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POULTRY MANUAL

REVISED EDITION

A GUIDE TO SUCCESSFUL POULTRY KEEPING

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The Poultry Manual

A Guide to Successful Poultry Keeping
In All Its Branches, Fancy
And Practical

BY FRANKLANE L. SEWELL
IDA E. TILSON
And Others

Illustrations By Mr. Sewell

TENTH EDITION
REVISED

PRICE, 25 CENTS

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PART ONE

The first part of the Poultry Manual is devoted to the standard breeds of poultry, including turkeys, ducks and geese. It deals with the origin and development of the different breeds and varieties, their characteristics and matters pertaining to breeding and rearing, and is intended to supplement the American Standard of Perfection, not to supplant it. The subject matter and illustrations are principally by Franklane L. Sewell, the world's premier poultry artist and noted authority on the standard breeds.

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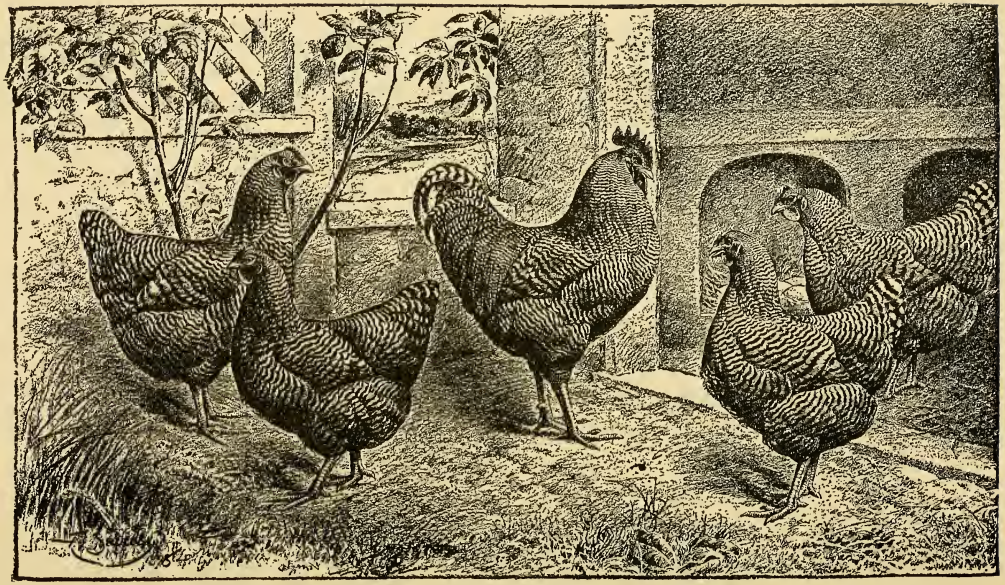


A Pen of Barred Plymouth Rocks Mated for Exhibition.

PLYMOUTH ROCKS

Origin, Development and Characteristics of America's Most Popular Production in Standard Fowls—The Principal Varieties of the Breed.

This breed originated as the Barred Rock in New England and the best authorities give the honor of its production to a Mr. Spalding of Connecticut and claim that it was produced from a cross of a Dominique colored male and Black Cochin hens. Good authorities also claim that the Black Java was used in its production and there are many reasons to believe that that is true. They were first shown at Worcester, Mass., in 1869, by Mr. D. A. Upham, of Connecticut, and were then called Improved Plymouth Rocks. The name Barred was not given them until later.

The early Plymouth Rocks were by no means free from feathers on their shanks or from white in their ear lobes, according to the testimony of the veteran I. K. Felch. At that time, which was before the advent of the Wyandottes, the Plymouth Rocks had the field clear as the general purpose breed. The conformation of the breed is such as would naturally be selected for a fowl intended to produce plenty of poultry meat and lay abundantly of eggs. This fact, together with their clean shanks and robust constitutions, gained them the title of the "farmers' fowl" and also the wide popularity that they attained in a comparatively short time. The comparatively heavy, though close-lying plumage and comparatively small combs, adapt them particularly to cold climates.

