public of that time seemed to have judged as he had done of the great advantages to be expected of making a business of chicken raising ; and he further stated, 125 years ago, that the multiplying of poultry yards, of which such a large number are consumed, could not be overdone.

The Abbé Copineau undertook to perfect Reaumur's method ; in 1780 he published a work called "Artificial Ornithotrophie ; or, The Art of Hatching and Raising Poultry by means of Artificial Heat." The same work was re-published in 1795, under the title of "Man Rival to Nature ; or, The Art of giving Existence to Birds, and principally of Poultry." In 1816 the learned Bonnemain also published a very instructive memoir, and of real value. So that at last we find a number of eminent men occupying themselves with this important question.



## Researches and Success.

The public will now understand from what sources I have sought to learn ; and after all the experiments I have made, I concluded, at last, that Reaumur's system appeared to be most feasible—it being the easiest and less expensive to follow. I, therefore, from that time began to practice it, thus : six casks were placed in a heap of manure, and 600 eggs were placed in them. All were lost. It was in winter, and I thought that in the cellar the casks would keep at a better degree of heat ; but there not being room enough, and the want of ventilation, were the causes of my failing. Not in the least discouraged, although disappointed, I again placed eight casks under an old shed, and this time put 800 eggs in them ; the success would have been entire had not the rain fallen one day on part of the manure heap, which cooled it off. Nevertheless, from the other part I proved the success, and you can judge how delighted I was to see several hundred young chickens hatched.

Let the reader rightly understand that we did not have entire confidence in the success to be derived from this venture at the time, as it was necessary to find a place to put the newly-hatched chickens in, which appeared to us like a true army of invaders. Those persons who have never seen hundreds of young chickens of one and two days old, can form no idea of the busy and noisy household. Luckily, we had an artificial mother, warmed by one lamp, and I placed the young chickens in it ; whether it was the smell of the kerosene that was injurious to them, or whether the heat produced by the hot water did not accomplish the wished for object, I lost the greater number of them,

and I had the misfortune to prove that it was especially from crowding themselves in the corners that they did. This was a bitter disappointment to me. As there was now no doubt that I could hatch the eggs with the aid of manure, it only remained to improve on the casks and mothers, and the manner of directing or regulating the heat, besides providing the proper and necessary ventilation, and to supply the necessary quantity of air. I first of all began my improvements on the artificial mother, in suppressing the corners as much as possible, and at last had one built without corners, measuring twelve feet in length and ten feet in width, and warmed by two kerosene stoves. I thought myself very happy in having such a large artificial mother in which I could place 1,800 chickens of different ages. Everything was complete in it, park, perches and ventilation. Unfortunately, one night in April one of the lamps exploded and set the building on fire in which it was (which measured 200 feet in length, and cost \$6,000). The dog gave the alarm, and soon every one on the farm was awakened, and commenced to extinguish the fire by means of the India rubber hose kept on the premises for such a calamity, and with a plentiful supply of water the building was saved by a miracle, but I was not so fortunate with my young brood—nearly all of them were smothered or suffocated. Again was I forced to resign myself to fate and give up the raising of my pullets artificially by means of lamps. The insurance company paid the damage to the building, but the poultry was not insured.

Having got over this loss I puzzled my brains to find a new system of raising them, and began to think I should have to renounce it, when the happy thought struck me to try the manure heap, and to see if I could

not make it do for the chickens what it did so well for the eggs. I then placed a common box in the manure and put in it some newly-hatched chicks; this was rather a bold proceeding, for the chances were that I should only find dead ones in the morning. Judge my surprise when at five o'clock in the morning I opened the box and saw all these little ones with their large eyes open, waiting their first meal, and they were quickly fed.

This, then, was the solution of the great problem. Was it chance or luck? Nevertheless I had before me the fact that there were animated beings born in manure and receiving the warmth necessary for their welfare from the same source. Having already received so many checks and deceptions, I hesitated and refrained from shouting "Victory!"—Eureka it might be.

A few more days will show me what success I might depend on in using this means of raising them, and all those that were daily hatched received the same treatment. At length, after fifteen days' experience I had only to fight with the corners of the box. For those who have the opportunity of visiting an establishment for rearing young chickens, know full well how they will crowd into the corners; the stronger ones mount on the backs of the weaker, and these are, almost in all cases, victims to their companions.

I now began to look for a box that would, in a certain degree resemble the hen. Everybody knows that if she gives warmth to the chickens it is by covering them with her wings; but again, if an account was taken of the number she crushes by treading on them, of those she loses in walking round with them, you can easily see that the raiser pays dearly for the heat she gives. I will admit there are some mothers patterns of

gentleness, tenderness and carefulness, and quite worthy of the praise and admiration bestowed on them, and will allow several authors to say all they can in their favor ; but if they were like myself, daily watching them and convinced of the reality, they would soon see how very many in general, destroy their young ; it is by millions yearly that they could be counted. Up to the present time very few have troubled themselves about this great question, for the simple reason that this enormous loss being shared by all, it has not awakened the attention of the great poultry raisers. One of my neighbors who raises a great quantity of poultry, especially turkeys, lost in one day sixty-four chicks, their careful mothers having taken them off to a distance, when the rain came and they were lost. This man, a clever farmer, suffering so great a loss, has he ever thought he might avoid it? I don't believe he has.

In order that my apparatus should be good, I kept strict account of the heat given to the chickens by the mother, the movement of the wings and especially of the amount of air that penetrated under her. After several days' labor and combinations I succeeded in obtaining all these results, and I found I had replaced the hen with great advantage, for really my apparatus is much superior to the hen. The stomach and the wings are, by a clever combination, beautifully imitated. Especially do chickens find this to be the case whilst growing up as well as when they are small. This apparatus having so admirably succeeded in raising chickens, why could it not serve also to hatch them? To this important question I could not immediately reply ; so I began another experiment, and the first trial failed, and upon my making further researches I



discovered that what prevented the success of the incubation was simply in the quality of the wood of which the boxes were made. I then made another apparatus and new experiments, and at last succeeded.

From this day I found I had solved an important problem, and that I could hatch and raise chickens without the assistance of any lamp, nor with any fire, and that manure alone would do it. Ah! if Reaumur could rise from his ashes how happy would he be to see these facts established, and I would wish to see present near the hatching broods those authors who have so little gratitude for this renowned man of the past century.

“Every pen that is employed in the praise of any subject or industry does honor to the author who renders justice to the merits of others, more especially when it alludes only to their memory.”

### The Patent Right.

Possessing my apparatus, my first business was to ask of the American and European Governments the protection that the law gives to inventors, etc. In granting me a patent every one who has seen my apparatus has immediately recognized its importance, and the benefit each might derive from it.

I have been advised to sell my patent to a company so that I might at once realize a large fortune, but I prefer to remain the sole owner, fearing that once the apparatus is spread over the country our poultry and eggs would decrease in value in consequence of there being too large a quantity of poultry thrown on the market. Several of my friends have tried to dissuade me from this, and a gentleman of some celebrity and of great talent made use of these words: “If I

had discovered this ingenious idea I would esteem myself happy to leave it to my contemporaries as a souvenir of my passage on this earth." I replied, if your name was not already surrounded with glory I would propose that you add yours to mine. You have witnessed my trials, disappointments and hopes, and have not only consoled me at times but encouraged me to try again, and this share is only your right. He refused this offer and said if I would sell my apparatus he would buy one. Two days after I sent him one, begging him to accept it, being the only one that has left the Gallinoculture Institute, and instead of sending it to his country seat he has it for exhibition, and takes great pleasure in showing it to his friends. I will not divulge his name—not wishing to follow in the steps of a great number of venders who fill their prospectuses with honorable names it is true, but who, having no interest in the affair, and far from being satisfied with the merchandise sent them, perhaps are only to be pitied in having just cause of complaint. A good thing recommends itself, and there is no occasion to use any humbug to make it sell, and I wish it particularly understood that I desire the welfare of my friends and neighbors, the farmers of these United States, and work as willingly for their benefit as my profit, and any reasonable person can clearly see that the profits I derive from this book will never begin to pay me for my time, money or labor bestowed on this patent, but expect a great deal from the interest the public will take in a business so simple and so interesting, and offering such good returns for the time and attention bestowed upon it, and especially when a thing is really good the inventor generally begins to turn it to his own profit. But such is not my present

desire. What I have done at my establishment with a great many of these apparatuses is to hatch and raise poultry of every kind—chickens, turkeys, ducks and Guinea fowls, and one reason why I have not delivered the machines to the public sooner, is that, as I before stated, I would not flood the market, and to a certain extent, put an end to the demand for poultry and eggs; but now, from the reports and statistics received on this subject, I happily find myself deceived, and find that, notwithstanding the quantity raised, buyers at a fair price will always be found.

#### The Value of the Eggs.

In a work on poultry I find that in New York and Boston alone were sold \$6,000,000 worth of poultry, which exceeds the commercial value of all the swine and half the value of all the sheep, the entire value of the neat cattle, and over four times the total value of the horses and mules. One large hotel in Boston uses an average of one hundred dozen of eggs daily, and another in Philadelphia consumes one hundred and fifty dozen daily. The *New York Evening Post* subsequently set down the value of eggs and poultry at the enormous sum of \$265,000,000.

It is easy to understand that from such an enormous business there must be a great profit to those who busy themselves in the poultry business, and if it were possible for me to get at the daily sales, and of which no account is taken, I am snre we should arrive at wonderful and fabulous figures; but although these United States are so rich in grain, mineral, lumber, and the different commercial productions, the first among which may be placed the raising of cattle, etc., yet they are obliged to send to Europe for a part of the

necessary quantity of eggs to meet the demand, a thing almost impossible to believe, yet it is unfortunately but too true, and I could hardly believe it, until I had received it from the Hon. Ed. Youngs, Chief of the Bureau of the Government Statistics at Washington—several reports, which, unfortunately, are too sparsely scattered through the States—and one of these reports shows me that there was imported into the United States during a period of eleven months in 1872, 5,025,958 dozens of eggs, being worth \$688,796, and during the same time in 1873, 5,467,264 dozens, and worth \$732,234. This increase is again repeated in previous years, not necessary to enumerate, for it would make these statistics wearisome.

So it can be easily seen that there is no danger of overstocking the markets, and I firmly believe that the consumers would rather have their eggs fresh than coming from Europe, as the voyage would not improve their flavor. After having read these figures, one can fancy the astonishment of my friends, the readers, that so lucrative a business is not more generally followed and better managed. Why poultry does not take its place among other industries and occupy that rank which it ought to among commercial affairs is, that the thing is too simple; and if I was to tell a father with two sons to teach them a trade of some sort, he would very likely reply they may be doctors or lawyers, and if I was to ask him the question: "Have you any fortune? or, have your sons any disposition for those professions? he would reply: "Not much; and I don't know if they are so inclined;" and suppose I hazarded the advice: "Have them taught the art of raising poultry," I should make that man my enemy, and he might ask me if I took him for a madman.



Don't get angry, my friend, I might justly say, for it is not every one who can raise poultry with profit. Generally every farmer raises some poultry, and his wife and children attend to this little affair; he must go to the field and tend his corn, etc.; talk to him of these crops, it is all right; he may have a large barn to hold his crops, while he will have some old shed, dirty, etc., for his poultry, and they must hunt for their living, or at best, are only fed once a day. If you should visit any of the farmers, how seldom do you see a pail of water for the fowls? No; the thing is very rare, and seldom the owner will spend a cent to build a fowl house; he would sooner put his money in the bank. Some will invest in railroad bonds that traverse the wilds of this vast country, and are fifty years before they pay any interest. Is it not so? While on the other hand his poultry might bring him in two hundred per cent.

Poultry has always been a source of revenue to the French people, as the following figures will prove: In France there are about 40,000,000 hens valued at \$20,000,000. One-fifth are marketed yearly for the table, bringing about \$4,000,000; the annual production of chickens, 80,000,000, worth in the city markets \$24,000,000, and \$2,000,000 are added for the extra value of capons and fatted hens. The production of eggs is estimated at 40,000,000, making the total value of eggs, chickens, capons and hens annually sold, about \$80,000,000, or \$2 22 to every man, woman and child in France. The power to make much out of little, and to live frugally on small means and with limited resources to fall back upon, is the distinguishing trait of the French people and one well worth emulating. The eggs imported from France to England in 1874 repre-

sented a value of \$1,200,000, and from Belgium \$300,000.

The New York *Herald* was the first newspaper that published the particulars of my discovery, I was overwhelmed with letters and visitors. Several Agricultural Societies invited me to their fairs, and accordingly I attended Queens County, Suffolk County, Saratoga, Albany, American Institute, and New York State fair at Rochester, where the crowd of people appeared astonished and very much interested. At each of these exhibitions I had six apparatuses in operation, consequently I received a great many compliments on both my Incubator and the Mother, and I was also asked to give lectures on my system, which I was obliged to decline owing to my inability to speak English. The principal journals sent me their reporters who gave long and minute descriptions of my system, resulting in my being obliged to give increased numbers of permits to visit my establishment. It soon became very inconvenient to be incommoded every day by visitors, even the Sabbath not being always respected; so I was obliged to strictly limit the time of exhibiting my apparatus. During the Centennial it will be in the Agricultural Hall building, Column C. After the Centennial I propose to have it on exhibition in New York. Persons interested in this can send me their address at my Box, 5470, General Post Office, New York, and I will send them an invitation. I also sent invitations to all the fancy breeders, about 2,700 in number, many of them coming over 200 miles to see me. I give in my circular several good extracts taken from long and interesting articles published by several newspapers most competent to judge of the merits of my invention. These articles proved very interesting

to the public, if I am to judge from the thousands of letters politeness required me to answer, and it would require a book ten times as large as this to answer all the questions that were asked in these communications, and hence I am under the necessity of dilating upon many matters which to some of my readers may appear trivial. The information I have sought to convey will, I trust, be eminently practical though unadorned by any literary embellishment.

