



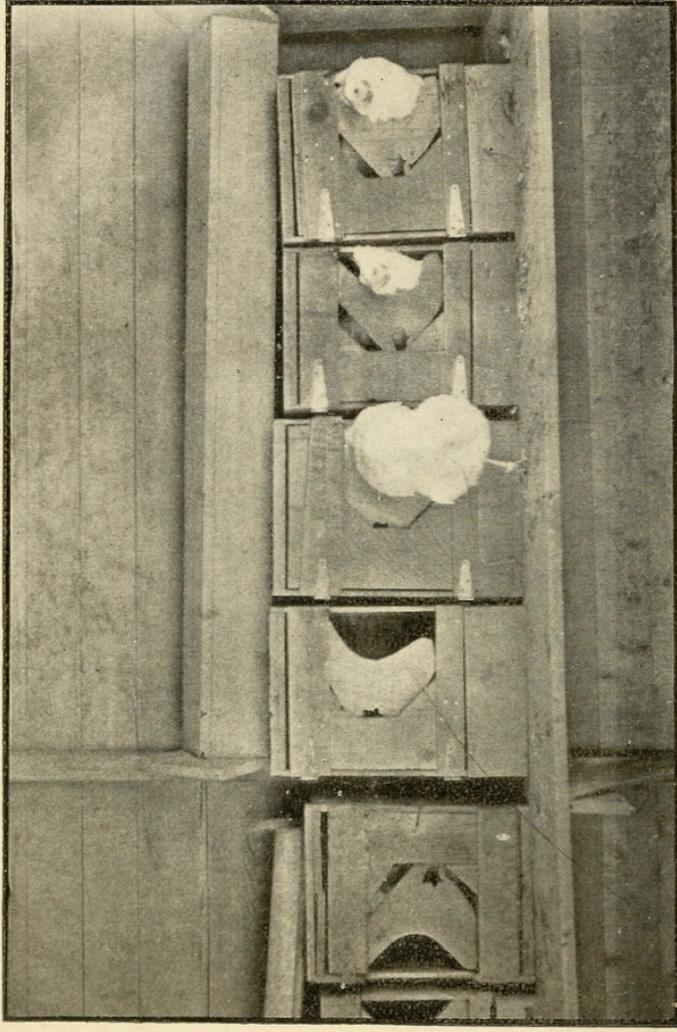
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This half-tone is from photograph of IDEAL TRAP NESTS in actual use. There are ten nests in this pen that have been in constant use for two years. The entire lot cost less than single nests of other makes that Mr. Wellcome owns . . .



PATENTED IN U. S., 1900. IN CANADA, 1901.

THE TRAP NEST THAT SET THE STANDARD.

The Trap Nest Text Book

By F. O. Wellcome



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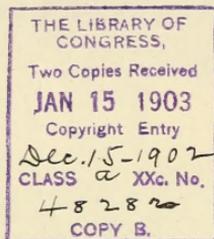
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“Unreasoning acceptance is the most baleful hindrance to reform. He who believes all that his elders teach, without the consent of his more modern mind, unconsciously admits that the world is at a standstill.

Every step ahead in history has been made by those who would not agree with sanctioned dogma. Galileo would not believe the world stood still, Columbus did not believe that it was flat. In spite of sainted mothers and venerable sires, we do not now favor their pet theory.”

From “SEARCHING FOR TRUTH.”

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THIS BOOK IS RESPECTFULLY DEDICATED
TO THE
THOUGHTFUL READER.

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“The advent of Trap Nests has been the means of more good in Poultry culture than any other invention of recent years. They are the only guides to success.”

Boyer.

NOTICE TO EDITORS, PUBLISHERS, AND WRITERS
FOR THE POULTRY PRESS.

It is the author's desire that whatever there may be of value in this work should be as widely known to poultry keepers as is possibly consistent with my business interests, I to be the sole judge of that.

The original matter, other than that directly connected with the construction of the Ideal nests, is covered by copyright solely to guard against the detestable practice of plagiarism that is so common in poultry and other literature and in some poultry supply catalogues.

While I should prefer that those who desire to quote from this book ask my permission, I realize that when brief reference is desirable this is not always convenient. In such cases, whether the accompanying opinions are favorable or unfavorable, I respectfully request that credit be given to The Trap Nest Text Book by F. O. Wellcome.

Matter in this book not original with me and not written expressly for the book is not covered by my copyright.

Respectfully,

F. O. WELLCOME.

The Man Whose Watchword's "Wait"

ROY FARRELL GREENE.

FROM "SUCCESS." USED BY EXPRESS PERMISSION OF THE SUCCESS COMPANY,
OWNERS OF COPYRIGHT.

"Great deeds", said Uncle Hiram, "I've observed, 'tween me 'an you,
For every man that does 'em there are ten agoin' to do;
There's lots o' men can sit aroun' an' entertain a crowd
With how they're goin' t' plant a field they've likely never plowed:
Bill Jones was such a feller, 'an I used t' hear him tell
Of a scheme he had fer killin' weeds that sounded mighty well;
Machinery could do the work,—a man need never sweat,—
But I find that William has'nt set the world afire yet.

"When Simpson's boy from college came, the fam'ly prophesied,
Within a year or two, the world would view him open-eyed.
And marvel at the wonders of improvement he'd advance
In scientific methods, if he had but half a chance.
He stayed around the town awhile an' worked quite hard, I jinks,
At poundin' little rubber balls o'er what he called 'the links.'
We've scientific problems still that make professors fret,
But I note young Simpson has'nt set the world afire yet!

"An' so," said Uncle Hiram, "future action does not count
Toward betterin' of our present state to any great amount;
A million 'goin'-t'-do-its' wouldn't balance one 'has-done,'
An' a pound of 'right-this-minute' 's worth 'tomorrow's' half a ton.
I've noticed in my lifetime scores of fellers, sad to state,
Who'd have prospered if they had'nt for their watchword taken 'Wait;'
Fellers sure to do great wonders ere the next day's sun had set,—
But I've noticed none of them has set the world afire yet!"

PREFACE.

IN this book I want to have a heart-to-heart talk with the Thoughtful Reader. I have the advantage that I can talk all of the time and the reader cannot talk back. The reader has the advantage that he can "cut me out" at any time, if he become bored. I shall not try to exhaust my subject or vocabulary and do not wish to exhaust the reader.

I am not talking to the novice all of the time, I am talking to the reader whoever he may be. There are some things in this book that I am sure some people do not want the novice in poultry keeping to know. I do want him to know them. That is the difference. The reader is for the nonce my friend and I propose to let him in on the ground floor. If he does not like it he can move out.

We poultry raisers are a free-and-easy lot. We can talk glibly on any subject whether we know anything about it or not.

Guessing counts and those who guess the nearest alike guess the oftenest. A plausible guess is contagious and we are now apparently enjoying a sort of guessing epidemic. Down South we don't guess so much but "I reckon" is the same disease modified by environment.

It saves a great deal of trouble and worry to be able to guess freely and often. "Of the making of many books there is no end and much study is a weariness to the flesh." Guessing saves study. When it causes weariness it is when it makes someone else tired.

Guessing promotes economy. Should we suspect that our hens are not as good as any, we can guess that they are better and so save buying new blood. We never guess that what costs nothing is well worth it for that would not be a practical guess. Guessing courageously and without too many unpractical, unbusiness-like scruples will increase our egg yield fifty per cent.

This form of guessing antedates the flood. It will never be stamped out. It thrives best in warm weather but survives the most frigid cold. If we guess ourselves out of the hen business we can guess about former egg records. The longer we keep it up the bigger they grow.

If we rapture a heart string, and spend money we can guess that we will be swindled and after the goods come we can guess that we have been; and so it goes, this merry guessing bee. We could not stop it if we would and some of us would not stop it if we could.

The reader is beginning to guess now and when he has read this book he will guess again. We simply cannot help it. We have all got the complaint; some have it worse than others, that is all.

There are several theories touched upon, some of them briefly discussed, in this modest little book. While I regard good theory to be better than bad practice, for any student, still I appreciate that unproven theories should be approached cautiously.

The test of time must be applied to every new theory as well as to every old theory that has been brushed up and offered once more. The old veteran will see them through. However firmly I may hold to certain views outlined herein, I do not expect others to wholly or even partially agree with me unless their own convictions will permit. My business interests have not, to my knowledge, had the most remote influence upon my opinions. I think some things that I have written may be opposed to my interests but I rather like to give my pen the right of way and let it go.

I am not a mind reader so the man who "always knew that" will not be given credit for such of his "original ideas" as I may have used. I give credit wherever I know that credit is due and hold the rest in trust for the owner who succeeds in proving his claim. The first person singular will be used quite frequently without regard to precedent or contemporary opinion. There are but one of us and I am he, in this book.

Should the reader meet with anything that he does not like, a little skipping will discover something different. Our human nature is such that we applaud what others applaud, or what agrees with our present convictions, and condemn the rest.

If we are all right, then poultry knowledge is the most paradoxically mixed up mess of modern times.

My instructions for preparing and using the Ideal Trap Nests and the drawings that illustrate them are as simple and as easily to be understood as I know how to make them. Brevity is said to be the soul of wit but contemporary poultry literature shows that accuracy of statement can be very easily sacrificed to brevity. I am not one of those who believe that "all there is to know" about poultry raising, for profit or anything else, can be couched in language so simple that a child can understand.

I have tried to avoid unnecessary complication in my choice of a not very large number of words in expressing a few of my ideas in regard to a part of what there is to know. A quart of milk cannot be delivered without a suitable vessel to put it in. I am dependent upon the Thoughtful Reader for an understanding, on his part, of what I have to say.

This book is not designed to be an encyclopedia of poultry wisdom. There are books that claim to be. There are many things connected with poultry keeping of which I shall say nothing. It is of no consequence to the reader how much or little regarding those things I may or

may not know. Suffice it to say that it is considerable, both ways.

The Poultry Press, long may it live and prosper, make a business of giving both general and specific instruction in poultry culture. Some of this instruction is from competent sources and is reliable, some of it we will not discuss here. There are a number of good poultry papers and I have no doubt that there would be more if Mr. Edward C. Madden of Washington, D. C. kept hens and realized the importance of promoting the poultry business in all of its legitimate branches. May he never get a stale egg in his Tom-and-Jerry.

This is a special book issued for a specific purpose. Primarily to show how to make and use the Ideal Trap Nest under a license controlled by my patents.

I have thought best to include a discussion of several subjects, some of them intimately and others remotely connected with the use of trap nests.

These articles have been written at different times and we feel differently at different times. I am sorry that photographs of my feelings at different times were not ready in time to have cuts made. What may seem to be a strange intermingling of seriousness and foolishness in some places, is easily accounted for. When a man begins to read up "the reason why chicks die in the shell" and gets to the point where he is asked to consider if the hen does not feed the chick through the shell, hence it starves to death in the incubator, he must move slowly. When his manly brow begins to throb and what appears to be the unquestionable fact that freshly-fertilized eggs are more likely to hatch well in a well-operated incubator than under the average sitting hen comes in to perplex, it is well to unbend and indulge in a little harmless frivolity. This takes off the strain and he can more safely take up the latest "Law of Sex." If the house cat happens to be a female she will be a good subject for experiment. Any rule that will work with her will also work in the poultry yard. When a youth I spent a short time each year, for several years, on the peaceful shores of Lake Winnepesaukee but I failed to note that a quiet and contented mode of life and absence of friction with the outer world and its strenuous (immortal word) struggle for existence and supremacy had produced so many females among the population that soprano and contralto were the only parts taught in the winter singing schools. Probably this was because I was not there in the winter. The reader who fails to catch my point is referred to current gossip in poultrydom.

A talented writer who has published a very good book that claims to contain "all that there is to know" about poultry keeping has not yet answered the following perfectly reasonable question addressed to him last spring by the author of this book: "Can you furnish me with

a—— cockerel, hatched from a brown egg that was laid by a hen that you know to have been a persistent layer?" "If so, at what price?" The courteous inquiry and a stamp failed to bring a reply to that question. A second letter also failed.

I received samples of shell that indicated that the hen that laid the egg had neither laid freely or long. I do not know if the Sage of Wolfboro knew that or not although he claims that we can learn all that we wish to know by observation without the aid of trap nests.

In my serious writing I desire that my words be taken at their face value. The personal equation as a factor in discussion is often given undue weight. An error is none the less an error because promulgated by those who command a high place in society, literature, politics, religion or business. A fact is a fact however humble its source. Behind this little book is the authority of a fairly good number of hens. To me they represent competent authority when we question them one at a time and do not endeavor to form our opinions when they are all talking at once.

There is nothing in this book that can harm anyone, nothing that need require much expenditure of time or money. Any time that an Ideal user becomes tired of using the nests as traps he can use them open and he will have as good open nests as I have ever seen.

I have been told that I take this business too seriously. That depends, of course, upon our point of view. A business that produces so many "wrecks along the shore" cannot be taken too seriously. These wrecks are not always due to the spending of too much money in preparing for the voyage. Many of them are due to a lack of knowledge of the laws of poultry navigation and the neglect to study the charts that show the rocks and the shoals that menace, and the beacon lights that guide or warn the poultry keeper.

There is nothing more important in the conduct of any pursuit, for business or pleasure, than intelligent thought. Nothing more harmful than hysterical assumption.

A man can keep hens, at a profit, for forty years and yet know very little about hens in general, or even his own hens.

Current discussion proves that men may read and criticize and yet know very little of what they read or criticize. This can be applied to poultry keeping, the coal strike, or anything else that gets into print and attracts attention.

Scientific advertising, when it degenerates to scientific lying, may arouse sincere condemnation, but many judge too hastily and allow their own ignorance to mislead them woefully. What may appear incredible to us is often a common-place truth to those who know.

I have read exposes, written by apparently competent authority, that bore the undeniable hall-mark of presumptuous ignorance. Because

one editor is bribable we are not warranted in assuming that all editors are. Because one hundred advertisers are known to be obtaining money under false pretences, we are not justified in assuming that even a single one of thousands of others are.

Popular thoughtlessness is responsible for much that is obnoxious to the intelligent observer in modern advertising.

If the showman did not add a few hundred pounds to the bill-board weight of the fat lady, or the strong man's burden, he would get less patronage.

The subscriber's unwillingness to read, think, reason and learn is in great measure responsible for the unquestioned and bare-faced lies that adorn the advertising columns of our poultry papers and are thought by many business men to be necessary to success.

The plain unvarnished tale lacks interest with by far the great majority of people. The author who attempts to disprove this is running much risk unless he be well fortified by both money and acumen.

The great trouble with those people who are sincere in the belief that the trap-nest idea is not capable of general application is that a full understanding of the question is wanting. They fail, first of all, to comprehend that means for obtaining such understanding has been generally lacking. The author of this book has been largely instrumental in making such means available, not only directly in connection with the Ideal nest, but indirectly in other ways. If it is not meet that he should say this for whom should he wait?

Many very incorrectly assume that a popular recommendation of the trap-nest system in the abstract embodies a failure to understand the conditions under which poultry keeping, as a general proposition, is (or must be?) conducted. To dismiss this as briefly as possible, I will say that no one who cannot get his money's worth from a practical trap-nest outfit can breed and maintain hens, either in large or small numbers, year in and year out, at a legitimate profit. Occasional ill-advised endorsements of nests that are impracticable should not effect the honest claims of other and practical nests, one of which is described in this book. Within my reach at this moment are the descriptions and specifications of a large number of trap-nests the like of which the poultry world has not yet heard of and some of them are good.

The poultry keeper who is obliged to be away from his birds nearly or quite all of the day is in constant evidence. He is not a fair representative of the poultry business, as a business, and were we to cease promoting appliances and supplies as of general utility that are of little use to him, most of us, editors and all, would shut up shop. The most serious fault possessed by an accurate trap-nest is that it is willing to work first, last and all of the time for the user's interests.

The writer is not a scientist and there has been no effort to adopt a

scientific tone in any of my writing, past or present. I have sought for the most simple language that would correctly define my meaning.

There is a tendency in poultry literature to simplify at the expense of accuracy. We are told, for instance, that too much corn will make a hen become broody. Such is not, necessarily, the case. A tendency toward broodiness carries with it a tendency to fatten, hence the whole process will be encouraged by the presence of food elements that can be readily converted into fat.

We are told that clover, vegetables and meat will *make* a hen lay a large number of eggs. Those foods will not, necessarily, bring about any such result. The elements contained in them will enable the hen with normal digestive and assimilative powers to feed such eggs as her inherent tendencies cause to be passed down. That number may be greater or less according to the capacity of the individual and the influences of surrounding conditions.

The scientific writer who makes a special study of foods and food values in their application to mankind or animals is prone to attribute far greater powers to his favorite foods than actual and general practice shows them to possess.

The recent boom in the by-products of certain concerns illustrate this point without lessening or increasing the actual value of those by-products in the least, as they are converted in the internal economy of those who eat them. One of the greatest points in favor of certain much-extolled foods for men or fowls is that they can be made to take the place, to a considerable extent, of heavier foods that are usually used in excess of the actual needs of the body. Over-feeding of ourselves, and those dependent upon us, is a national fault. A man can over-feed himself every day in the year without increasing his weight or the size of his aldermanic trade-mark.

Natural individual tendencies regulate, in a marked degree, the appropriation of food elements in the body. These tendencies vary with different individuals and are largely controlled by heredity.

One more reference to inaccurate writing and I will close this long preamble. One writer of current poultry fact and fiction asserts with great assurance that *all* of the big egg records are made by pullets. Some of us who live where we can communicate freely with the outer world know that this is not so.

I had a flock of twenty-three not very remarkable hens last year (1901) that were hatched in '98 and '99 that averaged 124 2-3 eggs each for the year. Two of them laid 177 each, one 162, one 151 and so on down to 71, the lowest record. Some of these birds are yet with me and are laying well. These are exceptional hens, perhaps, but they have not received exceptional care,

While economic conditions make it necessary for us to maintain our fowls in flocks, often large flocks, the individual bird and its individual traits and tendencies must be the foundation upon which to base all accurate information regarding their proper maintenance and possible profitableness. The small pen of the breeder is but the result of the working of this law and is of no advantage whatever, in regard to fertility or anything else, except as it brings us closer to the individual bird.

The trap nest enables us to get still closer to the individual, whether the separate flocks be large or small, and thereby enables us to judge of effect by the cause rather than of cause by the effect as is generally done.

With no further apology, I submit the following pages to the Thoughtful Reader.

THE AUTHOR.

Yarmouth, Maine, October 1, 1902.



“Our doubts are traitors
And make us lose
The good we oft might win
By fearing to attempt.”

“Who dares not follow Truth where'er
Her footsteps lead,
But says, 'Oh, guide not there, nor there!
I have not strength to follow where
My feet would bleed;
But show me worn ways, trodden fair
By feet more brave;
Who fears to stand in Truth's broad glare,
What others dared not will not dare,
Is but a slave.”

CHAPTER I.

INSTRUCTIONS FOR MAKING AND USING THE IDEAL TRAP NEST.

PATENTED IN THE UNITED STATES AND CANADA.

THE IDEAL NEST BOX.

THE IDEAL NEST BOX may be prepared from any box that is large enough to give comfortable room for a hen. It may be as large as desired, but should not be less than twelve inches wide, and should be at least 10 inches deep for Mediterraneans, 12 to 14 for Americans, and 14 to 16 for Asiatics, and high enough for the hen to stand erect (making due allowance for nest material) without touching her head to the top. Common soap boxes, canned-goods boxes and the like, *stood on end*, are often of suitable dimensions and are admirable for the purpose. With such boxes as these, the front and back referred to in these directions are what were, in the original box, the top and bottom. And the top and bottom of our nest box are the original ends.

Having selected a suitable box the cover should be carefully removed and the pieces cleated together to form the front for our nest box (see fig 1). These cleats should be nailed on 8 in. apart (C to D and S to T). Care must be taken that the nails do not project on the inside.

Saw an opening in this front of the following dimensions: (see fig. 1), mark out with pencil first. (For sake of clearness we will suppose that the box is 19 inches high when stood on end). Beginning at C, 6 inches from the bottom A, mark from C to K., 8 inches; K to G, 8 inches; G to D, 8 inches. Mark the angles J to L and I to H (from G to H should be 2 inches; G to I, 2 inches; J to K, 3 inches; and K to L, 3 inches).

Now saw from D to H, M to I, N to J, C to L; split out the pieces and finish off to angles L, J and H, I and round edges with a knife; this leaves in our front an opening 8 inches high and 8 inches wide, with angles in the corners as shown in the figure. *In no case should these angles be omitted.*

The top cleat Q should be at least 3 inches wide, and the lower cleat R not less than 2 inches wide. The lower edge of the opening O (K. C) should be at least 5 inches above the bottom of the box, inside, so that

the nest material shall not interfere with the "Attachment". It may be lower, however, if a strip of 1-2 inch stuff, 4 inches wide, be nailed on edge across the bottom of the box, inside and 4 inches or more from the front to confine the nest material. If this is done a deeper box will be required.

By adopting this method, a very low box may be used, even for large breeds, as an opening 1 1-2 inches wide may be cut in the front edge of the top of the box to permit the trap plate being raised to the full size of the opening (see U in figs. 5 and 6). Thus it will be seen that a box 13 or 14 inches high might be used, but so low a box would seldom be required and is not high enough for a hen to stand with comfort.

I earnestly recommend that when selecting or making nest boxes this matter of height be considered. It is a rare thing to find a covered nest that is high enough. Many broken eggs, mutilated combs and bruised backs result from using nests that are too low.

For the purpose of removing the hen and egg, the box may be fitted with a cover in the top, (fig. 2,) a door in the back, (figs. 3 and 6) or the front may be hinged to serve as a door, (fig. 5).

When trap nests are to be used in considerable numbers, they should be so made that the attendant can see if they are occupied without opening them. To attain this end the Ideal may be made with the hinged front, (fig. 5) and used back to the wall, or if, used front to the wall, the door in the back may be made of narrow strips or laths cleated together so as to leave openings *not more than 3-4 inches wide* between them, (fig 6.) When the box is used *front* to the wall the attendant can see into the nest through these narrow openings in the back. If the box is used *back* to the wall he can see at a glance if the trap is locked or the nest occupied: an important distinction with some trap nests. I prefer this latter style, (fig. 5,) in every case except when the nests are to be used on a littered floor or opening on a walk. When it is desired to hinge the front in order to use the box back to the wall, 3 inch strap hinges may be used and applied as shown in fig. 5. They may be easily bent so as to form a right angle. The door may be secured by any preferred form of hook or button. A simple catch, made by bending an ordinary screw hook at right angles, may be screwed into the edge of the box at any desired point and makes a strong and handy fastening. (see fig. 4.) This catch I designed especially for the Ideal and it is the only thoroughly satisfactory fastening that I have ever used. It is strong and "stays put." I find it a very handy form of catch for various purposes such as fastening coop doors, holding up the bail of the water pail, etc. Screw hooks of any size can be placed in a bench vise and hammered into the right shape. In use, if they turn too

hard, they should be screwed farther into the wood and then withdrawn the right distance. This will make them work easier. When making the hinged front it should be made 1-4 inch narrower than the box *inside* and the cleats Q and R made as long as the box is wide *outside*, as shown by the dotted lines E E, figs. 1 and 8. The movable portion of this front should not extend below the bottom edge of the cleat R, the remaining space is filled by nailing a strip to the box, (see W, fig. 5.) A space of 1-2 inch should be left between this strip and the bottom of the door to prevent the latter from binding.

VENTILATION.

The Ideal may be ventilated as much or little as is thought desirable. The comfort of the hen should certainly have consideration. Mr. Michael K. Boyer made ventilation one of the cardinal points in his trap nest "contest." The box may be ventilated by boring holes in the sides, using a large bit or auger, or a box may be constructed of slats or laths 3-4 of an inch apart, or the sides alone may be made in this way and the back solid. Openings should not be made in the top of the box unless it is to be used where the hens cannot perch on it, as their droppings will go through and soil the nest. If the box is high no openings should be made that will be above the fowl's head when she stands erect. Hens will jump toward the light that enters above their heads and may break their eggs. Boxes having openings in the lower part of the sides or back, should be used where they will not be exposed to direct draughts of air. The form of the trap-plate and the hen-opening are such as to provide air, probably sufficient in many cases.

TO MAKE THE ATTACHMENT.

The Ideal Attachment, a sample of which accompanies the plan sheet, consists of a trap-plate, (A fig. 8) and a pawl or trigger (P fig. 8). For the trap-plate take a piece of 1-2 inch dressed board not less than 9 inches wide and 11 inches long (old boxes will often provide suitable pieces.) Place the model on this and mark around it with a pencil; bore 1-4 inch hole in exactly same place as in sample; draw straight lines as shown in fig 7, then saw from A to B, C to D, E to F, G to D, H to I, J to K, L to M; cut notches and finish to curved lines with knife.

The pawl (P fig. 8) is made from 3-4 inch stuff. It is very important that this pawl be at least 1-4 inch thicker than the trap-plate which should be at least 1-2 inch thick. Mark out from sample; the grain of the wood should run lengthwise of the pawl; bore 1-4 inch hole in exactly the same place as model, then saw out and finish with knife.

TO PUT ON THE ATTACHMENT.

The trap-plate should be secured to the inside of the front by a ten-wire screw, 1 1-2 inches long. This screw should enter the front at a point just 3-4 of an inch above the top of opening O, or 8 3-4 in. above the bottom edge, and 1 inch from the side of the box, see fig. 8.

When the box has the door in the back or a cover in the top, the front is nailed on and the trap-plate, when closed, rests against the side of the box. When the front is hinged to open as a door a small piece of wood, 1 inch thick, 1 inch wide and 1 1-2 inch long, is nailed on to the inside of the front to serve as a stop for the trap-plate, see W, fig. 8. Two pieces of 1-2 inch stuff, one piece on top of the other, will answer.

The trap-plate should be attached to the front so loosely that it will fall back quickly when raised to its full height, and yet not so loosely that the pawl will fall behind it when it is pushed inward by the hen.

The pawl is also secured to the front so that it will move freely and at such a point that the end of the pawl shall fit easily into the lower notch in the trap-plate, (N fig. 8), and at such a height that the top of the pawl, (Z fig. 8), will be 3 1-4 inches above a point directly in line with the lower edge of the hen opening O. If the trap-plate and pawl have been properly hung the opening from X to Y (fig. 2) will be about 2 1-2 inches wide when the trap-plate is down and the pawl will fall from its raised position when this opening has been increased to 4 1-2 inches by raising the trap-plate (fig. 9). Should the breed be of very small size, so that they can enter the box without opening the trap-plate 4 1-2 inches, a strip of 1-2 inch stuff 6 inches long, should be tacked on to the inside of the box at Z, fig. 2; the pawl will then fall when the opening is 4 inches wide; or, if preferred, the curved recess in the edge of the trap-plate need not be so large as that in the pattern when the Ideal is to be used with Mediterraneans; for Asiatics of very large size this recess may be made 1 inch deeper if desired. Both the trap-plate and pawl should fall easily from any position when allowed to drop, either quickly or slowly, as upon the correct working of this trap-plate and pawl the accuracy of the trap depends.

In this connection I will say that, should the poultry house be excessively damp, the seasoned wood of the trap-plate, pawl, or front of box will swell and the attachment may stick, especially if the screws have been put in too far—a common mistake. Should this happen the offending screw must be loosened. When hanging the attachment a little vaseline or oil on the screws will prevent rust and lessen the liability of trouble in very damp houses. It will also be well to try and remedy the faults in the house that cause dampness, as damp poultry houses are exceedingly bad abiding places for poultry. Of course the nests are not designed to be run under water but they can be if the above obvious expedients are adopted.

At this writing I have never received a voluntary complaint from a customer. As neither my customers or myself are infallible and my description may not be wholly clear to every reader, I earnestly request that, should any trouble whatever arise, I be notified and given a chance to prescribe the remedy.

Public criticisms of the Ideal by people who have failed in their attempts to devise as good a nest and have at best a somewhat vague and superficial knowledge of our patent laws and system — at worst a most profound ignorance of them—will never occur if fair trial is allowed to anticipate judgement and I, as the inventor and promoter of the device, am treated with ordinary business courtesy and candor.

To give any trap nest a fair trial, at least one pen should be entirely equipped with them. This will require at least one third as many nests as there are laying hens.

Having prepared a sufficient number of Ideal nest boxes, put in a good supply of nest material, and place them in the pen just where they are to remain, first removing all other nests. In order that the hens may become accustomed to the new nests as quickly as possible the trap-plates may be raised and secured by tightening the screws. The nests may be used in this way for about one week, or until the laying hens have all used them, when the screws may be loosened and the nests used as traps. If the boxes are high enough to permit of it, or if openings have been made in the front edge of the top, as shown in fig. 5, the trap-plates may be raised so as to rest on the end of the pawl when for any reason it is desired to use the Ideal as open nests.

This is a suggestion merely. I always use the nests as traps from the start. I do not remain in the pen watching the hens as that would prevent them from following their own inclinations. I leave the nests and the birds alone and they get together all right as a rule. There are sometimes exceptions. Those are referred to under the heading, "eggs laid outside the nests" and elsewhere. Nest eggs should never be placed in trap-nests; they are an unnecessary nuisance with any nests, except when used with sitting hens, and should positively never be used in traps.

This positive statement will very naturally arouse opposition with some readers. I should not feel justified in making so broad an assertion had I not thoroughly canvassed the matter. Do not nest eggs induce pullets to lay in certain places? They certainly do. I doubt if the pullet that has not laid is influenced any by a nest egg, but after she begins the presence of anything that resembles an egg, in a nest *or elsewhere*, prompts her to lay her offering along side of it. That is one of my several objections to nest eggs. Birds form habits very easily and it is not always easy to change them.

Nest eggs are cold in winter, chilling the birds, often with serious results, and are a prolific cause of broken eggs. They have a great tendency to produce and foster broodiness and their constant use will lessen egg production.

The healthy and ambitious layer, pullet or hen, will, as a rule, use the Ideal trap-nests, if they are properly constructed and installed, without the use of nest eggs or other bait. I have had pullets on free range fly over the yard fences, enter the poultry house, and lay their first eggs in Ideal nests. These were exceptional cases of course.

In flocks of any size eggs are likely to be laid outside the nests occasionally, especially before the drones have been weeded out. The various causes for this, although usually preventable, are not always prevented. One egg laid outside may attract several others, especially if the birds have been accustomed to the use of nest eggs.

TO OPERATE.

Place the finger under the pawl when it is in the locked position shown in fig. 8; raise the pawl and the trap-plate will rise and fall back, leaving the pawl in the position shown in fig. 10. The hen, when entering the box, raises the trap-plate by the pressure of her body and the pawl drops into the opening in the back edge of the trap-plate. When the hen is inside the trap-plate resumes its original position, but the pawl has fallen into the notch X and the trap-plate is securely locked.

If the box has the opening in the front of the top (U fig. 5) one of the catches (fig. 4) can be screwed into the top edge of the front 2 1-2 inches from the side containing the hen opening and will serve as a stop, preventing the trap-plate from being thrown too high when the hen enters. A half turn to the right will permit the trap-plate being raised on top of the pawl when an open nest is desired. Turning the catch back will lock the trap-plate.



CHAPTER II.

First experiences. Controlling broodiness with the Ideal. Number of nests required: Location of the nests in the poultry house. The best location. Eggs laid outside the nests; causes and how to prevent.

FIRST EXPERIENCES.

When beginning the use of the Ideal they may sometimes be found locked and no hen within. This feature is not due to any imperfection in the trap device, but is the result of the investigation of the new nests by the hens. If the trap did not spring until after the hen had entered the box it would only result in more hens being found in the nests, not necessarily more eggs. The trap, springing as it does, simply prevents the curious hens from entering the box. In a short time the flock will become familiar with the nests and the laying hens will enter them without hesitation.