The plumage of the Barred Rock, as it came to be called, is extremely difficult to breed and to produce exhibition color in both male and female it is necessary to resort to two matings. To produce the cockerel for the show room, an exhibition colored male is penned with females which are too dark for exhibition purposes but which have been produced from a mating of the same kind. Exactly the reverse of this is the method of producing exhibition females. The winners of the present at the larger shows are remarkably well barred from the tips of the feathers to the hide, and the best of them show that desirable ringy effect on the outside which adds to their attractiveness. Although many breeders have paid more attention to color than

Barred Rock Feathers No. 1A.

to shape, yet the lines described by the American Standard of Perfection should first receive attention from breeders, inasmuch as it is shape that makes the breed while color simply stamps the variety.

Color in Barred Rocks

The subject of color and barring in Barred Plymouth Rocks has given rise to much controversy between fanciers of this popular variety, and in the mind of many a breeder of Barred Rocks there is a very indefinite idea as to the right thing in the color and barring of this popular bird. The Standard being our only law upon the subject, we must attempt to get from it the right ideas upon this subject of color and barring, and while it is not explicit enough in some respects, yet one may arrive at a good understanding of its intent from a close study of the wording of that part relating to this subject. The Standard says, blue that stops short of a positive black; that is, the color lacks that metallic shade of black, or the luster of the Black Langshans for instance. A dark blue is very much like a black in appearance, but has a soft shade and not the strong color of the positive or lustrous black. In order to illustrate, as near as possible, the color and barring of the male and female of the Barred Rock, we have selected feathers that were the best we could find and while not by any means perfect will give a very fair idea of the intention of the Standard.

Barred Rock Feathers No. 1B.

No. 1 A gives a very fair idea of the character of the barring of the neck of the male and female. The Standard calls for narrow, parallel bars, the barring to be close in all sections. No. I A shows the bars to be narrow and quite uniform in

character, with the barring close and running the entire length of the feather, while those of No. 1 B show an irregular character, with the barring more open and not showing the entire length of the feather. No. 2 A shows the barring along the back and cushion of the female, representing the straight,

Barred Rock Feathers
No. 2A.

feather, showing no signs of a bar. One feather shows very good surface color, but fails in under color. The idea of the Standard is that the feather must be barred its entire length, with the under color not quite

Barred Rock Feathers
No. 3A.

narrow barring, running the entire length of the feather, uniform and even in character. No. 3 shows the barring of back and saddle of male bird, A showing the close, narrow barring the entire length of feather, the under color being especially good, while B gives an idea of more open, irregular barring with the under color in one

Barred Rock Feathers No. 3B.

Barred Rock Feathers No. 4A.

as strong in color as the surface. It is not such a difficult matter to get our females with some kind of color in the under color, but in the male birds a much more difficult task, and such color as is shown in No. 3 A will be appreciated by all old breeders of Barred Rocks. No. 4 represents the color and barring of breast of both male and female, and in this section they are similar in character, in contrast to that of neck and back, which are different. The female, however, usually runs somewhat stronger in under color than the male bird.

No. 4 B shows types of color and barring often found in many males and females, with the open barring and lack of color and barring in the lower part of the feather, and also that irregularity of bar which so detracts from the "line barring" or "ringlet" effect of breast color. No. 5 A represents color of fluff and thigh of male bird, the small feathers being from the thigh. These sections are hard to get with barring running the entire length of feather as decided in character as that of the feathers of No. 5 A. No. 5 B represents the type more commonly met with, barring often fairly good in surface color but decidedly lacking in barring of under part; and in plumage of thigh the color and barring are often weak and uneven, and as the thigh forms a part of the leg the plumage of this section must be good in color and barring to pass without a cut, when scored by a competent judge. Yet many fanciers think if the shank is yellow in color and free from roughness, that a bird should pass without a cut in color of leg, not thinking that the thigh is a part of the leg and that its plumage must be considered in measuring the quality of any bird.

Barred Rock Feathers No. 4B.

The quality of plumage shown in No. 5 A

is not often found in the average class of Barred Rock male birds, and in No. 3 A the quality is better than is usually found; yet neither is perfect, and one can imagine what the perfection of the Standard really means. In every section each feather must be better than those of our illustrations in order to be perfect, as the Standard calls for perfection in every respect in the bird that would reach the 100 mark. We are not able to give an illustration of the barring of wing and tail, but it must conform to the general character of the barring of other sections, the barring of the larger feathers to conform to their size. The primaries and secondaries of wing when spread out in fan shape should show the bars of each feather in connecting and parallel lines across the entire sweep of wing; and in tail the barring should be as distinct and clear as in any other section, the tail coverts to be equally as well barred as any other part of the plumage.