I think it will not be long before this state of things will change, for I find every day that the hatching and raising of poultry is receiving serious ameliorations. Already many people have adopted my system, not only in the United States, but also in Europe, from where I get orders. The New York *Sun* of the 3rd of July 1876, had a long editorial in reference to artificial incubations, and mentioned a gentleman in New Jersey who has invested \$60,000 in the poultry business. The time is not very far distant when the capitalists will seek to invest their funds in this business, the only one where there are no risks to run. Our farmers also will learn to employ their time in Winter I trust, and will find more than enough profit in the sale of their Spring chickens to pay for the manure they will require in the culture of their fields for the ensuing year, and which I think they will allow is sufficient remuneration for the trouble they may have taken. The time will come when we shall see signs in all the cities, "Chicken Manufactory," and every family who has a house will raise its own poultry the same as it now makes its bread, butter and cheese. I know of a good many countrymen, who, I am sure will not be sorry to give up his pork and beef.

Many of my readers may be astonished that the farmers have not thought of using manure for hatching out young chickens, since nearly 100 years have passed since Reaumur promulgated his discoveries to the world. *Helas!* Yes, it is true, but then you know it was such a simple thing and so easy to do that no one would bother with it, and especially as no one could be found to puff it, and nothing to be made in giving it the publicity it deserved, whilst a machine with lamps (there was some chance of making a business of it with enormous profit for the maker) received its due amount of brag.

Chance, however, is sometimes the origin of many things, and now and then clears away the clouds that lead to fortune. I had just finished my experiments when I read in the *Commercial Advertiser* of New York, of the 25th of June, 1874, the following :

#### ARTIFICIAL INCUBATION.

“A lady residing near the Sisters’ Hospital keeps a half dozen or more hens, and has been astonished at the strange manner in which a nest full of eggs was hatched. A quantity of manure had been thrown from the stable, and yesterday the children heard young chickens in this pile. They at once called the attention of their mother to the fact, who, to solve the mystery, directed that the heap be pulled down. When this was done, a short distance from the surface a cavity was discovered in which were nine little chicks. The hen had managed to make her nest in the heap, and after laying eleven eggs, the opening had been closed by the stablemen piling on more of the cleanings from the stable. The warmth generated in the heap had incubated the eggs, and nine of the eleven hatched out. This may be a discovery which some one may turn to account.”—*Paterson Guardian*.



## The Inventor.

I sincerely hope that all those who have fowls will not hesitate to hatch some eggs in manure; and as I am certain they will derive a handsome profit from doing so. Before concluding this little work I ask permission to give the biography of the Hon. M. de Reaumur, who was the first to make this great discovery.

René Antoine Ferchault de Reaumur was born at La Rochelle, France, the 28th of February, 1682. After having graduated at Bourges, his fortune allowed him to pursue the study of the sciences to which his inquiring mind led him. The early part of his life was given to the useful arts, and it is to him that France owes her manufactures of steel and tin. Opaque glass was also his invention, but the work that has rendered his name immortal is called "Mémoires pour servir à l'histoire des insectes," 6 volumes, 1734-1742.

These memories reveal in each page the exact and minute details of the caterpillar, moth, butterfly, grub, fly and bee.

He was still employed on his work when he met with an accident at his estate of Brémontier, in Maine, which hastened his end, and he died October 17th, 1757. He had collected a splendid assortment of insects which he left to the Academy of Sciences, of which he was a member. Reaumur also published works upon shells, upon the artificial hatching of eggs by heat, and upon the keeping of eggs by means of greasing them.

In 1731 he constructed a thermometer, to which his name still remains.

### The Sort of Manure—How to Use It.

The manure to be used for hatching eggs or raising the young chickens must be taken from horses fed with grain, (the manure of a horse fed only on grass or hay having very little heat in it) and it ought to be several days in the manure yard, or even a month, and it might be advantageously mixed with that of the mule, which contains a great deal of heat; this is not actually necessary, but as some of my readers no doubt will have mules, especially in the South, I have thought it necessary to mention this fact.

The manure ought to be pure, that is to say, any extraneous matter such as old rags must be shaken out so that nothing but the fine straw and the dung well mixed, is used. That which has lain all the Winter in the yard and become frozen and full of snow and ice, cannot be used with success unless the sun has melted them and the heap has been turned over. That taken from the middle of the pile where it is not frozen, may of course be utilized.

For artificial incubation the manure must be handled with as much care as a skillful gardener uses in making a hot bed for his plants, and the building best suited to place the apparatus in is one in which the air circulates freely, and without a boarded floor; the temperature ought to be as near equal as possible, a building covered with glass being consequently unsuitable, that is to say that when a heap of manure is placed in such a building, the sun shining on it increases the heat considerably, while at night the temperature is lowered several degrees, thus causing endless trouble in regulating it. This difficulty I experienced at the Albany Fair, where the Agricultural Society placed at my dispo-

sal their splendid Floral Hall, built entirely of glass, but I found the heat 120 deg. during the day, and hence it became no easy matter to maintain my apparatus at the desired temperature. The Society therefore erected a special building into which I removed my apparatus, this considerate act of kindness relieving me of all further anxiety in this direction. One must therefore have as plain a building as possible, for no other heat is required than that derived from the heap of manure, and that is even more than sufficient, for it will retain its temperature for 40 or 50 days without varying a great deal, and the reader, who wishes to try my system, can place in the middle of such a building a heap of manure, six feet square, taking the precaution of forking it over carefully and handling it as before mentioned, being careful not to tread on the manure. It ought to be packed closely, but not trodden down, and when the heap is 18 inches deep the hatching apparatus is placed in the middle; a barrel or a box of any description will answer, but the wood must not be too thick (a flour barrel is as good a thing as any) and there must be a cover on it and a system of ventilation arranged to regulate the heat, after which it must be carefully covered with manure to make the heap square. After two days one ought to have about 120 deg. of heat, but it would be imprudent to place the eggs in the receptacle or box with which he wishes to make the experiment either of hatching or rearing the chicks, but care must be taken to diminish the heat to 100 deg. or 102 deg.; then the eggs may be placed in it and kept at 102 to 105 degs., care being taken to take them out every day to cool, and to exclude frost from the building, for the sudden change from hot to cold would kill the bird in the shell, but still they must

have air, for air is the life of the chick, and consequently if the raiser finds the hatch amounts to only five or six out of thirteen or sixteen eggs placed under the setting hen, the fault is generally from the close setting of the hen, and this malady is such that it frequently happens they die on the nest.

It is therefore necessary that every one who makes a business of poultry raising should take the setting hen off her nest and feed her or turn the eggs. The feeding should not take longer than 20 minutes. It being proved that air is indispensable, one must therefore give it to the egg while in process of hatching, the same as if it were covered by the hen. Artificial hatching is only imitating nature, and therefore it is important that whatever nature requires must be imitated in the minutest details, no matter how simple it appears, for often on what appears to be but a trifle, success depends. I cannot too strongly recommend those who make a business of poultry, to entrust to only *one* person, and that a reliable one, the management of the Incubator as well as the care of the poultry. No other business more imperatively demands the services of an employee in whom implicit confidence can be placed. During my residence in London I have frequently known capitalists engaged in the raising of poultry. I visited one fine establishment and refused the management of it because it was too difficult to oversee the hands employed, and after spending more than \$200,000 the stockholders withdrew. I therefore say to all those who wish to engage in the poultry business that they ought especially to work themselves, if not, success is impossible, for there are a hundred indispensable points, the non-observance of which will inevitably entail failure.

### The Best Breed.

I have frequently been asked what breed of hens is the best? This question is very difficult to answer from the fact that all depends upon the purpose for which they are kept, whether for profit or pleasure. To those who keep them only for pleasure I do not wish to give any advice, as taste and color are a mere matter of fancy, but to those who wish to make money out of them I would say that in a warm climate and where eggs are the main object, I would prefer the Leghorns as they are good layers but bad setters, and even to those who wish to use incubators, the eggs of these hens give chickens difficult to fatten, and they never weigh enough, and as poultry is sold by weight there is nothing to be made by them; but if on the contrary it is desired to market them, the White Bramah or Buff Cochins should be selected, which give nice chickens, easily raised and readily fattened. There are certainly other excellent varieties, but the two that I have recommended, are my choice, and I only state what my long experience has proved. I have had some of every desirable sort, and I am certain all the raisers of poultry are of my opinion.

One of the most essential points is to feed hens with the least possible expense, especially where a large number is kept; this is a very important point, and the poultry raiser will do well to keep it steadily in view. The farmer who has 50 or 60 hens is satisfied to throw them a few handfuls of corn every day, but when one makes a business of it, it becomes a much more serious affair. I cannot too strongly recommend as food, the refuse from the hotel kitchens for laying hens, but it should never be given to the young chickens, there be-



ing nothing so bad as meat for them. I was foolish enough to follow the advice in a contrary direction, given in a work, the name of which I withhold out of politeness, but I paid dearly for it in the loss of an innumerable quantity of chickens. Meat does not digest quickly enough and cannot find a passage as quickly as meal; the consequence is, that after a few days the chickens die. This great mortality caused me to make many researches in other books; finally I wrote to several newspapers in Europe, and one of them sent me the following:

#### Diseased Feet in Chickens.

Under the above heading we find in the *London Fancier's Gazette* of Nov. 6, a communication from M. Leno, an old and somewhat famous breeder of chickens, in which he says:

“During the last twenty-six years I have been solicited by near neighbors to unravel, if possible, the mystery of diseased feet in chickens, which included young turkeys, pheasants and poultry. I found the toes of many completely eaten off, some crumpled up with sores, others with toes turned under the foot, and of course many deaths, as they could scarce move about. I made the most careful inquiries of the several individuals as to the food given to them, and in every case I found a large quantity of animal food was being used. I ordered the meat to be discontinued at once, the result of which was that not a single bird fell with the disease that had not been fed with the meat, proving to my mind that the disease was caused through the too liberal use of animal food; and the other cases I inspected were similarly affected to mine.

My opinion, founded on long experience as regards so-called cramp in young pheasants and poultry, is that it is caused by a too bountiful supply of animal food, and not by wet ground. I know many game and

poultry rearers will believe me to be on the wrong scent; but when so-called cramp makes its appearance, reduce the quantity of animal food and note the result. I am not against the use of animal food, for I know, if judiciously and sparingly used, it is a very great help; but overdo it, and the result will prove very disastrous."

### Infectious Water for Chickens.

Several persons having poultry keep pigeons also. This practice is prejudicial to the hens, etc., and as it is imprudent not to take every precaution, I will quote one case. A resident of Staten Island called upon me and requested me to pay a visit to his poultry yard; all his stock, he said, were sick, and the mortality very great. I felt it to be my duty to assist him with my experience, so I went to his house, which I must say was kept in anything but a proper manner, and I found he had seven or eight hundred hens of different kinds, and very badly chosen were they. After having examined thirty or forty of them I told this unfortunate breeder to change the water in the drinking fountains. He took the water from a cistern and I asked him where the water came from that filled it, and he said from the roof of the hen house. Now as there were more than one hundred pigeons on it continually, it was apparent that every shower of rain washed their manure into this cistern, and that the water he gave his fowls contained a strong acid and was acting on them as a slow poison. I ordered a purgative, pure water and to change the food, and the following week the sickness had disappeared; therefore if you keep pigeons give the fowls water from a well.

Many persons believe every egg contains a chick; those who do so, labor under a great mistake. If I wish to offer a friend a pure egg I would give him one

from a hen fed on corn and from a yard where no roosters are kept; but if on the contrary I wish to hatch them, I would take them from one where there were several and which were fed on hotel refuse, especially in the Winter season, for then only a few are fit for hatching, for two reasons. Ist. At that season nature is sluggish. 2nd. That the hens remain nearly all day on the roost and the roosters have not the same chance as when they are running in the yard. Every one who has the requisite knowledge to raise poultry with profit, takes the precaution to double the number of the roosters that run with their hens in winter, and every day to drive the hens out of the house to pass a few hours in a yard or piece of ground near the poultry house, covered in with glass so that the sun may enter. In ordinary calculations twice two makes four, except in the poultry business, when nearly always twice two only make three; that is to say, any one having 100 hens will find they give them a profit, but if they have 200 they will find generally a loss unless well posted in this matter. In keeping hens there is a right way and a wrong one, and very few know the right one; the art of raising poultry with profit depends on a number of little things, essential points, which put together, lead the raiser either to ruin or a fortune, and I hope that my experience will be of use to others, for I firmly believe few are disposed to make the sacrifice that I have, and the reader will find in this little book all that I have been able to collect in the way of valuable information from the principal breeders and authors, but I don't think any of them have been able to discover a way to hinder the hen from sitting, at least. With my system they sit only a few days, and this is the rational of the process.