There is another point to be noted in this connection. It should be well known that a hen cannot see in the dark. If the nest box is built so closely that all of the light enters from the hen-opening the nest may become invisible when the entrance is filled by the bird's body as she attempts to enter the box. This may result in her backing out and the trap locking. In other words the bird is afraid of her own shadow. Especially is this likely to cause trouble when the nests are placed front to the wall, or in a semi-dark or secluded location. By this we see that the boxes should not be too dark. All theories that are opposed to this are untenable. However much exposed the location of our Ideal nest boxes may be, the nest itself will afford sufficient seclusion.

Non-laying hens and male birds will sometimes spring the traps but it would be more trouble to release them had they entered than it is to reset the traps. If desired, the trap-plate may be set so as to present a larger opening by raising it just enough for the arm to rest in the notch in the pawl. When the hinged front is employed the trap may be set without opening the door by making the opening marked S in fig. 6. This opening should not be over 5 1-2 inches long and one inch wide; this will involve a little extra labor when preparing the box and is by no means necessary.

When the Ideal is to be used on a shelf or under the droppings platform, it should have either the hinged front or the door in the back for removing the hen and egg. When used facing the wall a passage-way should be left in front of the nests to give the hens access to them.

Sand or dirt may be used in this passage but not nest material as that would tempt some of the hens to lay outside of the nests. A space wide enough to admit the hens to the passage, should be left at the center or any preferred place in the row.

If the nests are used back to the wall they should be so placed that the hens cannot get behind them. When one nest is to be placed on top of another, a board should be fastened to the top of the under box, projecting about 6 inches in front to permit the hen to reach the upper nest; cleats may be nailed to the board to prevent the nest from being pushed off by the hens. If such a board be fastened to the bottom of the box, the nest may be hung on the wall at any convenient height, provided it has the hinged front, or a door in the *side*. The Ideal nests may be made in banks or groups, "one box for each pen," if you wish, but most poultry keepers, I think, prefer to have their nests single and separate. I also prefer to make them with a bottom but it is not necessary.

A hen will often select one nest in which she will lay day after day, sometimes waiting a considerable length of time for it to be vacated. Taking advantage of this habit, I frequently "break them up" when broody simply by locking them out of their favorite nest and they will often begin laying again in a short time. While this will not be successful in every case it is well worth trying, for the brooding habit can be controlled to a considerable extent by the judicious use of the Ideal.

The constant handling of the laying hens and the frequent collections of their eggs has a tendency to keep them laying and overcome the inclination to sit. The trap nest has exploded the theory that a hen will only lay a certain number of eggs and then "go broody." The tiny eggs that have been commonly supposed to indicate the "end of the litter" may be laid at any time by hens that are out of condition.

When sitting hens are wanted they should be left on the nests as long as they will stay voluntarily, when they want to get out they should be released; do not try to force them to sit. Their eggs should be marked and dated and returned to them. When a hen begins to cluck, or has remained on the nest quietly for a day and a night, she may be removed to the hatching room, even if she has not stopped laying. Here seclusion and quiet, plenty of whole corn, grit and water and a few nest eggs will generally bring about the desired result.

NUMBER OF NESTS REQUIRED.

It is impossible to state the exact number of nests required, in every case, as that depends upon the number of eggs laid daily and the frequency of collections. There should be enough nests so that they will not all be occupied at one time. When a hen wants to lay she should

not only be able to find a nest to lay in but she should have a choice of nests, as if only one happens to be vacant it may not be in just the location to suit that particular hen.

I have found that when the eggs are collected but three or four times daily, it is advisable to have at least two-thirds as many nests as there are eggs laid daily. Hence it follows that the number of nests required depends more upon the number of eggs laid than on the number of hens in the flock.

By fitting up my pens with a number of nests based on the egg yield, adding more nests as more eggs were laid, I have been able to keep the eggs laid outside the nests down to a very small number, even with flocks of pullets. A proper arrangement of a sufficient number of traps in the pen will permit of a record being kept of practically all of the eggs laid by a flock that is in good condition.

It is customary to reckon one-third as many nests as hens but that rule will not always work. I have seen the claim that one nest for five hens was sufficient. That estimate was applied in connection with a somewhat expensive nest that was sold ready-made. One nest with five hens appears to have been one of the rules that helped to make a certain Experiment Station test one of the most amusing pieces of folly on record. The injustice, bigotry and inaccuracy that characterized the test was disclosed in a Report that also revealed the almost incomprehensible stupidity of the management.

Four nests might be sufficient for twelve hens but it does not follow that one nest will suffice for three hens. Three hens are likely to want to lay at practically the same time, occasionally, but they cannot all get into the nest at once—that is if it is the Ideal. I would use at least two nests with three hens. Perhaps five hens would need no more if looked after frequently. Ideal nests are cheaper than time however.

There is but one correct rule to follow and that is: use nests enough so that all of the nests will not be occupied long at one time. That might be two nests with one flock of twelve hens and eight nests with another. It all depends upon the kind of layers one has and the system of attention adopted.

I cannot impress too strongly upon the reader the importance of installing nests enough. It is immaterial, in this connection, whether the fault has been in the design of the traps, their expense, or lack of forethought on the part of the user the fact remains that probably ninety per cent of the troubles that people have had with installations of trap nests and the resulting ill considered and inaccurate opinions that have been advanced regarding this system have been caused, directly or indirectly, by an insufficient number of nests.

I do not think it necessary to explain in detail all of the reasons for this. Suffice it to say that experience will prove to any reasonable man,

woman, or child, that much time and trouble will be saved by installing nests enough to properly care for the egg yield. I have no doubt that I lose sales by emphasizing this point. I know that some go to greater expense for a less number of some other make of nests that occupy more room and then spend more time attending to them than my customers will find necessary. I think it better to be right, however, sales or no sales.

THE LOCATION OF THE TRAP NESTS IN THE POULTRY HOUSE.

That the somewhat limited space under the roosting platforms is a convenient and desirable place for a portion of the trap nests, or even for all of them in some houses, I will allow, but to my mind there are several very important reasons why this location should not be selected as the best, or to the exclusion of all others, in the great majority of poultry houses.

First it is perhaps unnecessary to say that many poultry houses are not provided with droppings-boards, and that in many more that are, there is not sufficient room beneath them for the necessary number of trap nests; hence some other location must be considered for at least a part of them. Individuality is a strong characteristic of some fowls, as well as some men, and while it is possible to train them to do as we wish in many things, it is equally impossible to teach all of them to do our bidding. To succeed in coaxing every laying member of a flock of hens to deposit her eggs in just such a nest, placed in just such a spot as we have decided to be the correct one, will be no light task unless the flock be very small, and not always then. I once had a hen that refused to lay in any of the open nests placed on the floor of the pen. Her egg was always found on the floor, (we were able to distinguish it from the others, for the hens were mongrels and her egg was unlike the rest), but a nest box having been placed on top of a barrel she at once adopted it as hers and laid in it right along. When the box was again placed on the floor this hen laid on top of the barrel. It is this trait in some members of the flock that will account, in some cases, for the eggs that are laid outside of the trap nests.

While it may be possible to teach the hens to use the nests by being constantly on hand, and when one is found sitting on the floor placing her in a nest, I have found it to be much easier to so place the nests in the house that the cranky members of the flock should find one suited to their peculiar notions. The fact that out of 1,368 eggs laid by one pen of mixed hens and pullets, none were found outside the trap nests, may perhaps give some color to what many might call a theory. In this pen

I had at one time seven nests placed back to the light under the droppings-boards, five on a shelf and six placed around in different parts of the room near the wall; at this time there were forty laying hens in the pen. Most of the hens would lay in any nest that happened to be vacant but some of them showed a decided preference to a certain location, and a number to a certain nest. The fact that some of the nests that stood alone were always occupied by the same hens, and that they would never lay in the others, proves to me that those hens had notions of their own in regard to the location of the trap nests in the pen. The removal of a few of the nest boxes later, resulted in nearly seven per cent. of the eggs being laid outside of the traps in one month.

This experience and these suggestions will apply more to flocks of hens that have not been bred to such a degree of uniformity as should characterize a flock of pure-bred birds of one strain. With a good flock of pure-bloods there will be more similarity of temperament and we need not be so particular regarding the distribution of the nests.

THE BEST LOCATION.

The best location in many poultry houses for the majority of the trap nests, if not all of them, is on a platform or shelf suspended from the rafters or supported from the floor at such a height that it will be easily accessible to the hens and the attendant. Such a platform may be built in the scratching room or roosting room as preferred, should they be separate. The height from the ground may be from 12 to 40 inches, according to breed. This location is more convenient and more agreeable for the attendant, who is not obliged to stoop when removing hen and egg. The nests are out of the way of the scratching material if the scratching room and laying room are one as is often the case. They will be warmer in winter than on the floor under the droppings boards besides allowing more floor space for the flock. Poultry keepers of the gentler sex will especially appreciate the advantages of a shelf for the trap nests. While the space under the roosting platforms is probably the least airy part of the poultry house in summer, it possesses the advantage that the tops of the nest boxes are protected from hens perching on and soiling them; but the boxes used elsewhere may be protected by slanting boards, hen wire, or in any preferred manner, if desired. I will say, however, that if the birds are fed properly they will not perch on the nest boxes to any serious extent during the day. At night they will occupy their accustomed roosts unless mites or other distressing conditions are present. This matter of the location of the nests is worthy of careful consideration. Even then we could not all agree. Our hens are not all alike. If they were, these instructions would be more brief.

To my mind the most objectionable place that would be likely to be devised for any nests, trap or open, is beneath the droppings-platforms, and I have tested it thoroughly, yet some prefer them there. Our own convenience, comfort and scruples should, in great measure, govern the matter.

Were I to fit up a poultry house with what I consider to be an ideal equipment of Ideal nests I would group all of the nests together if the plan of the house permitted such an arrangement. If it did not I would have two or more main groups and single nests where there was a chance for them, if they were needed.

I do not mean that I would build the nests together but that I would arrange the separate nests in one, two or more groups.

I would have all that I could of these nests up off of the ground, either on a platform or hung on the wall. These nests would all be made after the style shown in fig. 5 with the hinged front. If any nests were to be permanently used on the ground, I would make them after the style shown in fig. 6 and use them facing the wall and about one foot from it. With such groups of Ideal nests they all look alike and the birds are not so likely to become attached to certain nests as they are when the nests are of different styles and separately distributed. For this reason also I would have no other make or type of nests in the pen. Given such a group of uniform nests the bird that desires to lay will go from one nest to another in the row and select one that is unoccupied. The same hen may use each nest in the group in as many days. A single glance at this group of nests shows the attendant instantly which nests, if any, require his attention. This is a matter of no small importance if many nests are used. There is a farmer near here who uses a system of open nests that he thinks is about right and he would laugh at the idea of fooling away his valuable time with traps. Yet I will guarantee that he spends one-third more time in feeding and watering and caring for his hens and picking up 100 eggs a day than I do, and he does not spend half as much time at it as he ought either. He could not distinguish a hen that had not laid 10 eggs in six months from one that had laid 150 in the same time, to save his life.

Not only does the arrangement of traps that I am describing save time but, if the nests are raised above the ground sufficiently, we have the hen where she can be handled with the greatest of dispatch and ease. I like a distance of 30 to 40 inches from the ground to the bottom of nest.

My Rocks and 'Dottes have no trouble in reaching a bench of that height and the dry sand and litter on the floor does not injure them when they jump down. Of course this height is not arbitrary.

My bench or shelf would be 2 or 2 1-2 feet wide and the nests set

back far enough to leave sufficient margin for the hens to move freely in front of the nests.

Such an arrangement, in its general conception, economizes space in the greatest degree. No floor space, or indeed any space that would be needed for anything else, need be used. It is more agreeable as well as more convenient for the attendant to attend to the nests than would be the case if they were situated under the roost-platform where he or she must stoop when removing the hen and egg often approximating certain disagreeable and unsavory accessories. The hens like such an arrangement, apparently, as well as the attendant.

If there is a single objection to this nest-plan a three years test has not revealed its importance to me. There are some theories opposed to it and they are in a measure correct theories. I carefully nursed them for awhile, but when you find a theory, however good it may be, that can, with propriety, be improved in the interest of convenience it is well to change it even if you have to make a change of front at the same time. My general description will admit of various modifications to suit different houses and flocks.

Platforms for the trap nests may be hung from the rafters with furring or supported from below. They may be of any height preferred, from one to four feet above the ground; or two platforms may be used one above another. If one platform is 20 inches above the ground and another 20 inches above that, three rows of nests may be used, one row on the ground and two more above. Thus two platforms, each 8 feet long, would accomodate fourteen nests and seven more on the ground would give twenty-one nests, enough for from forty to sixty hens, without sacrificing but little floor space. The space beneath this lower platform, if open at the ends, will be cooler in summer than that beneath roosting platforms as usually situated.

A very good point to remember when arranging nests on a scratching floor, or water pails, grit boxes etc. that are near the floor, is that hens scratch away from the light. The litter will be thrown toward the back of the pen. If Ideal nests, made after the styles shown in figures 2, 3 or 6 are used on the scratching floor, back to the light and near the wall, the litter will not be likely to interfere with the trap.

EGGS LAID OUTSIDE THE NESTS.

When eggs are laid outside the nests there must be a reason for it. There may be an insufficient number of nests, or some of them may be too light, or too dark, or improperly located in the pen; they may be infested with vermin, or some of the hens are too fat. Whatever the cause may be it should be searched out and remedied as far as possible.

If boxes are so situated or constructed that they are so dark that the

hens cannot see the nest, they will not be used. If the boxes are ventilated in such a manner and placed in such a location as to admit too much light, some of the laying hens will avoid them, while the non-layers may patronize them for scratching purposes only, especially if a good supply of scratching material has not been provided elsewhere. Eggs that are found on the droppings-boards or in the open floor or yard, are laid by hens that are out of condition. Their egg organs are weakened by accumulations of fat so that the egg is voided prematurely. Incontinence may be caused by too frequent or too ardent attentions of the male, or a low tone of the nervous system, resulting in a lack of ambition may be at the bottom of the trouble, or it can be caused by over-stimulation.

It is somewhat amusing to read after the Author-of-all-poultry-knowledge, who claims that we can keep track of our layers well enough by observation without the aid of trap nests and in the next word says that we are not warranted in using them for the reason that eggs will be laid outside and no one can tell which hens laid them. If this Sage cannot find the pullet that drops her occasional egg in some corner his superior intelligence would hardly enable him to keep track of those that lay in the nests.

If eggs are laid around anywhere it will require considerable close observation and study to search out those few individuals that are responsible and get at the root of the difficulty. This goes to show how hopeless would be the task of attempting to keep track of the whole flock by the same methods.

Our first concern should be to supply an adequate equipment of suitable nests. This book shows one way to do that. Next we should so feed and care for our flocks that they shall be in good working condition, not indolent and filled with fat. The hens that lay in the nests at all and thus gain a place in our egg record will, as a rule, use them all of the time if they are not barred out. Those birds that prefer to lay outside are always the same birds. They do not lay in the nests part of the time and outside part of the time.

The record sheet will show which birds are using the nests. Those remaining will include the outside layers if there are any. It may be more trouble to watch for these drones than it is worth unless, as should be the case with Experiment Station workers we are seeking knowledge for the benefit of others. Those who are already so supremely wise that they do not care to look into the details of poultry keeping carefully will be perfectly justified in holding their peace regarding things that they can know nothing about. Ready guessers are mighty poor instructors.

Profitable layers will use suitable nests if such are available when they want to lay. I have taken the trouble to search out and keep track of

such of my birds as declined to use the nests. There was something the matter with every one of them and they were fickle layers.

When the drones are culled out the trouble will cease as far as anything that can be charged to the hens is concerned. If the nests are teeming with lice or mites we cannot blame a hen for declining to use them, but even when such deplorable conditions exist the most persistent layers will use the nests and suffer the consequences.

Delaying a meal much beyond the regular time (there should be a regular time) will sometimes cause hens to hold their eggs and neglect to enter the nests in time. In such cases eggs may be dropped at the attendant's feet when he enters the pen and the birds flock around him eager for their tardy meal. Regularity in feeding will prevent this.

Constant espionage by an inexperienced and over-anxious caretaker will be very likely to produce such conditions in a flock that an abnormal unrest and eagerness for food between meals will result both in the laying of eggs outside of the nests and in an appearance of uneasiness under restraint, with the birds in the nests. The wholly mistaken notion that a hen should be, or always desires to be released from the nest as soon as the egg is laid has often been fostered because apparently sustained as a result of such unpractical methods. The novice in poultry keeping is by no means the only offender in this respect. The trap nest novice is.

If reasonable confinement in trap nests is likely to injure our birds in any way then let us cease to impose the much greater restraint made necessary by our methods of caring for brood hens, breeding males, exhibition and market birds, and expensive specimens shipped to fastidious customers. Preconceived notions are not always consistent or sane.

When an adequate equipment of Ideal nests is provided and the flock properly fed and cared for and eggs are found outside of the nests, the presence of drones that should be weeded out may be suspected.

It may be regarded as reasonably sure that such birds as have a place in the egg record are not guilty. That will confine the suspects to those birds that do not appear in the daily records. This fact being recognized it will simplify the matter of detecting the offenders. A little watching will generally result in catching the bird or birds in the act and a note can be made of them.

When eggs are found in some corner or secluded spot where the hen has made a nest for herself, an Ideal nest box should be put in that place or as near it as possible. I have found that by this means the hen or pullet was invariably caught, and after using the nest once or twice would continue to lay either in the same nest or in the others.

To illustrate: on the 9th inst., an egg was found in the dust box, on the 10th another, in the same place. An Ideal was placed in the dust box; on the 11th, no egg was found; on the 12th, a pullet with no leg band (I do not give them bands until they begin to lay) was found with her egg in the Ideal. She was given a band, and on the 13th and 14th laid in this same nest box; since that time she has laid regularly in the same nest, although it has been moved to another place, and no more eggs have been found in the dust box. I could cite many of these cases if necessary.

Those who do not favor the general use of trap nests, may believe that it is impossible to prevent a large percentage of eggs from being laid outside the nests, and I have no doubt that this is true with many of the traps in use, which are of such construction that they only present the nests to view a part of the time. As imitation is a strong factor in hens learning to use any nests, they do not so readily learn to distinguish between the unoccupied nest which they can see and the closed nest which they cannot see. The Ideal presents the nest to the view of the hens all of the time; when it is occupied the other hens recognize the fact that it is a case of one at a time, and wait for it to be vacated, or look for another nest which has the same appearance, only it is unoccupied. Still another cause of this trouble is the presence in the pen of different types of nests. Some of the hens may become attached to a certain style of nest and refuse to enter another kind. If locked out of their favorite nest for a long time they may lay in front of it or elsewhere outside. These facts are given to serve as suggestions merely. Any construction or arrangement of the nest boxes that proves satisfactory in results will be correct; while if many eggs are found outside the nests, it will show that something is wrong and needs to be changed.

All of the foregoing may seem to be very trivial to those who regard it as a foregone conclusion that some hens will deposit their eggs anywhere, anyway, whether or no, and we should let it go at that and pick up the eggs. I assure the reader that when eggs are laid around anywhere, or under the roosts at night, in considerable numbers, something is radically wrong. Either a lot of unprofitable drones are being maintained at the expense of the birds that regularly use the nests or conditions of feeding or care exist that are not conducive to the best results in egg production.

CHAPTER III.

The best style of nest to use. One or two compartments; which? The two-compartment Ideal. The care of the nests. Collecting eggs. Record Keeping. Using the nests open. Separating the layers from the non-layers. Brief Pointers.

THE BEST STYLE OF NEST TO USE.

IN THE majority of cases the style shown in figure 5 of the plan-sheet—the one with the hinged front—will be the most satisfactory. This style is to be used facing the attendant and the light. It can be used under the droppings-boards, on a shelf, on an unlittered floor, or, by nailing a board on the bottom, projecting 8 inches in front, it may be hung on the wall. This hinged-front style is the one preferred by Mr. M. K. Boyer, and it was largely due to his criticisms of the other styles that I was led to make a most thorough test of this one that justifies me in recommending it as the best in most cases. Very nervous hens will not be as contented in them as they will in a box facing the wall and having a solid back, but careful handling will soon tame such birds sufficiently.

The styles shown by figures 2, 3 and 6 are best adapted for use on a littered floor, facing the wall and about one foot from it. The litter will not interfere with the operation of the trap. The style shown in figure 2 is the most economical to prepare as no hinges are needed, but it is more difficult to handle the hen, and, if nervous, she is likely to get away from the attendant. The style shown by fig. 3 has the advantage that the rear door being hinged at the bottom drops down and deep litter in the pen will not interfere with its being opened.

The style shown in fig. 6 is the best one of these three styles. It will not be much trouble to clear away what litter may pile up against the back and when the door is opened the hen is not so likely to leap upward toward the light that, with the drop-down door, is first admitted from the top when the door is being opened.

Having described these several styles and given my opinion of their comparative merits, that may or may not agree with others, I recommend that, after reading the directions regarding the location of the nests in the pen, the style or styles of nests that are desired be selected and enough boxes be obtained to fit up at least one pen completely. Prepare all of these boxes for the application of the attachments. Then make, or have made, enough attachments to fit up all of the boxes. Then hang and adjust the attachments, following the directions

explicitly. It will be well to have the hen-opening exactly 8 by 8 inches as the measurements given for adjusting the trap-plate and pawl are based upon that exact size.

After the boxes are all finished and ready for work, place them in the pen and remove every other nest of whatever kind or nature. This for best results. The Ideal is not ashamed to go into company, good or bad, but when it tackles a job of this kind it likes to handle it alone and then it knows that the work will be done right.

Placing one trap nest in a pen of hens, expecting to learn much about the nest or the hens, is about as reasonable as it would be to expect one man to carry a grand piano up a flight of stairs. The man might be able and willing to do his part but he could not, and would not try to do much more than that.

If the reader, after he has tested a complete equipment of Ideal nests long enough to understand them, and the relation that a single, solitary trap nest bears to a flock—even a very small flock—of hens, and considers that probably nine-tenths of the unsatisfactory trap nest tests that have been made have been apparently made on that basis, he can form his own opinion of some expert judgement and will perhaps say with Schiller: “Against stupidity the gods are powerless.”

One trap nest is of no practical use to anyone unless he can rightfully use it as a model from which to make a complete equipment. “One trap nest is enough for five hens” is true if only one hen is laying and the others let the nest alone, but if two hens are laying it is not enough, unless both are able to occupy it at once—as they are very likely to do with some traps.

I do not know as anyone in particular is responsible for the very prevalent notion that one trap can be made a satisfactory test of its own merits and of the practicability of the trap nest system.

It seems to be due to the all too common tendency of people to jump at conclusions, to assume that they understand a thing before they can know anything about it, and to ignore completely all competent authority.

Experience in the care of poultry justifies no man in assuming that he is competent to judge of the practicability of the individual system or of the appliances used in connection with it until he has been qualified by adequate experience with the system and its accessories.

The average daily egg yield and the length of time between the visits of the attendant are the only factors that determine the correct number of trap nests to place in the pen. The egg yield is the most important to be considered of these two. As many nests will be needed if they cost three dollars each as if they cost but three cents each. If the nests are so large that there cannot be found room for enough of them it will not lessen the need of more. “One box sufficient for each pen” in an

advertisement means that all the nests are made together, as a group of Ideal nests can be made if desired. It is, in my opinion, a bad plan and I advise against it. The nests should be single and separate so that they can be moved readily, taken out of doors and cleaned if need be, and arranged in the pen as convenience and circumstances may dictate.

This whole matter of the construction, arrangement and use of trap nests is so very simple when once understood that such a treatise as this would seem to be unnecessary did the author not know how little the matter is really understood.

I am writing frankly, and as plainly as I know how, as an instructor and I trust that each reader is an earnest student and willing to learn.

Should he have but a small flock and a roomy house and grasp my meaning and understand its importance at once, he may think that I am long-winded and take too much time to explain obvious matters. If so, I will remind him that there are others with larger flocks, differently constructed houses and various conditions to contend with that make the matter of trap-nest installation a fair problem. There are also some with heads so full of original(?) notions that it is pretty hard to crowd in a practical truth without causing concussion of the brain. I hope to have a large class and they will be varied in their individual make-up and be surrounded by conditions differing widely.

ONE OR TWO COMPARTMENTS; WHICH ?

Either the single or double compartment ideas for a nest box are not patented or patentable. Those who would like to divide their nest boxes into two parts, one for the nest and one for a "waiting room" can do so without infringing upon anyone's rights. I designed, years ago, quite a number of two-compartment nests and have also used and examined many others.

Our Ideal nest box can be made about two feet long and divided by fastening a 4 inch strip across the center of the box, or a box some 2½ feet long with the hen-opening made in the side can be used. This side can be hinged at the bottom so as to be opened downward. A strip four inches wide and of suitable length can be nailed across the box diagonally and the nest placed in one corner. After the hen has remained on the nest as long as she desires (from five minutes to as many hours) she may come off and wait patiently to be released or, if she is nervous, she may race back and forth on and off the nest. She can pull her egg out of the nest or eat it where it is, if she knows how. She can roost on the edge and soil the nest if she likes, and she is far more likely to do this than were she in the nest itself.

Personally I do not care for a two-compartment nest. I have had more eggs broken in two-compartment nests than in single apartments. The fact that some types of traps require so large a box led me to abandon such types and design a new type and fully protect it by letters patent. My customers can use any kind of box that they choose, provided it is large enough, in combination with the Ideal front and trap device.

THE CARE OF THE NESTS.

The nest-containing portion of the nest-box should be deep enough and tight enough to contain and retain a quantity of straw, or hay, sufficient to make a good nest. One that in use will always provide an elastic cushion to break the fall of the egg. A hen stands when laying an egg, paradoxical as it may seem to some. Sand is good for use under the nest material.

This supply of nest material should be maintained. I have allowed my nests to remain entirely devoid of nest material for months at a time. The nests were used just the same without the nest material as with, its absence or presence made no difference. Eggs that had strong shells were not broken, weak-shelled eggs often were, as they are likely to be in any nests. In practical use an abundance of nest material should be provided.

The nests, if kept clean, will discourage the breeding of lice and ensure greater cleanliness of the eggs. When droppings are found in the nest they should be removed. It is said to be a "mean bird that will foul her own nest" but in practice very nice birds will do so. It is not always due to the hen remaining in the nest box too long, not by any means. Hens very frequently void excrement at the very moment that the egg drops. For this reason soiled eggs are not entirely preventable.

I have found common kerosene oil an effectual preventative of lice in the nest boxes. I spray it in, on and around them thoroughly with a 50 cent tin sprayer that gives a mist-like spray. But little oil is wasted.

By spraying the nests late in the afternoon, after laying has practically ceased for the day, the hens are disturbed but little by the sound of the escaping spray. The oil will evaporate from the nest material sufficiently before morning so that the eggs laid the following day are not impregnated with it. At least I have found it so. If in doubt this test can be made with caution at a time when the eggs are not being used for hatching. I spray the nest material thoroughly with this fine spray at any time when I feel like it, and eggs used on the family table are all right. Remember: I counsel caution in this regard. Nest material damp with kerosene will not injure the hen. I have never

known it to injure an egg. Satisfy yourself by actual test before depending upon my experience.

If the care of the nest boxes is a periodical occurrence they should be taken out of doors, thoroughly cleaned, kerosined and filled with fresh nest material. The styles of boxes herein described are admirably adapted for convenience when cleaning up time comes.

That reminds me of the story of Augeus a fabulous king of Elis who won fame as the possessor of a stable, containing 3,000 oxen, that had not been cleaned for thirty years. Hercules cleaned it out in a single day. Could some modern Hercules be pressed into service on all of the poultry plants that are in a condition similar to that of the stable of Augeus the increased egg production of the country that would result might have a serious effect on the egg market.

COLLECTING EGGS.

There is a familiar saying that practice makes perfect. The chronic guesser may have heard the saying but is seldom willing to apply it impartially.

An experience of several years with trap nests, during which time I have personally collected forty thousand eggs, more or less, from them, is no doubt responsible for a view of this matter that differs materially from that obtaining among those who, for various reasons, desire to bring discredit upon the individual system, those who have adopted it and the appliances necessary to use in connection with it.

It is claimed by some, who have had more or less experience in handling poultry or writing upon the subject, that, even admitting the value of this system in the abstract, the attention of traps consumes time that could better be employed in other directions. It has been figured out on paper—the same process that they accuse us of applying to our arguments—that, if it takes one minute to collect and record one egg it would take six hundred minutes, or ten hours, to collect six hundred eggs. Six hundred eggs, they claim, at current market prices will not bring enough to warrant us in spending ten hours in collecting them and recording the numbers of the hens that laid them.

This is the sum and substance—shorn of a lot of superfluous verbiage—of the arguments, wise and otherwise, that our critics have written.

Several of these same critics have, at one time or another, when the trap nest was not their text, placed themselves on record by asserting that, to be successful with poultry, one must devote considerable time to them. One of our most practical editors, a man whom, I believe, is sincerely trying to upbuild the poultry business as hard as any writer we have, says: "The successful poultryman is the one who is constantly with his hens," and he does not exclude, as should be done, the

keeper of a few hens, who, obviously, cannot afford to spend all of his time with a small flock.

I will admit that logic does not always receive the support of practice, but, I am sure, we can show logic that is born of practice that will relate the arguments to which I have referred.

I am fully cognizant of that army of poultry keepers who keep hens as a side issue and are employed in shop, store, office or elsewhere during most, or all, of the day. They are often unable to derive any of the advantages that would accompany the use of bone cutters, incubators and brooders, or some of the thousand-and-one things that are, very properly, offered to the fraternity in general, without criticism, in the advertising columns of our poultry papers. Others of this class can use some, or all, of those things to more or less advantage. It is not a matter for us to determine for others, but one that must be settled by each person for himself.

I claim that any person who has spare time enough to justify him in attempting to breed and raise chickens with a view to honestly obtained profit can derive sufficient benefit from an installation of Ideal nests to warrant all necessary outlay.

My argument here is based upon what have become generally—accepted rules for good poultry-keeping and, like all such rules, must be modified by circumstances.

It is a somewhat bootless task to attempt to time, by watch, every distinct duty of the poultry yard or farm. It will take some time to tell how long it takes to do a thing. The workman who pays strict attention to the work in hand without too much regard for the fleeting moments will, as a rule, do better work and do it more quickly than the one who grabs out his watch every few minutes, for fear that he will work over time, and, figuratively speaking, leaves his hammer in the air when the whistle blows.

If our hens lay, the eggs must be gathered. It is admitted by all good poultry men that it is good practice to gather them frequently.

In cold weather, with open nests, eggs left too long in the nests become chilled. In warm weather they do not cool sufficiently if left too long, especially when they are covered by hens much of the time, as they are more likely to be in summer than in winter if not gathered until night. Eggs left in the nests induce broodiness, and much of the poultryman's troubles in summer with broody hens that he does not want, can be obviated by frequently collecting the eggs. Now all of this is not original with me. These facts are known to all experienced poultry raisers, and thousands of them collect their eggs regularly two or three, and often four or five times per day, the year 'round. All, do not. Some cannot, others will not; but they should be gathered sometime and not a few spend considerable time hunting in hay mows,

hedge rows, fence corners and other out-of-the-way places for the fruit of the festive hen.

The time required to collect eggs from trap nests as opposed to the time required without them is the difference between the two, if any.

Many people under the ordinary system arrange matters in such a way that "too much time" is required for many things, including egg collections. The same is true under this system.

If, under the old system, it takes fifteen minutes to collect a given number of eggs, and under the new system it takes twenty minutes, then five minutes is all the time that we can charge to the new method, not twenty minutes.

A complete adoption of the individual system may require a radical change in several directions, from the former methods of some poultry keepers.

It seems to me that this system is simple; far more simple than any other plan that I have yet heard of, that gave equal promise of sure results.

The general aim and design should be to collect the eggs when other duties are performed.

The other work can be arranged to work in harmony with the egg collections. My way may not be the best way for everyone but it has worked well here for several years.

I do not feed the morning meal early. I can conceive of no possible reason why it should be fed early, as far as the welfare of the hens is concerned.