Barred Rock Feathers No. 5A.

We now touch upon an important point and that is the straight bar, because to be most effective, the bar should be straight across the feather and even in width, so that the surface of the plumage may have that continuous bar or ringlet effect which is one of the attractive features of our best specimens. Another point, and that is, that the tip of each feather should be the dark blue—that is, the feather should have a dark bar at the end, not wide but narrow and clear cut. This does away with much of that indistinct, mealy ap-

Barred Rock Feathers No. 5B.

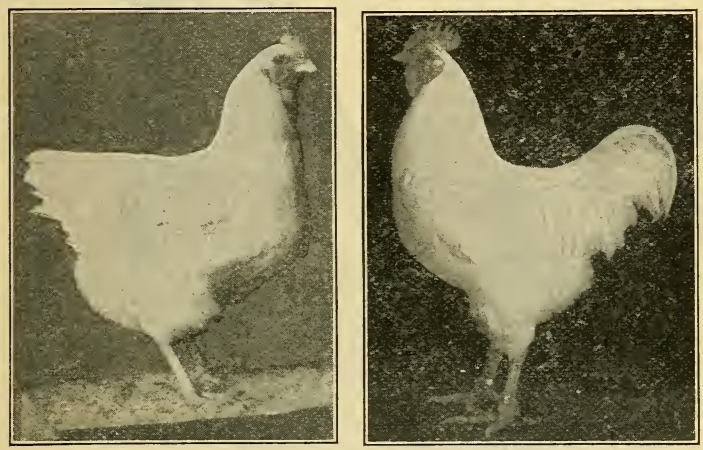
pearance in plumage that below the upper third of the feathers is very often well and distinctly barred. It is this upper part that is on the surface and the part that appeals to the eye, and either makes or mars the beauty of the specimen. If the surface of the plumage is well barred throughout, the bird will please the eye of the lover of Barred Rock color, but the Standard says we must not stop at the surface; that such good work along the lines of the beautiful must be continued, and that the entire feather must possess the same character of barring and color as the surface, although in a somewhat modified form in that part below the upper half. With the entire plumage barred with narrow parallel bars of the proper color we have the perfect plumage, such as that intended by the Standard.

The question is sometimes asked, how close shall the barring be? And we would answer, as close as is consistent with the work of obtaining the continuous lines of barring about the surface of the plumage. The barring must not be too close, for such an effect to be obtained. The ideal bird in its surface color would give the effect of one large, beautifully barred feather covering the whole bird and harmonizing completely in the lines of each section. With such a bird in the mind's eye, one would spend some time in search for a bird that would touch the 96 mark, and the lover of the high score would have to open negotiations with Dame Nature upon a very liberal scale in order to induce her to render her assistance in the production of the specimens deserving a mark around the high 90s.

Some fanciers go to extremes in the matter of color in Barred Rocks, one faction looking almost entirely to the matter of under color and seemingly ignoring that of the surface, while another faction looks only to the color of the surface and pays but little attention to the under color. Of the two factions we would prefer to be among those favoring the surface color rather than among those giving too much attention to the under color, as the surface is what lies before the eye, while the under color is hidden from sight. The beauty of the bird depends largely upon its surface color, as is the case with the specimens of any variety, but the highest quality of plumage must be good upon both the surface and the under part. In fact, the plumage of a Barred Rock, considering it as one feather, must be barred its entire length, with straight, narrow, parallel bars of blue-black or dark blue, to be in effect a black with that soft shade, that is in strong contrast with that metallic or lustrous black which the Standard cautions one to stop short of in the development of the color of the bar. The barring is to be as close as is consistent with the production of the line barring about the surface of the bird and giving it its greatest beauty of plumage.