### Hens Sitting only Six Days.

Having always eggs in my apparatus, directly a hen wishes to sit I give her those taken from the apparatus and which in consequence have passed thirteen or fifteen days in incubation by the heat of the manure, therefore the hen has only to finish the hatching already begun. I then leave her ten days with the young chickens. After this time she is put back again in the poultry house ; hence, instead of losing three months of her laying she only loses fifteen days, and for those who have a great many hens this is of great importance. The chickens are then placed in the raising department where there are hundreds of young ones of every age. To lead a regiment like this to the fields, I placed in the poultry house a mother selected for the purpose ; she guarded all my ducklings, chickens, young turkeys, every variety of breed and color, and nothing was more pleasing than to see her, a fine White Bramah walking about with four or five hundred little ones, and when she rested one might see her surrounded like a general with his staff, and at night she stretched her wings, so ambitious was she to try and cover them all ; but the greater number went of themselves under the artificial mothers. I therefore advise all those who raise poultry artificially to follow this plan, and if unable to get so good a hen, when the chickens are two days in the artificial mother, to place two or three young chickens a little older with them, and whether they come from the mother or the artificial one, these will act as school-masters, and will teach them to eat and drink and run in the yard. One ought never to let a hen and her young ones, or those out of the artificial mother, go out until the sun has dried up the dew with which the grass

is covered every morning. Another point to which I would call attention, is the method of discovering whether an egg is fertilized or not; people generally take the egg to a candle either before or after it is placed under the hen; some place it in a bowl of water and say that if it sinks it is impregnated, and if it swims, it is not. The surest way is this :

#### How to tell whether Eggs are Fertilized.

After the eggs have been hatching five or six days either under a hen or in an incubator, take a lamp into a darkened room and hold the egg before the light; if it is fertilized it will show a small black speck, and in turning the egg round with the fingers you will perceive that it moves. (In about twelve hours can be discerned the commencement of organization in the gelatinous spot called the germ, which is always in the upper part of the yolk whatever the position of the egg. At the end of the first day the head and the back bone can be distinguished; at the end of the second the vertebral and the heart; the third contributes to the development of the heart and the breast; the fourth to that of the eyes and liver; on the fifth the stomach and kidneys are discernible; the sixth the lungs and skin; the seventh the intestines and the beak; the eighth the bladder of the gall and the verticles of the brain; the ninth the wings and legs, and on the tenth day all the parts which are necessary to complete the bird are in their place, and are developed and attain during the following days their proper size.) If on the contrary this speck is stationary, that is to say stuck to the shell, the chick is dead; all eggs that have not this black speck are clear and still good to eat. You can nevertheless assure yourself of this fact by breaking two



eggs into a cup; that with the black speck will show a little blood, while that without it will not have this. This black speck will be much larger when the roosters are in good condition. It often happens that eggs are left in the nests of the hens and consequently are sat upon several days, and if these eggs are kept a day or two before being placed to hatch, this interval is sufficient to kill the chick which has already begun to form; therefore the eggs ought to be gathered twice a day from all the nests, care being taken not to shake them. Twenty days after being laid an egg cannot be put to hatch with any certainty of success. The duration of time is the same for hatching eggs in an incubator as under the hen, thus—hens' eggs take 21 days, ducks 28, turkeys 29, Guinea hens 27, pea hens 30, and geese 32. Fresh eggs are generally one or two days earlier.

#### Twenty Dollars Profit from each Hen.

A savant has said that to eat an egg is like eating an unripe fruit, and I am going to try and demonstrate what truth there is in his reasoning. Let us take for example the hen; she lays, we will say, on an average, 130 eggs annually; she sits on, say 12, and hatches out of this number, seven or eight chickens; there remains 118 which are not sat upon and in consequence have not become flesh to eat; if the raiser has sold these eggs at two cents each, it is because he did not know how to convert them into chickens which could be sold at from 50 to 60 cents each. Now let us see the difference as a business transaction: If all the eggs were turned into chickens instead of being sold as eggs at two cents each, it being understood that the hen sat upon 12 eggs, we must only place the figures upon

those that were turned into poultry ; thus 118 eggs at two cents each give \$2 36. Now let us suppose them hatched out by means of an incubator ; there would be about 100 of them that would reach the market ; allow for cost of feeding them, \$10 ; one cannot of course expect that they would all live so we will allow 10 per cent. for deaths, etc., there still would remain 90 chickens at 50 cts. each, making \$45 00, from which sum we must deduct their value as eggs, \$2 36, food \$10, and we will say for labor, etc., another \$10 00, making a total of \$22 36 to be deducted, leaving over \$20 00 that a hen might be made to make as profit. The reader may perhaps be surprised in looking over these figures, and perhaps more astonished that we have not a larger established poultry business ; but to arrive at this it will take a longer time than one would suppose. For more than twenty-five years meat might have been imported into England, and yet it is only this year that a good method of preservation has been discovered. I really hope that in the next century they will call us savages for having compelled a hen to sit 21 days on her eggs just to give her 102 deg. of heat ; it certainly would be more humane and more advantageous for the raiser to let her lay eggs.

### My Apparatus.

I would have liked in this work to have given some details about my apparatus, that is to say, its proportions and dimensions, how it is made, how to place the eggs in it, how it is managed, and how the incubator is changed into an artificial mother that is able to cover the chicks one day old as well as those of a month, which are naturally larger, but I have not done so, because with each apparatus I send out a guide which

fully explains all this, and I am sure that every conscientious reader will understand that for the price at which this book is sold I cannot give every one the facility to make an apparatus to save the few dollars that he would have to pay me for my patent, while I have passed several years and expended a fortune to perfect the invention. When I allowed every one to see them there were some unscrupulous persons, who after coming to see me two or three times and causing me much annoyance and loss of time, had apparatuses made very nearly like mine. Dishonest persons are found everywhere, but so are honest ones, and my thanks are due to one of the latter who informed me that his neighbor had infringed my patent right, and my lawyers made this man pay dearly for his audacity. A Mr. I. of P., after having written several letters to me, asked where he could see an apparatus in the neighborhood; without suspecting his design I gave him the address of one person; he went twice to see him and caused him a great deal of trouble, as he had some eggs hatching at the time; by continually opening the cover he deranged the temperature; this person wrote to tell me not to send him any more curious people as it was very disagreeable to him and contrary to my interests, as this visitor also made an apparatus after the model of the one he saw in operation. This is very discouraging and necessitates great vigilance in guarding my own interests. I have no desire to prevent any intelligent man from reaping the benefits of my discovery; I shall be only too happy to assist him, providing he remembers that there are laws that protect patent rights. The number of inventors who have died poor is considerable, and I do not propose to become an addition thereto. I am not acquainted with

any one connected with the newspapers or in any society, neither am I indebted to any one for the awards I have received in appreciation of my labors, and if the papers have devoted whole columns to my discovery it is simply because it was interesting to their readers and not on any account because it was intended to oblige me. All the intelligent readers will see in scanning the lists of the papers which have commented on my apparatus, that they are journals whose managing staff of editors it is impossible unduly to influence or to buy.

#### To the Ladies.

The husband generally, is supposed to be the bread earner of the family, and I now call your attention seriously to the following :

Every mother is more or less troubled for the future welfare of their families, and I would not wish them to lose sight of this fact. I have known many families who were very comfortable during their husband's life, but at his death are placed in straitened circumstances, if not in actual poverty. What business can the mother follow if she has been the wife of a merchant's clerk and able to keep her own servants, but the requirements of position have prevented her from saving anything, and whenever misfortune comes it is necessary to have the means of living and educating the children? How much better is it to anticipate such a crisis and to begin as soon as possible to have a certain income? *Engage in the poultry business*, and when you have sold the first \$500 worth your fortune is made; for should misfortune arrive all that you have to do is to increase the number of your hens.

However grievous the loss of the husband may be,

and whenever it may happen, you may be sure he would bless you for securing the welfare of his children and driving that gaunt dog, poverty, from the door; and even should not death, but commercial panics, which are a most frequent cause of misery, cause a change of living, *your* poultry will supply all the necessaries of life, and I should be happy if I knew that this advice had been followed.

Already has the example been set in Europe by several ladies, who certainly would never require assistance from the raising of poultry, and yet are not ashamed to acknowledge that they do receive a large profit from this pursuit, and have great pleasure and satisfaction in devoting their time and intelligence to it.

Her Majesty, Queen Victoria, of England, has a splendid poultry house and spends numerous days in studying, with great attention, the different remedies for ameliorating the condition of poultry, and we are indebted to her for the system of feeding which she has pursued for young turkeys, so as to avoid the great mortality that takes place when they get the red. This receipt has been regarded by those who are engaged in turkey raising, as a very superior remedy. But a long time before some people had presented to her Majesty the discovery of this receipt, we had made use of it and recommended it already. Further on more explanation will be found.

We find also that the example set by Queen Victoria has been followed in France by the Countess d'Albertas and the lovely Marchioness Bugean de la Tour de Pin, Antonie Passy, Cora Millet, Marie la Barriere de St. Polen Garret, etc. Madame la Baronne de Leinas, widow of an officer without fortune, and six children, became immensely wealthy in raising poultry, and al-



ready two of her accomplished daughters are married to men of the first rank and position. The fortune of Madame de Leinas is daily and steadily increasing from this source.

#### Amount of Profit to be Made by 12 Hens.

I have not wished by misrepresentation to sell at a high price a complicated incubator, or one that is often too difficult and dangerous for a great number of persons to direct. Many persons, especially ladies, have asked me what success and profit they might hope to attain with twelve hens and one of my apparatuses, and my reply has been, although somewhat difficult to assume as circumstances always alter cases, and many things are to be taken into consideration, yet the following result could easily be attained: If the hens are two years old they will give altogether in a year about 1,200 eggs, allowing 10 per cent. for clear eggs (eggs not fertile) the remaining 1,080, if we only allow a success of 800 hatched, and deducting 25 per cent. for deaths and accidents, there would remain to be sold as Spring chickens 600, which, if sold direct to the consumer, ought to bring at least \$500, expenses deducted. Is not this money very easily and pleasantly earned?

If you think we have exaggerated in this statement we will allow you to reduce our figures, and tell us is there any lawful business that will pay so well as the poultry?

Anyhow, we may not be of sufficient weight to plead this cause, but remember, that all those who have written or spoken on this subject, and in favor of poultry, have sufficiently demonstrated the profit of it. On referring to Mr. Burnham's new poultry book (page 77),

I find the following account of Mr. De Sora's establishment: The quantity of eggs during the last year averaged 50,000 dozen weekly, which, with the sales made of his yearly chickens, yielded him \$280,000 gross. His expenses, all told, were some \$145,000, leaving him a profit of \$135,000 for the year.

### How to Establish a Poultry Yard with \$1,000 Capital.

Is it wise to employ a large capital in the business? No, and I should severely blame any one who did it; hence, to those desirous of undertaking the poultry business, I would impress upon them the wisdom of limiting their investment to \$1,000 or \$1,200, and this amount I would dispose of as follows:

To rent of farm or a country house for six months.....	\$300 00
“ building a hen house.....	200 00
“ purchase of 100 hens, etc.....	150 00
“ “ “ 10 roosters.....	40 00
“ apparatus of 1000 eggs.....	207 50
“ carting and placing manure.....	20 00
“ grain for feed.....	50 00
“ different utensils.....	10 00
“ balance, cash in hand.....	222 50
Total.....	\$1,200 00

One hundred hens would give 40 to 60 eggs per day, and as it takes 21 days for incubation, the result is that a set of apparatuses of 1000 eggs would leave an apparatus of 100 eggs free every two days. It may happen that the hens do not lay regularly the number of eggs given above to keep the incubator fully employed; in that case the raiser could utilize three or four apparatuses as artificial mothers, which in truth would be ne-

cessary after the first hatching; thus I would recommend for a set of 1000 eggs, six as incubators and four as mothers; for a set of 500 eggs, three as incubators and two as mothers. This facility of converting the apparatus either into an incubator or mother, meets the wants of the breeder according to the season. Fancy breeders will save a great deal of money if in the hatching season they have an apparatus ready. Those who do not wish to let their hens sit 21 days might give them eggs that have been several days in the incubator, which is done after the eggs have been cooled. As a mother, the apparatus will render important service. Each time that a hen lets her chicks get cold or wet the apparatus would give them more comfort than a hen could by any possibility. The "Mother" is scientifically arranged so that the chicks cannot smother themselves, and in it they get every part of their bodies warmed.

# PRACTICAL RULES

NECESSARY FOR

**Making Money Acquired by Twenty Years Experience.**

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A few rules applied to the management of laying hens will insure a full supply of eggs throughout the year. But the small number of rules and their simplicity makes it imperative that they be understood and applied.

Hens require some care and attention. Unless their owner is willing to see to his hens he had better not have them.

1. Hens must have comfortable and convenient quarters in winter. Most people keep too many hens for the accommodations they furnish them. Hens are naturally active animals, and when confined in winter quarters require plenty of room. Fifty hens and five roosters, of all ordinary breeds, should have a house 24x16 in the clear, and 10 feet high in the clear. This will allow about 70 cubic feet of space for each fowl, which is little enough. No class of animals is so susceptible to the ill effects of crowding as the feathered class. Hens will not lay when too much crowded, nor

will they remain healthy long if too many are kept together. The building should be well ventilated by chimney without admitting any gusts or draughts of wind. It should face the south, if possible, and have several windows in front. Where the weather gets very cold it will be well to have the whole front glazed and have a stove inside. Hens cannot lay unless they are kept comfortable, and when the temperature falls to 10 deg., or lower, they require a little artificial heat. This heat must be carefully managed; a little fire only should be kept, and it should be as steady as possible. Uniformity of temperature is what is wanted. The houses must be kept clean and neat. The floors should be swept every day, and be dusted over with dry earth, ashes, chaff, short straw, or litter of any kind that can be easily removed. Every hen house should have plenty of suitable roosts. There should be a shallow box or bin in one corner—a sunny corner is best—containing dry earth, ashes, chip-dirt, or a mixture of them, for the hens to wallow in. They enjoy their bath in winter as much as in summer. Where oyster shells cannot be easily procured, there should be a box containing gravel within reach of the fowls. A sufficient number of nest-boxes with glass nest eggs in them, several shallow vessels for water, and a feed trough will complete the necessary outfit for the hen house. A very important adjunct to the hen house is an open shed where the fowls can stay at pleasure when the weather is not too cold. Such a shed should protect the hens from the prevailing winds.

2. When the house with all the necessary fixtures is ready for the stock, the next consideration is to have the right breed. Almost any breed will do tolerably well with proper usage; but there is a great difference



in the laying qualities of fowls. Under the same conditions, some breeds will lay twice or thrice as many eggs in a given time as others. As a rule, the smaller breeds are the best layers; and of the smaller breeds the Leghorns are preferable for several reasons: They lay a full medium-sized egg, are enormous layers, are docile and easily restrained, and have a yellow skin. Of the large breeds the Brahmas are the best layers. A cross of Leghorn rooster on light Brahma hens will be satisfactory. When one wishes to make eggs a specialty, only pullets should be kept for the purpose, and the earlier they are hatched the better. Don't keep hens over more than one winter, unless for some good reason.