I intend that laying shall be well started for the day before breakfast is fed. At this time I glance at the nests and remove such birds as are in them that they may eat, if they wish. Such eggs as are found are taken and the birds' numbers marked on the slip. When I have taken the trouble to time the operation I have found that I could collect and record about six eggs in one minute. Several numbers can be easily retained in the memory and recorded on the slip at once.

This may require some practice. Begin with two and gradually increase. Many people would be able to remember a half dozen or more numbers easily and accurately. This would make considerable difference with a large flock. I give fresh water twice a day and collect eggs at the same time. When a noon meal is fed that also includes an egg collection. The time consumed in going from the feed room to the poultry houses, and from one pen to another is not charged up to trap nests but to the feeding.

When no noon meal is given I make a special egg collection. At mid-afternoon (evening south) I water the second time and this is the last collection until supper is fed. My flock has never much exceeded 200

birds. If it were larger there would be more incidental work and the advantages of this plan be emphasized.

The actual labor connected with the continuous use of trap nests is in the record keeping: if continuous records are kept. If this form of record keeping is not worth the labor then no kind of record keeping is.

A completely-kept individual-record sheet is a memorandum and a chart all in one. Almost anything that we want to know about our birds will be disclosed or suggested on the record sheet. Nothing can take its place, but it requires time to keep this daily log.

The attention of the nests need be only an incident in the round of daily duties that the rules of good poultry keeping require. The birds will become accustomed to any reasonable and regular system. If the caretaker's visits are frequent the birds will learn to expect them. If not so frequent they will learn to be patient. Hysterical concern for the welfare of the hen should be guarded against.

During hot weather extra care must be exercised. The birds should not be allowed to become overheated while on or off of the nests. Observation will show that overfeeding is one of the dangers during hot weather and the over fat and occasional layer is more likely to suffer than the persistent layer.

RECORD KEEPING.

The laying hens should be provided with numbered leg bands. When the hen is removed from the nest her number should be marked on the egg or on a record sheet kept for the purpose. These record sheets are generally tacked on a board and hung up in the pen. When the flocks are kept in long houses it is a good plan to have the leg bands on the right leg in the first pen, the left leg in the second, the right leg in the third, and so on. If, perchance, biddy gets into the adjoining pen, this difference in the position of the leg band may be quickly noticed by the attendant, who may have seen her go in but might otherwise be unable to distinguish her from the rest.

The right way to handle a hen when taking her number, is to tuck her under the left arm, head first. The leg with the band is then lifted and the number noted. The hens will offer considerable resistance at first, but they soon become very tame, giving no trouble whatever. The bands should be put on upside down to facilitate reading when the bird is in this position.

Record keeping will require much or little time, according to the object for which the record is kept. A record for the purpose of pedigree breeding will necessarily be more complicated than one that is kept merely to ascertain the laying qualities of individual hens. Each

should adopt a system that is best adapted to his particular requirements and the time at his disposal.

The method that I am using at present is very simple and takes but little time. In beginning, I hang up a quantity of leg bands in each pen and band each bird that lays, when she is taken from the nest; the non-layers are not numbered. By this plan I am able to distinguish the layers from those that have not begun to lay at a glance. A block of blank paper and a pencil is hung up in each pen. When the eggs are collected the hens' numbers are marked on the paper and such remarks as to their condition, etc., as may seem desirable, are added. At night these slips are torn off and the record copied on the record sheet at any convenient time. The daily memorandum concerns the laying hens only; it is unnecessary to make a cipher when no egg is laid: the square being blank indicates that plainly enough. The additions are made as the eggs are put down; the last day in the month that a given hen lays gives her total for the month. If a hen lays two eggs in one day (which does not happen as often as some suppose) they may be put down in one square.

In the breeding season a list of the hens that we want to breed from is tacked up beside the record blanks and their eggs are marked and dated when collected. When the eggs are tested it is noted if all or nearly all of the eggs laid by any one hen are infertile. Breeders who sell eggs for hatching may thus, to a certain extent, avoid sending infertile eggs to their customers. A saving of time is an important consideration with us and this system permits of the eggs being collected more quickly and the book-keeping is done "after hours."

By using the various letters noted on the sample record-blank that accompanies each set of Ideal Plans and Permit a permanent record of the condition and disposition of each bird is made. A space is left for remarks of any kind. Record can be made of the date of the first egg of the pullet and also of the current market prices of eggs each month. The back of each sheet is blank and any data relating to rations and the expense of same can be noted there. I recommend that everything of importance be noted down on these blanks each night. The blanks when filled can be filed away by pens or by months as preferred; suitable clips for holding them together are easily obtained. Almost any information that one could desire in regard to the past history or present condition of his flocks can be obtained from these individual records. By adopting a regular and convenient system for doing this work the record keeper will soon acquire skill, not only in keeping the records but in reading them.

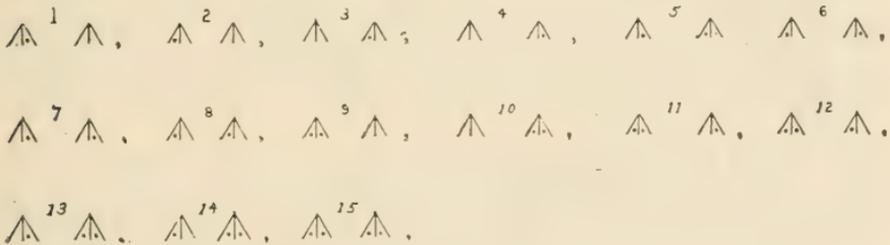
Proof of totals can be obtained by adding the perpendicular monthly-total column and the horizontal daily-total column separately; the

result should be the same in the square at the bottom of the monthly totals.

I prefer to keep these blanks in the house because I can collect the eggs faster when I roughly record them on slips of common paper hung in the pens, and because the printed sheets can be kept clean in the house. Neglect will make this work very laborious; regularity and interest will make it easy and a pleasure.

Those who wish to adopt a complete pedigree system should correspond with Beecher & Beecher, Belleville, Kansas who have a full page ad. in the back part of this book. They have very skillfully adapted the famous card-index system to the poultry breeder's use. I have just received one of their complete outfits and find it to be just what they claim.

When pedigree records are kept the breeder keeps track of the eggs of each female until the chicks are hatched when the chicks are toe-punched. Many of the poultry papers handle these punches. H. A. Kuhns, Atlanta, Ga. also handles a fine one. The following different marks can be punched in the web between the toes of young chicks, or adult fowls, and causes no pain or injury.



The eggs of each hen can be kept separate under sitting hens or by using a pedigree tray in the incubator. In the latter case the pedigree tray is not put in until the last time the eggs are turned on the 18th day. These trays keep each lot of eggs separate and also the chicks after they come out.

The information obtained in this way is of the greatest value to the breeder. Many of the persistent defects in our fancy breeds could soon be bred out if the breeder would discover and reject the hens that are responsible for them. It is the writer's belief that such faults as the single comb in Wyandottes and other rose-comb families, as well as plumage defects and the like can be got rid of by pursuing this course.

I found this year that one of my most remarkable layers, a very homely bird with a bad comb, gave me some fine cockerels with five point combs of good shape and texture. The sire also had a very ordinary comb. These things are well known by expert breeders but they are seriously handicapped under the ordinary system.

Poultry breeding is getting down to a genuine business proposition and no man can foretell the outcome. The time may come, possibly, when more breeders can produce birds that will substantiate their advertised claims.

USING THE NESTS OPEN.

The Ideal is especially adapted for those who are unable, or do not wish to keep continuous individual egg records. There are many cases where it is desirable to separate the layers from the non-layers. A hen that is laying requires more food than when she is not laying and it is impossible to feed a flock properly that contains laying and non-laying hens running together.

It is by no means necessary to keep count of the number of eggs laid by each hen for a whole year in order to determine if she is a good layer. That absurd idea has produced lots of trouble for many people. Incidentally the idea has been responsible for much ignorant writing on both sides of the question. We cannot, in any general extent, determine a hen's value as a layer without a record, in black and white, of her laying habit.

It does not require a year to get this however. When, for any reason, it is desirable to use the Ideal as an open nest all we have to do is to push up the trap plate and tighten the screw. If the opening in the top, shown in fig. 5 of plan sheet, is made, the trap plate can be raised on top of the pawl.

Mr. Victor D. Caneday makes his Ideal nest boxes 14 inches wide and by raising the trap plate high enough the pawl drops down out of the way and the trap plate will then move back and forth without locking. The hen pushes her way in as usual and pushes her way out after laying. Mr. Caneday likes this plan much better than mine. This will not work unless the box is about 13 or 14 inches wide.

By using the nests as traps when convenient, we can determine which birds are laying and the kind of eggs that they are giving us.

By using them as traps during the spring, we find the birds that are laying the most eggs per week or month and can identify the hen that produces each egg that we use for hatching.

By using the nests as traps in the fall with the pullets, we find which are the first to lay, which start in laying freely and the kind of egg each is giving us. With the hens we can pick out and note those that lay during their molt. In short we can use the Ideal as open nests or traps *ad libitum* and they are the best of their kind either way.

I recommend that continuous records be kept whenever it is possible and all of the advantages of the individual system be derived.

BRIEF POINTERS.

Small, deep, semi-dark nests will prevent egg-eating.

Moving non-layers into another pen will often start them laying.

It is not necessary to release a hen as soon as she has laid.

Collect the eggs as often as you wish. While three or four times a day will answer if you have nests enough, still in many cases it will be found desirable to gather them every two hours during that part of the day when the hens are laying the most eggs, say, 10, 12, 2 and 4 o'clock.

It will not be necessary to examine the nests except when the regular egg collections are made: If a hen is anxious to get out, the nest that she occupies may be readily ascertained without opening the others.

Openings made for ventilation should not be large enough to admit a hen's head.

If low boxes are used they should be 18 or 20 inches long.

Discard the nest eggs; they chill the hens in winter, and are a prolific cause of broken eggs.

If nest material be used in the passage in front of the nests, some of the hens may lay in the passage instead of the nests. This will account for some of the cases where a hen is supposed to have laid two eggs in one day; she may not have laid at all, but pulled the eggs in from the outside. This will not be possible with the Ideal, made as directed.

When the Ideal is made and used as recommended in these plans, there is little danger that the egg will be broken by the hen when trying to escape. My hens have laid thousands of eggs in such nests without an egg being broken or eaten in them.

One-half as many nests as there are laying hens is a safe rule to follow with a heavy laying stock, when collections are made but three or four times a day. If all of the nests are frequently found occupied at one time there are not enough of them in the pen.

When the boxes are made with openings in the back and used in rows facing the wall, they should all be made that way as the hens may avoid the lighter nests for the darker ones if they are not all alike.

If a nest is not used at all there is a reason for it.

If a hen can't find a nest that suits her she may lay on the floor.

Thin shelled eggs are liable to be broken in any nests. Clover, green bone, oyster shells, grit and exercise will ensure good shells.

A healthy hen that has laid in the trap nests a few times will seldom, if ever, lay outside of them unless she is unable to find a nest that pleases her.

The box with the cover in the top is cheaper to construct, but the hen is more likely to get away when the box is opened.

A hen will often go on the nest several days before beginning to lay. At feeding time all hens on the nests should be allowed to come off. If hens are released at any time between the regular rounds, their eggs may be placed temporarily in a vacant nest which should be locked; or an egg rack may be provided for this purpose.

In a scratching shed house a platform at the back of the scratching shed will be a cooler location for the nests in summer than the space under the roosts in the roosting room.

Use the same kind of nest material in all the nests in the pen; if the same kind of material is used for litter all the better.

Hens will, in time, learn to use almost any kind of a nest.

A box 14 inches long may be placed on top of a box 18 inches long; this gives the hens a chance to reach the upper box which should be secured so that it will not be pushed off. The more floor space given the hens the better they will lay.

Clean straw or hay is the best nest material; sand or dirt sticks to the eggs. Sand is good under the nest material.

The nest boxes may be made 24 inches or more long and divided into two apartments if desired. There is this objection to such construction however. The hen will sometimes pull her egg into the "waiting room" where it is likely to be broken if the bottom is bare. If nest material be placed in both compartments the hen will often lay in the "waiting room." Nervous hens are likely to break their eggs racing back and forth from one apartment to the other. The single apartment nest box is the best.

Don't criticise the Ideal because you think it hard for the hens to get in. It is a very simple matter to make it so that it will be easy for a hen to enter, but, when we do that, we tempt them to go in when they do not wish to lay. A hen will go into an Ideal Nest Box when she wants to lay an egg if she has to climb a foot to do it, but she will rarely make such an attempt at any other time unless broody.



CHAPTER IV.

Trap Nests vs. Observation. Culling for profit.

TRAP NESTS vs. OBSERVATION.

Should the figures seem to lie
We must prove the lie by figures
Or the "figures do not lie."

THOSE who have kept careful records of the doings of individual hens have often reported egg yields that seem so large, to some people, that they absolutely refuse to credit them. If we ask such a skeptic why he doubts he will give the reason, said to be such a favorite with women: "because." He may add: "it is unreasonable." "Because it is unreasonable" is no argument. When a man who knows anything about the egg-producing capacities and habits of individual hens questions the accuracy of a reported egg record he will be able to justify his doubts by an exhibition of facts, or figures obtained in the same way that those whose records he questions obtained theirs. Other wise we must doubt the doubter.

I am in the mood to make a comparison between the observation theory of keeping track of the laying hens, as it appears to me when handling my own hens, and the trap-nest system. Any trap-nest user is able to make the comparison; without trap nests it cannot be made. Any theory that does not furnish the means for proving its own reliability is a pretty weak theory. A book of this character seems like a good place to give rules that might be misleading elsewhere.

I cannot give all of the theories of which I have heard, but can give those that I have tested.

The bright, active, energetic hen will be in evidence in any flock on earth, that is properly fed and cared for. If we like, we can catch her, put a numbered leg band on her, and record her doings in the trap nest.

If there is any other way to find out what she is good for, it is outlined a little farther on.

There is a condition of the pelvic or posterior bones that is theoretically so reliable a test for a laying hen that I urge the reader to test it, if he be interested and has time, and see if he finds it reliable. A few hundred hens and a set of trap nests ought to show the careful student if there is anything in it. A writer in *Flarm Poultry* claimed that the opening between the pelvic or posterior bones of a bird is larger during a period of egg production than at other times. This corresponds to a

similar condition with mammals when giving birth to their young. Perhaps, in their wild state, birds may show this condition more than does the domestic hen. However accurately we might be able to distinguish a layer from a non-layer by noting if the pelvic bones were near together or wide apart, the test would be valueless as far as being able to distinguish a good layer from a poor layer was concerned. For separating layers from non-layers it would be useful, if reliable. I have been unable to make anything of it as yet.

It reminds me somewhat of the man who wrote to a heating engineer for certain estimates. He said that his chimney was a large one, and had a good draft. The engineer asked him how large his chimney was, as large chimneys were from four to forty feet square. It depended upon the point of view of the man who owned the chimney. When I hear of a flock of "heavy layers" I sometimes think of the same story.

An editor advised a subscriber to separate the hens with the scarlet combs from the others as they were the layers and should be fed heavier. I wondered, when I read that, what the subscriber would do if all of his hens had scarlet combs and none of them were laying. Now the color of comb has no particular bearing upon egg production, except indirectly. A well nourished bird will have a scarlet comb, if she is old enough to mate, and in good health. The combs of both the male and the female indicate the same thing. A scarlet comb may show that a hen should be laying, but it does not show that she is laying. If all of the reader's laying hens happen to have scarlet combs, and all of his non-layers happen to have paler combs, it will not disprove what I have just written.

There are thousands of scarlet-combed hens and pullets that are not laying now (September) and may not lay for months. There are thousands of hens with paler combs that have been laying for a long time, are laying now, and will lay for some time. A layer, on a long run of egg production, is likely to pale, more or less, if not adequately nourished, or if lice are troubling her; but otherwise she may hold her color all right. I have birds that have made a straight run of something like 200 eggs each and their combs are as bright as could be desired. They get plenty of food, pure air and water. I don't know how they are fixed for lice, I haven't looked.

I am compelled, by reasons that would not interest the reader, to neglect many details of management that are of more or less importance, and have considerable bearing upon egg production. I have also, at times, systematically practiced neglect for the purpose of studying the relations of cause and effect as shown by the behavior of the distinct and separate individuals in the flock. Any thing that may appear strange and incredible in this book may be charged to my point of view.

I have kept hens so long under this system that it is difficult for me to write of a flock as a single unit as it is customary to do.

To me they are a group of individuals resembling each other in outward appearance more than in any other respect. Each bird has a disposition, a habit, an appetite, and a productive ability that is different, in greater or less degree, from every other bird. You can no more tell how good a layer a bird is by looking at her, feeling of her, or watching her, than you could tell by looking at the writer how much "copy" he could turn out in a day.

If the reader would like to know the most reliable way to pick out the layers from the non-layers by observation without living in the poultry house and catching them in the act I will tell him. If the roosts are arranged at the back of the poultry house, where all of the light comes from the front, and they are level and in pairs, the hens that are laying will be found on the front roost. This is because they are the last to go to roost at night. They are the last to go to roost at night because they have the greatest appetite. They have the greatest appetite because they have to feed themselves and also the eggs. If but one roost is used the layers will be on that portion of the roost that is the last to become dark. So far this theory is worthless, for you have not tested it. Now place numbered leg bands on these birds, for you cannot identify them otherwise, and record the numbers on the wall. Put in your trap nests and see if the birds with the leg bands are not the ones that use the nests. If they are not, then this theory fails. I have tried it several times and it worked. One has to have trap nests, however, to test it. There is one slight difficulty that I will mention. Should the rear roost be too short to hold all of the non-layers, that went to roost first, some of them may be on the front roost. Should the roost be single it will also be impossible to tell where to begin the selection.

Does the reader wish to know how to select his best layers by observation? I will tell him. Select the birds with the reddest combs and band them and record the numbers. Now call on the trap nests for proof. Remove the bands from such of the red combed birds as the trap nest shows are not laying and place them on the paler combed birds that are laying. Now the trap nests can be continued in use and the record kept with their aid, or you can open them and spend all of your time watching the birds. They will soon become accustomed to your presence in the pen and will go right about their business. When you think that a bird has laid an egg, (she may announce it, or she may not,) go and get the bird and the egg. If the egg is wet, and the bird is on the nest, or just about to leave it, it is probably her egg. Otherwise it is all off for that egg. If satisfied, then record the bird's number. Keep this up for one month and you will get an approximate idea

of those birds that happen to be laying the best during that month. If you wish to know which birds are paying you the best, which are producing, or are likely to produce the most eggs during the year, you can arrange a system from what I have described, or you can use Ideal trap nests and follow the teachings of this book, whichever you think will be the easiest, the most reliable, and will take the least time.

The actual truth of the matter is that we cannot, in any practical way, tell which are our most profitable layers, or which are the best females to use as breeders in order to improve the laying qualities of our strain, without a record, in black and white, of the laying habit of each individual. Every scheme, of whatever kind or nature, that has yet been advanced for obtaining such a record without trapping the hen and her egg not only involves a greater expenditure of time and labor, but is less reliable than a correct installation of Ideal trap nests rationally attended.

I will allow that unthinking or uninformed people may, in all sincerity dispute this claim; but when an experienced poultry keeper, be he a clergyman, a civil engineer or what not, or merely a common every-day liar, claims that he has a method by which "the hens will keep their own record, and that perfectly," or by which "you can learn all that you want to know by observation, without trap nests," my opinion of his sincerity, honesty, truthfulness or religion would be unfit for publication.

CULLING FOR PROFIT.

"Let your own discretion be your tutor." *Shakespeare.*

Culling: to separate, select, to pick out. Def.

The maximum of profit-in-poultry-keeping depends in the greatest measure, upon careful, constant, and skillful culling. Retaining doubtful specimens "to see how they will come out" may be a good plan for the student who is willing and able to pay for first-hand knowledge, but it costs money.

If we can succeed, at the expense of much labor and considerable money, in getting good results from little promise it does not prove that we are warranted in the attempt. Legitimate profit is always (or should be) the margin between actual value to the buyer and cost to the producer.

Neglecting to cull out, promptly, all stock, young or old, that is being kept at a loss with no promise of future profitableness, means the difference between profit and loss with thousands of poultry keepers. Even in flocks that, as a whole, pay a profit, a more strict and careful culling would increase the profits.

I have reason to believe that many who use trap nests make the mistake of retaining birds that have shown good evidence that they will never lay profitably with their present owner. Many are also prone to use as breeders, birds that, while they may have laid freely, are worse than useless as breeders.

We want to breed from our best birds, but our best birds are not always those that lay the most eggs. A bird that lays steadily, without loss of vigor, under fair conditions, and gives us a good egg, is a better layer and breeder than one that has nearly laid herself to death, under hot-house conditions and a forcing ration, even though the latter produces a much greater number of eggs.

The art of culling wisely and correctly is not easily or quickly acquired. Every infertile egg that is lost, every chick dead in the shell, every weak chick hatched, every unprofitable bird raised and retained, means expense and a reduction of profits.

One market-poultryman has said: "An experienced poultryman can readily choose birds to market, *retaining only those that it will pay to keep and to feed.*" (Italics mine.) This same poultryman shows how he thinks that it can be done by explaining his own method. He says: "Our practice for years has been to market hens at, or near, the end of their second laying year. Occasionally a young hen or pullet would be killed for meat *as they were not as active and robust as we like to see them.*" (Italics mine.) From this we readily make the deduction that any hen that is active and robust will lay profitably for two years,—from laying maturity; after this she will not lay profitably. This is very remote from the truth.

The trap nest, in the hands of one who is willing to learn, will show, that, while a skillful feeder, who sells to a not-over-particular buyer, may make his business profitable by such extremely simple methods of procedure, he is working in the dark and will not only be liable to "kill for meat" birds that had better be burned or buried, but will, unwittingly, sell two-year-olds that might be profitably kept, and retain for two years birds that do not lay profitably.

There is no way known to determine surely that a pullet is likely to become a profitable layer for one or two years, until we have gained a knowledge of her *laying habit*. This must be on record in black and white and not merely the speculation of a more-or-less unreliable mind and memory. To observe closely enough to learn these things accurately, or even with approximate accuracy, so that they can be recorded, would take more time than the attention of trap nests requires, and more time than can profitably be devoted to it.

The presence in our common markets all over the land of poultry that is unfit for human consumption can be accounted for by the necessity of straining every nerve (and nerve can be given more than one

meaning) to get a profit under a system that is illogical and blind. An intimate acquaintance with hucksters who buy poultry will enable anyone to substantiate this position.

A story that I will vouch for illustrates the point. A simple minded farmer's boy appeared at one of our stores one day with a dressed fowl for sale. The merchant asked him: "When was the bird killed?" "We didn't kill her, she died," replied the unsophisticated youth.

Under the trap-nest or individual system, we do not require the aid of our nests to cull out, and dispose of, runts and sick birds. We may find birds that can be honestly "killed for meat" that the veriest novice could tell, by observation, were not producers: but we also find, often in large numbers, birds that are not, and will not be good layers, that cannot be identified without a knowledge of their laying habit.

It is easy to tell that a bird is heavy or light, fat or lean, but we find that many good layers are light, many are heavy; some are fat, many are lean. The fat that interferes the most with egg production is frequently found (by killing the bird) to be so located that its presence cannot be determined while the bird is alive except by its effect upon her laying, or the eggs that she lays. Such birds are often very thin in flesh. We are frequently cautioned against overfeeding, but, until we succeed in getting our flock into such shape that it will comprise good layers only, we cannot feed properly without overfeeding some of the birds or underfeeding others. It is quite difficult to overfeed a persistent layer that is well started on a period of laying if the ration is balanced, and exercise is encouraged.

Great egg production, under normal conditions, is not necessarily a great strain upon the bird, but it makes constant and forcible demand upon the care-taker for a generous supply of suitable food.

CULLING FOR PROFIT should begin with the eggs that are to be used for hatching.

A hen that is well developed, with the reproductive organs in normal condition, should produce eggs of even color, (if colored) and good shape, with strong shells. If she is properly nourished and in good breeding condition the eggs will be of representative size. Abnormally-large eggs, porous, rough, or uneven shells, ill shaped eggs, spotted or unevenly colored shells, indicate an abnormal condition of the bird, probably due to internal fat.

Small eggs are produced by immature pullets, hens nearing the end of a laying period and hens that naturally lay small eggs.

Occasionally a hen that habitually lays an egg of normal size will give us an abnormally-small or -large egg. This, in common with double-yolked eggs, poorly-shelled eggs, blood-stained eggs and eggs with no shells, I believe is due to a more or less overfat condition.

Contrary to common opinion the first egg of the pullet is not necessarily stained with blood. Overfat hens often lay blood-stained eggs. Blood upon the first egg of the pullet has been an exception rather than a rule in my flocks. I have known a pullet to lay a double-yolked egg for her first.

While eggs that are small for the breed are often hatchable, and may produce strong chicks, they should, as a rule, be avoided.

Abnormally-large, double-yolked eggs, and eggs of bad shape or poor shells seldom hatch. If they do they are likely to produce weak chicks, cripples or monstrosities. They should be avoided. The claim is made that thin-shelled eggs and eggs without shells (soft-shelled, so-called.) are due to an absence of shell-making materials in the ration. This may be true in some cases, but I have never been able to prove it so in my flocks. The absence of lime, and other shell makers, tends to induce mal-assimilation, and the formation of internal fat. This condition promotes the production of abnormal eggs. By withholding oyster shell, bone and clover I have reduced the egg yield, but what eggs were laid were as well shelled as when those materials were supplied.

With a constant and abundant supply of shell making material some individuals would produce thin-shelled eggs and "soft-shelled" eggs. It was quite clearly accompanied by an overfat condition.

It is my belief that a hen in normal condition will not lay more eggs than she can shell properly. Hence a lack of shell-making material in the ration will diminish the egg yield. Whatever effect it may have on the shell is secondary, not primary.

In selecting eggs for hatching, then, we should cull out all abnormal eggs and all eggs that are small for the breed, no matter how good the hens that produced them may appear to be, or what their previous egg record has been.

If we are breeding for egg production, we will use for hatching only eggs of good shape and size having strong shells of good texture and smooth surface and (if colored) even color, laid by individuals that have shown by their work in the nest that they are likely to transmit a persistent laying habit, together with other desired features, to their offspring; and are in active, vigorous, breeding condition in the breeding season. I appreciate the extent of the task that I have set before you.

With all our care we may have more culling to do when the hatch is off. Sickly sentiment has no place here. Every chick that is crippled, weak, puny, dumpish, "had-to-be-helped-out-of-the-shell," should be destroyed. A convenient and humane way is to insert the hand in a pail of water for a minute. The chick should be in the hand.

This is a hard thing to do but it should be done. Such chicks will never be of any honest value to anyone.

As the chicks grow they should be carefully observed and unpromising specimens destroyed.

A chick that once gets a serious set-back will never lay well or be fit to head a breeding pen.

When our pullets begin to lay we will notice a great difference in them, unless we have been extremely fortunate in our choice of stock and our previous culling.

They should, by this time, have become perfectly at home in their laying houses, — quite an important matter. It is assumed that they are reasonably free from vermin and are being fed as well as the owner knows how. Under these conditions some may begin to lay regularly and freely, some may lay irregularly, while others may not lay. If a good supply of Ideal trap nests are furnished, the majority of the pullets will probably begin to lay in them. (I say *probably* because no human mind can foretell surely what a flock of pullets will, or will not do. Were I governed solely by my own experience and the experiences of a large number of Ideal users I should omit the word *probably*.) Some of the pullets may not use the nests and these should be regarded with suspicion from the start.

There are exceptions to nearly all rules, but my experience has been that when the installation of nests was correct and adequate those pullets that failed to use them have turned out badly as a rule. We should not, at this time, judge too hastily. Some of those pullets that are slow to begin laying, or lay irregularly at first, may make our very best layers.

While I think that the most common mistake is to hold unprofitable stock too long, I will caution against condemning a bird too quickly.

A case in point is that reported by a correspondent of mine, a well-known breeder, who thought that he had made such a mistake. This gentleman is away a good deal and employs a man. Last fall he had some pullets that did not begin to lay as soon as he thought that they ought and he sold them. The person who bought them had no other birds and kept a record of these. They averaged 216 eggs each in a little less than eleven months. The gentleman who sold the birds has a little more faith in what is called early maturity than I, and I think that he condemned them too soon. Their good record in other hands did not, I think, prove that they would have done as well had he kept them. A change of environment will make peculiar changes, some times, and they cannot always be accounted for.

In our haste we are apt to confound sexual maturity with bodily maturity. I am not yet prepared to believe that the precocious layer will make the best layer, or a good breeder of good layers.

The limiting of the profitable laying-life of a hen to two years naturally accompanies a belief in forced sexual maturity. If we propose to get a foundation stock of breeding birds that will lay a large number of

good eggs, early laying should not be forced. Forcing, or encouraging pullets to lay early and freely may be all right when immediate profit is the only end in view, but such forcing, if successful, checks growth and the development of the vital organs, and is mainly responsible for the undersized pullet's-egg. Some of the best and most profitable layers that I have ever had did not lay early, but when they did begin they soon distanced their more precocious mates. If the precocious pullet lays a short time and then stops, as she is very likely to do, she may catch up with the procession, in time.

When a pullet lays her first egg in the nest we give her a numbered leg-band and her number goes on the record sheet. After allowing her a reasonable time for practice, we will expect her to get right down to business. If our feed and care are such that well developed pullets are laying from 15 to 25 or more eggs per month those pullets of the same breed and equal age that lay 12 eggs or less per month are marked for the block unless we can trace the trouble to some individual condition that is *easily* remedied. I emphasize *easily* because it is not often practicable to go to a great deal of trouble in such cases. Where one has a spare pen it may be well to place such birds by themselves and give them different treatment for a while and watch results. I have tried this a number of times and the results never warranted the trouble except in the information gained. If we have no spare pen it would obviously be bad practice to change the ration of the good layers in the hope of improving the poor layers. This, I think, is often done unknowingly.

I have never had any harm result from moving the persistent layers about, after they were well started in laying, when I wanted to bunch them together.

The pullet that does not begin to lay when she can reasonably be expected to, when the conditions and feed are right for her mates, she too is condemned. In this connection I will refer to a type of pullet that might appear to be a freak to some. She will, very naturally, puzzle those who find her for the first time. She is common enough I imagine. Such a pullet may have been laying and thus have gained a place on the record sheet or she may not have laid at all; yet we repeatedly find her upon the nest. As pullets generally visit the nest a few times before the first egg is laid this case does not at first occasion remark, but soon we find that she is peculiar. She is found on the nest day after day, some times several times a day, for a long period. A careful test shows that she is not an egg eater. The following account of such pullets was printed in THE POULTRY KEEPER, Sept., 1902, and illustrates my point.

FREAK HENS.

The account of the "freak" turkey on page 150 of P. K. for August reminded me of a number of hens that I have had that showed similar characteristics. Both in Barred Plymouth Rocks and White Wyandottes I have occasionally found pullets that regularly visited the nest, remaining quietly for a long time, but without result. I have often detected them in the apparent attempt to void an egg.

In every case there was a previous history of laying. With one exception these pullets had laid very few eggs at long intervals. This exception laid well for a time. These birds were apparently in vigorous health, combs red, eyes bright, and their unproductive visits to the nest were frequent and regular for weeks and in a few cases for months. They were not egg eaters, as was shown by careful tests.

I have changed the quarters of such birds, changed the ration and amount of exercise with no effect. Those that I have killed showed considerable internal fat (not distinguishable by outward examination) and the oviduct was atrophied or shrunken. There was no indication that they would ever lay again. The latest specimen would cackle when leaving the nest. Two specimens appeared to become broody while in this condition.

The cause of the condition I do not pretend to know. I have called it fatty degeneration, but that is purely speculative. I do not attribute it to any serious defect in the ration, for these occasional freaks get the same ration that their more commonly prolific mates receive. I believe that the most profitable plan is to market such birds as soon as discovered.