The color and character of the Barred Rock plumage must

be uniform in all sections and are indeed difficult to produce in the best form and have proved stumbling blocks in the progress of many a fancier, giving the Barred Rock the reputation of being one of our most difficult varieties to produce with a high quality of plumage. To many people that which is hardest to obtain is highest prized, and may to some extent, account for the popularity of the Barred Rock as an exhibition bird. Its real popularity, however, is due to its strong combina-



Typical White Plymouth Rocks, Male and Female.

tion of practical and fancy qualities, making it a strong favorite with both the practical poultryman and the enthusiastic fancier, and is fully deserving of their most enthusiastic support.

White Plymouth Rocks.

The best of the White Plymouth Rocks were developed from pure white sports thrown out by pullet matings of Barred Rocks. When they first came before the public and began to be popular, various crosses of Plymouth Rocks and white birds, including Single Comb White Leghorns, were made by breeders who were in haste to make money by supplying the demand for White Rocks which at that time was in excess of the supply. These crosses, however, did not by any means keep pace with the strains developed from sports and soon went out of existence.

Daniel Christian, of Rhoanoke, Ind., told me while at the Indianapolis show, years ago, that his stock had given him quite a number of these sports, equal in all respects except color to

A Buff Plymouth Rock Cockerel that Won First Honors at a Leading American Show. His Tail Plumage Was Not Fully Developed, Otherwise He was Shown in Excellent Condition.

his best specimens of the original race. Mr. Frost, of Maine, was among the first to bring before the fancy this white variety as a distinct race, to advertise and make it popular.

Some of the best records that have been kept of laying are to the credit of the White Plymouth Rocks. In the "National Stockman and Farmer" egg contest, the surprising egg yield of an average of 289 eggs each, was credited to a pen of eight fowls of this variety. The value for the eggs was $5.00 to each hen during the year, or $40.16 for the eight birds; a good return, was it not? The third pen in the contest were also White Plymouth Rocks, averaging 280 eggs each, the eggs valued at $4.00 per hen. This shows what good fowls under good care can do.

In shape of every section and in color of comb, ear lobes, wattles and shanks, White Rocks are the exact counterpart of the Barred variety. The general characteristics of the breed, too, are much like those of its progenitors. Its plumage should be pure white, without brass on the surface or oily yellow color in the under feathering.

Buff Plymouth Rocks.

Buff Rocks like White Rocks originated in the east, the first specimens of that variety coming from northern New York, according to most authorities. Mr. Wilson, of that state, exhibited a number of them in the early nineties and soon after they began to be recognized as a distinct variety and to be classified as such at shows.

In type and characteristics, except as to color, they should be an exact copy of the other varieties of the Plymouth Rock breed while their color should be a clear, even buff of medium shade. The earlier specimens of the variety showed considerable foreign color, either black or white or both, in their plumage, more especially in neck, wings and tail. Careful breeding, however, has produced now and then an absolutely buff bird of satisfactory shade. In breeding, the majority of fanciers believe that black is preferable to white in that it adds strength to the reproduction of color.

Newer Varieties of Rocks.

Silver Pencilled Plymouth Rocks are of comparatively recent production and are birds of Plymouth Rock type in shape, head points, etc., but have coloring of the Dark Brahma. Partridge Plymouth Rocks have been shown for some years at the more important shows and follow the original Plymouth Rock in shape, size and other points except color which is like that of the Partridge Cochin. Recently Columbian Plymouth Rocks have taken the field and seem destined to become fairly popular. They also have the Plymouth Rock shape and color except that of plumage which in its perfection is similar to that of the Light Brahma.

THE WYANDOTTE FAMILY

This Breed Shares with Plymouth Rocks the Honor of the Most Popular American Variety—Its Several Varieties Their Origin, Development and Characteristics.

"The best Wyandottes" (Silver Laced, then the only variety,) was the object that sent me on a long hunt through the East in the autumn of 1885. I had seen them in a breeder's yard and once at Chicago when Mr. McKeen showed them at the Chicago exhibition, held in the North Side Museum. But this time I was bound to search out the best the East had. Houdlette, of Massachusetts, Millington and Bourne, of Vermont, Hull, of New York, and many others were in the route pursued.