3. When the proper accommodations are furnished and the proper breeds selected, the next and most important step is the feeding. Egg-production is hard work for hens, especially for those that are large layers. An egg is a highly organized and complex substance. It is for the most part composed of albuminous matters and oils and fats, together with fibrin, phosphorus, sulphur, iron, etc., in small but appreciable quantities. An egg is a potential chicken. The hatching process adds nothing to the contents of the egg, but only develops the chick from the substance already there. Thus, in an egg there is the material for bones, flesh, brain, nerves, feathers, and all the organs of life. Hence egg-production, considered physiologically, is an exhaustive process, when hens lay regularly and constantly. Furthermore, the shells of eggs are composed almost exclusively of carbonate of lime. When a hen lays freely she requires a supply of the raw material from which to secrete this carbonate, and it should be furnished to her at all times. Is it any

wonder, then, that hens, as they are ordinarily kept, do not lay in winter? Their food must contain the materials from which they secrete eggs, or they cannot lay. Probably nine-tenths of all the poultry in the country is fed on raw, whole corn. We know that corn contains all the elementary substances that eggs do, but in very much smaller quantities, bulk for bulk, and when a hen has no other food she cannot eat enough to afford the materials for an egg a day, or every other day. She will get fat and lazy, but cannot lay. *Hence the necessity for a variety of diet.* In summer, when at liberty, the hens can find the variety of food that suits them, and generally lay well without much care; but in winter they can get only what is given them, and generally they do not lay. But if we know the wants of the hens, and supply them, we may have as many eggs in winter as in summer. Poultry are large consumers of grass when they can get it, and to keep in good health they must have it, or its equivalent, in winter. Cabbages or boiled vegetables of any kind are good substitutes. Grass, if cut green and carefully dried in the shade, when cut fine and steeped a while in hot water, is nearly as good as green grass, and is eagerly eaten in winter. Besides grass, or its equivalent, we must give a supply of lime. Oyster shells, when they can be had, are the most convenient; when they cannot be had, ordinary stone lime from the kilns will do as well, after it has been slaked, but gravel must be supplied with the latter form of lime. Domestic poultry must be classed among the omnivorous animals. There is nothing that can be eaten that a hen will not eat if she can have it—any kinds of odds and ends therefore will not come amiss—and much refuse matter, that would otherwise be wasted, may thus be turned to good ac-

count. Hens are very large consumers in proportion to their size, and scanty feeding in winter will not do. They should have as much as they want to eat and as often as they want it, especially when they are laying well. They should be supplied with animal food in some form—offal meat, cracklings, chandler's scraps, sour thick milk, etc., will give the necessary supply.

It thus appears that an egg is a complex substance ; that it is composed of the highest products of secretion ; that egg-production is an exhaustive process to the hen ; that to produce them in large quantities we must supply the proper variety of diet, and plenty of it ; and to keep up the health and strength of the hens they must have green food and animal food in winter.

I have made out a bill of fare for my hens, based on physiological principles, keeping in view the composition of the egg itself and the health and comfort of the hen. I will not occupy space in showing why this is in accordance with theoretical principles or analytic results. I do not claim that it is the best or the only way to feed hens, but it has answered so well with me that I do not know how to alter it for the better.

This is how I feed : Their morning feed consists of cracked (very coarsely ground) corn, wheat, oats, or corn and wheat bran, *scalded*, and fed warm in a trough. This is given them as soon as they can see to eat. As soon as they are fed I break up a pound of oyster shells for 35 heads. Then they have fresh water from the pump as much as they will drink. Fowls often suffer for water in winter. After their breakfast I give them about a pound of scraps or cracklings from the chandler's shop. This is broken in pieces with a hatchet. It furnishes animal food and is cheap ; I give two or three quarts of thick, sour

milk every day, with a handful or two of wheat bran stirred into it. Besides this, I feed some cabbage, or turnips, or potatoes, every day. At noon they have a little oats, or corn, as the case may be, and fresh water again, in clean vessels: At night, before roosting time, they get as much whole corn as they will eat, and fresh water again. I make it a rule to give as much as they will eat. A hungry hen will not be a laying hen.

The greatest regularity should be observed in feeding and caring for flocks. Have a regular time for all the different operations, and the hens will become as methodical as their keepers. Eggs should be gathered punctually twice a day, or oftener in very cold weather. The morning feed should not be made too wet, and should not be given too hot. In very cold weather it is advisable to put a little cayenne pepper and a sprinkle of salt in their morning food. Besides the above enumerated articles, the hens should have all the scraps from the table. They are very fond of them, and will turn them to better account than cats or dogs will.

Let us recapitulate. Give your hens a reasonable share of your attention; furnish suitable accommodations; get and keep the right breed; save only pullets, the earliest hatch, for laying. Furnish as great a variety of diet as possible, and feed as much as they will eat. Give green food and animal food of some sort in winter. Keep the hens quiet and comfortable; don't allow them to be worried or frightened. Water is as important as food, and should be kept clean and fresh. These rules, intelligently applied, will secure an abundant supply of eggs at all times of the year.

### Care of Sitting Hens.

Ought hens to sit by themselves and apart from other sitters? This question is one, to be answered rather from the standpoint of the convenience of the breeder than from any other. No doubt hens, if left to suit themselves, will choose a nest in some solitary corner; but the habit is not one that is acquired by reason of any advantage to the constitution of the chicken, but from a dread of enemies. In the case of quiet stock, such as the Brahma, there is no need of separating the sitters, if at all inconvenient for the attendant.

On the other hand, where many sitters are together, some extra care is necessary in arranging the nests so that every hen will know her own. The nests must be scattered widely about the apartment, for it will never be found that the hen which should occupy a nest in the upper right-hand corner of a room has deserted it for one in the lower left-hand corner. Also, if the nests look very unlike, the birds will observe the distinction. The difference between a box open at top and a barrel turned on the side, is palpable enough to the dullest sitter. In our modern fowl houses, where a love of order prevails, the nest-boxes frequently look as much alike as two peas, and in that case wisps of straw or boughs of evergreens may be fastened in the immediate vicinity of a nest to enable the occupant to know her own. This, of course, must be done before the fowl has laid her laying out, so that the features of the vicinity may become firmly fixed in her "mind," for birds, as well as men, have *minds*.

The system of allowing each sitter a separate apartment has decided advantages in many cases. It is always the best plan to follow, when the weather is warm



enough, to give each sitter a yard of her own, ten or twelve feet square to exercise in. By watching sitting hens at feed, when they have range and opportunity to follow their natural bent, it will be seen that they run around at a great rate, acting almost like mad, and seem determined to get as much exercise as possible in the short time allowed them. In this way their bowels are kept in good order. But when sitters, in order to keep laying hens from their nests, are confined in very small separate pens, they move around slowly, and instead of running and flapping their wings, they mope, and after merely satisfying their hunger, take to the nest again. Therefore, allow each sitter as large a yard as can be afforded. If you attempt the plan of separate confinement, then you will escape the evil of two hens quarreling for the same nest; layers cannot drop their eggs in a sitter's nest, and, at the same time, the incubating hens are allowed plenty of exercise.

### Helping Chickens out of the Shell.

It has been generally supposed that chicks that are shell-bound, or too weakly to get out without assistance, could not be saved, but an accidental discovery has put another face on the matter. *Keep the egg in warm water* (about 95 deg.) while the assistance is being rendered, and success may be hoped for. The shell must be cracked very gently, and the inner membrane very tenderly peeled off till the chick be at liberty, keeping all but the beak under water until nearly clear. The operation must be performed in a warm place, and tenderly, as if touching raw flesh; and it will be found that the water generally facilitates matters, liberating the membrane if glued to the chick, and enabling it to

be separated without loss of blood. The latter occurrence, nine times out of ten, is fatal ; but if the operation be completed without blood flowing, success may be anticipated and the nearly dead chick may be put by the fire in flannel, or under the hen, if a quiet, good mother—under her at night, in any case—and next day may probably be as well as the others.

### Cooked Food for Poultry.

An important question is the comparative value of raw and cooked food. That the latter is not natural is not a convincing reason, because to domestic animals the word has no application. They are in a peculiar condition in many respects, resulting from the long-continued influence of domestication. Besides, there is no objection to departing from the ordinary food of any animal, if the substitute can be shown to be as easy, or easier, of digestion. In reference to this point it must be decided by experiment.

Now, the experiment has been made over and over again. Swine have been fed with raw and with cooked corn in equal quantities, and the result, tested by weighing, is from 20 to 40 per cent. in favor of the cooked article. Some keepers are accustomed, with their fowls, to boil a part of the corn in the kernel, and they do well. However, it must be said that they soon tire of it, and cannot be induced to touch it if raw corn can be had. The food is also sometimes steamed.

However, sometimes raw food is better. The corn may be boiled upon the ear, thus saving the labor of shelling it. It is more economical to boil corn in the kernel than when ground, as there is saved not only cost of grinding, but some labor in the cooking process ; for mush must be continually stirred, while corn in the

kernel will not "burn down" if suffered to rest on a perforated plate for a few inches from the bottom of the kettle.

It is claimed by some chemists that the food value of certain articles is increased by cooking, increasing the actual amount of nutritious substances in them.

Another method of softening grains, sometimes employed, is fermentation, which turns the starch of the grain into sugar, changing it into a substance more easily digested. Brewers' grains are much given, but should be used only in alternation with whole grain, because they are too moist and purge the fowls. They are to be recommended in the rather rare cases—when costiveness is complained of.

#### Keep the Chickens Growing.

It is a mistaken policy to stint young fowls of rich food, and plenty of it, is what they need; and no danger of over-feeding, if they are growing and have their liberty. Old fowls that have their growth and are shut up, can easily be fed too much, but do not fail to feed the young ones all they will eat. A good feed of whole grain of some kind, just as late in the evening as they can see to eat it, is one of the means of making fine stock. Also give them a plentiful breakfast of soft food early in the morning. Let no food lie on the ground, or anything that will sour; it will be very likely to make the little chicks sick. A few cents worth of food, given at the proper season to a fine bird, may make several dollars difference in the price when you come to sell. It takes a certain quantity of food to keep up the waste of sustaining animal life; so every ounce of food properly digested, in addition to this actual requirement, goes to increase the size of the fowl. Re-

member this, and never neglect the growing stock. Time lost here can never be regained. Neglect the little chicks, and you will surely see the effects of the neglect in the mature fowl.

Artificial nest eggs may be prepared very simply by breaking a small hole in the round end of an ordinary egg, removing the contents and filling the shell with plaster paris, sufficiently moistened with water as to be easily poured into the shell; after it hardens, paste a piece of white paper over the hole, or the hens will peck out the plaster paris and destroy the egg. It is easily made and will last a long time. It is advisable to always have such nest eggs, and fowls will not acquire the habit of eating their eggs; hens are also less liable to wander off and hide their nests when plenty of nest eggs are placed in the nests.

#### Hens that Eat Eggs.

The best way to break hens of egg-eating is to break their necks, and re-stock with birds that have not acquired the habit. Fowls that are expert in egg-eating first attack the shell with their bill. If it is a thin shell a few strokes will break it, and the rest is an easy job. If, however, the shell is a thick one, they generally fail to break it with their beak; they then begin to scratch in the nest, and, with their feet, throw the egg against the hard side of the box until it is broken. First of all, make hens lay hard-shelled eggs, so hard that they cannot be readily broken by a hen's bill. This can be done by feeding freely with slaked lime, ground or broken bones, oyster shells, etc. To prevent breaking against the sides of the box, the nests should be high and lined upon the sides with cushions filled with hay or other soft material. Their only

chance then is that they may throw two eggs forcibly against each other. To prevent this take the nest egg away and gather the eggs several times a day. It is a good plan to leave a few China eggs near the nest for them to work at, which will make their bills so sore that they will strike the real egg with less force.

#### Evening Exercise for Yarded Fowls.

During the summer, when fowls must be shut up on account of their roaming propensities, much of the ill effects of their imprisonment may be avoided if they are let out for a short period at evening. While out they may be watched, although there is little danger of their going into the garden, and they will find enough in the grass-plots to keep them busy. Indeed, it is surprising how beneficial this time of exercise is. The fowls, knowing that they are to have a chance to get out, are much more quiet during the day, and if regularity in letting them out and shutting them up be observed, they will return to their roosts without trouble. It is possible, also, that an hour at evening is nearly as good as a whole day, as far as the health of the flock is concerned; for, if there is any special article of diet needed, they will hunt all the more diligently. It is for this reason that they will prefer the grass to the plowed land. By such an arrangement as this, large flocks can be kept in good condition, although shut up through the year.

#### Dust Bath.

By instinct all birds are taught the need of a dust or water bath for their well-being. They choose a sheltered and sunny spot of fine, dry soil, in which they open their feathers and fill them with dust, which, ap-



plied often enough and in sufficient quantities, is death to all parasites which infest the plumage or skin. As the domestic fowl is not a native of a cold climate, it becomes necessary for us to supply the deficiency which exists during our winter season. This is readily accomplished by the dust box, which every one who has fowls should provide. Fine road dust, coal ashes, sand, pulverized loam or clay even, are all very good, and with a sprinkling of flour of sulphur, constitutes as good a bath as can be desired. This should be placed in a sunny exposure of the room and kept dry and clean so that the fowls may enjoy its benefits when they choose.

When poultry is kept in a yard, it is best to dig up a small corner occasionally, to let them hunt for worms and beetles, and then sow it in oats, and corn and lettuce. They also want a dusting place. A box of ashes with sulphur intermixed is what they need for this.

### Clipping Wings.

Clipping one wing of fowls to prevent their flying is a necessary operation sometimes, but never necessarily disfiguring. It generally is, however, since the farmer's shears almost always makes a clean sweep of all the quills, and an ugly wing is the result. Besides the ugliness, there are also other disadvantages in such a sweeping operation. A sitting hen uses the outer end of her wing to retain the eggs under her in place, and those near the body protect the skin being torn by her mate's claws. The proper way is only to trim the feathers partly off with a pair of scissors, except about one inch at the end. It shows but little when the wing is closed, and does not disfigure the fowl, but lets the wind through, so as to prevent flying.