F. O. WELLCOME.

These have the laying instinct, they want to lay, and they try to lay. Sometimes these pullets are heavy, sometimes they are light. I know of no way to detect their infirmity except by their nest record.

I believe that, as a rule, birds that do not lay profitably under conditions that are apparently suitable for their mates should be marketed as soon as they show their true colors.

The tendency of a hen to become a chronic layer of weak-shelled eggs seems to increase with age as also does the tendency to overfatness.

I think it well to get rid of such hens. They may lay freely. I have one such hen that is now on her fifth year of laying. She lays quite well although quite fat and is practically a non-sitter, (P. R.) yet she cannot produce a well-shelled egg. These weak eggs are very easily broken in the nest, and elsewhere, and the birds that lay them constantly thus become somewhat of a nuisance.

Common causes for poor laying are bad feeding, lice and mites, extreme heat and cold, fright, disease, broodiness, molting, and natural incapacity. This last is often intimately associated with excessive broodiness.

The incapable pullet or hen should be weeded out as soon as discovered. Friends of the noble Asiatics, or any breeds that are famed for their sitting qualities, should not infer that I am prejudiced against their favorite breed, as a breed. Non-sitters are found in practically every breed, and there is no reason why excessive broodiness cannot practically be bred out of any strain.

The novice should always move with caution, yet always remembering that life is short.

Rules for culling, like rules for feeding, that would fully apply to all flocks are impossible to formulate, — except by inexperience. The hasty writer can make an iron clad rule for most anything.

Skill in culling can only be obtained by experience, close observation, and an understanding of the language of the record sheet.

CULLING FOR PROFIT.

WRITTEN ESPECIALLY FOR THIS BOOK BY MICHAEL K. BOYER.

For years poultry writers have advised close culling. "Cull closely" and "Cull again" have been their warnings. With the fancy this was a comparatively easy matter — the culling consisting of picking out birds defective in certain markings or "points." The practiced eye was the guide. The advice, therefore, of the aforesaid writers was timely and of service, but of what benefit was it to the practical poultryman who made egg production his business? He might with the eye select the most desirable carcasses for reproducing table poultry, but he would certainly be at a loss to determine which were his best layers, so that he might breed from them and gradually exhibit a family of heavy egg producers.

Not until the introduction of the trap nest was it possible for him to gain this much desired information. And it seems that not until the advent of the trap nest did our practical poultrymen understand the importance of knowing which were not only our best layers, but which were our drones or "robber hens." How can we tell the idlers? We may notice that certain hens are laying, but how can we tell how many eggs they are giving us? Can we tell if they are paying their board? There is but one method — the trap nest.

We, one season, picked out a pen of fifteen hens — such hens as we thought were doing good work. We installed trap nests in their house, and we kept a careful record. One hen laid something like 196 eggs during the year. Several gave us over 150 eggs, and the rest, with the exception of five, laid between 100 and 140 eggs each. The five that were an exception laid less than 100 eggs each, one giving but 20 eggs the entire year, one 45 eggs, two 60 eggs each, and one 72 eggs.

Now as it costs not less than one dollar a year to keep a hen, it is

plain to see that any hen that lays less than 100 eggs a year does not pay her board.

In the flock referred to above there were five hens that not only did not pay their board, but they were in the way of those that were workers. It would have been more profitable to have killed them and sold their carcasses than to waste feed upon them. Here was where the trap nest proved to be of great value. We could not have secured a good laying strain from those drones, had we set their eggs. Instead we set the eggs laid by our best layers, and do so each year.

Since we have installed trap nests we get more eggs from 150 hens than we got from 200 hens prior to their use. The trap nests taught us how to sort out the cream of our stock.

It is very plain that if we, each year, breed from our best layers, mated to male birds hatched from eggs laid by heavy layers, we are building up a strain of great egg producers. Is it not so in breeding cattle and horses? Then why not in poultry?

Another point of culling is according to color of egg. With a few exceptions, the markets are calling for a brown egg. Such being the case, it is advisable to breed for them. Your flocks are laying a good brown, a light brown, a white egg. You can improve the color of the egg in future generations by hatching only the brown eggs, but you want to get rid of those hens that are laying white eggs. How can you do it? Only by using the trap nest. Will it not pay you to cull out all such? Better that your flock should be reduced fifty per cent. in order that you may get the desired color than to send a mixed lot of eggs to market that you will be cut on price on account of the assorted colors. Uniformity of color helps the sale of eggs in market.

Another, a hen that lays a poorly shaped egg should be culled from the flock. Some hens, no matter how old, will lay a regular pullet sized egg, and we have had others that laid badly shaped ones. We even had one hen that laid the entire season a very thin shelled egg, yet she had plenty of lime in her food. Is it not best to cull out all such birds? With the use of the trap nest we can breed for good shape as well as good color of egg.

Another useless hen, and one which should be gotten rid of, is a hen that will not produce fertile eggs. Careful students of the trap nest have learned that eggs from a certain hen are nearly always fertile, from another about fifty per cent. are fertile, and from others rarely an egg hatches. Will it pay to keep hens that cannot reproduce themselves?

On a large egg farm only a few miles from here, trap nests are used to pick out the laying pullets at a certain age. All pullets that do not lay by the first of January are sold. Incubation on this farm starts March 15th, so that the first hatch comes off early in April and ends so

that the last hatch does not run into June. Eggs are always on sale at this plant. In a talk with the proprietor the other day, he said that since he has given trap nests a thorough trial, he is able to do fifty per cent. better. He says he need not keep as many hens to get the same amount of eggs, for the reason that he is rid of the drones and saves on the feed.

The idea is to keep only profitable hens. Does the farmer keep the cow that can furnish little or no cream upon her milk? Then why should that same farmer harbor a lot of hens that are not worth the grain given them? Again the advice of the writers "cull closely—cull again," can be sounded, and I can assure all practical poultrymen that if they wish to establish profitable egg farms they should install trap nests and arrest the drones.

In these days of high priced feed we must cut down as much of that expense as possible, and we can do it if we retain the workers and get rid of the loafers. Trap nests do not require the attention that some writers would like to make us believe. The careful poultryman makes a number of trips among his flocks, and in doing so it is but a few minutes time spent to inspect the nests. A glance will tell if the hen has laid, and with well ventilated nests—as we know the Ideal trap nest to be—a hen does not suffer one bit. We would just as soon think of giving up our incubators, our brooders or our bone cutter, as to give up our trap nests, and so will every poultryman that has given them a proper trial.

CHAPTER V.

CONTROLLING THE BROODING HABIT.

Controlling the brooding habit. Breaking broody hens. Is broodiness opposed to profitable egg production? Can a hen lay two eggs in one day?

JOSH BILLINGS said: "The time to set a hen is when the hen is ready." Unfortunately for Josh's philosophy, when we attempt it's practical application we often find that we have no use for the sitting hen when she is ready, and the hen is not always ready when we are.

Broodiness is the survival of an ancestral trait that has only been retained because necessity demanded it. Since the advent of the incubator and brooder the sitting hen has been slowly passing.

As the necessity for her passes away much of the unpractical sentiment commonly associated with her will disappear. As artificial-incubation and -brooding will never become universal, on account of economic

conditions, the sitting hen will always be in some demand and her treatment will continue to be an important consideration. The natural sequence of the several stages of the reproductive instinct or passion may be described thus: First, the passing down of the eggs from the ovaries; second, the mating; third, the production of a "litter" of eggs by the female; fourth, incubating the eggs; fifth, brooding the chicks until they are able to care for themselves. In their wild state birds possess this instinct in its most complete development. Under domestication the reproductive trait has been modified and changed to meet our demands for a greater number of eggs than the natural exercise of the normal reproductive function would give us.

The profitable domestic hen is, in a degree, an artificial product. The unprofitable domestic hen—and her name is legion—is either the result of degeneration, caused by unsuitable feeding and care and haphazard breeding, or a reversion to ancestral types.

Not only has selection and breeding from superior specimens (often without design) practically eliminated the incubating trait in many hens, but keeping them under conditions where they are frequently disturbed by their mates and the attendant, compelled to exercise, and their eggs not allowed to accumulate in the nests, tends to overcome the inclination to sit and keep them laying.

The desire to accumulate a nestful of eggs is one of biddie's strongest ambitions. If the eggs are removed as fast as laid, the bird is deceived and continues to lay egg number one—as she figures it—for a period that may be long or short according to the individual tendency or capacity of the bird and the good judgment and skill of the feeder and caretaker.

If the eggs are allowed to remain in the nest this desire to accumulate is soon gratified, and, other conditions being favorable, unless the incubating tendency is dormant, the bird will spend more and more time upon the nest until egg production ceases and broodiness is confirmed.

If sitting hens are desired out of their natural season, the flock should be fed generously on corn and other heat-producing food to induce a feeling of general well-being and the layers allowed to remain on the nests, undisturbed, as long as they desire. If trap nests are used the hens should not be removed unless they want to get out. Their eggs can be marked with the birds' numbers, and the date, and returned to them. On no account should the attempt be made to force them to sit, by artificial restraint, until broodiness is partially developed. If open nests are used, they should be well supplied with nest eggs covered with cloth to prevent chilling the birds. When a hen has voluntarily remained upon the nest over night she should be removed, preferably at night, to a place especially provided for the sitters, whether she has stopped laying or not. Here peace and quiet, plenty of whole corn, grit and

water, and freedom from lice, will generally produce sufficient broodiness for all requirements.

To prevent broodiness a course in some respects opposite to the other is indicated. The birds should be well fed and kept comfortable, but they must be compelled to exercise and their eggs should be collected as soon as convenient after they are laid. No nest eggs should be allowed in the pen. Keep the birds moving.

Even under these conditions hens with strong hereditary brooding tendencies in their make-up are likely to become more or less broody occasionally. It then sometimes suits our purpose to "break them up."

BREAKING BROODY HENS.

The spirit in which untimely broodiness is commonly approached by the ignorant and thoughtless is thus humorously described in verse by Mr. Holman Day:

"When a hen is bound to set, seems as though 'taint etiket
Dowsin' her in water till she's connected with a chill.
Seems as though 'twas scarcely right, Givin' her a dreadful fright,
Tying' rags around her tail, poundin' on an old tin pail,
Chasin' her around the yard. Seems as though it was kind of hard
Bein' kicked and slammed and shoo'ed 'cause she wants to raise a brood;
I sh'd say it's gettin' gay, just 'cause Natur wants its way.
'While ago my neighbor, Penn, started bustin' up a hen;
Went to yank her off the nest, hen, though, made a 'peck' and jest
Grabbed his thumb-nail good and stout, (like to yank the darn thing out.)
Penn he twitched away and then tried again to grab that hen;
But, by ginger, she had spunk, 'cause she took and snipped a chunk
Big as a bean right out his palm, swallowed it, and cool and calm
Hi'sted up and yelled, "Cah-cah"—Sounded like she said "Hoo-rah!"
Well, sir, when that hen did that, Penn he bowed, took off his hat—
Spunk just suits him, you can bet. "Set," says he, "goll darn ye, set."

Along with other senseless methods the irrational and cruel expedients for breaking broody hens are passing. Broodiness is a mental as well as a physical condition—rather more mental than physical.

(I may be criticized for assuming that a hen has a mind, but I believe that we can understand and handle her better from such a standpoint even if it does require some imagination.)

When the bird begins to remain for longer and longer periods upon the nest her physical condition will naturally begin to change. Less exercise being taken, more fat may be stored for use during her long confinement. The fat does not cause the broody condition, but the broody condition tends to promote the formation of fat. It is often claimed that broody hens are generally fat hens, but nine-tenths of my most persistent sitters have been thinner than the proverbial rail.

What fat they had was out of sight. On the other hand some of my non-sitters have been very fat.

Plucking feathers from the breast, (not always done,) long continued contact with the nest, and the persistence of lice, may cause a superficial inflammation that is at once noticed when the hand touches the breast of the bird. This gives rise to the assumption that, a "broody fever" is present and that, in order to break her up, the bird must be "cooled off."

While I cannot deny that some broody hens show an apparent fever, I am forced to admit that some broody hens do not. Natural skepticism may account for a trace of suspicion that the so-called broody fever is not wholly due to broodiness, but may be caused by external conditions that commonly surround a broody hen. Certain it is that procedures that would naturally increase a fever will cure broodiness.

A physician's thermometer carefully placed under the wing, with the bulb *touching the skin*, will, when tried with a sufficient number of broodies and non-broodies, give the average temperature of each class. If the birds are tame enough so that they will not become excited when handled, their heart action can be compared. It would seem that these tests should reveal any fever that might be present.

The simplest, easiest and most humane way to break a broody hen is to distract her attention from the nest. Induce what mind she has to consider other things; "to run in a different channel."

The "breaking up coop" constructed of laths or slats and hung on the wall or suspended from the ceiling is all right if the confined birds have plenty of room, food and water, and are kept clean, cool and comfortable. But all too often they are sadly neglected in these coops and their future usefulness impaired. Their dearly-loved nests and other familiar objects may be in plain sight and cases have been known where birds so treated died, apparently from "a broken heart."

The earlier the approach of the broody condition is noted the more easy it will be to prevent its culmination or shorten its duration. When trap nests are used, the first signs of threatened broodiness will be observed sometime before laying ceases. All that we can do then is to keep the bird moving and see that she is on the roost at night. This will completely abort the broody tendency with some hens and laying will not be appreciably interrupted.

My first move, when broodiness has stopped egg production, is to lock the bird out of her favorite nest — if she has one.

If her fruitless attempts to enter that nest do not discourage her, and she goes into another, I place her in another pen with strange mates and surroundings. Should this fail and I find her on a nest in that pen I place her outside of the house. She will not wander off or get into

mischief, but will chiefly concern herself in attempts to get into the house or yard.

She can be fed and watered without trouble and two or three days will suffice to cause her to forget her desire to sit and laying is likely to be resumed in a short time. Another good way is to place the hen in a pen or yard with a lively male.

All of this may seem like lots of trouble, but it is simple and easy in actual practice.

The hen is easily identified by her leg-band number wherever she is found and the record sheet contains a note of her condition.

The number of times that a hen becomes broody in a year is not a safe criterion by which to judge of the extent of her broody tendencies. The effect of broodiness upon her egg-record is the true test. One of the best layers that I ever had was broody and broken seven times in one year. She gave a good egg yield every month in the year in spite of her broodiness. Some hens evidently become disheartened and dependent under the influence of a hopeless desire to sit and refuse to lay for months, although they may not be broody enough to stick to a nest in the face of opposition. Such birds are unprofitable and should be weeded out, or allowed to hatch some eggs.

IS BROODINESS OPPOSED TO PROFITABLE EGG PRODUCTION?

If we eliminate from our minds all sentiment, current tradition, and the contrary opinions of poultry raisers whose observations of the habits of hens have been confined to a general consideration of flocks as they appear as a whole, or at best a few individual specimens at special times, if we can dispense with all this we will be likely to admit that broodiness is, to a greater or less extent, opposed to profitable egg production, and that all successful attempts to lessen its effects, or to breed it out, will improve the laying qualities of our strains.

The more pronounced the brooding instinct becomes, in a normally developed hen, the smaller will be the egg yield. Many hens are good sitters and "mothers" and also good layers, but in such birds the brooding instinct is not fully developed. They occupy the middle position between the ultra-natural hen, with her two or three "litters" a year, and the highest type of our artificial hen that makes egg production her principal occupation and has little time or desire to incubate. Those who regard the behavior of one hen that they own, or have owned, as being a fair sample by which to judge of hens in general, or some particular breed in general, often hold a very different opinion from this. There are also others who desire us to believe that the hens that they are exploiting possess every attribute, in a superlative degree, that any

one could desire. Thus we hear of the hen that hatches and rears three broods of chicks, rests two or three months during her molt and lays two or three hundred eggs in spare moments during one year besides winning first prize at the cattle show. If any of us are disposed to apply simple mathematics to such claims it is our own fault, not the claimants.

I believe that the brooding instinct, as a pronounced trait, can be bred out of any breed of fowl. The wild duck hatches and rears her young, but the domestic duck is rarely broody.

One large breeder of ducks reports, in *Farm-Garden and Poultry*, that he averages about seven broody ducks per year in a flock of two thousand. It is noteworthy that the brooding tendency, as a family trait, diminishes and becomes dormant in the shortest time in breeds of active habit and highly nervous temperaments. What is true of families, seems also to be true of individuals within any families. Ducks, and hens of the Mediterranean breeds, are very restless and are easily disturbed with slight cause. Under domestication they are rarely permitted to enjoy that peace, quiet and freedom from distraction that, when long continued, tends to foster the brooding instinct. When such conditions are present, ducks or hens of any breed are likely to develop broodiness upon occasion.

With breeds and individual birds of a decided phlegmatic temperament, easily tamed and naturally slothful when highly fed, the broody tendency will sometimes be found in its highest and most unprofitable development. Such individuals should be avoided when the breeding pens are made up. The pet hen, in spite of sentiment and the highly colored, guessed-at and imaginary egg yields so often attributed to her, is, no doubt, often an extremely poor layer. The persistent layer, while she is tamable to a sufficient extent, does not like to be petted too much. All hens will lay better when tame enough to bear necessary handling and endure the presence of the attendant without getting excited, but petting or coddling is not conducive to long continued, hence profitable, egg production; while it does tend to arouse the dormant brooding instinct that is present in all birds.

I have found in several years experience with Plymouth Rocks and Wyandottes that my most determined broodies were often my poorest layers, and that my best layers were but slightly inclined to broodiness; many of them being practically non-sitters. Occasional apparent exceptions have but proved the rule.

Prof. Gowell of the Maine Ex. Station, where Plymouth Rocks and Wyandottes have been bred that laid from 200 to 252 eggs in one year, wrote, in reply to my query, that their best layers were not strong sitters and were easily broken. In the birds that I have handled there was no other evidence of an admixture of Mediterranean blood that would

in any degree account for their non-sitting tendencies. My methods of feeding have had no effect upon the matter, except to hasten or retard broodiness, as far as I could determine. Persistent broodies have held to their ancestral instincts for two and three seasons under various conditions and changes in feeding and feeds. The non-sitters have remained non-sitters for three and even four years under the same conditions that surrounded their broody mates.

I do not wish to be understood as condemning all hens that become broody. Many such hens are splendid layers; the laying habit being stronger and more fully controlling the organism of the birds than does the brooding or incubating instinct.

I recommend, merely, that the points that I have tried to make clear be kept in mind as having an important bearing, not only upon the egg-producing qualities of present birds, but also their offspring. 200-egg hens as individuals are very common. There can be no doubt of that.

The 200-egg strain is not common; I do not know that such a strain exists; but when such a strain is created the 300-egg hen will not be far off, and she will be a non-sitter.

I. K. Felch is authority for the claim that a Light Brahma hen laid 318 eggs in 333 days. Such a record on its face indicates an almost perfect bodily development, a persistent laying habit that effectually subdued all incubating tendencies, during that time at least.

Those birds that lay in "litters" and are given to broodiness to such an extent that they do not lay profitably, from a market-egg standpoint, should not be used in the breeding pen. They should be marketed as soon as their unprofitableness has been determined; which with me has been in a short time.

CAN A HEN LAY TWO EGGS IN ONE DAY?

There yet remain, upon this mundane sphere, those who will deny that it is possible for a hen to manufacture and deposit in some suitable receptacle more than one egg in "one consecutive day." True there have been people who persisted in declaring that they owned but one hen, that their neighbors did not keep hens, and that their one hen, alone, and unaided by joking college boys or other facetious meddlers, had laid at least two eggs in one day.

There are several ways in which one could be mistaken in assuming that such a thing had taken place. Firstly: an egg may become buried in the nest material and not be noticed when search is made for eggs. The hen may uncover it later, resulting in its discovery the next morning, parading as a newly laid egg: possibly it might be warm. Later still, biddy may lay another egg. Sure(?) proof that both were laid on the same day. Secondly: as such an unusual event is not anticipated

one might forget to look for an egg the night before and the next day forget that they forgot. If one uses trap nests it would seem that this sometimes-discussed matter might be settled.

Let us look into it from that standpoint. With any or all trap nests but one hen is supposed to use the nest at any one time. "No admittance except on business and admit but one then" is the rule of the accurate trap nest. It cannot exclude the hen that enters on business but is unable to transact it. Curiosity is, however, discouraged if the trap is a practical one. If we find at the close of the day's business that No. 19, for instance, is credited on the record sheet with an egg twice, we may conclude that there can be no doubt that she laid both of them.

This will depend upon several things. When collecting eggs from trap nests the attendant should keep his mind upon the work in hand. Should he be dreaming of "The Law of Sex" as outlined in *All That There is to Know About Poultry Keeping* he might absent-mindedly remove No. 19 from the nest and record her number before she had laid, and later in the day find her on the nest with her egg and record her number again.

The same cause might result in forgetting to remove the egg the first time and No. 19 being a little inclined toward broodiness might be found on the nest, with the same egg, again with the same result upon the record sheet.

Non-belief in the ability of a hen to lay twice in one day, and a careful attention to business would prevent such an error.

To illustrate, clearly enough to be understood, the ways in which inaccurate nests can deceive the record keeper it will be necessary to refer to experiences of my own with unreliable nests.

I used at one time a nest that permitted two hens to occupy it at once and also permitted one hen to escape leaving the other one with two eggs in her possession, or the egg laid by the hen that escaped might be credited to the hen that remained. As she was removed and went back and laid later, she would get credit for both eggs—if the attendant happened to be a novice.

Another type of nest, one that created somewhat of a sensation a few years ago, presented some still more perplexing problems to one who was not overly anxious to discover the 200-egg hen. This nest box, according to the testimony of its inventor, permitted any number of hens to enter at once, yet we could determine, with accuracy, the origin of each egg found within. It worked with me as follows: Hen No. 1 entered a nest and not being wholly pleased with it went through a rear door into another nest behind the first one.

Hen No. 2 entered the nest just vacated by hen No. 1 and laid an egg. Hen No. 1 in the rear apartment, being in a partially-broody condition, was much interested in the performance of hen No. 2. Needing eggs

in her business she reached into the nest occupied by hen No. 2 (which the construction of the nest permitted her to do) and "swiped" the egg of No. 2, carefully pushing it beneath her own body. Should the attendant appear at this time he would naturally remove hen No. 1 and credit her with the egg found beneath her, but actually laid by hen No. 2.

No. 1, although partially broody, has not ceased laying so she returns to the nest later and lays an egg of her own. This also being credited to her would give her two eggs for the day. Should she not lay she would have simply received credit for one egg, laid by another hen.

Now I will venture to let the reader in on a point that he is very likely to discredit until he meets with it in his own experience, which he may never do.

Probably every experienced poultry observer knows the thieving propensities of broody hens. They will appropriate eggs to their own use, no matter where they find them, if they can, by hook or crook, get them under their bodies. *Some* broody hens, (not all) can persuade *some* hens (not all hens) to lay an egg where she (the broody hen) holds the fort. The language used is, to my ear, similar to that which she uses when calling her chicks. I have known such a broody hen to induce such a laying hen to avoid her regular nest, day after day, to deposit her egg where she (the broody) could get it. I am not enlarging upon a single case that has come under my observation, but am describing what has taken place a number of times in my pens and has been carefully and personally observed. It is no dream.

To return to the nest that we were just considering we will take up the first instance that I ever knew of such an occurrence. Such a broody hen as the one that I have described had been using this nest regularly. She appeared to lay two eggs a day so frequently that my suspicions were aroused to such an extent that I placed a china nest egg on the floor outside of the nest. Later I found the china egg inside of the nest in possession of the broody hen (the reader will understand that with me a hen is broody when she is broody whether she has stopped laying or not.)

I took out the egg and laid it on the floor again and waited until I saw her reach out and pull it in. Later, by remaining at a point of vantage the greater part of the day, I observed the actions of her chum as she approached the nest. I heard the cluck of the broody and waited until the egg was laid and pulled in. The layer did not try to enter the nest and she was a hen that had regularly used another nest. This same thing could happen with hens that were accustomed to use that nest and, finding the entrance barred, laid outside. So much for what I know about mistakes that could be made regarding the laying of two eggs in one day by one hen.

We are also taught by these things to be cautious about forming opinions from slight evidence.

We are taught that it is well to have all the trap nests in the pen accurate nests.

We are taught that when the nests are grouped together and all look alike the hens are not so likely to become so attached to one nest that they will lay outside of it if it is occupied.

We are taught that the entrance to the nest should be so high above the floor that a hen inside cannot pull in an egg that might happen to be laid on the outside.

We are taught that broody hens should be removed from the pen, or broken up, as soon as they cease laying.

We are reminded that appearances are deceitful and that it is very easy to be mistaken. The importance of installing nests enough to take care of the daily egg yield with such a system of attention as we are able, or care to give them, is also shown.

CHAPTER VI.

FERTILITY.

Fertility. Foundation principles underlying fertility. Conditions necessary for good fertility. Causes of infertility. A big hatch. How soon after mating will fertility become established, and how long will fertility continue after mating has ceased? The question answered. Causes of failure with incubators.

THE all-important question of fertility, as it applies to the breeding of poultry, can best be studied from the available facts relating to the union of the sexes in the higher orders of animal life because those higher forms have been more closely studied by competent people, and a more serious and general interest has brought out the facts.

Nature is very lavish in her provisions for the reproduction of any species. The female is supplied with a far greater number of eggs than will ever become fertilized and developed into counterparts of the parents. The male can and does supply a much greater number of fertilizing agents than can possibly be utilized by the female's eggs.

A short period of service by a male bird might, if conditions within the female permitted, fertilize every egg that she could ever lay. Those favorable conditions do not, however, exist. To my mind the leading causes for infertility in the poultry yard are excessive service, imperfect union, and no union at all. Lack of vigor having an effect only as being contributory to these causes.

Excessive service can be brought about by a lustful male being too constantly in the company of a few females in a confined space, and by artificially exciting the sexual desires by stimulating foods and drugs. Imperfect union can result from some abnormal defect in the male or female, too profuse feathering of the posterior parts of either male or female, or both, or a lack of elective affinity (mutual attraction) between the male and female. Forced service is very apt to be futile or imperfect.

The absence of mutual attraction will account for those common cases where there is no service at all.

In and of itself alone considered, prolific egg production can have no possible effect upon fertility. In many cases it can and does have a contributory effect.

As explained elsewhere in this book the natural mating time is at, and near, the beginning of a laying period by the female. This favorable time is apparently recognized by both the male and female, under normal conditions.

It has been frequently observed, not only by myself but by others, that the female that has been laying freely for a long time may persistently avoid the attentions of the male: also that the male may not offer his services to such a female. Mutual attraction may, however, exist between the male and a female that has been laying freely for a long time, and may be absent between the male and a female that has just begun to lay. Egg production does not, necessarily, control elective affinity.

What I have outlined is, I believe, sufficient to account for absolute infertility in by far the great majority of cases.

Weakly fertilized eggs, so-called, containing germs that fail to develop fully and normally during incubation, may be caused by imperfect mating or the germs may perish from lack of sustenance in the albuminous portion, or white of the egg.

Eggs that are insufficiently nourished may result from an insufficiency of suitable elements in the food served, or obtained by the bird, or by a failure on her part to properly convert those elements to the needs of the eggs. This, as well as a lack of affection for the male, or imperfect union with the male, may accompany an overfat condition of the female and be caused by it.

It will readily be seen from the above that the writer does not entertain for a moment some of the commonly accepted notions regarding a necessary connection between prolific laying and infertility. That the causes for infertility that I have outlined can be wholly avoided in actual practice is another question and I have grave doubts of its possibility.

When we supply certain predetermined conditions for our fowls we

will, in the great majority of cases, also supply conditions that were not predetermined and that we fail to note, or attach much importance to if noted. Results, good or bad, that accompany conditions for which we intentionally arranged are naturally attributed to those conditions; yet they often may be, at least in part if not wholly, due to the conditions that we have not noted.

A great many poultry breeders do, at times, succeed in obtaining almost perfect results in fertility. I have obtained as good results with one male running with fifty-five females as most of us can get with a small pen. I have heard of good results with still larger flocks containing but one male and I have no reason to doubt them.

In my own cases, and I suspect the same with the others, the eggs used for hatching were from females just beginning to lay and the male had been long in their company. This year I had, at one test, 100 per cent. fertility from a pen of 19 females (hens, two, three and four years old) that had been retained from year to year for their persistent laying qualities. Two of the older birds in this pen laid 177 eggs each last year. One of these two gave me an egg this spring not fit to use; she was very fat. This was my best pen and was headed by one male. I got the largest hatches and the best chicks from this pen, which was one of three that were mated. The hens did not lay during the winter. It is believed by some that the safer way is to discourage egg production during the winter preceding the breeding season. There is sometimes danger, when doing this, of getting the birds overfat and thus defeating the very end sought — fertile eggs and strong germs. The concensus of opinion among experienced breeders is, that but few females should be mated to one male. There will, of course, be less females that will give infertile eggs in a small flock than in a large one, as a general proposition. The law of elective affinity not only influences fertility, but it also influences the resemblance of the offspring to the parents. This is another advantage of the small breeding pen. As far as the inherent ability of the male to fertilize the eggs is concerned the size of the flock has no bearing. By keeping a record of the eggs that are used for hatching, the females that do not give well-fertilized eggs can be discovered and their eggs avoided. In practice it is best to keep close to the established usages of expert breeders until good reason appears for independent judgment.

We should respect authority, but it is neither necessary or wise to venerate it.

The use of several males with one flock works exceedingly well on many of our farms. Each male will have his own affinities. A case that illustrates this point attracted some local interest here this spring. An acquaintances of mine has a rough-and-ready farmer's flock containing several males.

This spring he bought a 220-egg incubator. At one hatch he took off 192 chicks and at the next 196 chicks; the best hatches ever obtained in this vicinity. His wife operated the machine.

The breeding season is probably the only time when so-called natural conditions will be found better than the best artificial conditions. Sufficient out-door freedom to range certainly awakens the mating instinct.

HOW SOON AFTER MATING WILL FERTILITY BECOME ESTABLISHED, AND HOW LONG WILL FERTILITY CONTINUE AFTER MATING HAS CEASED? THE QUESTION ANSWERED.

In the spring of 1898 the writer purchased ten pullets from a fellow-townsmen. These pullets had been maintained during the winter in a flock of some fifty or sixty females headed by one male in a house so loosely built that the evening that I got the pullets I could see the moonlight through the sides of the pen.

The pullets were placed in meal sacks and trundled up hill and down dale to my home, in a wheelbarrow that is nearly as old as the writer. These birds were placed by themselves in a pen in my barn chamber entirely isolated from other fowls. The next day I received seven eggs from this flock, the next day ten. They laid freely the entire spring. All of the eggs that they laid for two weeks were dated and placed under sitting hens. The fertility was very high for one week rapidly decreasing, after this time, until the tenth day which gave the last egg in which a germ developed. All of the eggs that were laid after the tenth day tested out clear.

Experiments have shown that if a laying female voluntarily mates with a male shortly after laying, the next egg laid may be fertile; the second egg laid after mating is more likely to be fertile than the first.

It is reasonably safe to use eggs for hatching one week after the male has been introduced to the flock, other conditions being equally favorable. The longer he is with the flock the better acquainted he will become with the different individuals in the flock. As the presence of the male has no effect upon the eggs laid by females with which he does not mate, some experiments that have been reported yield no satisfactory evidence; as it does not appear that it was known that the infertile eggs were from individuals that had mated with the male.

Other things being equally favorable, females will lay more eggs without a male than with one, and the eggs will be of better quality and keep better, as an infertile egg will not rot. Without life there can be no death and there is no life in an unvitalized egg.

CAUSES OF FAILURE WITH INCUBATORS.

I think there can be but little doubt that, as a general proposition, the causes for unsatisfactory results with incubators can be easily and briefly explained. The incubator is generally started at a time when sitting hens are not available and the conditions in the flock are unfavorable for good fertility. This will, I believe, account for any large percentage of absolutely infertile eggs in the machine.

Poor results in the incubation of fertile eggs can be accounted for by the condition of the breeding stock, the manner in which the eggs are handled before they are placed in the machine, and the failure of the operator to realize that the inventor and the manufacturer of the machine and the expert operator know about 99 9-10 per cent. more about it than he possibly can.