### Breeding and Mating.

Too many fanciers and farmers, otherwise earnest in their business, are very careless concerning their fowls. Interbreeding certainly degenerates—particularly when so promiscuously permitted in a flock as is common. There are the same good reasons for making choice of the best bred fowls as for making the same choice in other stock. For, while a prime breed is as easily reared, fed and housed as a poorer one, there is a decided difference in the returns in favor of the former. If properly cared for, we do not hesitate to say that fowls of superior order do yield the farmer even, the largest interest for the outlay he makes, of any other stock he keeps.

### Food for Sitting Hens.

The requirements of a sitter differ from those of other hens. By their keeping quiet and without exercise, not much is required to sustain vitality, and that should be of such a nature as to digest slowly. For this reason whole grain is preferred, and corn is thought to be much the best. Soft food of any kind is soon digested, and the hen either leaves her nest very frequently or becomes very poor. The advantage of corn over other grain is that it is more oleaginous and so likely to stimulate the production of eggs, and being hard and compact it digests more slowly than other grain. A run upon the grass is also beneficial to sitting hens. Meat should be avoided.

### Turnips for Hens.

In order that to keep fowls in the best condition, green food is always important. With free range in

warm weather, grass, etc., supplies this need, but in winter it must be furnished daily, and nothing is better than raw turnips, which can be cut open and fastened in a rack, or chopped fine and fed in a trough. They will leave cabbage and "go for" turnips every time. Asiatics seem to consume more green food than the smaller breeds. It is even surprising how much they will eat of it, if given a full supply. A mixture of turnips, apples, and onions, chopped fine, is a savory mess.

#### The Number of Hens to a Rooster.

Houdans, ten hens to one rooster; Creve-Cœurs, eight hens to one rooster; Buff Cochins, ten hens to one rooster; Gray Dorkings, ten hens to one rooster; White Leghorns, fourteen hens to one rooster; Spanish, twelve hens to one rooster; Brahmas, ten hens to one rooster; Hamburgs, fourteen hens to one rooster; Polands, twelve hens to one rooster; Game, ten hens to one rooster. With this proportion of hens to a rooster the vitality of the eggs will prove good.

#### Poultry Manure.

Poultry manure, or hen guano, is worth, if kept under cover, almost as much in price as Pacific guano, which is selling at \$60 per ton. Hen manure, on the garden or farm is worth \$50 per ton. To prepare it for use, mix it with soil, half and half; keep it till wanted. For corn, onions, and all vegetables, it is one of the best manures. No farmer, who wants to make his farm pay, should sell it for twenty cents a bushel. It is worth a dollar for his own use.

### Keeping Eggs for Winter Use.

To four gallons of boiling water add half a peck of new lime, stirring it some little time. When cold remove any hard lumps with a coarse sieve; add ten ounces of salt and three ounces of cream of tartar, and mix the whole thoroughly. The mixture is then to stand for a fortnight before using. The eggs are to be packed as closely as possible, and to be kept closely covered up. Thus treated, if put in when new laid, at nine months they will eat nearly as good as though laid only six days, though of course not like *new-laid*.

A better but a little more expensive way of preserving eggs is recommended by the French: In eight ounces of warm olive oil dissolve four ounces of bees-wax; with this mixture annoint the egg all round, using the tips of the fingers or a rag. The oil will be absorbed by the shell and the pores filled up by the wax, and if kept in a cool place, the eggs after two years will be as good as if fresh.

### Gravel for Fowls.

Granivorous fowls need the assistance of hard substances, such as stones, gravel, etc., to digest the food upon which they live. This they are able to obtain for themselves, in most localities, at all seasons except in winter, or when confined in limited quarters. At such times they must be supplied with a liberal quantity of clean, sharp gravel, or coarse sand. Young fowls of all kinds should have fine gravel or coarse sand constantly within their reach, of a size adapted to the capacity of their throats.

## How to Fatten and Dress Poultry for the Market.

Although the manner of fattening poultry may seem plain, yet there is, nevertheless, a right and a wrong way, a long and a short mode of accomplishing the object desired.

Never let poultry forage and shift for themselves for at least *ten* days before killing, for they are apt to range in the barn-yards and pick up filthy food, which permeates all through the bird, its flesh frequently becoming so tainted, that it is unfit to be eaten.

The best method for steady and regular profit, or for domestic use, is to keep them constantly in high feed from the beginning, with plenty of clean, cool water; then they are always ready for the table, with but very little extra attention, their flesh will be jucier and richer in flavor than those fattened from a low and emaciated state, always commanding quick sale, at the highest price in the market, a healthful, nourishing and restorative food.

Some "cram" their poultry before killing, to make it appear heavy; this is a most injudicious plan, as it shows at a glance the dishonest intention of the shipper to benefit himself and swindle others, in his poor effort to obtain the price of poultry, for corn; the undigested food soon enters into fermentation, and putrefaction takes place, injuring their sale a great deal more than is gained in weight. Fowls should always be allowed to remain in their coops at least twenty-four hours previous to being killed, without food, then they will keep longer, and present a better appearance.

The best food for fattening fowls, old or young, is barley meal, or mixed with equal quantities of corn meal, cooked, and fed warm (a small quantity of brick



dust in their drinking water is recommended), which will make flesh faster, and more solid, giving it a fine golden color after being dressed. Good food is positive economy.

The best mode for killing poultry, as it causes instant death without pain or disfigurement, is to suspend the birds by tying their legs firmly to a pole or heavy wire across the killing room, a convenient distance from the floor, and opening the fowl's beak, and with a sharp-pointed and narrow-bladed knife, make an incision at the back of the roof, which will divide the vertebræ and cause immediate death.

Dry-pluck the feathers and pin-feathers all off neat and clean, while *warm*, without breaking the skin; then plunge it into a kettle of very hot water, holding it there only long enough for the bird to "plump," then hang it up—turkeys and chickens by the legs, and ducks and geese by the heads. Do not remove the entrails, heads or feet. This mode gives the poultry a nice buttery, golden color, that attracts the eye of the epicure.

Pack only when thoroughly dry and cold (not frozen) in medium sized, clean boxes or barrels, in thoroughly cleaned and dusted rye straw, and to be extra nice, wrap each bird in clean, white (not printed) paper, fold the head under its body, legs stretched out, lay in the left hand corner, with its head toward the end of the box, back up, fill the first row, then commence the second in the same way, only let the bird's head pass up between the rumps of the two adjoining ones; this makes it solid; the last row reverse the order, placing the head towards the end of the box, letting the feet pass under each other; should there be space between these rows wide enough to lay in a few side-wise, do so;

if not, fill in tight with straw, so the poultry cannot move. This gives uniformity of appearance and a firmness that will prevent moving or chafing during transportation; over this layer place straw enough to prevent one layer from coming in contact with the other, and add other layers until the box is filled full. Great care must be taken in packing not to break the skin, for during transportation such places turn black and injure its sale.

## DISEASES AND THEIR CURE.

Every one a Doctor for his own Fowls.

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Usually when fowls take cold, inflammation of the head and eyes is one of the first symptoms to attract attention. If allowed to suffer from neglect and continued exposure, the trouble speedily runs into what is termed roup, or swelled head, and is often accompanied with canker or ulcerated sore throat. In the last mentioned condition rattling in the throat often occurs.

Fowls are, however, sometimes troubled with difficulty in breathing and a rattling in the throat, as the result of atmospheric changes, and in such cases the affection is similar to bronchitis. While not considered very dangerous, there seems as yet to be no certain cure for it, and since it is not contagious we seldom give it much attention. The rattling, or gaping or wheezing, which comes from cankered throat and mouth, is a very different thing, and should be looked after immediately.

A breeder, whose fowls are evidently suffering from the results of colds, writes thus: "My chickens are

afflicted with a blindness and inflammation of the eyes. The eyes close up and there is a rattling in the throat part of the time when they breathe. What is the disease, and what is the remedy?"

The blindness and inflammation of the eyes can generally be easily cured if attended to promptly. The *Fancier's Gazette*, of England, recommends to bathe the head and eyes with a solution of sulphate of zink, five grains to the ounce of water. Chlorinated soda, which you can get at any good chemist's, is also suggested. Carbohic acid, one part acid to forty parts water, is another remedy often mentioned, and acetic acid is likewise highly spoken of.

A general observation and experience in the treatment of such cases, is that diluted vinegar and common salt water combined, make the best, and most readily procured remedy we have met with. Chlorinated soda and acetic acid are only learned names for substances, the properties of which we have in as available a form in the simple and well known articles of common salt and vinegar.

In a case of inflammation, as above mentioned, the head and eyes should be bathed several times each day with the solution of salt and vinegar. Open the mouth and you will most likely find a yellowish, cheesy substance in the slit in the roof of the mouth. This should be carefully removed with a quill or pointed stick. A flat piece of good hickory, four inches long and one-fourth of an inch wide, and as thick as a case knife, roundly pointed at one end, makes a good instrument for such work. If the cheesy matter has not yet formed in the head, you will at least find in the roof of the mouth a slimy discharge, similar to that which comes from the nostrils of the bird. This should be

removed as well as possible with a sponge or soft rag. Then tie to the end of a small stick a piece of sponge saturated with the salt water and vinegar, and with this sponge out the mouth well, and force some of the wash through the slit in the roof of the mouth. It is convenient to have for this purpose a small syringe with a bent tube. The face and nostrils should also be well bathed with the salt and vinegar, and no harm need be feared from getting the wash into the eyes. This will be a benefit rather than an injury.

The diet of the fowl should be soft food. Soaked bread is good, seasoned with pepper. In the drinking water should be dissolved a little sulphate of iron. Stimulating foods and tonic drinks are of great benefit in such cases. If no more serious symptoms appear, your bird may be expected to recover in a short time.

Cankered throat may accompany a severe cold as well as roup in its worst stages. If on opening the mouth of a bird you find it badly coated or ulcerated, the tongue covered and the ulcers extending down the throat, you had better give the case up as hopeless. If the ulcers appear only in small spots and streaks, and the tongue is clean, or nearly so, it is worth while to attempt a cure, provided the bird is worth the extra daily attention it will require. The course to be pursued is to take a stick, such as that above described, wet it well with the salt water and vinegar—the solution for this purpose may be as strong as it can be made—and then proceed to remove with the point all the ulcers from the roof and sides of the mouth and about the base of the tongue; in fact all you find. Do not be uneasy about the bleeding, as no harm will come of it, but rather good. Wet the stick frequently with the salt water and vinegar in order that as fast as the ulcers



are removed the solution may immediately come to the exposed parts, thus causing them to heal and preventing the spread of the disease. Having carefully done all you can at one time in this way, give the inside of the mouth a good sponging with the wash, and if the fowl seems to require food, but is unable from the soreness of its mouth to take it, some should be forced down its throat. The like course should be gone through with the next day and the following, until the ulcers are entirely killed out and removed. In the meantime the fowl should be given easily digested and stimulating food and tonic drink as above recommended.

In some cases small pustules appear on the sides of the head and the wattles and the ear lobes. The salt and vinegar will be found to be a good remedy for these also. Remove the scales and bathe the parts freely with the solution, repeating the operation once or twice each day. What is commonly termed swelled head is but an advanced stage of roup. The secretions seem to concentrate, settle or consolidate, as it were, at some one point, frequently on the face beneath the eye, yet seldom so deeply seated but that the accumulations may be reached and easily removed with the knife. Sometimes a mass of yellow, cheesy matter as large as a thimble will have formed at one place. It should be taken out and the wound bathed with salt and vinegar. Nature will soon heal over the frightful looking cut if the work of cleansing has been well done.

About 30 per cent. of hens are lost annually by diseases of every kinds so that I think a few simple remedies for some of the most common, will be appreciated by my readers, and I therefore give them without further explanation, under their most common names as

quoted by fancy breeders. These receipts have been taken from the most trustworthy books and journals and are known to the breeders as reliable.

#### Abortion.

Generally produced by fright. The remedy is to confine the bird in a rather dark pen, with a nest in one corner. Soft food only should be used, given sparingly. The drinking water should be impregnated with a small amount of carbonate of soda. This disease must not be confounded with the ordinary laying of soft eggs.

#### Apoplexy or Paralysis.

More probably arising from high feeding than any other cause. An unsteady walk with drooping wings, as if the bird were giddy, is a warning symptom. Fasting and a dose of fifteen grains jalap and one grain of calomel will be found very useful, with continued low diet for two or three days. In cases of sudden attacks, with loss of power and consciousness, it will be necessary to lance immediately the large vein under the wing, and to bleed freely until the bird recovers. Stop the flow of blood by means of burnt alum or other styptic, and take care that the fowl is not allowed to peck open the wound and cause death from hemorrhage. Cold water applied to the head is often of beneficial effect. Fortunately these diseases are both of infrequent occurrence.

#### Black Rot,

Also rarely to be met with and only to be cured in the earlier stages. Symptoms, blackening of the comb and swelling of the legs and feet, accompanied with

gradual emaciation. Treatment is a dose of calomel or castor oil, with warm and nourishing diet, together with the use of "Parrish's Chemical Food," or Tonic No. 4.

### Bronchitis.

Known by the frequent coughing, unaccompanied by discharge, as in the case of cold in the head. A small quantity of nitric and sulphuric acids in the drinking water, with sugar enough to make the whole slightly sweet and acid to the taste, is all that is required. The food may be seasoned with a little cayenne or ginger, and the fowl should be kept in a dry place, moderately warm. Sometimes the disease is accompanied by a peculiar rattling in the throat. The homeopathic cure is two pellets of aconite in the morning before feeding, and the same in the evening, for two or three days. This is said to be a specific.

### Bumble Foot.

A corn or abscess at the bottom of the foot, most frequently found in the larger breeds, and is supposed to be caused by descent from the perches to a hard board floor. Daily applications of lunar caustic, or pigment of iodine painted over the spot with a brush, will often effect a cure. The tumor should afterwards be cut and the matter pressed out, the part thoroughly cleansed with warm water, and in a day or two the caustic applied as before. One ounce of muriate of ammonia dissolved in a pint of vinegar is very useful in reducing the swelling. The bird should be compelled to sleep on straw during treatment. Another remedy is to wash the foot with tepid water and soap, afterwards

cutting open the swollen foot and removing the putrid and diseased surface flesh, and applying sulphate of copper (blue vitriol) and then tying up the foot so as to retain the medicine as applied. In severe cases two or three applications may be necessary.

#### Canker or Ulceration.

This disease bears a striking analogy to the roup, but is distinguishable from the latter by a lack of discharge from the nostril. It frequently extends to the throat, covering the back of the tongue with ulcerous formation. In such cases remove the ulcers with a sharp, flat stick of hard wood and apply with a camel's hair brush a wash of tincture of myrrh, borax and chlorate of potash, dissolved in water. Use powdered borax afterwards upon the sore. Give soft food and occasionally bread soaked in ale. When the disease affects the eye, use McDougall's Fluid Extract for a wash, in the proportion of one teaspoonful to eight of water. As in the case of roup, the diseased fowl should be removed to warm, dry quarters, and the feathers on the neck and head kept clean by washing in warm water. Another remedy is to dissolve some alum in water and wash out the mouth, throat, and eyes with it, after which sprinkle burnt alum on the sores; to be repeated daily until cured.

#### Cancer.

The first symptoms are loss of the use of the legs, the bird squatting about on its hocks, and using its wings to assist locomotion. There is no apparent loss of appetite or energy, but absolute loss of power over the legs. The disease is incurable, as removal of the

cancer by a surgical operation, only results fatally in a week or so thereafter. When it is apparent that the disease has become seated, the most humane treatment for the breeder is to kill it.

### Cholera.

If there is a disease among fowl resulting more particularly from carelessness or ignorance than any other, it is the fatal disease known as the Cholera. All writers on the subject agree that it arises from exposure to the sun, without sufficient shade, warm and stale drinking water, foul and offensive grass runs occasioned by the droppings, and most important of all, the absence of a regular supply of fresh green food, which is the great preventive of diarrhœa in fowls. This disease is rarely if ever known where a cool shade, clean runs, fresh cool water and green food are provided daily.

**SYMPTOMS**—Sudden and violent thirst, diarrhœa, greenish droppings, afterwards thin and whitish, with extreme weakness and staggering or “falling about,” sometimes accompanied with cramps, and often with an “anxious” look about the face. Death results in from 12 to 36 hours.

*Treatment*—Administer every three hours the following: Rhubarb, 5 grains; cayenne pepper, 2 grains; laudanum, 10 drops. Give midway between each dose a teaspoonful of brandy diluted with water containing 5 drops of McDougall’s Fluid Extract, or either of the following:

No. 1.—Equal parts of the tincture of opium, red pepper, rhubarb, peppermint and camphor, well shaken, with doses increased from ten to twenty drops several times a day when not immediately relieved.



No. 2.—Two oz. each of alum, resin, copperas, lac sulphur and cayenne pepper; pulverize, then mix three table-spoonsful of the powder with one quart of corn meal, and dampen for use. This is sufficient for twelve fowls, and may be used either as a preventive or cure. For the former, once or twice a week is sufficient. Rye or wheat, soaked well in highwines or strong whisky, fed occasionally, is also said to be a good preventive.

No. 3—Blue mass and cayenne pepper, each 1 oz.; camphor gum  $\frac{1}{2}$  oz., and a teaspoonful of laudanum, well mixed and made into pills of ordinary size. Give one pill every hour until the purging ceases: Also a teaspoonful of brandy morning and evening.

No. 4.—Cayenne pepper and prepared chalk, each 2 parts; pulverized gentian and pulverized charcoal, each 1 part (measurement, not weight); mix well together and form a paste, with either lard or sheep's suet. Give a pill the size of a common marble once a day, and keep in a warm and dry place forty-eight hours.

No. 5.—Carbolic acid, 1 drachm; glycerine, 1 oz.; mix thoroughly, adding one quart of water. Of this solution use two tablespoonsful to a gallon of water, allowing the fowl access to no other water.

The fountains and feed boxes should be disinfected with carbolate of lime or carbolic acid. The water must be kept cool, plenty of shade provided, and the free use of green food indulged in, for those not attacked. No food or water with the exception of soft or moistened wheat bread in warm milk is needed for the diseased birds.

The use of kerosene in this disease has lately attracted some attention, and elsewhere we present a

newspaper article on the curative qualities of this oil. It is said to be very efficacious.

### Cattarrh.

A common cold, if neglected, is likely to terminate in roup. The bird should be immediately removed to a warm place. Three drops of *mother* tincture of aconite added to half a pint of the drinking water will be found beneficial. The food should be soft, mixed warm, and seasoned with Tonic No. 1.

One pill of the following, given night and morning, is also highly recommended:  $\frac{1}{4}$  oz. each of camphor, valerian, cayenne pepper, lobelia seed powder, and gum myrrh, made into forty-eight pills. If not better in a few days, roup may be suspected, and the treatment should be the same as for that disease.

### Consumption.

Caused by cold or dampness, want of light and constitutional debility. Most frequently observed in birds related. The symptoms are chronic cough, with wasting away and loss of strength. Incurable when once fairly seated. Where its presence is suspected, cod liver oil added to the meal food is a corrective, together with "Parrish's Chemical Food," half a teaspoonful, twice a day.

### Cramp.

Early chickens are most subject to this disease, caused by exposure to damp during cold weather. It may be known by a tendency to walk on the toes, and afterwards on the knuckles or outside of the foot. Also by squatting on the hock. Removal to a place provided with a dry boarded floor, well sanded and kept

clean, is usually sufficient. In severe cases, where the toes are much contracted, the legs and feet should be bathed in warm water several times daily, opening and extending the toes, and afterwards drying them with a cloth. A little tonic should be added to the food. Opium in quarter grain doses two or three times daily will prove beneficial in the treatment of this disease.

### Crop Bound.

Occasioned by careless feeding with hard grain or pieces of tough meat, bone, or other substance too large for the bird to swallow, causing the crop to be so distended and swelled as to close the outlet to the stomach. Warm water should be poured down the throat, and the crop gently kneaded or worked for an hour, if necessary, until it becomes soft, holding the bill open and the head down. Then give a tablespoonful of castor oil and feed sparingly for several days to prevent a permanent distension. If this is not effective, an incision about an inch long should be made at the top of the crop, first removing some of the feathers, and care being taken not to open any of the large blood vessels. The contents of the crop should then be removed and the outlet examined to see that it is not stopped up. The incision may be closed by making three or four stitches with silk or horse-hair in the inner skin, and the same in the outer. Be careful not to sew the two skins together, as it is almost certainly fatal. Feed on soft or sopped bread, and allow no water for 24 hours after the operation.

### Crop Soft or Swelled.

Usually caused by excessive drinking, and the con-

tents of the crop are of a soft, fluid character. Confine the bird separately, and feed sparingly with soft food, thoroughly cooked. The water should be slightly acidulated with nitric acid, of which the bird should be allowed to drink very moderately after each meal only. The food should be seasoned with Tonic No. 4, and half a teaspoonful of sal volatile given every morning, in double the quantity of water. Chopped onions or garlic is the best green food during treatment, having themselves a strong remedial effect. It is to be very much doubted whether the distended crop resulting from negligence in feeding after treatment for "crop bound" can ever be successfully removed. The two disfigurements being similar in appearance, are apt to be confounded. The one resulting from excessive drinking is properly a disease not so fatal as the hard crop, but nevertheless sufficiently dangerous to excite apprehension, while the other, beyond being unsightly, causes little injury to the bird.

#### Dysentery.

This disease is really chronic diarrhœa, the droppings being mingled with blood. Rarely cured, and evidently contagious. The diseased birds should be removed to a cool place and the cholera remedy applied. Five drops of laudanum and five drops of "McDougall's Fluid Extract," every three hours, has also proved to be efficacious. A teaspoonful of strong cinnamon tea every hour should be given instead of water. The carcass, in case of death, should be buried deeply, away from the yards, and the latter should be thoroughly disinfected.

### Debility.

Sudden terror or prostration from a long journey and excitement attendant on exhibition, often occasions fowls to droop without any apparent positive disease. In such cases nothing is better for restoring strength than a raw fresh laid egg daily. Strong tonics are not advisable but the usual modicum of the "Douglas Mixture" given every third day in the drink will prove an invaluable aid.

### Diarrhœa

Is usually caused by too sudden changes of food, and sometimes the weather. In its earliest stages it may easily be checked by feeding soft food cooked with milk and mixed with chalk or seasoned with pulverized cinnamon, or by giving camphorated spirits, or water, every four to six hours, in doses of 10 to 20 drops, according to severity, and feed nothing green except it be fresh grass, in limited quantities. Tegetmeier's recipe, given years ago, has had some favor, viz: 5 grains chalk, 5 grains rhubarb, and three grains of cayenne pepper made into pills. But if the case is one of severity one teaspoonful of laudanum every six hours should be given until relieved. With proper and judicious feeding, plenty of fresh water, cleanliness and a plentiful supply of lime, oyster shells, or broken or ground bones, and a free use of the "Douglas Mixture," there need be but little fear of any serious results.

### Egg Bound.

Inability to lay on account of unusual size of egg, may be known by the hen coming off the nest and



moping around in evident distress, with wings on the ground; sometimes she remains on the nest. A large dose of castor oil will generally give relief in a few hours. Failing in this a free injection of olive oil into the oviduct may be used, care being taken not to break the egg. If no syringe is at hand the oil may be passed up with a feather, having first bathed the vent with warm water. The food should be soft and not of a stimulating nature. In case the egg passage should protrude or become ruptured, egg production should be totally arrested by giving the following: One grain calomel, one twelfth of a grain of tartar emetic and a quarter of a grain of opium, made into a pill, and administered every four hours. In the first pill the quantity of calomel and opium may be doubled.

#### Elephantiasis or Scaly Legs.

A rough scurf on the legs and toes of a horny substance, resembling scales. Not dangerous but very unsightly, and some strains are more predisposed to this disease than others. It is considered by some to be also slightly contagious. Different opinions exist as to its origin, but the treatment is simple and effective. The diseased fowl should be provided with a dry and moderately warm shelter, and a vigorous scrubbing with soap and warm water, with a hard brush will remove a great deal of the scuff. Then anoint the affected parts with sulphur and lard, and give half a teaspoonful of powdered sulphur internally. The washing and anointing must be continued daily until a cure is effected. Three or four applications daily of kerosene oil is also recommended as a wash, and the slackened scales removed with a blunt knife, after which anoint

as above. A weak solution of the sugar of lead is also an excellent wash to be used in the morning, followed in the evening by an application of lard, mixed with ointment of creosote. It is desirable that the yards should be clean and free from mud, and the fowl kept from exposure to wet or damp of any kind.

### Eruptions.

A whitish scurf or efflorescence causing the loss of feathers, as far as it extends, generally results from lack of green food. This must be supplied and cleanliness attended to. The diseased parts should be dressed with tar and sulphur ointment, or a compound of cocoanut oil, one ounce, and powdered tumeric, quarter of an ounce. A dose of castor oil followed by a teaspoonful of powdered sulphur daily in the food for ten days, should also be given. If the sulphur should tend to make the fowl scratch or irritate the head before a cure is effected, the parts should be dressed for a few days with McDougall's Fluid Extract, diluted with three parts of water. As this affection is contagious, it is necessary to isolate the affected fowl.

### Feather Eating.

This unnatural appetite, generally observed in the hen, is a source of great annoyance. It is probably the result of thirst, and also a want of exercise consequent upon close confinement. There seem to be no specific for this disgusting practice, as remedies which have cured in one instance have utterly failed in another. Indeed, it may be a question whether the cures which have supposed to result from the giving of remedies, have not rather been a natural withdrawing

of the disease itself than otherwise. External applications would seem to be necessary in order to nauseate the unnatural appetite of the birds. The stumps of feathers should be extracted, and all the parts attached anointed with a stiff lather of carbolic soap. To give the birds occupation it is advisable to bury corn in the ground, or hang up a cabbage or lettuce by a string just within reach of the birds. A bran and linseed mash twice a week has been known to produce good effects. One fourth of a grain of acetate of morphia daily, with a grain of calomel twice a week in addition is a good sedative. The drinking water should contain enough carbonate of potash to give it a decided alkaline taste. Raw bones crushed small, have been known to effect a cure and a sheaf of corn fodder thrown in the yards is said to be beneficial. It would be advisable to seclude a fowl which manifests a wicked desire for this habit until the appetite becomes more natural from forgetfulness.

The *Poultry Bulletin* says: From close observation, we very much doubt if it is the soft, bloody end of the feather that is craved for, but the light, webby portion. In all cases we find the crop filled with this portion of the feather, and we have a number of times checked the trouble by giving the fowls a supply of finely cut rowen grass or hay. Where fowls have a run on *grass*, winter and summer, they do not indulge in this troublesome habit, even if they have no animal food at all; but confine them to a yard or house, no matter how large, if there be no grass or hay within reach, the trouble soon commences.

Another writer gives a rather novel method by which an incorrigible Patridge Cochon Cockerel was inadvert-

ently cured. After giving him up as incurable, he put him in a run with twenty or more cockerels weeded out for killing. Instead of submitting to his cannibal tastes, however, these strangers made it rather uncomfortable for him, and to use an expressive Westernism, caused him to "gyrate round the yard like a Chinese joss with the jim-jams," uttering doleful cries. He was completely cured, and never afterwards offered the first indignity to his hens. Perhaps, after all, a good thrashing like the above might prove a sovereign specific for this offensive habit.

#### Frost Bites.

Large combed breeds especially suffer from having combs and wattles affected by frost. By oiling them with a sponge every morning, this may be prevented. The best treatment of frost bite is a vigorous application of snow or very cold water, afterwards applying glycerine. Painting the frozen part with compound tincture of myrrh three times a day, is said to be beneficial. Turpentine is also recommended.

#### Fledging.

When the weather is bad and the chicks appear to be suffering much, the food may be seasoned with No. 3 tonic, and the addition of tincture of iron to the water. Warm milk should also be given to drink.