The sooner a fertile egg is incubated after it is laid the better will be the chances of getting a lively chick from it. The capacity of the incubator is often too great for the capacity of the breeding pen, or pens, to supply hatchable eggs; hence the eggs are held too long before being placed in the machine. In order to get the trays full anything in the shape of an egg is pressed into service. Brown eggs and white eggs, large eggs and small eggs are placed in the same machine — something that should never be done.

That antiquated and frequently-resurrected yarn of the hen that steals her nest and brings off a chick for every egg has no virtue as an argument against artificial incubation. That event usually occurs at a time when the condition of the bird, and the conditions that surround her, are the most favorable for reproduction.

I had a hen that "stole her nest" out in the orchard, laid a nestful of infertile eggs and sat on them for five weeks. The incubator is all right but it does not provide an automatic reasoning-apparatus with the automatic heat-regulator.



CHAPTER VII.

THE BROWN EGG.

The brown egg. Origin of the brown-egg fad. What the trap nest says. The size of the egg. The terms "litter" and "clutch" defined.

PERHAPS I can do no better than to begin this subject by reproducing an article that I contributed to the Eastern Poultryman last year.

THE ORIGIN OF THE BROWN EGG FAD.

(Written for the Eastern Poultryman.)

While the white shelled egg is still preferred in some sections the brown shelled egg is ultra-fashionable in New England and throughout the greater part of the country.

Perfectly fresh eggs, laid by healthy hens that are fed the same kinds of food will taste precisely the same be their shells white or brown.

The brown shelled eggs are laid by hens that secrete coloring matter or pigment in that portion of the oviduct where the shell is completed.

Hens whose animal economy does not furnish this colored pigment lay white shelled eggs.

Let us examine a chocolate colored shell laid by a Plymouth Rock of a "brown egg strain." We find that the color does not permeate the entire shell. The inner membrane that first encloses the egg before the shell is formed is white; the structure of the shell itself is white; the outer surface of the shell only is brown. It is merely a surface tint from the brush of the artist Nature serving to distinguish one family from another. Who can say that birds in their wild state are not guided and aided in the protection of their species by the color of their eggs?

It is said that the color of the flower serves to point out to the bees the place where honey is to be found and the bee in turn carries the life-giving pollen to other flowers.

The brown color of the egg shell being confined to the outer surface cannot effect the flavor of the egg; but there can be no doubt that many people have had, and do have the idea that brown shelled eggs are better than white shelled eggs. There is a reason for everything and there must be a reason for this. Brown shelled eggs formerly denoted that the hens that produced them were Asiatics or had Asiatic blood. The Asiatic breeds lay large eggs. Is it not true that years ago when the "brown egg fad" began to be noticed that the brown shelled eggs in our city markets were generally larger than those having white shells? If so, the people would naturally prefer them.

But there was another condition twenty-five or thirty years ago that it seems reasonable to suppose might have had a tendency to bring the white egg into discredit and thus boom the brown egg. That was the

practice of pickling and liring eggs to preserve them; a practice that is still followed but not so extensively since the advent of cold storage. A pickled or a limed egg is not a very delectable article of diet as every good housewife knows. The brown shelled blood (Asiatic) was not so common on our farms then as now. The greater part of the eggs picked up by the country collectors for preserving were white shelled, hence the ill-tasting preserved egg was more commonly white than brown.

The writer remembers an egg merchant who did a considerable business "preserving" eggs for the Boston market, and it was said that he experimented not a little to find a way to color the pickled eggs a brown that would have a natural appearance, but without success.

Is it not reasonable then to infer that the "brown egg fad" had a logical basis?

Brown eggs were generally good eggs, white eggs were frequently of inferior flavor as preserved eggs always have been and probably always will be.

Public opinion is not easily changed. A market that once demanded a brown egg for good reasons would continue to demand it after those reasons had disappeared unless some condition should arise to warrant a change.

So while we know that there is no difference in the eating qualities of white and brown shelled eggs, and that as far as beauty goes the color or absence of color on the shell is a matter of individual opinion, we must give the market what it most desires, be it brown shelled or white shelled eggs.

WHAT THE TRAP NEST SAYS.

Trap-nest records have shown us that the ability of a hen to assimilate a generous ration and convert it to her own maintenance and a regular and abundant supply of eggs at the same time, does not, as a rule, include the ability to secrete color pigment in sufficient quantity to color the eggs equally as fast as produced.

It has been my practice to make note of the color of each hen's egg from time to time, generally about once a month, by marking opposite the bird's number on the tally sheet a single letter to denote the shade of color. Thus for a dark brown or chocolate, I use the letter D, a good brown is marked B, well tinted T, lightly tinted L, white W. To one who is studying the subject the information obtained in this way is well worth the trouble.

By this method I have found that with the most regular and persistent layers there is a marked and often a rapid decrease in the color of the egg as laying progresses. A pullet that laid a dark brown egg when beginning in the fall or winter would be laying a tinted egg in the spring. On the record sheet would be found color marks ranging from D to T, B to L, or L to W against the same bird's numbers. This has not been a peculiarity of an occasional individual but has been a general

characteristic of the steadiest layers in my flocks for the several years that I have been observing the matter.

While the general tendency is for the eggs to grow lighter as frequent and regular laying progresses, still there are marked and peculiar variations in the color, as well as the size and shape of the same hen's egg from time to time. This shows how unreliable was the old method of trying to distinguish each hen's egg by its appearance. It is true that some hens will produce eggs that are almost exactly alike from day to day, such changes as take place being so gradual as to be unnoticed unless a record is made of them and comparisons made that cover a long period. But others will lay eggs of different sizes, shapes, and styles of color without rule or apparent reason. Thus we will find a bird that gives us a dark brown egg, then a spotted egg, then an egg quite light in color soon followed by an egg of the original dark brown.

Some moderate and some very poor layers will give a fine brown egg all of the time. The most beautiful brown egg that we get is from a very moderate layer. It varies but little in color, size or shape throughout the year. The exceptional hen has given a large number of well colored eggs.

A professor in an Agricultural College wrote me that he *thought* that their heavy layers held up the color of their eggs as well as the rest. Had he *known* that they did it would have been more convincing.

Quite numerous reports from trap-nest users confirm my own observations as noted above.

What effect confinement and ration have on this matter I do not know, but I have long suspected that it had some bearing. I believe that the time will come when it will be possible to introduce elements into the food or drink of fowls that they can convert into color pigment for the surface of the shell. That the color of the shell is influenced by conditions that have no apparent connection with the number of eggs previously produced or being produced I know.

Birds of mine have deepened the color of the shell after being given more freedom of range in grassed yards. The same has been true when carbonate of iron was being added to the mash to assist the molting process.

That the range, or the grass, or the carbonate of iron had the slightest influence on the matter I do not know.

The several conditions were coincident with some individual birds, but not with all or even the majority of them. The only food that I have ever found that had any influence in determining the quality of the shell formation without the shadow of a doubt, was bone. Green-cut bone and granulated bone will improve the quality of egg shells in a bird in normal condition.

I have read in some scientific work that animal color pigment was

largely fat. That is all the pointer that I am able to give and that may be of no value. Careful chemical research may disclose the secret, or it may be landed by a chance shot from some unskilled source as so many of our most valuable discoveries have been. Certain it is that to color the shell brown would not necessarily imply that brown must be the color of our color-producer.

The bird's chemical laboratory is a place where many mysterious compounds are made and no one has yet thoroughly explored it; although some appear to think that they have.

SIZE OF THE EGG.

As a general proposition the size of the bird determines the size of the egg. Specific examination will show, however, that there are a number of factors that influence the size of a bird's egg.

The pullet that does not begin laying until eight or ten months old, will, other things being favorable, lay a larger egg than she would have laid had she begun at four, five or six months of age. This, I believe, is not wholly due to the greater development of the reproductive organs. The egg grows in the body of the bird and its growth is dependent upon the supply of elements that are diverted to that use by the bird. These elements are all primarily the same as those that are used in building the bird's own body. When our immature (in growth) pullet begins to lay she begins to use material for egg production that she needs for her own development and she continues to appropriate to her own use some of the material needed by the eggs. The result is an insufficiently nourished body and an insufficiently nourished egg. The growth of the bird is somewhat checked by laying and the growth of the egg is influenced by the growth of the bird. The immature size of the oviduct, it seems reasonable to suppose, also has its effect. The broody hen, as soon as she begins to store up material for use during her pre-supposed confinement also begins to reduce the size of her egg. As long as the incubating desire is present she will lay a smaller egg until laying ceases or the incubating desire is removed.

Mal-assimilation of food also seems to have a remarkable effect upon the size, shape and quality of hens' eggs at any part of a laying period. Thus we find individuals that will produce eggs that are abnormally-large or -small, or insufficiently or excessively provided with shell, or not shelled at all, with no apparent relation to the number of eggs previously or subsequently laid or, indeed, the quantity or quality of the supplied ration. Overfeeding, or feeding that is not properly balanced is no doubt responsible in many cases, but overfeeding, underfeeding and unbalanced feeding can take place in the bird's body as well as in the feed trough. Students of incubation may or may not find here a hint as to one

possible answer to the much mooted question: "Why do chicks die in the shell?"

It is the writer's present belief that those who would secure long and profitable life in the poultry yard should consider the above propositions carefully.

EXPLANATION OF THE TERMS "LITTER" AND "CLUTCH."

A "litter of eggs" is a number that a hen, reverting to the incubating instincts of wild birds, will lay for the sole purpose of reproduction. A normal litter will be no greater number than the hen is able to cover with her body.

"A clutch of eggs" is a term that has evidently been adopted in the effort to account for a hen ceasing to lay after she has produced more eggs than the word "litter" would explain, and for the reduced size of some hen's eggs at certain times when the incubating tendency may wholly or only partially develop. It has no definite number.

The number of eggs in a "litter" or "clutch" is not predetermined in the physical structure of the bird, as so many assume, but depends upon her disposition or temperament, the food that she receives, and the conditions to which she is exposed.

A perfectly developed hen, with a bred-in-the-bone ambition for egg production could, if perfectly maintained, produce at least one egg for every day of her vigorous adult life, perhaps more. If not then *why* not? Perfection can never be attained, either in structure or maintenance, but it is as worthy a goal for utility as for art.

CHAPTER VIII.

IS IT NECESSARY OR ADVISABLE TO FORCE EGG PRODUCTION?

Is it necessary or advisable to force egg production? Egg production during molt. The rooster and the trap nest. Egg-eating hens.

THE point of view of a reader is not always anticipated by a writer. It is quite commonly understood, I believe, that no hen will lay, except during the natural breeding season, unless forced to do so. If we concede the truth of such a proposition we must concede that any hen that lays a larger number of eggs in succession than she would be able to cover with her body, and hatch, (if fertile) has been forced to do so by some means aside

from her own inclination; for the "litter of eggs" is nature's number, and, as far as we have yet been able to determine, is designed by nature to be incubated by the bird that produced them.

What constitutes forced egg production? What is commonly understood by the term: "forcing for eggs?" There may be a difference in the minds of different people as to what forces really operate to produce a large yield of eggs. There may be a great difference in the forces themselves, as brought to bear by different people, in different places and with different hens, that will and do promote great egg production.

The writer endeavors to feed his hens well *because* they lay well and not with the idea of *making* them lay well. Is he wrong or right? The hen that is not provided with suitable food to repair those tissues of her body that *have been* used in the feeding for growth of the eggs within her is not properly supported in her efforts to add to our revenues.

Are we *forcing* anything when we supply the right elements to repair used up tissues and energy?

Drugs and condiments may stimulate the reproductive organs and cause the eggs to be passed down from the ovaries abnormally fast, but they will not feed the eggs. The growth of the egg begins in the bird's body and ends with the completion of the egg, if it be not incubated, or the death of the germ or the resultant body if it is incubated.

We are not forcing nature when we feed the egg within the parent body, any more than we are when we feed the chick after it is hatched and it has digested all that was left of the egg but the shell.

Inherited and acquired tendencies will cause the eggs to become detached from the ovaries very rapidly with some birds. A pullet owned by the writer laid her first 20 eggs in 21 days and she had not been forced for eggs or forced for growth but had roamed over free range at will.

The more rapidly these eggs come down the more pressing will be the demands made upon the bird's body for suitable food elements to feed them and perfect their growth. Supplying the bird with suitable food elements to balance this drain is not forcing egg production. Should these elements be provided in excess of the egg supply, or be converted to other uses in the economy of the body unfavorable changes may take place in the physical condition of the bird; but if the reproductive, the digestive and the assimilative functions of the bird are working in full harmony we are feeding the bird and her eggs; we are forcing neither.

The harmful effects of a failure to understand this principle or a neglect or inability to work it out correctly are well shown in the following clipping from *The Dixie Fancier*.

FORCING HENS FOR EGG PRODUCTION.

Nothing we have read more nearly coincides with our own views and experience in forcing hens for great egg production than does the following clipped from Commercial Poultry and written by Mr. W. B. German. Read and study it, brother poultrymen.

It has got to be quite a fad now to advertise eggs or stock that comes from hens with a big egg record. Such advertisements are all right and not misleading when such record is produced through natural means—that is, not forced on highly stimulating feed beyond the natural capacity of the hens for egg production, which means a deterioration of, not only health and strength of the hen in question, but also of all subsequent stock emanating from that source. I will admit that it is possible by proper selection and mating to produce a strain of hens that will be great layers and while this fact should be worked upon by all breeders yet great care must be exercised or harm will be done by exhausting the vitality of the hen and that of her offspring. To show how it will effect youngstock where the parent stock is overworked I only need say that chicks hatched from eggs laid by hens that have been forced to lay in season and out, will be puny and weak and half of them will not live, and those that do will not reach that state of perfection that would warrant using them as breeders. We can see the magnitude of this mistake when we know that this lost vitality, or weakness, is handed down from one brood to another for several seasons. Indeed I doubt if it is ever wholly overcome, so long as a trace of the former blood remains. While it is possible to force a flock to great egg production at the present, yet if they are used as breeders while under this strain or even afterwards, the work of breeding up the flock will be lost and we will be heavy losers through lack of health and vigor in our future flocks. There is a limit to all things to go beyond which brings a reaction which is disastrous, and I would not think of getting eggs for setting from any breeder if I knew his hens had been fed for eggs through the winter, because eggs were bringing a good price. It is contrary to nature for a hen to lay except at certain seasons of the year, and while nature may be assisted and improved upon and great changes brought about through this assistance, yet there is a limit past which it is dangerous to go, without endangering our future success. Hens used for layers may safely be forced for a large egg production in a short period, but those used for breeders dare not be without a corresponding loss of vitality, reaching into future broods, thereby lowering chances for success.

EGG PRODUCTION DURING MOLT.

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The molting process is one that should receive more attention from poultry raisers than is usual. This is a critical period with all birds and

unless their environment is sufficiently favorable they are likely to perish from exposure to the elements or become so weakened that they fall an easy prey to their natural enemies.

We are accustomed to imagine that nature is always kind to her own and that wild beasts and birds always thrive and, as a rule, die only from old age unless destroyed by the hunter. The naturalist knows well that such is not the case. The mortality among wild birds and animals is very large. One naturalist went so far as to claim that a natural death is unknown among them.

We can affirm, with no fear of competent contradiction, that the more carefully we imitate the normal conditions of nature the less valuable, to us, will become the lives of the domestic birds or beasts so surrounded. The almost universal worship of some medium of exchange (the almighty dollar with us) has produced an all-too-prevalent belief that whatever appears to be cheap is right and we distort both truth and reason in the attempt to convert Nature to our way of thinking.

Let us admit, then, that under domestication the hen has a far better chance to live in good health and contentment than her wild antecedents could have had. Instead of taking it for granted that the molting hen must be a sick hen rather let us take the position that, with the care and food that we are abundantly able to provide, there is no need for sickness or debility during the molting period of birds that have inherited a vigorous constitution.

Hen feathers somewhat resemble certain plants inasmuch as they sprout and grow, are alive, for a season, then wither, die and fall, and are replaced by another crop.

Feathers grow very rapidly, fed by nutrient vessels, and make great demand upon the source of nutrition for sustenance. Corn will not make feathers. As well try to make nails from soap as to expect feathers from corn. As the bird needs energy, and fat is necessary for nervous force, corn, or its equivalent, should form a part of the ration.

Much of the trouble that often accompanies molting is no doubt due to general neglect—a combination of unfavorable conditions—during that period.

Carelessly fed; indifferently housed; tormented by vermin; breathing hot impure air by night and chilled by cold winds, or fall rains, by day; fed anything or everything except what she most needs, it is no wonder that general neglect has produced a general condition of despondency, sickness and unproductiveness among molting fowls. How easy it is to acquit ourselves from blame and charge up the whole business to Nature.

The molting hen requires good care and suitable food. She needs food rich in feather-forming elements. Meat, bone, clover, bran, oats, oyster shell and mineral grit. Linseed meal (o. p.) is a good addition to the mash. Green food in the shape of vegetable tops, vegetables or

apples are great aids to the digestion and proper assimilation of the other foods.

The birds should not be compelled to expend too much energy in exercise at this time. That molting hens are often fed the wrong kinds of food is shown by the overfat condition that so often accompanies and follows the molt.

The different behavior of individual hens fed the same ration and kept in the same flock seems to show that molting, as well as egg production and other functions, is largely influenced by individual tendencies. Some individuals drop their feathers so rapidly that they become almost naked in a short time while others molt so gradually that only close inspection, or the brighter appearance of the new feathers, shows that molting is in progress. With one bird egg production ceases at, or near, the beginning of molt and is not resumed until the new feathers are fully grown: while others keep fully clothed and lay freely during the entire period. I have noted these differences in one flock of the same breed, same age and, of course, receiving the same ration.

As an example of steady laying throughout the entire year I will take a Wyandotte hen of my own. I will give her egg-record by months to show how little effect certain conditions appeared to have upon subsequent laying. During the year 1901 this bird laid as follows: January, 19 eggs; February, 9 eggs; (broody and broken up.) March, 20 eggs; April, 16 eggs; May, 11 eggs; (broody and broken.) June, 18 eggs; (broody and broken.) July, 12 eggs; (broody and broken.) Aug. 13 eggs; (broody and broken.) Sept. 16 eggs; (broody and broken, molting.) Oct. 11 eggs; (broody and broken, molting.) Nov. 19 eggs; Dec. 19 eggs. Summary: Total No. eggs laid, 183. Broody and broken 7 times. Molting observed only two months. This is an exceptional hen, but the data given above I personally know to be correct. This record was made under conditions that must have been very unfavorable at times and that is what emphasizes a performance that would be in no degree remarkable, I believe, under the best of conditions. On the coldest winter days warm water placed in the pail in the morning froze before noon. The droppings froze on the platforms. But little vegetable food was supplied as we did not have it. At this writing that hen is on her 24th consecutive month of laying. Pretty close to a continuous performance for a bird that became broody seven times in one year.

I have had many hens lay during the greater part of their molt, and quite a number that laid well entirely through it with no loss of vigor that I could determine. I never try to force laying at this time but endeavor to feed suitable food to assist the growth of feathers and maintain the bird in good health and flesh without fattening.

Even when not so carefully fed I have found that individuals of a persistent laying habit are likely to lay well into, or entirely through

the period. If sufficient and suitable food is given I see no reason why harm should result. Such laying may effect fertility. With the single exception that mutual attraction between male and female appears in some cases to be weaker after laying has been in progress a long time I can as yet find no reason why any well-nourished egg should not become fertilized no matter to what part of a laying period it belongs.

If the egg has not been starved I see no reason why the fertilized germ should not thrive.

THE ROOSTER AND THE TRAP NEST.

A man, at one time a servant of the state of Rhode Island at their Agricultural College, found his rooster in a trap nest and said that there was no apparent reason why he went there. Neither could he understand how any trap nest could prevent egg-eating.

As some other trap-nest novice may be more interested in the relation of cause to effect I will explain the rooster matter here and the egg-eating question elsewhere.

Male birds that go on the nest are known to observing poultry breeders as "coaxers." Some male birds seem to possess an intuitive knowledge of the most favorable time for the female to mate with a view to reproduction. So we often find them paying almost exclusive attention to those of their mates that are about to begin a period of laying, or have been laying but a short time. They carefully protect them from annoyance, see that they get choice bits of food and frequently coax them to enter a nest by entering themselves and then calling their mates. An observing care-taker will perhaps find, as I have, that when the male bird is found in an Ideal nest, a favorite that has not been laying for some time, or but recently began will be in evidence. The record sheet and an observing eye will tell the story. Her eggs will almost surely be strongly fertilized. It would seem to be of good omen when the male is found on the nest. If there is any valid objection to this behavior it can be laid to the bird and not to the nest.

The facts connected with this matter no doubt have an important bearing on fertility, especially when one male heads a large flock of females. The larger the flock the more hens there are likely to be that are not in a receptive condition, hence do not mate willingly, or at all.

The natural mating time is at the beginning of a laying period and it is certainly recognized as such by some males and females. When the eggs from hens in the midst, or near the end of a long period of laying are well fertilized it simply shows that other conditions have overcome, or lessened the force of natural tendencies. That this is a desirable end to be sought and attained is believed by many. It is simply a problem to solve and some appear to be solving it.

EGG EATING HENS.

An egg-eater is a bird that has contracted the habit of breaking the sound shell of an egg with her beak and eating the contents. If not cloyed with shell she will eat the shell also unless some other hen gets ahead of her. It requires very close observation, sometimes, to detect an egg eater. The fact that we find a nest moist with egg, or see a bird with feet or beak smeared with egg does not prove that the egg-eating habit is present. Any fowl will eat a broken egg, and thin-shelled eggs are very easily broken in any nest or elsewhere. In open nests that contain nest-eggs, or eggs previously laid by other hens, a thin-shelled egg is very likely to be broken at the moment it drops from the bird. This egg will be eaten by the first bird that smells it: probably the one that laid it. The finding of the nest, the eggs, or the beak of the bird smeared with egg might give rise to the assumption that the vice of egg eating had developed in the flock. A sound egg left in some convenient place ought to show if there are any egg eaters present.

Broken eggs may induce the habit of egg eating. The absence of oyster shell or other supposed egg-shell-makers may induce it. I have noticed that when the shell-box had been empty for some time the birds would make frantic efforts to break a sound egg placed before them—without success however.

I have tried a number of times to teach my hens the art of breaking and eating eggs in order to study the matter more closely, but without success. A broken egg thrown upon the ground would be devoured in an instant but a sound egg could be left around in safety.

A number of years ago I had several hens that formed the genuine egg eating habit in trap-nests of two compartments. First they would pull the egg out of the nest and it would break or crack when it fell. After a while they learned the trick of breaking the eggs with their beaks. I found that, in order to puncture the shell with the beak, the bird was obliged to get the egg at such a point of vantage that a sharp blow could be struck while the egg was so situated that it could not roll away. By having the birds lay in Ideal nests a foot square I found that the egg was at all times in such close proximity to the bird's body that she was unable to deliver a direct blow that would puncture the shell. A hen cannot break a strong shell that is under her body by striking it with her beak. None of these birds were able to eat their eggs in a trap nest one foot square. They were able, and did eat them in the two compartment nest until I cut off the point of the upper mandible. Then they were cured entirely. By the time the beak grew out again the trick was forgotten. This operation has been frequently recommended and I believe it will work in every case, unless the beak is cut on the wrong bird; which is no doubt frequently done.

The fact that no traces of egg or shell are ever found in the nests does not by any means prove that no eggs are broken and eaten. Some egg-eaters will not only eat every particle of the egg and shell but also all nest material that is wet with the egg.

Non-laying hens and male birds are as likely to contract this habit as are the layers. Ideal trap nests keep the eggs out of their reach.

Open nests that are so constructed or so situated that the nest is semi-dark will prevent the birds from seeing the eggs plainly enough to eat them. If the nests are too dark the birds are likely to lay elsewhere.

When egg eating is suspected, eggs should be placed where the hens can see them, and results noted.

CHAPTER IX.

NATURE'S SECRET REVEALED TO THE BREEDER. THE FOUNDATION PRINCIPLE OF THE LAW OF LIKE BEGETTING LIKE. THE BREEDER'S LAW.

Nature's secret revealed to the breeder. The foundation principle of the law that "like begets like." The breeder's law. Single vs. multiple mating. The fallacy of the so-called "law of sex." The fallacy of the egg-type theory. Individual merit from the standpoint of the buyer. A prophecy.

THE key that unlocks the door of success is persistence. Genuine persistence is not acquired but inherited. We may subdue, in a greater or less degree, those qualities that antagonize persistence and we may remove obstacles from the path of persistence, thus giving it a better chance, but we cannot create it either in ourselves or in living organisms that we are seeking to control. All success in the improvement of vegetable or animal species is obtained by discovering individuals in which the desired features are persistently present and are persistently transmitted when we propagate the species. From this we deduct the law: **THOSE TRAITS OR QUALITIES THAT DEVELOP IN A SUPERIOR DEGREE UNDER SEEMINGLY UNFAVORABLE CONDITIONS ARE THE ONES MOST LIKELY TO ATTAIN EQUAL OR GREATER DEVELOPMENT IN THE PROGENY.**

The observing poultry breeder who keeps track of the offspring from each individual pair cannot fail to be impressed with the truth of the above proposition.

A bird may have a serious defect in comb or plumage and yet that defect may never appear in the next or in any future generation. In such a case that defect is not persistent. If it does appear in every subsequent generation it is persistent.

The same is true of all qualities good or bad, desired or undesired. The creation of improved strains of fancy fowl has resulted from the working of this law of persistence. Whatever the distinguishing quality or qualities may be that distinguish one breeder's strain from another's, peculiar coloring or marking of feathers, style of comb, shape or carriage, or habits and traits, they are known by their persistent presence in the individuals and in their progeny. Unless such distinguishing features are thus persistently present there is no strain.

In 1898 the writer raised a lot of Plymouth Rock pullets. Those that developed a persistent laying habit under very unfavorable conditions were marked. From year to year the most persistent layers from that lot were retained. I have some of them now. One of those birds laid 177 brown eggs in 1901. This hen has a very imperfect comb. This year she was mated to a finely marked cockerel that had a very ordinary comb. From those two birds I have cockerels with good five-point combs. I never found the imperfect comb of this female reproduced in any of my chicks, any year. It is not persistent. That hen has never been broody but once and then only in a slight degree. Her shape does not resemble a Leghorn, by the way.

The persistent laying habit is easily recognized by the trap nest user. One writer who had evidently used trap nests, for he recommended them highly, said that if we keep individual records at all we must keep them throughout the year in order to determine which were the good layers. This writer may have had persistent layers, but he himself lacked persistence for he was grievously in error in making such a statement. The persistent laying habit does not require a year for its discovery. The female that produces eggs freely under unfavorable conditions at any time shows a persistent laying tendency.

There may be other persistent tendencies that will eventually dominate the egg producing tendency and they may be observable without the aid of trap nests, or they may not. Broodiness is one of these; inherent constitutional weakness another. The female that lays steadily and freely throughout the natural breeding season under conditions that are favorable to the development of the incubating instinct discloses a persistent laying tendency that dominates broodiness. The bird that goes through its molt in fine condition keeping fully clothed and in good health and vigor all of the time while its mates, or other birds subject to the same conditions, are ragged and despondent shows a persistent tendency for normal feather-reproduction. If such a bird lays during this period she shows the persistent laying tendency also.

The bird that is raised on free range and comes to winter quarters in an overfat condition while its mates are in proper condition reveals a persistent tendency to fat production.

The female in the laying pen that converts her food to fat while her mates are converting theirs to flesh or eggs reveals the persistent tendency to mal-assimilation of food.

The breeder who early recognizes the truth and the dominating force of the law of persistence and maintains those persistent qualities that are desirable and discards those persistent qualities that are not desirable will if he himself is persistent meet with success whatever be his aim.

The propagation of species is governed and influenced by a multitude of factors some of which are clearly understood, some partially understood and others not understood.

People of mature years know how often children "take back" to their grandparents: not only in appearance but in mental and physical traits. Sometimes they take back so far beyond the grandparents that nothing but family tradition or record can connect their characteristics with their ancestors. Some people do not believe in the influence of heredity. In the attempt to prove their theory they will cite cases where the law of heredity has apparently failed. One such attempt that I recently noted in a newspaper was amusing.

A list of poets was given with the statement that the poetic gift had not been transmitted to the children. This was true. Quite a number of those given in the list were never married and several of those who were had no children. The children of others died young. With all such attempts to discredit one of the most powerful laws of nature the full facts relating to both sides of the union are either suppressed or are not known.

What is true of the higher orders is also true with our domestic animals and birds. When traits that seem to be especially prominent, are not transmitted, it is because those traits were not as persistent as we supposed, or they have been overpowered by more persistent traits that we failed to note. Pedigree breeding is the only correct foundation for a strain of superior merit in any direction.

No man can tell by looking at a pair what the offspring will be. Standard points, prolificacy, health, vigor, and the power to transmit them are all governed by the principles herein outlined, and the truth of the maxim that "like begets like," will depend in a great measure upon our knowledge of each individual breeder, its ancestry and its previous offspring, if any.

SINGLE vs. MULTIPLE MATING.

To treat of this subject briefly is no small task. To treat of it exhaustively is utterly beyond the capability of the writer. Single mating is the mating of a single pair—one male with one female. When the Creator in his infinite wisdom selected a type of life that was to dominate all other types He arranged for their propagation and permanence by mating a single pair. Who they were, where or when they existed is not material to this discussion. According to tradition like did not beget like in a complete degree. One son was a degenerate. The principle of the single mating, followed through all the ages, has brought man to his present high state. Races that have violated this rule have invariably degenerated. This is the fundamental law governing the improvement of species in so far as it is governed by the laws of reproduction. Economic condition must always modify all laws, human or divine, and in nature we often find multiple mating supplanting at least for a time, the single mating, numbers being apparently of more consequence than individual merit. It will not be necessary that the Thoughtful Reader should have attained the eminence of a Darwin, or the dignity of a breeder of fowls even, to follow me along this line.

Nature's processes are outlined in a free library that is, to a greater or less extent, available by the most humble of us. Nature has arranged for the greatest possible measure of success in the reproduction of large numbers from a single pair in the organisms of the male and the female and by providing the instinct of mutual attraction. This principle of *mutual* attraction is of the utmost importance.

The maximum of fertility and vigorous offspring can only be attained where each mating is the result of a mutual attraction or agreement between male and female.

This is the only unavoidable barrier to high fertility with multiple matings,—one male with numbers of females. The larger the number of females the more there will be that do not mate willingly or will not be served by the male. When nature seeks to reproduce a specific type; offspring that will be exact counterparts of the parents in appearance and in tendencies; she not only calls mutual attraction to bear to insure success in numbers, but she applies the principle of consanguinity,—the blood relation. Mutual attraction and consanguinity are, then, the keys that unlock the treasure house of nature's mysteries to all who wish to study the underlying principles of cause and effect as they relate to the propagation of, and the improvement of any species of animal life.

The improvement of a family of hens is impossible unless *some one* practices in breeding.

The novice who inbreeds simply to avoid buying new blood will invariably cause degeneration in his flock and will utterly ruin it in time. The

person who allows the cost to regulate his judgment will never do the *best* thing. The *right* way is the only way to achieve the most perfect results. The breeder of birds or animals who is aiming for improvement asks himself first: "what is the right way?" What it will cost to follow the correct course is a secondary consideration, and should not be considered when we are seeking the right thing to do. When this first principle becomes fixed in the mind, then the cost becomes an important factor. If we cannot see our way clear to do what appears to be the best thing we should take the next best or the nearest approach to it that seems practicable.

The highest possible success in the improvement of a family of fowls would attend the efforts of the intelligent and wise breeder who would practice single matings with single pairs, housed and maintained separately. This would usually cost too much. The nearest approach to this plan that is economically practicable is the one to pursue.

THE FALLACY OF THE SO CALLED LAW OF SEX.

"Upon what meat doth this our Cæsar feed that he hath grown so great?"

Briefly stated the so-called law of sex consists of a claim that, if a certain method of procedure be followed, we can produce males or females at will, either in reproducing ourselves or our animals and birds. The author, or authors, of the so-called law have never known of a case where the scheme worked; hence they are able to produce nothing but apparent coincidences to support the assumption. This has been a common expedient with the dreamer through all the ages.

There are two reasons why we cannot accept this so-called "law of sex." First: its basis is wholly untenable. Second: even if the claimed conditions determined the matter, it would be impossible for us to supply and maintain the conditions.

Man is a wonderful creature, and, under the guidance of and aided by a Higher Power, has wrought remarkable changes in the animal and vegetable worlds. This gives finite man an exceedingly good opinion of himself. The late Mr. Ingersoll had noted this so much that he was led to pen that famous line: Man has created God in his own image.

Those of us who sincerely believe in an Infinite Being will, I believe, see that, should man be able to control sex at will, he could overturn the established order of things to such an extent as to completely extinguish a family or a race. Nature will never reveal to us any law that would enable us to accomplish such a thing.

What a graft the Chinese would have with such a law lying around loose in their houses with their notions regarding sex. Were there such a law they would claim it, as they claim priority in everything.

While the primary-influences that control the sex principle in the embryo are not understood, it has been quite clearly shown that, up to a

certain stage of development, the male and female organs are both present and both equally developed. What destroys this balance and causes one sex to dominate is not yet known, but we have excellent reasons for believing that the sex has not been predetermined up to the time that this change takes place. Sometimes the determining factor seems to be absent and the hermaphrodite results.

We have no reason to believe that there is any sex whatever present in the vitalized germ contained in a new laid egg. When the egg has been incubated long enough for the embryo to reach the right stage of development the matter of sex is determined. If man is ever going to control the matter, that is the time for him to operate.

THE FALLACY OF THE "EGG TYPE" THEORY.

It is so difficult for us to understand what we cannot see that we are constantly seeking for some visible sign by which we can determine, (usually without effort on our part) whatever we wish to know about every object animate or inanimate that attracts our attention.

Any characteristic, or any combination of characteristics, visible to the eye or not, that always accompanies a specific performance, a specific trait, or a specific quality, *and is always absent when such performance, trait or quality is absent*, constitutes a reliable type by which those who are competent are able to predetermine, accurately, what performance, trait or quality will be present or absent in the object under examination.

What a task, then, has the investigator who seeks for the "egg type," as it is usually understood, set before him. He has to discover a large number of birds that are prolific and a large number that, when maintained under equally favorable conditions, are not prolific. These birds must be taken from many breeds and different families within each breed. The product of each specimen examined must be measured with a sufficient degree of accuracy so that no mistakes in that regard are possible. Hearsay evidence that is unsupported by an individual egg record must, therefore, be rigidly excluded from the start.

The experimenter should not allow himself to be encouraged by an alleged "dairy-type" of cow. While there is a fair analogy between egg production and milk production when we are considering the composition of the two products and the importance of individual measurement, there is as yet no apparent analogy beyond that. The quantity and the richness of the milk that the dairy cow gives up at each milking is the standard of measure in the dairy herd. In the poultry yard we expect but one egg at a time and the quantity of nutriment contained within that egg has not as yet been connected with this question. If, therefore, we look for a capacious abdomen in the "egg type" hen

merely because the great milker has a large udder, we are off the track at the outset.

We desire to know, not how much egg our prolific hen will lay in one day, but how many days will there be in which she will give us one egg. The size of the egg, though important, is secondary at this time. A simple mathematical calculation will enable us to get an approximate idea of the number of eggs, that have become sufficiently advanced in growth to be affected by the length of the oviduct, that could be present at one time. I am neither affirming or denying that a large egg yield is only possible with a bird having a large and prominent abdomen or "egg basket." I can say, however, that I count my eggs after they get into my basket and the size of the hen's basket has had no apparent relation to the number of eggs that she would contribute to mine.

A contributor to Commercial Poultry affirmed that the typical shape of the Leghorn would be found to be typical of the prolific hen. He based his claim upon what he said was true with his Plymouth Rocks. A several years use of trap nests had shown him that his most prolific layers resembled the Leghorn in shape. If the "egg type" or the prolific type can be determined upon such slight evidence as that, then we may expect a great many different egg types and a larger individual supremacy among Leghorns than has yet been disclosed.

All living birds are of the egg type whether they are Leghorns, Ostriches or English Sparrows. The *prolific* type of the domestic fowl can be determined by suitably maintaining the bird and counting her eggs. That this type will carry with it distinguishing marks that can be seen with the eye or felt by the hand remains to be determined. At present we know of no prolific type except such as is shown by the egg producing tendency of habit of the individual.

That prolific layers will usually have bodies longer than wide I believe. That unprolific layers will also present the same characteristic I also believe.

"The prolific shape" has very graciously adapted itself so as to include a very large proportion of the hen family. That modifying this shape excessively in order to obtain a distinguishing feature for some fancy breed or strain would be likely to interfere with perfect development of the vital organs and thus ruin the egg producing qualities of the strain or breed seems reasonable. Nature abhors a monstrosity as well as a vacuum.

INDIVIDUAL MERIT FROM THE STANDPOINT OF A BUYER.

It is obvious to every buyer that individual excellence should determine the value of a bird.

A world-famous poultryman and editor once told a correspondent that "a bird is worth all that you can get for it." It would be pretty hard to make a novice, whose judgment of quality is practically valueless, believe that statement if he were buying a bird. It might seem all right if he were selling one.

There often exists a double barrier between buyers and sellers that cannot be leveled. We have the ignorance and the cupidity of many buyers and the cupidity and the ignorance of some sellers as a permanent bar to satisfactory transactions. The determining of the equitable cash value of a bird depends upon the individual merit of each party to the transfer as well as that of the specimen sold. In looking at this question from the view point of a buyer possessing average intelligence and fairmindedness we have to consider facts as they really are, or as they appear to us.

It is not the duty of the poultry press or of the writer to encourage the idea that every novice is legitimately "a soft mark" for the advertiser, while it should be the duty of every friend of the business to combat the all-too-prevalent notion that nearly all advertisers consider him so.

The American Poultry Association and the Specialty Clubs in formulating standards for the different breeds have presumably done so for the guidance of the breeder. The buyer who demands their impossible ideal for a rummage-sale price of \$1.99 is demanding too much, but he is entitled to a dollar's worth of value for every dollar that he invests in a bird.

It is doubtful if the good reputation of a breeder has any honest cash value to the average beginner, but the blood that gave the breeder his reputation may. There is little doubt that this value is sometimes inflated. It is my candid belief that some breeders of established reputation send too few birds to market.

A case in mind is one where \$20.00 was the price paid for a bird (at once returned) that in the opinion of the fairly well informed buyer was worth seven cents per pound.

Utility has for years been a catchword that has truly covered a multitude of sins, or has attempted to cover them. If a farmer or a market poultry raiser chooses to utterly disregard the general standard requirements—the distinguishing characteristics—of a breed in his efforts to maintain or improve utility qualities he has a perfect right to do so.

If such a person can make sales to parties who come to his place and see his stock he has a perfect right to do so. But when he places his ad. in a poultry paper he is offering his stock, "sight unseen," to those who are more or less educated along Standard lines and expect pure-blood stock possessing characteristics, visible to the eye, that prove the gen-

uineness of their breeding. He has a right to expect this and he should get it.

A number of years ago the writer sent five dollars to a breeder, then doing a large business in "Utility Barred Plymouth Rocks" and another breed, for a cockerel. I received a bird that by a considerable stretch of the imagination might be called a Barred Plymouth Rock, but his like had probably never before been seen in this locality. A local sage, whose standards were and are much lower than those of the average buyer, said: "If that is one of ——'s \$5.00 birds I should like to see one of his \$2.00 ones," and his tone left nothing to be surmised. This bird did not suit the ignorant novice then, and the slight knowledge obtained since does not, in the retrospect, add to his value. The bird was returned and I received my five dollars, but was out the express charge, a coop and several weeks time. A letter from the seller, in which he acknowledged his error and stated that he "usually sent such birds to market when six weeks old but will now sell him for \$2.00 to some farmer to improve his flock," did not help me much. I still pity the farmer who may have improved his flock with such a bird.

I use this illustration simply to bring out my point and not to air a grievance. I got a satisfactory bird from one of the best known strains of Standard-bred Rocks in the world for that money and think on the whole the circumstance was fortunate.

There is no apparent excuse for such a condition of things. There can be no doubt that in the hands of a great many fanciers the utility qualities of their birds have deteriorated, been completely ignored in fact, but it has not been so with all.

It is not necessary for the ultra-utility breeder to compete for prizes at the shows or to sacrifice a great deal to fancy points, but he should not ignore the Standard if he is to advertise pure-bred poultry.

Pure-bred Rocks, for example, do not have rose combs or feathered shanks. All of the breeds have certain distinguishing features that are supposed to denote purity and the utility breeder should not ignore them if he is to advertise pure-bred stock.

There is no "egg type" that can be determined by external appearance. The monstrosities in shape and comb that are sometimes bred on an egg-type theory—which, even as a theory, seems to differ with about every theorist—are but caricatures of worthy breeds.

When a farmer or market-poultry raiser has read his poultry paper sufficiently to become convinced that pure-bred hens are better in every way than scrubs, and sends, often with doubt and misgiving, his good money to an advertiser who claims a pure-blood strain, bred for eggs—perhaps named for the number of eggs that one exceptional hen happened to lay in a year—he should receive pure blood for his money and not a conglomeration of dunghill and several breeds that has been

named for the one that, in the breeder's eye it most resembles.

Utility is a good slogan for every breeder who has the interest of the domestic hen at heart, and it is of happy omen that honest, intelligent breeders all over our land are working along "business and beauty" lines, improving their flocks in both utility and Standard points.

Many assume that the farmer cares nothing for fine feathers because he sometimes talks that way in self defence; but when he once decides to send away for a "full-blooded rooster" he often wants all the fine feathers and gilded beaks and shanks, bay eyes and five point comb that would go with a very expensive bird.

We do not all care to breed for the show room or to take the trouble to prepare birds to show, even if we have those that we think are worthy. A low rating on a score card is no disgrace, but a low nest-record, if the fault of the bird, should be. Individual merit should show in external appearance, in the nest and in the progeny. Upon this merit, which should be in some degree discernable by a reasonably intelligent buyer, the cash value of the bird should be based.

INDIVIDUAL MERIT.

Straight Talk by a Fancier on the Evils of Selling Poor Birds With Pedigrees at High Prices.

BY A. P. WINSLOW, IN THE POULTRY KEEPER.

In breeding poultry, as in many other things, individual merit is lost sight of, and inferior birds are used in the breeding pens, and sold on the strength of the breeding. Blood will tell in poultry as in everything else, but breeding should not be looked upon as the only object in view. Line breeding is all right and if carefully followed will surely produce more uniform birds, but even in line-bred stock the greater the value placed upon individual merit the greater will be the success.

I am a firm believer in good breeding, but I also believe in individual merit. A few years ago Maine horse breeders were after pedigrees. Any old thing that had a pedigree was bred and no attention was paid to the individual merits of the horse. The result was that many people had good hard cash tied up in horses that were bred for speed, but did not have such qualities as go to make up a salable horse, and such horses were cheap with no market for them and Maine breeders did not breed many horses for a few years. Now the breeders are breeding for individual merit and, while good breeding is desired, a horse that possesses individuality is selling for good prices.

In poultry the same principle holds good. In buying stock the buyers can not hold a veil of winnings over a bird that has no merits of its own, but is simply backed up by the breeding back of it. A buyer pays \$20 for a bird and when the bird arrives he finds he has paid \$18 for breeding and \$2 for the merits of the bird. He writes the seller and gets a reply saying that the bird is closely related to a line of winners!

I think it is the duty of breeders of poultry to place themselves face to face with the buyer, so to speak, and looking at it from this point of view think what that bird is worth. Remember, he has no other birds bred in the same lines as this one, he does not know how this bird is bred or how many prizes its ancestors have won, but he is buying this bird to get new blood, to improve his stock, and he looks at the individual merits of the bird and has a perfect right to expect his money's worth, not in breeding alone, but in that individual bird.

With good individuality the chances are that the bird was well bred and will breed well. Good specimens are not in many cases a case of chance, but are the result of careful and systematic breeding.

Poor birds will come from any mating, I care not how good, but good birds from a poor mating are seldom met with. We should not close our eyes to the defects in our birds simply because they have good breeding back of them. But rather should we keep our eyes open for defects in our birds and by good breeding and by using birds with individuality as well, remedy those defects and thus make like produce like, but we want that like to be a bird with individuality. It has been said, "A man's as good as he makes himself, but no man's any good because his grandfather was." The above is as true in poultry as in men.

A PROPHECY.

To my mind the time will come when the effort of breeders who are trying to raise the standard of egg production, will be to produce, by breeding and general maintenance, a hen that will lay, as nearly as may be, an egg a day every day in the year.

I regard the figures 365, as a standard of egg production, as being analogous to the fancier's standard of 100. Impossible to attain, but, as a standard of a perfect egg yield, one to be aimed at.

I believe that, when the laws of breeding as they will be found to apply to improvement in egg production are as clearly understood, and as intelligently acted upon as those which apply to standard points are now understood and worked out by the most successful fanciers, the production of a 347-egg hen will represent no greater progress than is now shown by a 95 point specimen in the show room.

347 eggs per year bears practically the same relation to our standard of 365 that 95 bears to 100.

I think that any expert poultry feeder who can obtain an average of over 150 eggs per hen with a flock of 100 or 200 hens will be surprised at the work of some of the individuals if he keeps track of them. It may very reasonably be claimed that there may be a great deal of difference between the skill and care required to so maintain a hen that she will lay close enough to an egg a day to score 347 egg-points and that required to raise and prepare for the show room a 95 point specimen. We cannot, any of us, do more than guess at that.

This is not a question for either the novice or the veteran to get hysterical over.— the one in a burst of enthusiasm, the other in a fit of condemnation. Neither the one nor the other knows all about it.

Obstacles can be conjured up, and vividly portrayed as being insurmountable. Success, or partial success, is not attained by creating imaginary obstacles.

It is well enough to enquire the way if we find those who know the way, but we can cross no bridges until we come to them. The success that has been attained by men who were blindfolded by false theories and handicapped by unsuitable methods should encourage those who care to glimpse into the future to take a decidedly optimistic view of the future possibilities of the domestic hen as an egg producer. The alarmist will perhaps have a fit of indigestion followed by a nightmare when he meets with this theory and predict the ultimate ruination of the egg business. "Hens will lay so many eggs that prices will drop below par and there will be no money in it." If he does he will take more stock in the theory than does the author. There will never be 300-egg hens enough to seriously affect quotations in our market reports.

The poultryman, or the prospective poultryman who may chance to peruse these day dreams should not think that I recommend him to spend any valuable time in idle speculation thereon. Far from it. The man who is obliged to get immediate profits from his business, whatever it may be, should hold all speculative theories at a respectful distance. Do not let dreaming interfere with your business, but remember that all human progress has resulted from dreams. Inch by inch, step by step, we advance toward some future goal. Some drop out, some fall, but the others move on.

The busy poultryman has little time for experimenting. He works mainly along lines that he feels sure of, and leaves experiment and the initial steps toward progress to others. He can learn by reading, what he will rarely learn in practice. What improvement he makes will be gradual and more or less sure according to his light.

I will caution the enthusiastic novice to be very careful how he accepts the claims of those who feed his credulity with big figures. At the present time hens that can and do lay 200 eggs in less than twelve months are very common, reckoned as occasional individuals. Flocks that have, do, or will average 200 eggs per hen under ordinary to fair conditions of feeding and care are not common. The 200-egg strain is probably just as common as 90-point strains or prize-winning strains. A genuine 200-egg strain would be characterized by its tendency to produce as large a proportion of 200-egg hens as a prize-winning strain would of high-scoring specimens. A strain is supposed to take its name from some family characteristic. Contemporary adver-

tising to the contrary notwithstanding, breeders of prize winners get plenty of culls and breeders of 200-egg hens sometimes get more poor layers than they want. Flocks can be found that have averaged over 200 eggs for each hen per year. Where can we find the flock that will average enough points to win first prize at the Boston show reckoning the "better birds that were left at home?" That word "strain" is a poor one to bet money on at the present stage of the game. There are honest strains, lots of them, but contemporary advertising shows that the term can be applied to almost anything by people who do not even know the real meaning of the word.

The 300-egg hen is not a creature of some modern pipe-dream. In 1876 I. K. Felch sold a Light Brahma hen to Jeremiah B. P. Ladd. The third day after she was purchased she began to lay and produced 318 eggs in 333 consecutive days, when she stopped. The next year she laid 133 eggs in less than six months when she was sold. Through the kindness of Mr. Felch I am able to give the following affidavit of the record of this remarkable hen.

TO WHOM IT MAY CONCERN.

This is to certify that the Light Brahma hen, known as "Rebecca No. 3935," which I bought of I. K. Felch January 1st, 1876 commenced to lay on the third day of said January and laid three hundred and eighteen eggs in three hundred and thirty-three consecutive days, when she stopped. She began to lay again on the first day of February and up to July 28th, when I sold her, she had laid one hundred and thirty-three eggs. She never wanted to sit while I owned her. This statement is made from actual record and is true in every particular.

{ seal }

(Signed) JEREMIAH B. P. LADD.

This is to certify that I am cognizant of the facts in relation to the laying qualities of the hen "Rebecca No. 3935" as above, having handled her a part of the time covered in the above certificate of her owner, and I have personal knowledge that the foregoing statement is a true and correct account of the eggs laid by the aforesaid hen.

{ seal }

(Signed) H. C. FEGAN.

ESSEX S. S. DECEMBER 30, 1878.

Personally appeared the above named, Jeremiah B. P. Ladd and Henry C. Fegan, whom I know to be reliable and entitled to credit, and made oath to the truth of the above statements by them made, this day, before me.

(Signed) GARDNER P. LADD, Justice of the Peace.

CHAPTER X.

THE UNRELIABILITY OF THE COMMON METHOD OF RECKONING AVERAGES ILLUSTRATED.

Foods and feeding. Early maturity. Meat or eggs, which? The Exceptional hen. Treatment of sick hens. Practice vs. theory.

IT IS customary to divide the total number of eggs received in a given time from a flock of hens *pro rata* among the total number of females in the flock; the resulting average being taken as an approximate total number of each bird's work during that time. If the average is 18 eggs per hen in one month the hen that laid 28 is underestimated and the hen that laid none, or but few, is given credit that belongs to the others.

A well-known breeder once wrote me that when a flock averaged 17 eggs each per month he knew that there were not many poor layers in it and he was safe in breeding from them.

Here is an egg record of one of my pens for a month. This flock had been culled once. All of these birds were discarded when the breeding pens were made up. Number of birds 34. Number of eggs laid 544. Average per bird 16. 15 of these birds laid only 179 eggs, an average of 12 each. The other 19 laid the balance, or an average of 19 plus each, 7 of these laid 157 eggs, an average of 22 plus each. While there were some fair layers in this flock they were not used for breeders because I had some that I believed to be better. It will be seen that although the average for the flock is not bad, nearly half of them were very ordinary layers when we take into consideration the fact that they were pullets, ten months old and were not broody during the month.

There were 9 two-year-olds in this flock, eight of which were among the good layers.

Elsewhere in this book is an account of one of my pens of old hens, (23 birds) that averaged 124 plus last year. Yet two of them laid 177 eggs each, one 162 and one 151. 19 laid over 100 eggs, 4 laid less than 100, the lowest giving but 71 eggs. This was a select flock retained after repeated cullings for several years.

With apparent reason it has been claimed that even if there are poor layers in the breeding pen we set but few eggs from them, as they lay but few. Opposed to this is the clearly proven fact that some individuals will do the best part of their year's laying in the spring, and often they give us the very finest looking eggs; the ones most likely to be selected for hatching. While a poor yearly layer may not give us 25 or 30 eggs per month in the breeding season, yet she may give us from 10 to 15; enough to produce quite a number of chicks. A good layer is

the one that has a persistent egg-producing tendency or habit that tends to dominate and control all other tendencies that are opposed to prolificacy. This persistency may disclose itself in the spring season or at any other time, but the eggs must be counted and, together with other data, made a subject of record.

One poultryman of considerable experience refused to have any dealings with me because I marked a hen as having laid 26 eggs in one month.

He said in his letter, "No chicken will lay 26 eggs in one month." If that man didn't need a little trap-nest enlightenment no man ever did.

Thus it is that a careful man underestimates his best layers when averaging egg yields in the usual way, while others appear to have a method similar to that of an applicant for the chair of astronomy in a college: asked how he would measure the distance from the earth to the sun, he is said to have replied, "I would guess half the distance and multiply by two."

FOODS AND FEEDING.

"One man's meat is another man's poison."

I have very little to say here about foods and feeding. The feeding of hens is no doubt just as important a matter to the hens as the feeding of other live stock and ourselves is to the stock and to us. More seems to be known about this subject than any other that is connected with poultry keeping, if we are to judge by the quantity of what we read and hear. One can get about all of it in a full year's numbers of any good poultry paper at 25 cents to \$1.00 per year. He can then judge for himself how much is actually settled regarding the feeding of fowls. It seems to be generally agreed that hens should be fed, and that if they are expected to lay well they should be fed well. We work to get money to buy food to support us while we work to get more money to buy more food etc., but as the hen knows nothing of money, if she works at all it must be for the food itself. As an idle hen is a charity patient it is best to make her work for a part of her food. This seems to be quite generally recognized.

My friend with a feeding hobby declares that this whole matter of egg production is one of feeding and care. He has not yet explained why it is that some of our hens, or some of his own for that matter, may lay but 75 or 100 eggs while others lay close to 200 or more with precisely the same food and care and nothing in their appearance to account for it.

The man who can tell a good layer the moment he sets his eyes on her points out one of our birds as being just the thing and we find that she is not laying at all and never laid well. He selects another as being way below par and the records show her to be one of the best in the bunch. He picks up a pullet in the fall and says that she is too fat to lay and

the trap-nest shows her to be the only pullet in the lot that is laying.

The feeding enthusiast tells us that too much whole grain will get our layers too fat and that to fatten old hens for market we must feed corn meal mash as they will not fatten on whole grain.

We are told that oats is the great egg food, then again it is wheat, then corn; then it is mash in the morning, or at noon, or at night, that will do the trick. Then we get a dose of compound fractions and chemical ratios that would force an egg a day from a crow, if we are to credit the whole of all the stories.

I have mixed balanced rations according to my humble ability to interpret the most approved methods of modern science and have also tried the ultra-practical rations of the man who does not believe in anything but ancient science. I have found nothing worse than the first—except the second—and my hens manufactured eggs and deposited them in the proper place in spite of either. I have a decided partiality for genuine science, perhaps because I know so little about it. When I get a chance to investigate the subject of foods and feeding I propose to thoroughly test the Midland Poultry Foods, or something in that line, for, if this matter is one-half as complicated as it is claimed to be, it is distinctly the work for specialists who will honorably take our good money and give us real value in return. We do not get it in the "practical" ration, usually. If, as I more than seven-eighths suspect, the complication lies in the different tendencies of the distinct and separate birds that compose our flocks that, for convenience and economy, we are obliged to feed all together, then this problem of feeding is one that each poultry keeper will have to solve for himself with such help as he can get from experts, and others.

If most condition powders and such were placed on the market accompanied by reasonable claims and sold at a price that would justify their use I might take more stock in them than I do now. I have no doubt that they are useful at times, but I can afford to get along without them. It is no wonder that some who attempt to force eggs from a hen at an expense of two or three cents each, object to any further expense or trouble in recording them.

Dr. Weston's preparation appeals to me because it is reasonable in price and, as far as egg production goes, claims only this: "It assists them to lay all the eggs that nature calls for." That is all that any preparation can do as far as a number of dollar's worth of experiment and a good deal of trap-nest evidence has yet shown me. They generally give the best results when served for about two or three weeks before the hens would begin to lay anyway. The best of them are useful when their use is indicated by some condition in the flock that experience only can determine. The beginner should carefully guard against recklessly dosing the flock merely because he does not know what else to do.

EARLY MATURITY.

It seems reasonable that the craze for early sexual maturity, combined with the practice of over-stimulating the reproductive organs of the growing chicks, should be largely responsible for the degeneracy that so often shows itself in families of fowls just when the breeder should be reaping his reward for years of hard work. I read a short time ago in a leading poultry journal that a prolific laying habit was the result of forcing the pullet to start laying as early as possible and they would get in the habit of it and keep right on. There may be rare cases where a precocious pullet will make a good layer: there may be rare cases where a precocious cockerel will attain good size and make a good breeder for two or three years, but in nine cases out of ten the reverse will be the case. The sexual life that starts early, fails early, with the human family, beasts or birds. The pullet that starts laying abnormally early will, as a rule, lay a few eggs and then stop. If she does not lay again for a long period, and the conditions are favorable for growth, she may make a good layer: otherwise not, in the majority of cases. While it is true that early-laying pullets may lay 200 or more eggs their first year, under very favorable conditions, they will rarely lay profitably the second year, and they will rarely if ever make good breeders. I have had Plymouth Rock pullets lay at five months of age, but many of those that did not begin until seven or eight months old proved to be the better layers. Hens that laid well in their third and fourth laying years matured normally as pullets and have made my best breeders.

It is my present belief that no breeder will ever succeed in producing a prolific strain of long lived birds by breeding from either males or females that develop sexual maturity at an age abnormally early for the strain.

I do not discountenance the practice of driving pullets to the limit of their capacity for market eggs and then marketing the birds as soon as their profitable laying ability is exhausted. That is a business proposition purely: but such birds are unfit for the breeding pen, and any flock will run itself out if such birds are persistently bred from.

The advice that we sometimes read to mark the earliest-laying pullets and the earliest crowing cockerels for future use as breeders may have sprung from good intentions, or it may be an echo from personally interested sources.

The earliest laying pullet and the earliest crowing cock may be all right in some flocks. "Earliest" simply means that their sexual development is in advance of the others.

Again, the advice may work well where chicks of different ages are all reared together and the owner cannot distinguish one hatch from another. The chicks will naturally tend to develop in the general

order of their age, and, generally considered, laying would begin in about the same order. There are, of course, quite numerous exceptions to this rule.

Pullets and cockerels that are well developed by spring, and possess the other desired qualities, should be good breeders, but it is a common custom to use for hatching eggs from the general lot, and a large number of these eggs are likely to come from immature pullets. This tendency can be discounted to a considerable extent by using only eggs that are of good size.

As good development and constitutional vigor are essential to either permanence or improvement of species the general ideas that are absorbed by the average beginner tend in a directly opposite direction to successful breeding. I have a Plymouth Rock hen that when about five months old laid 20 eggs in 21 days. Considerable boasting of her performance drew out the fact that many people considered it as indicating an exceptionally valuable pullet, which I very much doubted. She would have gone to market that fall had I not desired to observe her through life.

Eggs for hatching should be from birds that at the time of mating give individual evidence of merit combined with a history that justifies their use.

Early laying is by no means governed by heredity alone. The time and nature of housing, the feeding and care, will hasten or retard laying according as they are favorable or unfavorable to egg production.

Improvement in fowls is governed by natural laws that are not influenced by the price of eggs in October and November. Money values are often governed by natural laws, but Nature has no regard for money.

The means commonly advocated for getting eggs when most people are not getting them are progressive attempts to force Nature to work for our selfish interests. Those people who meet with a measure of success in this effort are justly proud of their skill. Their methods, once radical and revolutionary departures from established customs, have become "conservative" merely through lapse of time and familiarity. They are as radical as ever to many a farmer. When an effort is made to progress still further by taking out what is unnatural and unbusiness-like in their method and substituting therefor factors that are fully in accord with Nature and business wisdom we find those who object. They believe in progress up to the point where they have stopped, but we must go no further.

A March- or April-hatched pullet may normally come into full laying in the fall and meet our requirements in eggs when prices are high without detriment to her breeding qualities. Much, of course, depends upon the way she is handled. July-, August-, and September-hatched

pullets are very likely to lay during the fall of their second year, when the early-hatched pullets of the previous year are ordinarily not laying.

It will be impossible for a market poultryman to get the best results in egg production or meat production and at the same time be able to select his breeding females and mate them for best results unless he combines an expert knowledge of his own birds with a knowledge of the best rules that are followed by the leading breeders of Standard fowls and the most successful market poultrymen. People who possess any of these requirements in a superior degree probably form a very small part of our poultry-breeding population.

In descriptions of the exceptional poultry plants there appears much that leaves room for speculation. Professional writers usually know what looks best in print. The fact that X—— does a several-thousand-dollar business in a year does not carry with it anything that requires us to believe that he practices all that the advertising agent preaches for him or all that he preaches himself. It does not necessarily detract from its value if he does not.

A man's business is his own private property and we not only have no right to pry into it, but he is not bound to disclose anything that he prefers to hold back; unless public necessity demands it.

Those who have even a slight trace of Sherlock Holmes' genius for deduction can derive some little pleasure from a comparison of some of the facts which a practical use of trap nests will bring out with some of the fanciful romances that we occasionally read.

Any of us who own or hire a bit of land can hatch and rear chickens and keep hens. We can by reading the best poultry literature and carefully studying our birds gradually learn the best way to care for them. Both our flock and our reading require careful and rigorous culling, and we have a clear right of way for independent study and judgment. The poultry industry is still in its formative period. Men have become established, but precedents are comparatively few upon which to establish methods. Some of the greatest successes depend upon artificial conditions for their success.

Three or four good poultry papers are sometimes more valuable than one. Occasionally some point of agreement between different writers will be found and can be noted in the memory, or it may do to hang our hat on, temporarily.

One of these points is likely to be this matter of early maturity, for it was threshed out long ago. With no more light than I now possess if I wanted to get the best obtainable advice for growing young stock for the best results in future egg production I would look to the veteran fancier rather than the average market poultryman.

The greatest layers ever known have been bred by fanciers, and I want to advise my utility brother, or sister, that, while bad practice is

no doubt running riot in the fancy the same is true in utility circles. The expert fancier possesses the best knowledge of the laws of breeding.

The show room has attracted all sorts of superficial breeders, but utility would many times do well to get hold of some of the rules of good practice observed by fanciers.

Unfortunately a blue ribbon does not carry with it a guarantee of prolificacy. At the present stage of the art it seems hardly reasonable to suppose that any considerable number of fanciers would discard birds possessing superior Standard qualities merely because they exhibited tendencies opposed to great egg production. It is far easier to scoff at the "theory," deny the tendency, claim prolificacy, and make a run for the ribbons with their financial attractions. Yet, for all this, stock from the yards and eggs of fanciers who win in "hot company" have proved to be grand layers. So have some mongrels.

It is a condition all around that causes both deep reflection and much loose talk, but it is unavoidable.

Self-interest prostitutes truth and retards progress; yet truth cannot be found, and progress is impossible without self-interest.

This matter of early laying often appears in a wrong light to the ordinary poultry raiser. He may have 100 pullets. *They* begin to lay in September. They lay an average of three eggs each in October. The average gradually increases through November, December and January. In February they lay quite well, in March and April still better. The point of error is in the word *they*. The size of the flock and egg yield are always associated in the owner's mind. Very likely all of the eggs laid in September were laid by three or four pullets, perhaps by one. Eight or ten, or perhaps less, may be laying in October, but it is possible that none of them are the same that laid in September. In November a new lot may come along and the previous layers stop. New ones may begin faster than the earlier layers stop thus increasing the general egg supply until February or March, when those that had begun early and stopped, have begun again. Their eggs added to those of the pullets that did not begin laying until January, February or March make up a fair total. The poultry keeper imagines that the earliest layers have kept laying all the time, excepting those that may have become broody, and that the average each month represented fairly well the work of each bird. Such is probably never the case in an ordinary flock. Pullets often lay regularly and freely from the very first egg. If a pen of 12 pullets gave 20 eggs in September it is perfectly possible that one pullet laid them all. I got 26 eggs one September from a lot of pullets and 20 came from one pullet and six from another.