#### Fractures.

A broken shank may be "set" without difficulty, and secured with a splint of porous brown paper, saturated with white of eggs, which hardens as it dries. A bro-

ken wing is best cared for by putting the feathers in position and binding tightly together about an inch from the end. But unless the accident occurred to a very valuable fowl, useful to breed from, the time and care necessary to successfully treat fractures are generally unprofitably wasted.

### Gapes.

This disease is caused by the windpipe of chickens or young fowls being infested with worms, eventually causing suffocation. How the disease is propagated is a debatable question. The worm is usually found doubled, of a pale reddish color, and rather less than three-quarters of an inch long. The number in one chicken usually varies from two to a dozen. Dirt and damp have undoubtedly a predisposing effect, as it is well known that gapes rarely ever trouble a clean and dry yard.

By many it is supposed that the worm is generated in some manner by lice or a similar parasite which infests the head of young chicks, and as a preventive the following ointment, applied very lightly on the back of the head, on the throat, and under the wings, in a melted or fluid state, at the time of taking chickens from the nest, is said to remedy the evil: Mercurial ointment, 1 oz; pure lard, 1 oz; flour of sulphur,  $\frac{1}{2}$  oz; crude petroleum, 1 oz. It is stated on good authority that chicks anointed in this manner have never had the gapes, while others of the same broods not anointed, have been affected. Another method of keeping the chicks free from the parasites that are supposed to produce gapes is to apply once a week, under the wings and on the breast of the hen, a



small quantity of carbolic soap in solution. The effect of the ointment beginning to destroy the parasites, would seem to give color to the theory that gapes are the result of the presence of lice or similar vermin, and would also tally very well with the fact that the disease is comparatively unknown in clean and comfortable quarters. A free use of carbolic disinfecting powder is an excellent preventive. The disease may be checked after it has entered the yard, by using fluid carbonate, camphor, or lime in the drinking water, and the affected bird made to inhale the vapor of carbolic acid by placing a few drops on a red hot shovel, and holding the bird in the fumes until it is nearly suffocated. This kills the worms, and is an effectual cure. The worms may be taken from the throat, also, in the following manner: Take a medium soft quill feather, pluck the web from both sides to within a short distance of the tip, and wet with a solution of 20 grains carbolic acid and one ounce of glycerine. Run the feather down the windpipe, give it three or four turns and quickly withdraw. Repeat two or three times with a new feather each time. The acid paralyzes the worms, and the glycerine sticks them to the feather, and they are thereby drawn out of the trachea. The feathers and all matter drawn from the throat of the fowl should be burnt, in order to prevent the exposure of the rest of the flock to contagion.

Another remedy is to administer a kernel of black pepper to the chick affected, which is said to destroy the worm.

#### Leg Weakness.

Young fowls of the larger breeds frequently outgrow

their strength, or from a lack of bony matter shown by constant squatting about instead of walking or standing. To prevent the occurrence of this affection, give all young fowls plenty of bone dust or broken bones and oyster shells. When first discovered it may be checked and strength restored by giving "Parrish's Chemical Food," a tablespoonful to a pint of water. A little tincture of muriate of iron in the drinking water is also beneficial.

#### Gout.

This is a disease of the legs which can be distinguished from leg weakness by the feverish condition of the legs. Remove the bird to a warm and dry place, give a dose of jalap or calomel to open the bowels, after which a half grain pill of extract of colchicum should be administered twice a day. The legs and joints may be well rubbed with sweet oil daily with benefit.

#### Giddiness.

Usually resulting from too high feeding, and likely to develop in apoplexy. Hold the head under a stream of water, and reduce the system by a dose of castor oil, and feed on sparer diet.

#### Lice.

To guard against the encroachment of lice and other like vermin, the walls of the sheds should be regularly washed every year with strong lime-wash, containing a pound of sulphate of iron to every three gallons, applied hot from the slaking. A thorough syringing either with parafine or a solution of carbolic acid will also be efficacious in getting rid of the annoyance.

Carbolic acid is certain death to all insects, and is an invaluable aid to the resources of the poultry keeper.

Experience proves that the free use of dry, sifted coal ashes is an excellent exterminator of these pests. The ashes may be sprinkled over the roosts, and a commodious box filled with this material should be provided for the fowls to dust in—a provision of which they seem to take pleasure in availing themselves. In making up nests for hatching, it is advisable to put ashes in the bottom and cover with clean straw. After the chicks make their appearance, the nests should be thoroughly cleansed and the straw and litter destroyed. In localities where coal ashes can not be easily procured, good dry sand may be substituted, in which carbolic powder or sulphur, or both, has been sprinkled.

It sometimes occurs that, in spite of all precautions, the vermin accumulate to such an extent that the house becomes literally alive with them. In such cases a thorough cleansing is necessary. All the hay and straw in the nests should be burnt, the hens driven out and the house closed tightly and fumigated with sulphur. This may be done by putting a pound or so of brimstone in an iron pot and dropping on it a piece of red-hot iron. Keep the house closed two or three hours, after which it should be well ventilated and swept out thoroughly. The walls, inside and out—in fact every place that can be reached—should be washed with hot water, in which has been dissolved potash, one pound to every quart of water. Then follow with kerosene oil. Fresh hay is needed for the nests, and assurance is made doubly sure by white-washing. This radical treatment is not accomplished without some trouble, but the result amply repays the labor.

### To keep Lice out of the Hen-house.

These pests are about the worst the poultry keeper has to contend with, and I therefore give a simple cure if not an entire preventive.

Take a hot pan or iron pot, place it in the hen house and pour into it at least one pound of sulphur. Be careful not to inhale the fumes. Close all windows and doors and let the lice enjoy the atmosphere for about two hours. Then air the house and give it a good coat of whitewash, nor forgetting the roosts. Change the nests and you will find yourself free from these pests.

### Indigestion.

Loss of appetite, caused by feeding too highly seasoned food. The diet should be restricted to soft, well cooked food, twice a day, with fresh water in moderate quantities, containing the "Douglas Mixture." Where a run cannot be had, a little fresh grass cut fine is beneficial. If the disease does not yield to this treatment, give daily five grains of rhubarb, changed every fourth day for one of calomel.

### Liver Disease.

Most generally observed in cold and damp localities. Indigestion is frequently the forerunner of this disease, and the remedies recommended in such cases should be applied. If, however, the bird should take on a sickly, yellowish look about the head and comb, there is no doubt about a serious enlargement of the liver. Alterative doses of mercury, followed by cod liver oil and Parrish's Food, may effect cures where not deep

seated, but success cannot be expected where the morbid structures are of any considerable size. Poultry keepers should never breed from fowl affected in this way.

### Moulting.

Moulting is the discarding of the summer coat of feathers and putting one on suitable for cold weather. Perhaps many poultry keepers have never considered the great drain upon the system of the fowl during this change of covering. Not only do the regular flesh-forming, life-giving processes of nature have to be fulfilled, but an entire new coat of feathers has also to be manufactured. These feathers consist not of flesh and blood alone, but of component parts of mineral and animal substances. These substances are assimilated from the food, and unless birds can obtain such food as contain the necessary qualities, the work drags, is prolonged, and the poor fowl droops and grows thinner in the vain endeavor to fulfill nature's requirements without the proper means to work with. The moulting season is the most critical period of the year for old fowls; and yet, in ninety-nine cases out of a hundred, there is less care taken then than in the Spring, when everything is in their favor. Not only is an abundance of warming, nutritious food needed, but a tonic of some kind should also be given. Stale bread, sopped in old ale, given two or three times a week, is always beneficial; but perhaps one of the best things is to use the Douglas Mixture, in the proportion of a teaspoonful to a pint of water, in the drinking fountain, and keep it by them during the whole time of moulting. A little hemp seed given every day is also beneficial,



and with these aids, and a little pepper on their food, with perhaps a little extra meat, or even a little ale during the few weeks the process lasts, there will rarely be any loss. With hardy kinds and good shelter such precautions are hardly necessary but they cost little, and have their effect also on the early re-commencement of laying. A tonic that is also recommended is gin and molasses, in proportion of three parts gin to one of molasses. A tablespoonful is a dose for an adult fowl, giving it before feeding in the morning; where the fowls do not appear to have an unusually hard time, twice or three times a week is sufficient. But where the fowls are in close confinement, they *must* have *iron* in some shape. A little treatment of this kind not only benefits the health of the fowl, but shortens the period of moulting fully one-third. In addition to that, the growth of feathers is stronger and heavier, and the fowls are thus better able to stand the cold of Winter. The appearance of the fowl is also vastly better, the feathers are lustrous, and appear as if oiled; the bird takes on fat at once, and meets the cold weather with a vigorous health and strength which otherwise he might not have.

### Pip.

The symptoms are a short, quick, spasmodic chirrup, repeated at short intervals. On examination a dark colored, dry, horny scale will be found on the end of the tongue. This is not the disease, as many suppose, but the *results* of the disease. In some cases, if not checked, the beak will turn yellow at the base, and the plumage become ruffled; appetite fails, and the bird mopes around and finally dies. A little cayenne or black pepper mixed with meal and administered three

times a day will generally effect a cure. Another remedy is to apply chlorinated soda to the horny scale on the tongue. This will soften the crust, which will come off without difficulty. Feed soft food and give a dose of castor oil or other aperient.

### Rheumatism.

Weakness of the legs, stiffness of the joints, contraction of the toes are symptoms of this disease, which may be mistaken for cramps. The treatment is similar. The bird must be put in a warm and dry place, and fed with warm and rather stimulating food. The legs should be bathed in rather hot water containing some mustard, and afterwards dried. Half a grain of opium twice a day should be given internally. A little cooked meal every day is beneficial, and minute doses of oil of mustard have been of marked efficacy in some cases.

### Roup.

Probably the amateur, and sometimes even the experienced breeder, turns more anxiously to the treatises on this disease than to any other, for the reason that it is at once the most annoying and destructive of the whole catalogue, though less to be dreaded now than formerly. Nearly all writers agree that roup results from exposure to damp, draughts and confinement in tainted coops. It is highly contagious, the germs of the disease being communicated by drinking or other contact. The symptoms of roup are at first identical with those of a severe cold; the discharge from the nostril, however, soon loses its transparent character, becoming more or less opaque, with a peculiar and

offensive odor; froth appears in the inner corner of the eye; the lids swell, and sometimes the eye-ball is entirely concealed. In very severe cases the cavity of the nose becomes filled with the diseased secretion, which cannot escape, owing to the small size and closure of the nostril, and then the face swells considerably.

TREATMENT.—In this disease, nearly equal numbers recover, under various modes of treatment, so far as relates to internal remedies. But in *all* cases the bird is at once to be isolated, and the water vessels immediately disinfected. McDougall's Fluid Extract is excellent for this purpose. Warm, dry lodging and stimulating nutritious food are the first essentials to recovery. The eyes and head should be frequently bathed with warm water and remedial agents of some kind applied to the diseased membrane. This is somewhat difficult, on account of the nostrils being closed up, but may be overcome by inserting the point of a small syringe into the slit in the roof of the mouth and turning it rather to the outside for each nostril. Labarraque's solution of Chlorinated Soda is the injection most in use by a number of the best fanciers. Tegetmeier says he has used a few drops of a dilute solution (10 grains to the ounce of water) of sulphate of copper, with very favorable results. The internal treatment is a dose of castor oil, to be followed every morning and evening by a pill of balsam copaiba, 1 oz.; liquorice, in powder,  $\frac{1}{2}$  oz.; piperine, 1 drachm, with enough magnesia added to make the mass into sixty doses or pills. A few drops of tincture of iron or McDougall's Fluid Extract should be added to the drinking water.

We also present the following remedies, all of which are said to have effected cures in particular instances. Perhaps it would be well, in case a number of fowl are

simultaneously attacked, to try them separately on different birds. That which acted most promptly might then be applied to all.

No. 1.—Powdered sulphate of iron,  $\frac{1}{2}$  drachm; capsicum powder, 1 drachm; extract of liquorice,  $\frac{1}{2}$  oz.; make into 30 pills. Give one at a time three times a day for three days; then take  $\frac{1}{2}$  oz. sulphate of iron and 1 oz. cayenne pepper in fine powder. Mix carefully a teaspoonful of these powders with butter, and divide into ten parts. Give one part twice a day. Wash the head, eyes, and inside of the mouth and nostrils with vinegar it is *very* cleansing and beneficial.

No. 2.—As soon as the bird shows the usual symptoms, take it to a small room or outhouse, close the door and windows, take a shovelful of red-hot coals from the stove and on them sprinkle flour of sulphur (pounded brimstone). Let the bird inhale this gas for about ten minutes—it will cause it to sneeze, and the congealed matter will be blown or thrown up through the nostrils and so relieve the poor bird and its symptoms.

No. 3.—Bathe the head and throat in warm salted water, after which, with the thumb and finger open the eyes and wash them well with a rag saturated with salted warm water and then give a pill made of equal parts of cayenne pepper and prepared chalk. Follow this treatment every morning, and, if there be any rattling in the throat, give a teaspoonful of cod-liver oil every night.

No. 4.—In the first stages of the disease give a dose of castor oil, which will generally effect a cure; but if the mouth and tonsils have become ulcerated, several doses may be necessary, given twelve hours apart.

Use a small mop, dipped in vinegar, to cleanse the mouth, head, throat, and nostrils, after which dip a feather or mop in soft soap and touch every ulcer.

No. 5.—Sugar of lead and pulverized opium, 20 grains each; mix with one pint of soft water. With a small syringe inject warm water into the nostril of the sick bird and then inject the lotion. By using a small bent tube on the syringe an injection can be forced into the nostril through the upper part of the mouth. Feed with soft food only, giving plenty of chopped vegetables, and mix ale with the food.

No. 6.—Bathe the head with tepid water and castile soap, removing all unhealthy secretions about the eyes, head or throat, and if there be any visible ulceration wash well with a strong solution of alum water, and give a bolus of lard and sulphur mixed as large as an English walnut, at the same time anointing the head well with the mixture of lard and sulphur.

No. 7.—Wash the head with cresylic soap suds until the nostrils are opened and the eyes relieved. Then strip a feather to within half an inch of the end, and dipping it into diluted nitric acid, insert it into the nostril of the fowl. Two or three applications will generally be sufficient.

No. 8.—Five drops tincture of iron in a teaspoonful of water thrice a day. Feed the fowl with scalded food well seasoned with cayenne pepper.

Undoubtedly the seeds of this disease are laid in the sudden changes from warm to cold nights, when the Summer changes to Fall, and the chickens are allowed to occupy their unprotected coops and wander about hungry and cold in the raw, early morning. This would especially tend to the development of roup if there



should be a continued spell of damp weather, for roup, after all, is simply a chronic catarrh or cold. Upon the first indication of a change of weather in the Fall, the young chicks should be provided with warm, dry quarters, and not allowed their liberty in the morning until fed. A plentiful supply of good, nutritious food and tincture of iron added to their water, with a little sulphur in their soft food, will be found of great benefit. Prompt attention to these matters will eventually result in preventing the appearance of the roup—the dreaded scourge of the poultry yard.

#### Rump-ail.

This difficulty, occasioned by the badness and infection of the hen house, has for symptoms, constipation, slowness in walk, troubled sleep, sad way, low head, drooping tail and bristling feathers. The chicken does not scratch, and finally a tumor forms around the rump. It is necessary to cut this tumor with a sharp instrument, and press it with the finger to expel the pus, then wash the wound with vinegar or stale wine, and feed with agreeable diet, like barley, bran, or boiled rye or lettuce. One of the first precautions to take is to purify the hen house.

#### Scaly Legs.

Under the head of Elephantiasis will be found some remedies for this disease, but having come across the following, it was decided to insert them :

Dissolve a little carbonate of soda (sal soda) in water and rub the feet and legs every day with this solution until the scurf is removed. After this is done and the

feet and legs become dry, anoint them well with lard and sprinkle on some sulphur or red precipitate, or they be made into an ointment before they are applied.

Another remedy is to use an application of cocoanut oil or turmeric—the proportions are about one-fourth of an ounce of turmeric powder to an ounce of the oil; this forms a yellow ointment. Apply it to the parts affected, and a few applications will be sufficient to effect a cure.

### Soft Eggs.

If of frequent occurrence, a sign of over-feeding. Reduce the food and feed sparingly on mashed potatoes. In some cases, soft eggs occur from the entire absence of any material to form the shell. The fowl should be supplied with old mortar, burnt oyster shells pounded, or similar ingredients. Lime water is highly beneficial.

### Wry Tail.

Carrying the tail to one side, strongly hereditary, and evidence of a weakly constitution. The surest way to cause its disappearance and prevent its recurrence is to get rid of the fowl altogether.

### Turkeys.

The best preventive for sickness in these birds as well as to help them through the red is to mix finely cut onions or chives in their food, which ought to consist of Indian meal mixed with either milk or water, but small potatoes boiled and mashed with plenty of pepper may be used with raw onions chopped fine instead.

## Kerosene as a Curative.

We have seen, recently, testimonials from so many quarters, as well South as North, as to the efficacy of kerosene oil in chicken cholera, as to inspire a hope that an unfailing remedy has at last been found for this hitherto most desolating disease. A Woodville, Miss., correspondent of the New Orleans *Home Journal* says: "I tried all the remedies mentioned in your paper for cholera, but none seemed to do any permanent good until I tried coal (kerosene) oil; this has effectually arrested the disease, and I am satisfied is a good thing." In addition to this, the editor of the *Journal* says: "We had a pullet which was actually on its last legs, not being able or willing to feed any more. Our better-half took some grits and mixed a sufficiency of kerosene with it to make into pills and crammed some of it down the throat of the fowl. The effect was almost instantaneous, as, at the next feeding time it appeared with the other fowls and participated in the meal, and since then has been constantly improving. We now feed corn mixed in kerosene oil three times a week, and since adopting this mode have had no new case of cholera.

A correspondent writing to the *Country Gentleman* from Habersham County, Ga., says: "I have found kerosene oil a cure for chicken cholera. Last year I lost my entire flock. This year, by soaking my corn in kerosene, but one has died, although several have been sick."

A recent number of the *Southern Homestead* gives the extract which we annex, from the pen of the editor, by which it will be seen that the curative power of kerosene has been as prompt in giving relief to an equine

sufferer as to the pets of the poultry yard: "The peculiarly penetrating nature of kerosene makes it one of the best external applications for bruises, sore throat, diphtheria, etc., in man that can be employed, while for diseases in horses, such as big shoulder or other lameness, two applications, well rubbed on, will effect a cure. Only a few weeks ago we proved its efficacy in bots or grubs. We had a fine colt violently attacked with this dangerous disease, and after trying several remedies without relief, as a last resort tried kerosene, rubbing the body thoroughly, producing an instantaneous and permanent cure."

#### Chlorate of Potash.

For internal administration to fowls for canker or roup, or for common colds or cough, chlorate of potash is said to be very beneficial, and is at the same time a perfectly safe remedy to use. Water only dissolves a certain proportion and no more of the salt, and it should always be made as strong as it can be, which is making what is technically called a "saturated solution." For convenience it is better to keep it prepared ready for use, as follows: Put in a half pint bottle an ounce of chlorate of potash and an ounce of crushed sugar, then fill the bottle with soft water and shake occasionally until no more will dissolve. The sugar seems to serve the double purpose of loosening the phlegm in the throat of the fowl and to disguise the saline taste of the chlorate, making it more easy of administration. Chlorate of potash will not only remove canker and ulceration in the mouth and throat, but cools and allays fever, and by its action in the stomach, destroys all traces of canker in the system of the fowl, thus rendering the cure a permanent one.

After using off the water more may be added, as long as any of the chlorate remains, adding sugar each time, as the sugar, unlike the chlorate, all dissolves the first time. Give adult fowls a teaspoonful of the solution two or three times a day, in severe cases giving it oftener if required. An ounce of the solution in a pint of water is a good remedy for common colds and for young chicks, to be given in place of drinking water, continuing for several days, or until a cure is effected.

CHARCOAL.—It is claimed that a free use of crushed charcoal will prevent the disease known as the enlargement of the liver. It keeps the organs in a healthy state; their fondness for it would indicate some benefit derived from its use, the same as in the case of gravel.

Corn or corn meal is the cheapest and best food for fattening fowls. Oat meal, bran, and middlings are the best for the young, growing stock.

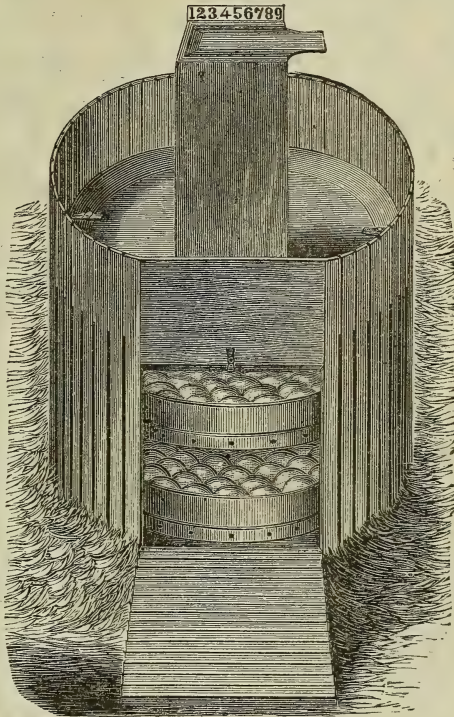
Capsicum mixed with the food and assafoetida in the drinking water is recommended for cholera in fowls.



# How to Hatch Eggs,

AND

Raise Poultry by means of Horse Manure.

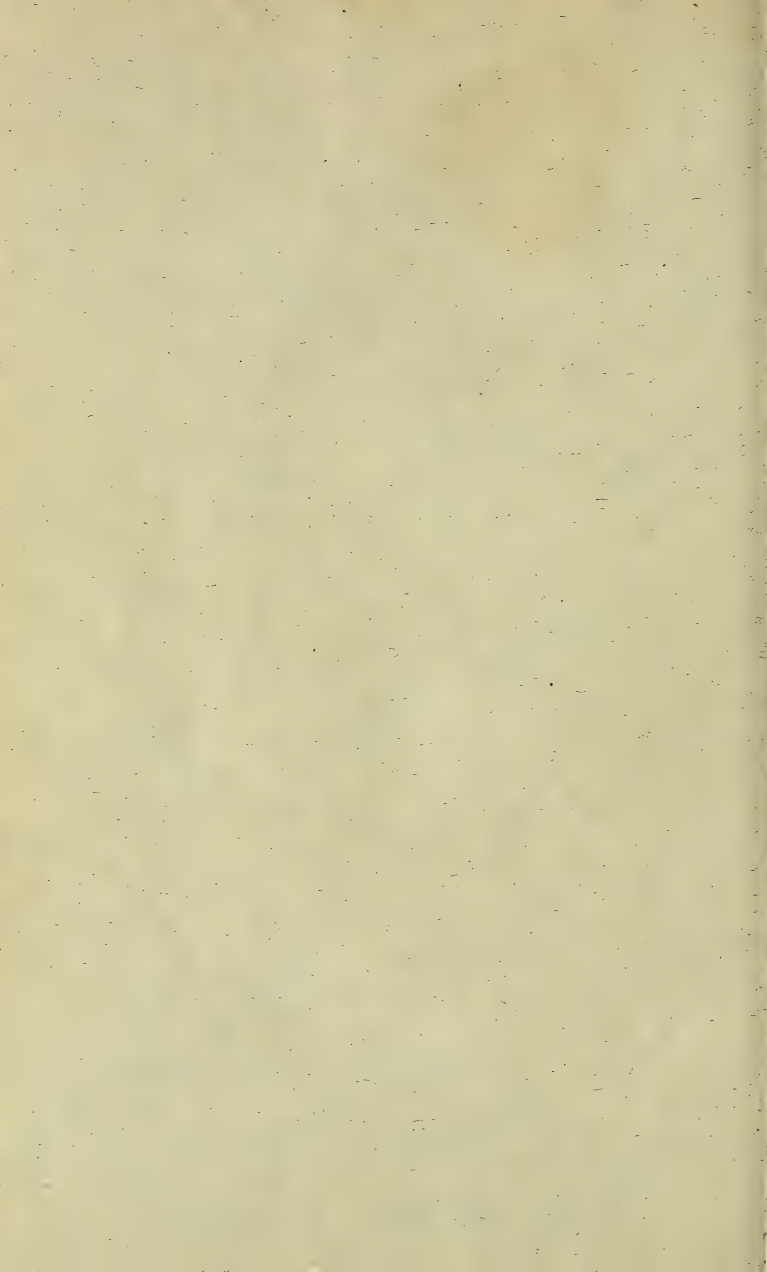


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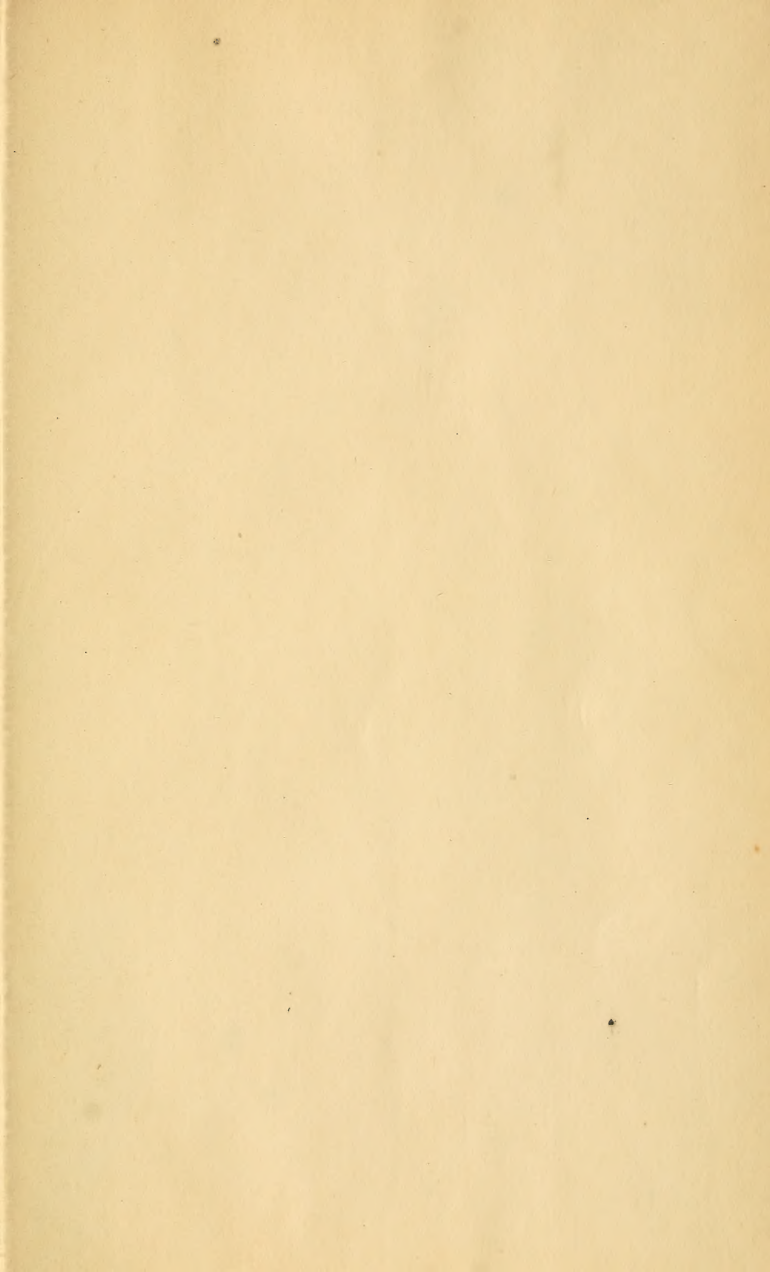


















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