In late summer and fall when the hens are in molt the situation is reversed. One by one the hens stop laying entirely, but certain ones keep right on; they are persistent. A few eggs per week from the

molting flock does not prove that most of the birds are laying an occasional egg. One or more hens are very probably laying all of the eggs.

I have had something like 80 eggs in October "from 21 hens," but four hens laid them all. One laid 23, 17 did not lay an egg.

It is this principle that makes references to flocks of hens as laying a certain number of eggs sometimes appear unsatisfactory to one who has been accustomed to treat as laying hens only those individuals that actually do lay, and to credit a bird with being a "good layer" only when that bird has proven her worth in the nest.

Practical necessities require that we keep our hens in flocks and treat each flock as a unit in a great measure, but they do not require that we sink individual performance out of sight altogether.

The product of the hen is low in value, individually considered. So, also, is a single grain of wheat, but the expert goes into the wheat field and carefully fertilizes one kind of wheat with another and afterward collects, grain by grain, the seed that will later produce a new and better strain of wheat that may later enrich the very farmer who sneered at his work on the ground that it was not "practical."

MEAT OR EGGS! WHICH?

That poultry breeding, as a business, is yet far behind the breeding of cattle and horses is well shown by the general practice of attempting to unite, in one breed, or in a single "strain" or family of one breed about all of the qualities that all hens, separately considered, are known to possess. Thus, in attempting the impossible, the breeder can never attain the highest development of any one quality.

If we desire to hatch and rear chickens with our own hens we must to be sure of the best results, breed hens that possess the incubating instinct in a high degree and are well adapted, by size and disposition, to mother the chicks.

Such females as these can never give the best results in egg production. For great egg production we want females that are not much inclined to broodiness.

While broodiness can be controlled to a considerable degree, when suitable means are employed, it is an obstacle to prolificacy in proportion to the strength of the tendency. It certainly is not determined by methods of feeding or composition of feeds to the extent that many suppose.

The tendency to convert the food elements into flesh or eggs is also, in a very marked degree, an individual trait. It is not clear how either of these tendencies can ever become a family characteristic until the breeder separates the one tendency from the other, for we cannot get the maximum of profit in eggs and meat in one and the same bird, no matter how we feed.

The tendency to make eggs on almost any ration is so strong with some females that it becomes a serious problem how to so feed as to maintain them in good condition. With others it is impossible to feed well without causing them to put on flesh instead of laying profitably.

It seems that this principle has long been recognized by cattle breeders. It is claimed that the dairy cow that is a heavy milker cannot be so fed as to take on a good quantity of flesh profitably, for she will convert the food to milk. If she is fattened, each pound of added flesh costs more than it will bring in the market.

It is also said that the most expert feeders of beef cattle employ a ration rich in protein that, if fed to dairy cows in sufficient quantity would enable them to yield their capacity of milk.

Expert poultry fatteners claim that they often find mature hens that will persist in converting their food to eggs in spite of efforts to fatten them. A crude attempt of the writer's to fatten his first flock of mongrels came to naught from this cause. The hens were old enough to market and were shut up in a pen, whole corn left before them and soft food fed heavily. In two weeks, or thereabout, so many of them were laying that but few were sold.

It is often a difficult matter to put good flesh (free fat is objectionable) on an adult fowl fast enough to be profitable unless there is a tendency to make flesh rather than eggs. If it is done it will usually cost more than it will bring. Full feeding of a suitable ration would tend to produce the best of flesh on those birds of a natural flesh forming tendency and enable the others to produce eggs according to their capacity.

When broodiness or molting has stopped egg production there is usually an increased tendency to fatten, naturally due to the condition.

All this does not imply that individual tendencies alone control meat or egg production, but that the best results in quality and profit would be obtained by recognizing that these two qualities are in a great measure distinct and that exceptional gains are not likely to be made and retained by attempting to unite them in one strain.

Because our birds get heavy when deprived of exercise, or when fed heavily when not laying, it does not prove that the increase in weight has not cost more than it will bring in the market. Neither will examination of the birds on the roost tell the story. A good layer may be fat and a poor layer thin, or the reverse may be true, but the known laying habit of the bird and observations of her condition will give a good idea of her tendencies and value.

That this principle is not more generally understood is no doubt due to the practice of treating the flock as a unit for one thing, and because of the great differences of opinion, *and of interests*, as to what shall constitute a prolific layer or a profitable market fowl.

Any attempt at a standard is likely to be so much too low for some

and so much too high for others that it would be mainly useful to emphasize its own necessity. The 300-egg hen is the ideal, the 200-egg hen is in the middle, the 100-egg hen appears at the other end under the title of "a prolific layer," "a grand layer," "a good layer," or a "poor layer," according to the point of view or the personal interests of her owner.

Not every "good layer" will lay market eggs enough in one year to pay the reasonable cost of her maintenance, and not every adult female can be fattened at a cost that will permit a profit.

This discussion need not involve a comparison of breeds. Under the present haphazard methods of distribution of blood there can be little uniformity in breeds other than in general Standard requirements.

Some of the greatest egg records, for instance, have been attained from breeds claiming superiority in meat qualities. A great many poor layers normally develop in those breeds claiming superior merit as layers.

Those personal interests that provoke and maintain comparisons of breeds also prevent the production of uniform tendencies in the breeds.

THE EXCEPTIONAL HEN.

The exceptional hen has, from time to time, come in for a good deal of notice. When a single individual develops any quality in a remarkable degree it is worthy of note. It would however be folly to judge of all hens by the behavior of one. It would be unwise or untruthful to claim that results that might be obtained by giving one hen, or a few hens, special care represent what could be expected from a larger number maintained in such a way as to pay a market profit. If we should be able to get an average egg yield of 250 eggs each from five exceptional pullets, given special care and attention, that would not warrant us in claiming that we had a 250-egg strain unless those results were clearly due to a fixed family trait that could be traced back along a line of ancestors and could, by correct methods, be transmitted to future generations.

The writer owns some exceptional hens, but they have invariably received the same care in every respect as their mates. No individual birds have ever received special and separate treatment in order to encourage their exceptional traits.

My pens are all adapted for from 30 to 60 laying females each and, before culling, they often have contained approximately that number. Exceptional individuals have developed under the same conditions that surrounded their mates and they have always and continually been maintained under the same conditions as the others. Different treatment of different flocks has sometimes been adopted, not with the idea of causing one flock to excel another, but because I have often found that different flocks require different treatment.

Any birds of mine mentioned here or elsewhere have been subject to the conditions mentioned above.

The Hasty Thinker who regards the exceptional owner-of-the-exceptional-hen who carefully nurses that one hen with a view of making capital out of her performance, as being representative of all owners-of-exceptional-hens is uncharitable.

Various long-distance shots have been aimed at those who record their 200-egg hens, by those who lack personal experience in the matter. Some imagine that the 200-egg pullet must be early-hatched and receive the best of care. This is not necessarily so. June is a good month to hatch chickens if they can have plenty of shade.

I have a flock of exceptional layers that were hatched in June and were not taken out of the brooders until November. They were in the way the whole summer. I had no suitable place to put them in and no time to care for them. Some of these pullets began to lay in December and nearly all were laying by February.

The pen contained 40 birds during the winter and is practically the same size as one that I recently saw limited to 10 birds in a leading poultry paper.

One of these pullets laid 202 eggs in a little over nine months, another 150 eggs in six months. I do not like to boast of egg records, but this illustrates my point. Good care and proper maintenance are necessary for the best results, and I am the last person to underestimate their importance, but, as a champion of the Persistent Layer I wish to show that she can and will lay a large number of eggs under unfavorable conditions. Favorable conditions would enable her to do much better.

The frequent references to my hens in this book are made solely for illustration. These hens are far inferior in every way to many others, I believe. They are not in competition, only with each other.

TREATMENT OF SICK HENS.

The best family doctor for the poultry yard I have found to be the hatchet.

A sharp hatchet is a quick, sure and safe remedy for the most serious complaints to which fowls are heir. Divide the bird into two parts: the head and the rest. Burn the body, or bury it too deep for resurrection. This treatment for sick hens has long been recognized by practical poultry keepers as being the cheapest and the best; hence I can recommend it with the greatest assurance.

Slight colds can be easily treated by giving four drops of Johnson's Anodyne Liniment in a teaspoonful of sweet oil to the bird that has the cold. Let the dose pass down the bird's throat slowly, or it may choke. Repeat until the symptoms disappear. If they do not disappear I destroy the bird on the principle that a stitch in time saves several.

Books have been written and much space used in the poultry press to show us how to cure the many diseases of poultry. Those who desire to fix up a sick bird to sell to some novice "to improve his flock" can get all the pointers he requires by asking for them. I do not believe that a bird that has once been seriously sick will ever again be of honest value to anyone. Not only our own interests, but the interests of the public demand that sick birds be destroyed.

Their individual value is too small to justify the expenditure of much time or money in doctoring them with any honorable end in view. Trap-nest evidence that would prove that a female that had been cured (?) of disease afterward gave a good egg record would be something new under the sun.

Probably no one would knowingly buy a breeding male that had a history of sickness behind him.

The fact that poultry diseases have been studied and treatments exploited, indicates conditions in an industry that provides the public with a large share of its food that should be, in some greater degree than at present, under control of law. The study of poultry diseases is essential in order to learn the cause and best means for prevention, but we are told that a bird that has once had the "roup" should never be used in the breeding pen and then we are given "a sure cure for the roup." Perhaps that is one of the things that we should not know.

"The great American hatchet" is the best and the cheapest cure for "roup" and all the other diseases to which fowls are heir.

PRACTICE vs. THEORY.

IN PRACTICE.

"Those love truth best who to themselves are true,
And what they dare to dream of, dare to do."

Practice against theory is a favorite caption with those who, through ignorance, prejudice or self-interest desire to assail attempts at progress.

Many very worthy people are not content with presenting the results of their practical efforts for our instruction, but also insist that their notions of the fundamental causes that produced the results are correct; although the practical necessities of their work must necessarily and effectually prevent them from closely studying specific details, even if qualified to do so by nature. As the same results occur with people possessing different degrees of imagination and guessing ability a somewhat mixed symposium results.

The theoretical writer who endeavors to show to the thoughtful reader what he believes to be the correct underlying principles upon which reliable knowledge must be reared is likely to be assailed from the farm, the practical poultry plant, the little venture of the novice, the editorial chair and the kitchen table. Admitting that he is human,

that we may honestly and with good reason differ with some of his views, why should we condemn them all?

The scientific writer has been accused of confusing the novice student, of trying to overturn established customs and combat competent and trustworthy authorities. He is charged with trying to impress us with his superior knowledge at the expense of our peace of mind and ultimate success. His use of technical terms or groups of words that concretely express his real meaning and are incapable of expressing anything else meets with cavil from those who would substitute common-place terms and expressions that seldom have the same meaning with different people who use them or read them, and still more seldom express the exact and not-to-be-misunderstood truth.

Has any "scientist" that has yet appeared succeeded in causing as much perplexity in the mind of the poultry student as has been produced by the cock-sure opinions of a multitude of "practical" writers, hardly two of whom can agree regarding the every-day commonplaces of practical poultry keeping?

Our own limitations or the necessary limitations of our environment; our indifference, slothfulness, or, worst of all, our prejudices, that cause us to read hastily and draw hasty conclusions from slight evidence; our anxiety to present what we think that we know rather than seek to learn what others know cannot reasonably be charged up to the list of faults with which some so love to endow the scientific investigator.

When one who, by virtue of his previous work and present position, is in actual business competition with any educational poultry effort, prostitutes his position by seeking to throw down a real or fancied rival, the garb of the demagogue will not conceal the motive.

The work of any scientist that ever lived contains error. The humble may detect it, or it may elude all but superior knowledge. Almost any sincere writer's style, or absence of style, may be offensive to some readers, but we should not condemn the thought because we do not like its delivery.

The ultra-practical man is in evidence everywhere. He gropes in the dark for years for things that lie right at hand. The mechanical arts and sciences furnish most prolific illustrations of the absolute inability of the average practical mechanic to take the initiative in any step toward improvement in machines or methods.

Many of our most valuable inventions in mechanics have been devised by men *and women* who were not mechanics. Furthermore they have taught the mechanics, often much against their will, how to use them.

It is claimed that one of the most valuable improvements in use on all of our railroads was first conceived in the mind of a lady passenger who did not know the throttle from the steam gauge. The writer once saw a locomotive tried that was a radical departure from existing types.

It was invented by a man who knew practically nothing of railroading or mechanics, so the mechanics who did his work claimed. He was obliged to watch carefully every detail of construction, for the mechanics knew (?) that it would not run. It did run nevertheless and has continued to run for several years.

The originator of the greatest and most practical of our modern inventions is said not to be a "practical man" from the mechanic's standpoint. He is known in inventive circles as being eminently practical.

Practical workmen usually lack creative imagination. Their minds become accustomed to certain set rules of action and they cannot imagine that the accustomed results of their gradually-acquired skill could possibly be obtained by better but unfamiliar methods. Sometimes they possess too much of that superior form of egotism often mis-called "modesty." If, as is commonly the case, the practical man is under the practical necessity of applying his whole attention to his regular work in order to get present results he has no time to think out new methods or devices and exhaustively test them to achieve success only after repeated failure.

What is true in mechanics is true in every branch of human endeavor. We sometimes ridicule the "dreamer" of to-day in words that are taken down and reproduced by the wonderful machines made possible by the dreamer of yesterday. We do not stop to think that he who opposes the initial effort retards future achievement.

The novice poultry keeper is in little danger from real or imagined "science." If he dreams dreams it will be because nature made him a dreamer. His dreams may not cause him to send quite as much money to the "kickers" as they would like.

We can go as far back as history can carry us and we will find Practice opposed to Theory; the successful theory becomes practice only to oppose new theories, over and over in the line of progress.

Practice does well to be cautious about accepting theories, and it invariably is. Elementary effort is not practice in the practical sense and one of the greatest troubles in the poultry business is that it too often tries to be.

A student of poultry keeping will wonder which "practical" practice it is that he should model after; perhaps to find that correct practice is claimed to be that taught by the teacher who does not believe in the practice of the other teacher with whom he is more or less in competition. He may later learn that there is much chance for improvement in the practices of both.

The most desired and most elusive end that is sought by all practical "dreamers" is simplicity. When attained it is often laughed at. We never had a practical screw driver until recently. It not only puts in the screw, almost anywhere, but will pull it out.

When we first see it we can all say with Edison: "Funny no. one

thought of that before." It is patented. That end in view, probably caused the inventor to think of it. Thinking of a thing is not invention. The thought is useless until it is given material form and is made available for use. Money and printer's ink make it available.

The advertiser's money directly or indirectly originates and maintains public interest in nearly everything that tends toward industrial progress. It would be useless for progressive people to recommend what cannot be found; yet they sometimes do. No useful invention, no improved method, no educational effort has ever been made of public benefit except by means of effort and expenditure, the greater part of which is often used in overcoming the resistance of the very people whom it is designed to benefit.

That is why most new ventures are conducted for a considerable time at a loss. Absolute perfection is rarely attained in advance of commercial success.

The innovator has first to struggle along until the people embrace the opportunity to test the new idea and arrive at as good an understanding of it as he possesses when he in turn must learn from the people. All too often the people dictate before they investigate. Artificial incubation was condemned before we had practical incubators. Methods are condemned before they have been adequately tested. We may be urged to conduct tests that would cost thousands of dollars with the assurance that, if they are successful the idea will be accepted—as a gift. The postal-card that invites us to give away our property is much in evidence. It has one fault. It costs a cent.

Common Practice will always be set against more modern practice, calling it "theory" as a term of reproach until general familiarity "wears off the new," and with it the "theory." Then philanthropic (?) capital buys or steals what it could not create, pays the "practical" objector his price, if he has one, and is promptly introduced as a public benefactor. The history of industry for the last hundred years is replete with such precedents.

CHAPTER XI.

THE QUESTION OF PROFITS.

Better the rudest work that tells a story or records a fact
Than the richest without meaning.

Ruskin.

EVERY business has its own special features that are specifically different from the special features of every other business. To thoroughly master any business it is important that everything that is intimately or remotely connected with it be closely studied. For this reason but few men ever master any business. The study of poultry and the study of the poultry business, therefore, may be conducted

separately by different people or they may be conducted separately by one person.

A man may learn the poultry business well enough to make a good profit from it and yet know very little about poultry. He has an expert knowledge of business, but merely a general knowledge of poultry. Knowing how, when, what and where to buy: how, when and where to sell, are factors that often lead to a great measure of success where an intimate specific knowledge of the goods handled and their production may be lacking.

I know a large and successful poultry supply house that cannot tell me how to run an incubator, how many brooders are needed with one machine, how their leading poultry food (manufactured under their name) should be fed, how best to install and use trap nests, yet they buy and sell all of these things. They understand enough of business to conduct theirs successfully yet they know very little regarding many things connected with the use of the goods that they handle.

Many poultrymen successfully breed and sell poultry and produce and sell eggs, yet there are many things about both poultry and eggs of which they know nothing. The reverse is often true. One may learn a great deal about hens, their proper maintenance and their product and yet be unable to conduct a poultry business successfully. These distinctions are often, perhaps generally lost sight of. We go to the successful business man for specific information regarding something that he handles because, in our ignorance, we assume that he must know all about it. He may be the exceptional man and give us reliable information or he may know nothing of what we wish to know, and yet not think it necessary to admit as much.

To convert specific knowledge into dollars and cents requires business ability and business experience. The rules of business are many and varied. General rules that apply to any legitimate business (and many that are not legitimate) have to be modified very frequently to meet special conditions and individual peculiarities.

We may sometimes conclude that "For ways that are dark and tricks that are vain the 'business method' is peculiar."—to adapt a familiar line.

It would seem that the golden rule would be a good business maxim, but few business men so regard it. "Do unto others what they would like to do unto you and do it *just*" was the rule of one successful business man in the days of the "Cardiff Giant." That man is dead. The rule still lives.

By far the great majority of people who are in business are conducting their business at a loss. Statistics of trade show that this is true. It is the exceptional man who succeeds. Success depends mainly upon the man himself. It is not always a question of integrity. I fail to see

any good reason why we should lie to our youth and tell them that integrity is essential to what nearly every one regards as success. When the youth that has been thus deceived wakes up, it may be too late. We should teach him to be honest, but we should not teach him to believe that all successful men are honest, for he will then be wholly unarmed against the host of successful men who are dishonest. Optimism is good, but it is all too often used as a hoodwink.

Many men fail, not because they are untruthful, but because they do not know how to lie scientifically. "Man's inhumanity to man makes countless millions mourn." An upright and thoroughly competent business man may fail because he will not adopt the tricky practices or dishonest methods of competitors who are numerous enough and strong enough to dictate the conditions upon which success in that particular locality or line shall depend.

A prominent and wealthy wholesale grocer told his pastor (a friend of mine) that he had to lie in his business or go out of business. The clergyman told him that he thought he ought to be in jail instead of in business on ——street.

My clerical friend certainly did not consider the interests of tax payers. If all liars were sent to jail who would support them?

Many of the conditions that control the poultry business are the same as those that control other businesses. Many are different. It would be difficult to show, for instance, that the market price of eggs depended upon the actual cost of producing them. A very large percentage, (no man can tell how large,) of our market eggs come from flocks that are maintained at a loss. Generally considered the price of eggs depends upon the supply and demand. The cost of production (often unknown) having little bearing. A large part of them come from the hundreds of thousands of small flocks scattered over our land, and only a small fraction of these flocks are maintained on business principles.

I have known a difference of eight cents per dozen in the price of eggs between two stores in one small town, and the quality cut no figure.

The glowing reports and the figures in millions that have their proper place in our poultry- and farm-journal sometimes show the great *possibilities* of the poultry business: -- rarely the *probabilities*.

Should this chapter be read by any one who is suffering from a severe attack of poultry-hysteria I would caution him to go slow. There are immense opportunities for losing money in the poultry business.

It is one of the most simple things in the business to hatch and raise chickens. What are you going to do with them after you get them? The common ambition to keep 500 or 1000 hens is one form of mild insanity. The ambition to learn where to obtain, and how to breed and maintain as good hens as possible is a worthy one.

The ambition to produce as many eggs as possible at the least expense is also worthy. There are flocks of 50 that are now producing more eggs daily than other flocks of 200. The man who can breed and maintain a flock of 12 hens that will pay a good profit (assuming that all the food was purchased) is warranted in practicing with 50 the next year.

Some who make a profit on flocks of 1000 or more save enough by buying their feed by the carload at a favorable time to account for much of their profits. That requires capital. If they bought their food as the small breeder buys his, some of them would make little or no profit. But for every paying flock of 1000 I believe that flocks one half, or less, as large that are paying a larger net sum could be found.

There is perhaps no business that can be studied so closely and at so little expense prior to the time of actually embarking in it. With poultry a person can begin with a small capital and pay for his experience from his other source of income. He should not, and need not attempt to get a large profit, or indeed any profit from his experimental flock.

Thousands of people rush headlong into this business, invest all the money that they can get hold of in fancy stock and all kinds of appliances and learn a little when it is too late. They all fail in their aims, and have no opportunity to learn much about hens.

The beginning should be small, always. Growth should be gradual and depend upon accurate knowledge of what can reasonably be expected. As a general proposition the less a man knows about his hens and the results obtained from them the smaller will be the amount that he will acknowledge to be the cost of maintenance. A man could devote his whole life in the attempt to find out how many hens there are in the country, their average yield and cost, and he would get no reliable totals. The people who own the hens could not give information that they do not possess and, unfortunately, those who know are not always worthy of credit.

The census taker asks the farmer how many hens he has and the average farmer gives a guessed-at number or purposely underestimates through fear of increased taxation,—even when told that his hens will not be taxed.

There can be no doubt that there is money in the poultry business and that the general and specific instruction given in the best poultry papers and books contains the general principles that contribute to success.

The business presents great opportunities to those who have a capacity for hard and long continued effort, and are willing to begin small and study faithfully, and postpone the necessity for profits until sufficient knowledge and skill are obtained to make profits reasonably certain.

There is, apparently, a great and ever increasing demand for good stock. It requires considerable experience and knowledge to be able

to tell what is "good stock." Stock is not good, better, or best, merely because we own it, or because it appears to be good to our unskilled judgment.

One peculiar feature of this peculiar business is that experience can sometimes sell a bird for several dollars that is worth about eight cents per pound while inexperience is often obliged to send to market really valuable breeding cockerels; and he often fails to market those early enough.

It is one thing to produce, another thing to sell at a profit. The effect of competition, while healthful in the main, is to block our attempts to sell our goods at a profit. The shoemaker will agitate the question of shorter days and higher wages and then try his best to beat down the price when he buys a pair of shoes.

It is the same with all products. Complex and unreasonable human natures make all problems of profit in business complex and difficult of solution.

The demand for poultry and eggs is, however, greater than the supply; hence there is plenty of room and reward for industry, intelligence and capital in the business.

There is an immense difference between the methods of different successful poultry keepers. I have in mind two cases that illustrate the point. A— keeps from 1000 to 1500 hens (mongrels) and one farm hand cares for them. They are fed cheap feed and every thing about the plant is cheap, yet a profit has been made for many years. A— is an exceptional man. What measure of success he obtains is not due to his choice of stock and methods of maintaining it but in spite of them. His own personal aptitude for making money is responsible for his profits. Being a modest man he thinks, of course, that they are due to his "practical" methods.

B— keeps 200 or 300 pure-blood birds in nice houses, uses the best of every thing in feeds and appliances, sells breeding stock and eggs for hatching, and makes a good profit. He could not succeed by A—'s methods and A— could not succeed by his; yet each will tacitly condemn the other's system and recommend his own.

The whole matter of success lies in the men themselves and not in their peculiar methods or pet theories.

Sometimes a successful man in explaining the "secret" of his success will wander into romance and tell a pleasing story that is largely made up of the things that he has often dreamed of doing, but rarely has done.

Successful men have their dreams, but they do not let the dreams interfere with present duties.

When we arbitrarily dictate to the poultry-beginner, tell him that he must do this and must not do that, there is danger of giving him advice

that will do more harm than good; for the personal equation, which is the greatest factor of all, is unknown to us and may not be at all adapted to our favorite system and theories. Most of us have theories. To us they are facts, to others they are delusions.

If I believed that ten per cent. of those who appear to be successful with poultry were as successful as they believe, or are willing that others should believe, I might look at this a little differently.

I have obtained a profit from hens when profit was the last thing thought of, but there would have been no profit had I adopted the popular theories with which I am very familiar.

A hen will eat a pound of food in from two to five days according to the hen and her productiveness. How much does our feed cost per pound? How does it figure out for the year? How many eggs must she lay at market prices to pay for the food, interest on investment, and our time? Any answer to the latter question must be modified by local conditions, but it will probably figure out about double the product of the average hen.

There are three general ways of converting what is generally a losing proposition into an occasionally profitable one.

First: keeping the amount invested in stock and equipment, and the cost of maintenance down to the lowest possible figure and marketing what product there is as favorably as is consistent with the general plan of the business. The welfare of the stock or the interests of the consumer, "sentiment," do not enter into such a proposition to a sufficient extent to occasion any outlay of money. A man with the faculty for making money without spending money often succeeds by this method. Such a man will sometimes provide his mongrel hens with a rotting pile of stable manure, renewed frequently, in which they revel in filth and sing contentedly. He boasts of his mongrel flock, their egg yield, and the low cost of maintenance. Much of the grain that the hens get is first passed through the other stock, so costs nothing.(?)

He is welcome to his mongrel hen and her stinking flesh and eggs. I want none of them. During eighteen years of city life I often found it difficult, at times, to get anything else in the line of poultry and eggs.

Second: investing in a fairly good equipment, fairly good stock, and taking fairly good care of the stock; endeavoring to produce goods of a little better quality than the average. For such goods a bright person can get a little better price, in time, than the average. He will have to work to get it. People want the best, but they are not particularly anxious to pay more for it. Sometimes they will call at the door for fresh eggs and complain because we charge "as much as they do at the store."

Third: investing every obtainable dollar in such a way as to make it earn money. The more dollars the more money. "Them as has, gits."

The cost of buildings, equipment, stock, feed, and labor is not considered only to the extent that everything shall count toward obtaining desired results. The aim is to produce the very best quality of salable goods, in the greatest possible quantity for the size of the plant and the money expended. The welfare of the stock and all who are concerned in its maintenance is considered to be important as a means to an end; as are also the interests of consumers who want good quality and will pay for it.

Exceptionally good stock, well fed and well cared for, will produce a profitable yield of eggs, and a quality of meat and eggs that are fit for human consumption: which much of the stuff in every market is not.

Every poultry paper or magazine that seeks to instruct its subscribers in the art of properly breeding and maintaining poultry is a public benefactor, and should be universally recognized as such.

Different methods of keeping hens represent different individual qualities in poultry keepers: for the man is always father to the method. Get any method and a man that fits it together and financial success will follow. The misfits will fail every time.

As different men fit different methods so do different hens. The trap nest points out those hens that fit the man and his methods.

Some people buy, at a big price, poultry appliances that cause much actual loss, and others that are of no practical use to them; yet other people may find those same appliances both useful and profitable.

To wildly endorse, without good reason, every new idea, or to as wildly condemn it are essentially the same thing as far as the novice is concerned. One is as likely to mislead him as the other.

I believe in cleanliness, comfort, convenience, and all improved methods and appliances in so far as any individual can make them of profitable or pleasurable use. All such, when they are worthy, should be generally recommended without regard to the amount of space that their promoters are able to buy in the advertising columns.

I am looking for poultry food of good quality, yet the Chemist-Writer who examines such foods and writes about them in a poultry paper cannot mention a good one by name "for it would be improper." What folly! One would think that the man or firm who sells goods was a criminal who must be confined to the advertising columns for life and only allowed in sight of the public when he pays for the privilege. Then he can rob them *ad libitum* if he likes.

We should not expect editors to discriminate between different articles that are worthy but when a contributor finds that one firm's meat scraps are good he should be free to say so for the benefit of the one reader in a thousand that may want to know.

Let some spiteful individual find fault with some specific article that is not advertised "over its head" and he will be accorded a hearing in some mediums, benefiting no one and perhaps injuring many. The more diplomatic his language the more easily it will pass, and the more harm it will do.

When a man produces a strain of fowls, an individual bird, a food, a condition powder, a louse destroyer, an appliance, or conceives an idea, that is superior or useful he is in a position to benefit his fellows and we should, on general principles, credit him with honest aims until we find otherwise.

It is quite rare that criticism does not diminish in proportion as the size of the ad., or the amount of personal favor that the advertiser enjoys, increases.

This is almost universally recognized among our people to such an extent that honest endorsements and valuable and instructive "write ups" are condemned at sight by a large proportion of readers.

The average subscriber to a poultry journal may be a child in poultry raising but he is not a child in other respects. One journal promises us all that we ought to know? What is it that we ought not to know? Why should we not know it?

There is nothing known about poultry or the poultry business that should not be available for every one who wants it and is willing to pay for it; he to be the sole judge. If he is not willing to pay for it he is not entitled to it. These opinions are not from the advertiser's standpoint, for, as an advertiser the writer has in most cases been treated courteously and generously.

I am writing from the standpoint of a reader who wants to know and is obliged to grope in the dark for many things. Not only beginners, but experienced poultry keepers all over our land are maintaining hens that are not, and never will be profitable in their hands.

Many of them waste money and time in the effort to push the average production of the flock up to a profitable point, overworking the good layers and uselessly urging the poor layers to do what they are incapable of doing.

Again and again we are told "cull out the poor layers;" "Keep only the profitable hens."

The query, "How can I distinguish the profitable hens?" is met with equivocal and vague references to "active hens;" "those with red combs;" "those that sing and hustle and cackle;" "those with long, deep bodies;" and a lot more qualities that are possessed by the majority of hens any way, whatever their laying ability may be. They always avoid the direct claim that all healthy, active hens are profitable layers, for we can prove otherwise; yet that is all that is left when their generalities are boiled down.

Where in any history of human or animal improvement can we find any proven precedents upon which to base the almost universal theory that great egg production in fowls is mainly a matter of feeding and care?

We find the flock of heavy layers fed by a man who claims that his system is the main cause of the results. What are we to do with the other man who follows a system that is radically different, yet gets as good or better results than the former? With all this we are more or less at sea. The man who never got half eggs enough, if sold at market prices, to pay for his feed may stoutly maintain that his hens are prolific layers.

There is a tremendous lack of figures, of carefully kept accounts showing results in this business. One man's guess is about as good as another's, take all guesses as they run.

If we breed or buy hens that lay well under our system of feeding, it is because they have the inherent ability to lay well; bred into them somewhere, sometime, by someone.

If this is not so, if it is all a matter of feed, then the poultryman with his 1000, 2000 or more mongrels is the shrewd poultryman; for in many localities his mixed lots of eggs, all sizes, shapes and colors, handled as he handles them, pay him as well as would a more even lot obtained by other methods that would not fit him or his conditions.

Some men claim to make money by buying cheap pullets in January or February, feeding them for eggs until they begin to "shed" in August or September and then selling them for as much or more than they cost. These men never hatch a chick and keep no stock during fall and early winter.

Another way is to buy cheap stock, leave food before them all of the time, market those who get fat or sick and sell the eggs that are sure to be laid by the others, if the food supply contains anything to make

them from. If we are to discount progressive methods we can take up some of these primitive ways of making poultry pay that are practiced all over the country, but are not reported in the papers.

All systems of handling hens are good for those who are adapted to the system, if not for the consuming public.

Some men make a good living buying eggs and poultry as low as possible from those who do not produce enough to ship away, sorting them and selling at the best obtainable price. The producer keeps the hens and pays for the feed, the middleman takes whatever profit there is, in many cases.

If poultry raising as a general proposition pays, where does the great demand for "Red Albumen" and the other more popular nostrums to "Make hens lay" come from? Certainly not from those who know their hens and get a market profit from them.

To me the condition appears to be one of generally unprofitable maintenance of stock incapable of profitable production, by people who are indifferent or believe in false theories regarding the hen and her product.

The advertising page and the circular take advantage of the condition as it is and work the poultry raiser for all he is worth.

The best poultry papers and magazines appear to be endeavoring, to the extent of their light, to improve this condition and teach the truth. They should never be denied a favorable mailing rate, for, with all their conflicting theories and chaotic mixture of interests they are helping us to an understanding of poultry and the poultry business and materially assisting the general public, the consumer, to get poultry and eggs that are fit for human food.

A consideration of the poultry press is intimately associated with the question of profit and progress with poultry. The individual poultry journal reflects the personality—the character and understanding—of its promoters and its editorial staff. The poultry press as a whole shows clearly to the earnest student the state of the industry. Some of these periodicals appear to be founded upon a base of ignorance, personal prejudice and greed, and unprincipled demagogism.

If the writer's view of the average reader is anywhere near correct such papers cannot long endure. The paper that in the slightest degree appears to cater to the natural dishonesty and selfishness of what it may mistakenly believe to be a large proportion of its readers must in time disgust even that class. Whatever our own business practices and theories may be we all respect straightforward honesty even though it be opposed to our own selfish interests.

Thoughtful readers of high class periodicals such as *The Scientific American*, *The Outlook*, *Success*, *The Youth's Companion*, and the like will, if interested in poultry (and thousands of them are) welcome to their homes those poultry journals that combine with a broad understanding of the industry an honest desire to uplift it "with charity for all and malice toward none."

The combative attitude of ignorance and selfishness toward science, invention, investigation, or an endeavor to improve in any direction, cannot receive even the tacit sympathy of a journal without such sympathy being clearly reflected in its columns, by omission as well as commission.

It is a mistake to assume that the poultry raisers in our rural communities, villages and city suburbs are mainly ignorant people. If we

are to assume that, we must at the same time grant that poultry raising presents no better industrial opportunities for the individual than the digging of ditches or the cutting of wood.

Any literature, industrial or otherwise, that has any valid excuse for existing, other than the mere getting of money, should present things as they are without regard to what the ignorant or selfish reader imagines or desires them to be.

Not only are the low-grade poultry papers misleading and harmful to what few "actual paid in advance subscribers" they may have, but they are of little use to the honest advertiser of worthy goods. Either a trial with "keyed" ads. or a careful study of their columns for a year or two will prove this to be so.

The contributor whose knowledge of the equities of life is inadequate to dominate his or her crude notions of business or hens often finds space available in some papers that evidently have little use for a waste basket.

The journal that works harder to get advertisers than subscribers is of no particular use to either advertisers or subscribers. The only mediums that can assist us to get knowledge, pleasure or profit from anything are those that furnish a quality of reading matter that is worth reading, even if they have to pay for it, and have a list of patrons that read what they have paid to get.

The comparisons of breeds which we meet are often productive of much perplexity and misunderstanding.

A—— has tried a few hens of several breeds and has decided what shall be "the best breed." B—— examines a few hens on his own account and gives expert evidence that he has found "the best breed." C—— is hunting for "the best breed" among several millions of hens, no two of which are alike, and as long as he believes that the excessively limited observations of A—— or B—— would shed the slightest ray of light upon the matter he is likely to keep on hunting to the end of the chapter.

All poultry-qualities are not included in the requirements of the Standard of Perfection or discernible by the skilled eye of the judge.

The practice of conflicting systems of breeding pure-blood fowls by people with all kinds of ideas and standards of merit, and the distribution of this blood all over the land indiscriminately, producing mixture upon mixture without guide or reason, should show anyone that there can be no uniformity of utility qualities in any breed, considered broadly as a breed.

A man's chances of establishing a family of exceptional layers ought to be just as good, if not better, with the Asiatics or Americans as with the Mediterraneans, if he goes about it in the right way.

It is probable that there is more Mediterranean blood in the country than any other pure-blood, which would of itself be sufficient to account for any popular theory of supremacy in laying qualities that may obtain, even if no logical reason for the theory existed.

Some breeds possess qualities as breeds that adapt them to conditions that would not be as favorable to other breeds. The same appears to be true of families or "strains" within breeds.

The glowing tributes to this, that, or the other breed of fowls that we commonly encounter are excessively general in character. "They are splendid layers." How much of a layer must a hen be to be a "splendid" layer? Thirty-six eggs per spring-time-hatching-season,

at two dollars per setting, or fifteen dozen per annum at an average of twenty-five cents per dozen?

The words "splendid," "good," "great," "fine," "better," "best" etc. are capable of many specific meanings according to our point of view. The student should not be misled by the glittering optimism of the poultry journals and show rooms. It is all right enough as a vent for self-interested enthusiasm, but disappears in vapor under close examination.

The compounding of "scientific" rations, the devising of new and improved poultry houses and fixtures, the natural beauty of pure-bred fowls, the cheerful rivalry and the incentives to effort produced by the poultry shows, and a natural love for animals, all contribute to awaken and maintain an interest in poultry. When the interest is sufficiently supported by hard work, money and ability, progress is sure to be made whatever the aim—even to the extent of profit—but the success is due to an intelligent working interest in good stock. It is not necessarily due to the particular ration employed or the expensive or unnecessary equipment or methods.

It is perfectly possible to get a good egg yield while paying more for the eggs than they are worth. This fact is recognized by those who sincerely believe that trap nests cannot be profitably used by the average poultry raiser. I believe that they understand the average poultry raiser better than they do the practical trap nest, its proper use and possibilities. I have saved time and money enough many times over by avoiding unnecessary but commonly-employed and -recommended methods and expenditures to offset the keeping of my individual records. The attention of the nests has not yet appeared to me a very arduous undertaking and I shall be unable to reckon that factor at all until I learn of some reason why I should.

A few drones sent to market, that would be retained were it not for the nests, pays for the nests. If they are kept instead of being sold it is no fault of the nests.

When the user becomes skillful in recognizing the persistent-laying habit and the different individual tendencies of his birds, and abandons whatever previous theories he may have had that blind his eyes to plain facts he will be able to cull wisely and often, retaining the cream of his flock while marketing the others.

No man can dispute the logic of getting rid of every bird that cannot be profitably retained, just as soon as its unprofitableness is determined or its self-limited profitableness has ceased, and retaining every bird as long as it is profitable to do so, be it six months or five years.

Trap-nest experience will enable the poultry keeper to do just that and help to solve the question of profits.

CHAPTER XII.

SOMETHING ABOUT PATENTS.

The golden rule of invention: Find out what has been done, keep track of what is being done, learn what needs to be done, and then *do it*.

THE United States has advanced materially beyond all other countries because it has welcomed invention, encouraged and protected inventors by the best patent system on earth, and hailed as a

public boon every new and better way of doing an old thing.

Perhaps I can best describe to the reader what our patent system is designed to be by first explaining what an inventor is. Any person is an inventor who devises a new thing or finds a new use for an old thing. If this new thing or the new use for an old thing is useful—of utility and value to others—they ought to have the use of it, and derive the benefits to be obtained from its use.

Here is where the patent system comes in. The Government employs trained experts to determine if inventions submitted to them are new and useful. These experts being human beings like the rest of us are not infallible, but they know quite a good deal about their business. What they don't know your lawyer, or my lawyer, or someone else's lawyer tells them,—sometimes, when it becomes necessary. It is not for you or I to tell them their business or question their decisions unless we have a personal interest in the matter and know more about it than they do—quite possible.

When the patent office experts have searched all of the records and find that what the inventor claims to be original with him has never before been described, either in this or any other country, and there is no evidence of its being known to the public for more than two years prior to the application, and it appears to be of public utility, they grant that the invention is the property of the man who invented it and, being his property, he shall have exclusive control of it for a term of seventeen years. After that it becomes the property of the public; for it is presumed that the inventor, or someone who has purchased his patent rights has succeeded in getting it into use and has obtained his reward.

In this way our patent system accomplishes two things. It grants the right of the inventor to own and control his own property so that by selling it in whole or in part, or by letting it out for rent in whole or in part he can stand some chance of getting paid for his labor and also be able to make his invention of use to others. The inventor or his assigns are obliged to advertise the invention, or the goods that are made with the invention, or the benefits that the people can obtain from the invention, in order to get his pay. That lets the people know about the new thing and they can purchase that which is designed to be of use to them.

Some people do not like the patent system for the reason that they are selfish and do not believe in justice. Justice does not ask us what we want, but seeks to give all of us what belongs to us, and protect us in its possession.

Justice is well represented as being blindfolded. That is why she sometimes fails to connect with the right owner.

It is a popular delusion that we can rightfully make a patented device for our use without asking anyone or paying anything for it.

Shyster lawyers sometimes foster such a notion in the hope that they may get a chance to defend the infringer in a suit at law. He gets his pay, win or loose. No one can legally make or use any kind of a patented invention except by means provided and controlled by law and the owner of the patent.

The patent system, directly and indirectly, has done more to promote our progress in every direction than all other causes combined.

Agriculture has been benefited wonderfully as a result of our patent laws. Dishonest schemers have made popular ignorance and popular

greed and selfishness a means of perpetrating fraud under the guise of patents. Inventors who have been granted patents for inventions are quite frequently as ignorant of patent law as are the people.

If we question a man who has become rich out of some patent he may swell up and tell us that he knows all about patents when he knows very little about them. He may have become rich by owning a patent or by stealing one.

Some look with disfavor upon patent ownership because they think that were it not for that they could receive the benefits from the patent without paying for them. We have a good chance right here in this book to examine that idea. A few years ago there did not exist on the face of the earth such a thing as the trap nest described herein.

It is a case of a "new thing under the sun," unless proven, in the courts provided for the purpose, to be an old one.

Now how would the reader have ever heard of it if I had not spent my good money to advertise it? Why should I do that if not to make something so that I can advertise it some more, and make it of use to a lot more people?

Sometimes people say, "Well, I will make it a little different that will be all right." Now that has no bearing whatever. We cannot tell by looking at a patented thing what the inventor's rights in it are based upon.

Another thing that is not commonly understood is the matter of improvements on patented things.

A change in the appearance, the form or the working of a thing does not constitute improvement unless the change creates greater efficiency or utility in some direction favorable to the public. It must be in fact an improvement that expert opinion will recognize as such. An improvement even if a patent is obtained for it does not grant the right to use any previously patented feature of the device. For this reason it is the rule to either sell such an improvement to the owner of the patented device or purchase from him the right to use his part of the improved thing.

He can grant such use or not, as he likes. Those who would dabble in invention with a view to the obtaining of a patent or avoiding infringement upon the rights of others should consult a regular patent lawyer of good repute.

That reminds me of a story. It is said that an old lawyer by the name of John Strange was about to die. He was consulted in regard to his epitaph. He requested that the stone be incised "Here lies an honest lawyer." Asked if that was all he replied "That is enough." "Why! your name must be added," his wife said. "No" he replied, "when they read that they will say: 'Here lies an honest lawyer, that is Strange!'" Now I don't know if the point is in the "honest lawyer" or in the idea that a lawyer could lie in death as well as in life. The reader can judge.

The Patent Office publishes a Gazette that illustrates all patents and gives the claims upon which the rights of the inventor are based. This Gazette is published for the benefit of the public and shows them what they *cannot* make or use except by consent of the owner. The interpretation of patent claims is work for which patent lawyers and experts only are qualified. The description of the patent and its illustrations describe the invention so clearly that, at the expiration of the time limit of the patent, those who are skilled in the art to which it applies

can make it. When a picture of a patented device is published with the statement that it is patented intentionally omitted we are justified in concluding that contributory infringement is intended. Innocent people might infringe the patent not knowing that it belonged to another. There is no reason for the air of mystery that the people themselves have hedged about the subject of patents, except the reason that so many prefer to guess about things than make a little effort to get the facts. Every citizen should be interested in our patent system. It not only confers great benefits upon all of us, but any person has a chance to benefit himself and the people by devising some new and useful thing and getting it patented.

SOME AMERICANS HAVE NOT DISCOVERED IT YET.

Scientific American says that some three years ago the Japanese government sent to this country a certain Mr. Takahashi to study our patent system. Mr. Takahashi pays a glowing tribute to the American system. "We saw the United States not much more than one hundred years old," he said, "and we asked, 'what is it that makes the United States such a great nation?' We investigated, and found it was patents, and so we will have patents."

CONCLUSION.

Let all the considerate people have their way and see how they will come out.

Carlyle.

"When a man is always striving just to please others he lacks the moral courage to do right."

It is a difficult matter to draw this text book to a close, there is so much that remains to be said in the interest of the persistent layer and her owner.

It was not without due consideration that I have introduced examples of good results that many people will find it impossible to believe if they chance to read them. Poultry keepers of the old school have persisted in the declaration that hens would lay well without the excessively careful methods of feeding and care that are generally advocated in our poultry literature. Many of them absolutely refuse to read such literature, because they find so much that they know is not true; this added to what they imagine is not true causes them to discredit the whole thing.

It has suited my purpose to look into the matter somewhat with a view to finding out at least a part of the exact truth. The facts are, as nearly as I can yet determine, that the persistent layer will lay a great many eggs under apparently unfavorable conditions. She is likely to be found almost anywhere. It does not appear to be a question of breed.

The skeptical farmer probably does not always possess such good hens, or get as many eggs, or as much profit, as he sometimes tries to make us believe. He is often a cheerful guesser, and is skilled in the art of verbal self-defense.

The poultry writers whom he discredits with good reason exaggerate the value of their favorite breeds, foods, and practices, in connection with good laying and profits from good layers.

The truth seems to lie between these two extremes. The flock that contains a considerable number of vigorous, healthy hens that possess a strong egg-producing tendency is likely to lay profitably, from a market-

egg standpoint, under conditions that to many people would seem to be very unfavorable.

The flock of common-place layers,—hens whose egg producing tendencies are no stronger than other tendencies that interrupt or interfere with egg production may be coaxed to lay—by careful housing, feeding and care—well enough to pay a good profit when a considerable part of the eggs are sold for hatching, and stock is sold for breeding.

When the flock of exceptionally strong layers can be given exceptionally good care there may be an exceptionally large egg yield. The profits would, as in all other cases, depend upon the factors outlined under the heading "The Question of Profits" in this book.

Such books as "POULTRY CRAFT," "WINTER EGGS AND HOW TO GET THEM," "ALL ABOUT BROILERS," and some others, treat of technical work with poultry from the standpoint of practical workers. These books do not contain all that there is to know about poultry maintenance or breeding; for the reason that no one individual or combination of individuals have yet learned all that there is to know about poultry.

The authorship of the books that I have mentioned is an absolute guarantee that they contain valuable and practical information.

Our poultry papers and magazines periodically bring to the reader both old and new facts, old and new theories, current poultry news and gossip, and a general symposium of the good, bad and indifferent methods and ideas of a large number of writers, and an occasional mimic.

Some of these writers are similar to the politicians whom Thomas B. Reed described in the *mot*: "Every time they open their mouths they subtract from the sum of human knowledge."

We are, of course, all aware of the truth contained in the statement of Bulwer: "He that fancies himself very enlightened, because he sees the deficiencies of others, may be very ignorant, because he has not studied his own."

The poultry keeper who is searching for truth will be sorely perplexed by the mixture of conflicting testimony that will confront him whichever way he turns. He should not be deceived by the personality of the writer or speaker. Some of the most harmful and serious errors being promulgated to-day are fostered by people who have some handle or other to their name, or a skill in the use of language and the furtherance of their own personal interests that gives them the appearance of wisdom and sincerity.

Some of the strongest poultry-facts are presented in our periodicals by people of humble station whose work is rude but helpful.

On the other hand those people, high or low, who are ignorant of the moral ethics of business and life, or for personal reasons choose to ignore them, are continually fostering wrong ideas in the minds of the people.

The person who needs or wants anything about which he has no special knowledge is between the devil who wants his money and the deep sea of going without what he needs or wants. He should be willing to buy what he wants. He should not expect his favorite paper or magazine to furnish it at the expense of those who are, or may be, able to supply him through a regular commercial transaction. The journal already gives the subscriber much more than he, or it, pays for. What he desires generally exists and can be easily obtained at a price that informed people know to be a just price,—but where?

He does not know, and those who do know generally will not, and

very often feel that they should not tell him. If they do tell him, their sincerity and disinterestedness may be doubted.

Germany has a law that forbids an advertiser lying or appearing to lie in his advertising. The exact truth may be barred unless it be self-evident, "The best in the world," even if true, as it quite frequently must be, will not pass the censor.

Some enterprising American Manufacturers are said to have been unable to circulate their expensive and convincing literature in Germany for that reason. We have no such law here. This is a free country. I have before me the literature advertising two brooders. One I know to be a good one, the other has not a single feature that would recommend it to any person who knew any thing about brooders. It is an expensive, worthless contraption, from my point of view, yet its claims, advertising and illustrations are the most pleasing of the two—to inexperience.

There is a great difference in the character of the testimonials, however.

Most people are sufficiently doubtful. Too much so as a rule. In talking with people about commercial products in general I find a common tendency to doubt about everything that is true and useful—and costs something. The love of money appears to be the root of much ignorance as well as evil.

On the other hand many will swallow the most absurd proposition, bait, hook, line and bob, and gleefully pay the price. The fact that such a large part of our population is of this class accounts for the very condition of things that I am describing. They apparently have no use for honest business men or methods.

In all comparisons of appliances, breeds, foods or whatnot, the poultry keeper is up against this condition and he should know it at the start.

The only thing for him to do is to think, reason, and learn as much as possible from the disinterested opinions of others, if he can find such. The man who has his own bigotry, prejudices, or past opinions to sustain is not a disinterested adviser.

There are a great many honest men selling goods. There are a thousand dishonest men among buyers to one among sellers. Twenty-five years of intimate observation of a mail-order business that dealt with people in various parts of the world has given me some idea of human nature. The poultry keeper who advertises stock or eggs has got to beware of the crafty buyer. A large per cent. of the dissatisfied customers of mail-order business men are those who tried to cheat the seller and failed.

We run more risk when sending goods to strangers in advance of payment than we do when paying for goods before we get them, yet many very good people don't seem to realize it.

The idea that the poultry business is a short and easy road to wealth is not quite as common as it used to be, yet the old pipe dreams are sometimes resurrected and the victim's money distributed around.

Colonel Seller's argument that there must be "millions in it," because every one has sore eyes and would buy a bottle of his eye wash at \$1.00 per, is not valid in the poultry business. Every one does not want fancy poultry or fancy eggs, and all of those who do will not buy ours, even if a fortune spent in advertising happens to attract their attention.

Some people assume that the majority of poultry keepers are simple-

minded people who could not understand the truth even if it came to them through the mail.

The majority of poultry keepers who are looking for instruction are bright, intelligent people and have wit enough and education enough to understand anything that seriously interests them, if it be presented fairly without circumlocution and evasion. There is nothing any more mysterious about a hen and her performance than there is about any other members of the animal kingdom and their functions. The air of mystery has been maintained because it *paid*, and because the hen has not been generally studied as an individual.

* * * * *

We cannot keep poultry or engage in any business or pursuit intelligently unless we start right. Our thinking and our work must be founded upon the bed rock of fact, not the shifting sands of superstition, popular misinformation and commercial humbug.

Any degree of merit in our fowls begins with the egg. Just as worthless a chick (to us) can emanate from a fifty-cent egg as from a one-cent egg. Yet it pays to get high priced eggs when we know just what we want, and have reason to believe that our chances for getting some of it are contained in those particular eggs. If the mysterious principle that determines future excellence in any direction is not present in the vitalized germ of the egg that is to produce the chick no method of feeding or care ever devised will cause the resultant life to be of genuine value. No matter how good the breeding may be it will all come to naught unless the chick is enabled to grow and develop sufficiently well to prove its breeding.

At this point we find one of the greatest bugaboos of the whole business. Being bred right the chick must be hatched right and provided with suitable food and care. All of these factors combined determine the extent of future excellence; no single one can be credited with all of the success and not always with failure. Yet how common it is to select a single element upon which to bestow the whole credit or blame, as the case may come out. Usually that which we purchased is condemned when results are bad, and that which we ourselves provide is held blameless.

To my way of looking at things many much-recommended methods of poultry maintenance have evolved from a general attempt to get good results from ill-begotten, or poorly-hatched or -grown stock. Too many hens give grand results in egg production under conditions that many suppose to be wholly bad, for this point to be ignored. While it is apparently true that egg production is often controlled by agencies that are not yet fully understood, it also seems to be true that a hen with a bred-in-the-bone egg producing tendency will give a more profitable egg yield under ordinary conditions of maintenance than the ordinary layer can possibly do under the most approved scientific methods.

What are we to say of the pullets hatched in June and not removed from their out-door brooders until November; crowded, always in the way, forty of them wintered in a shed 11x12 and roosting room 11x6, some of them laying over 200 eggs each before they were eighteen months old? We know that this is a bad and a risky way to raise chickens, but we also know that these chicks were well hatched from eggs laid by healthy, vigorous hens with a known, individual, persistent-laying habit, at a time favorable for strong prepotent fertility. That is

the greater half of the battle. These hens were no better than hundreds of thousands of hens: not nearly as good as many, probably. Why should they be? All the good layers that use trap nests and prove their worth to their owner are called "exceptional hens." It is far more reasonable to infer that those owners who know which are their best layers and breed from them are exceptional poultry keepers.

Good methods of maintenance should follow good breeding, but they can never, only to a limited degree, offset bad breeding. We will never get good results from hens that are inherently unable to give good results. Suitable methods of feeding and care *enable* our hens to respond to their own individual egg-producing inclinations; they do not *make* them lay.

The feeding and housing of poultry, or their general maintenance, can never by any possibility appear in the same light to large numbers of breeders. No one set rule in these matters would work the same with different flocks. It is, therefore, impossible that any one method of feeding and care, however good it may be, can ever obtain a sufficiently general adoption to greatly benefit the industry. Good breeding proves itself under many widely differing systems of maintenance; but rational systems of maintenance rarely, if ever, prove anything but the breeding.

Certain methods of breeding practiced along the same general lines— not specifically the same,—by many breeders having practically the same aims have established the general Standard qualities of our leading breeds and improved them to a degree that probably was not dreamed of two generations ago. There is no evidence that such a course has ever been pursued with the utility qualities kept to the front.

Observation has been the only means generally employed for selection, and observation is powerless to discover and keep track of the *best* layers, except with a few fowls given a great deal of attention.

Large numbers of birds are of great advantage to any breeder who has room and time for them, as they give him a large field for selection. This is so true that expert selection for the show room often wins the ribbons away from the expert breeding that actually produces superior average merit. This principle is as true with utility as with fancy points.

There is no available evidence that proves that the average pure-blood hen lays any better than the average mongrel under similar conditions.

Our not wanting this to be true will not change the present facts in the matter. A comparison of pure- and mongrel-blood sufficient to disprove this would also require proof that the specimens tested fairly represented the average of each class. Uniformity of performance can never be obtained and maintained with impure blood; if it has yet been reached with pure blood the cases are probably rare. It can only be determined by the individual record.

It would seem from the general view that there is plenty of room for improvement in the utility qualities of any of our popular breeds without permanently sacrificing any rational Standard qualities.

Those who will start with the best Standard blood that they can get, cull closely, with utility always to the fore, ruthlessly discarding heavy laying or high scoring specimens when they are unsuitable for the breeding pen, never inbreeding closer than is consistent with constitutional vigor, and *never introducing new blood unless it is known to be in harmony with the end in view*,—those who will pursue such a course

with the lively, intelligent interest and persistence that has characterized the work of thousands of fanciers who aimed at the blue ribbons will do what few have yet done and should achieve what has seldom been achieved. When improvement is once started along lines that become generally recognized as correct it expands and grows with ever increasing rapidity through the distribution of improved blood throughout the land.

There are many fanciers and many farmers who actually do not know what a good egg yield is; and, furthermore, many of them do not care. Of all poultry breeders the fancier should possess the highest standard of egg production, for the established Standard-bred bird presents the surest and the shortest route to prolificacy.

* * * * *

Early in the game I became convinced that the practice of keeping hens in small flocks, devoting more time and money in caring for them than they were possibly worth, in order to force or coax them to the limit of their capacity for egg production solely to get 200-egg hens to use in the breeding pen, was a great mistake. It is theoretically and practically wrong.

If a bird is *able* to lay 200 eggs in one year that should suffice without using force to compel her or coddling to coax her to prove it to the limit of her vitality. It is often far more wise to hold her back.

When the experts rose up and declared that we could not tell if the hen was able until she did it they unwittingly exposed the utter fallacy of the observation theory upon which the whole matter has rested from time immemorial.

Large flocks of cheap hens have laid profitably within range of my observation for many years. Similar flocks no doubt exist all over the land. Their owners neither read, nor contribute to the poultry press. These are not the exceptional flocks. The flocks that we read about are the ones that are exceptional, for the reason that written-up flocks, good or bad, are a small part of the whole number of flocks that exist.

The 200-egg hen as an individual can be no new thing. She has been here all the time. She wears the patchwork coat of the mongrel and the fine raiment of the prize-winner. Fine clothes do not make the man nor fine feathers the hen, yet both contribute to an appearance of merit.

The discovery of the 200-egg hen is what is new to an ever increasing number of poultry keepers. Like political capital they are being produced unknowingly all of the time by already established factors.

The reason that the average production with well-cared-for flocks is commonly so low is that so many poor layers and ordinary layers are retained in service.

Suppose we have several pens of fowls of twelve females each. One pen averages 150 eggs per hen in nine months. If we have individual records of all of the females in all the pens, and select from the records of the whole lot the twelve heaviest layers, and quote an average of 225 eggs each we would be criticised because the twelve birds were not all in one pen. But what sense would there be in such a criticism? One hen or any number of hens are entitled to credit for what they do individually. If they do good work handicapped by unworthy associates and unfavorable conditions their value is emphasized and they should

be more entitled to credit. We are obliged to treat a flock as a unit in many respects, but the flock is not a unit. It is a number of individuals differing from each other in specific merit. No man denies that one flock of hens will average a great many more eggs than another flock of equal size and maintained equally as well. This of itself, with no other evidence, shows that the same differences in performance may exist between individuals in the same flock.

What this reasoning suggests the individual record proves, thus establishing the fact beyond question.

* * * * *

One condition that makes it so difficult for the poultry student to get exact information is due to a peculiarity of the American people. We are great experimenters. Every Tom, Dick and Harry is an original genius—in his own mind. We read, study, think and experiment superficially; or deliberately copy from someone else, thinking that the country is so large it will never be found out. This is a big country geographically, but electricity and steam bring us pretty close together after all.

Our markets are glutted with incomplete inventions and compounds; our patent office shelves are groaning under a load of experimental folly; our people make experiments and draw conclusions therefrom when the nature of the experiment precludes any possibility of its proving anything but its own weakness.

Some of our writers in all kinds of literature are continually discovering something new to them, but obsolete to the informed, and burst out with a lot of old misinformation dressed in new garments.

The history of the trap-nest idea is replete with illustrations of this practice.

The advertising and press notices of the pioneer promoter of a record nest stimulated imitation, investigation, theft, and honest invention, just the same as do all successes, or apparent successes.

The crudest nest trap is a wonderful thing to the enthusiastic poultry keeper who tries it for the first time, and a very unpracticable thing to experience. So those first crude traps and their later imitations, now obsolete as far as practical trap-nest work is concerned, are still producing misinformation regarding the trap-nest idea that varies in character according to the point of view of the observer.

One prominent writer wrote a very wise criticism of trap nests in general. He had never had the opportunity to see or use a practical trap-nest equipment, and he had never seen any one who had. Thus it is that premature wisdom makes itself utterly absurd at times. People are likely to endorse or condemn what does not exist if they mimic all they read or hear.

A few letters or conversations reporting smoke have caused some people to imagine that the world was on fire and they have sought to quell the conflagration with printer's ink.

Those who desire to post themselves regarding the actual trap-nest situation will have to spend more time and money in research than most of the critics have yet shown evidence of having done. One of our very best and most practical poultry editors has had an especially favorable opportunity to judge of the working of some unpractical trap-nest equipments and methods, and his very moderate and conservative opinions regarding the general adoption of the trap-nest idea are well justified from his point of view.

Those who have the legitimate interests of any industry at heart should consider that the prospect of commercial success is generally the incentive that leads to improvement in any direction.

The more successful the undertaking becomes, financially considered, the more wide spread will be the benefits, and the more rapid will be the progress made.

The attitude of the industrial press toward inventions, the patent system, and the interests of honorable commercial effort—present or possible—in general, gives a good forecast of the probabilities of success for any proposed improvement.

Commercial failure never proves lack of merit, even when it clearly accompanies it. The right thing must be advanced at the right time in the right way in order to be successful.

New things do not flash upon the world in a full burst of success at once. They are opposed by all sorts of conditions, most of which are wholly out of the view or possible knowledge of any but those most intimately interested.

In estimating the relation of the individual system to time and money we should study each element of the system separately and understandingly. If an insufficient number of nests are installed the necessity for very frequent attention is an indication that more nests should be put in. If the nests are so designed that it takes considerable time to remove a hen and prepare the trap for another it shows a specific defect that should not be charged to the fundamental trap-nest idea. If the system of keeping the records is clumsy and takes too much time a more simple and practical plan should be sought.

If at first we are slow in handling the hens and the nests and recording the data we should consider that practice will enable us to work much faster in time.

If by keeping individual records and basing our practice upon the information so obtained we increase our egg supply and diminish the number of unprofitable hens we should consider that the time and money commonly spent in hatching, rearing, housing, feeding and

caring for unprofitable hens has been saved to the credit of our trap nests and records. If we will carefully note the condition of our hens as we handle them during the day when taken from the nests, we should consider that we are thus saved the necessity of looking them over at night after they have gone to roost: a time-consuming operation that is universally practised by careful poultrymen under the ordinary system. The question is not how much time will it take to care for a certain number of hens under this system, but how can we best apply our time so as to get the best results. If 200 hens will lay 30,000 eggs in one year it hardly seems reasonable that we can save time and money by housing, feeding and caring for 300 hens in order to get the same number of eggs.

We should consider that it is very difficult to get any reliable basis for judgment by comparing the methods and results obtained by different operators. The man rather than the method may be the determining factor.

No man can justly compare the individual system with the common system of breeding and maintaining poultry until he become familiar with both systems.

A practical trap-nest system given thorough and adequate trial is essential in order to obtain evidence of the comparative merits of the new and the old. The trap nest does not provide an easy way to keep hens for profit. Neither does anything else. There is no easy way. Successful poultry keeping under any system requires hard work and a careful attention to details. Trap nests are not essential to success. They contribute to success by making available information that can be obtained in no other way with large flocks, and not without more time-consuming labor with small flocks than would be necessary with them.

I shall be glad to hear from any reader at any time in the interest of the persistent layer and her owner.

If a reply is desired a self-addressed and stamped envelope should be inclosed unless the matter directly concerns the Ideal Nest or specialties.

I have no means of knowing how many practical nests exist, but I do know that a very few that are good are, or have been, to some extent commercially available. It is hoped that this text book will be found useful with any, should they be preferred to the Ideal.

THE END.

"Genius is two per cent. inspiration and ninety-eight per cent. perspiration."

Thomas A. Edison.

THE OPTIMIST, SPRING.

A young man returned home from a voyage about February 1, and began to brace up his father's flock of hens. They had been neglected all winter and had not laid an egg.

The son cleaned up the pen, put in scratching material, fed vegetables, meat and mash, and along toward the last of the month the hens were laying well. Boasting of *his* success with "the old man's hens" to an old poultry keeper he was met with the cheerful statement: "Yes! good care is all right, but if I had hens that wouldn't lay now, anyway, I would cut their blamed heads off."

Blessed spring-time. How it aids us to cherish our little conceits, shows how indispensable our favorite methods are, proves the worth of certain rations and substantiates the claims of the condition powder or "egg food," and allows us at last to truthfully claim that our hens are "good layers."

With happy memories of spring kept fresh in our minds, how easy it is to ignore the other nine months in the year. All hail to the Optimist, Spring.

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