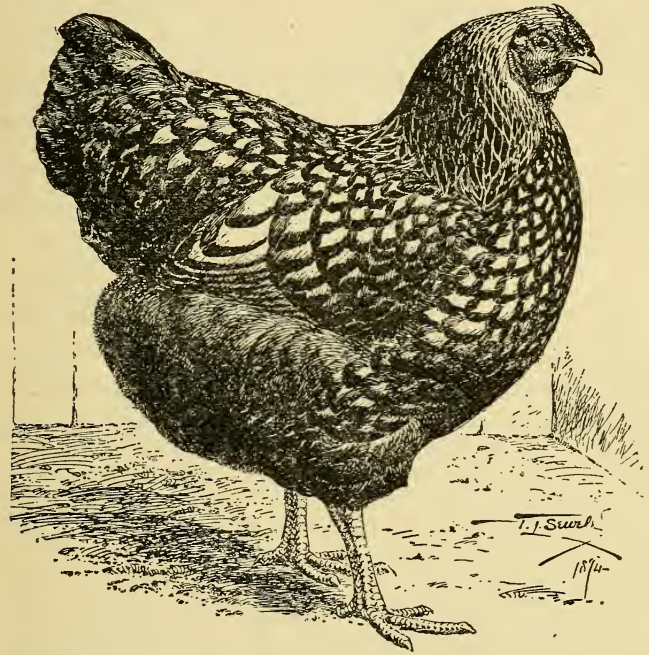
In Columbia county, N. Y., we struck a hot bed of Wyandotte fanciers. At Chatham a carriage was hired and I drove to the home of Jones Wilcox (one among the many good fanciers who have passed from among us). Shrewd, enthusiastic Jones, he knew every Wyandotte in the country, and had a lot of good ones. Mr. Wilcox was not loathe to show me what others had. Hull, Gillette, Delevan, Joles, and others whose names I do not now recall, were sought out. Now and then, down a lane to a quiet cottage in a nook where only the neighbors ever knew, there were Wyandottes, the coming fowl, in the poultry yard or about the orchard.

Prices had commenced to go up, and anything in any way resembling the Wyandotte found buyers. Everything was claimed for the Wyandotte, and hundreds of young fanciers bought and attempted to breed them, who understood nothing of training such a pattern of feather. It was to the detriment of the reputation of the race that it got into so many inexperienced hands, and it has taken until only recently to find its level again, which it justly deserves.

Most all of the females in those days that had open centers were strongly frosted on the outer edge of the breast, and many on back and wings as well, and backs filled with the dreaded mossiness were common. So was brassiness in the males, and males that did not tan to brassiness easily were rare. These faults are to-day troublesome, but seldom seen in the best show rooms to any great degree. Combs were all styles that a rose comb can get into—broad, narrow, high and low behind, flat,

concave or rocker topped, and some fell heavily over the eyes. A really bad comb in a Wyandotte to-day is seldom shown.

After they were admitted to the Standard, sales increased, and they were bred to fit the Standard, and some construed the meaning of small, white centers in back of female, to mean the white shafted black back often seen and easy to produce, covering the moss and crowding out the frosted edge with an over



A Silver Wyandotte Female With Centers of the Medium Type.

amount of black. Pullets that with some judges obtained high scores, were produced with little culling, and the true open center and laced effect was lost in many yards. Those who preserved the true idea, the laced plumage, are reaping their reward today.

Silver Wyandottes.

The origin of the Silver Laced Wyandotte was always a mys-

tery. Mr. Newton Adams told me he knew of them in the early seventies in northern New York. Early writings and pictures show that the Wyandotte sprung out of an attempt to produce the Sebright Cochin; but we fancy that the original idea of this type was given up on account of the difficulties that beset every fancier attempting to produce single lacing on a fluffy plumaged bird. The mossy peppering of color seems persistent on the parti-colored birds of Asiatic type.

Our own experience with the Wyandotte confirmed our faith in their economic qualities. As exhibition fowls, we found that they must be bred along particular lines very closely or their pattern of coloring could not be depended upon. Indiscriminately breeding one strain with another threw all styles of lacing and, not rarely, spangles (moon shaped) on the breast, and very dark and very light, both from the same mating, although the parent stock might be ever so well matched and almost perfect individuals in color. Our best productions for the show pens were always from stock closely related and following particular lines for several seasons.

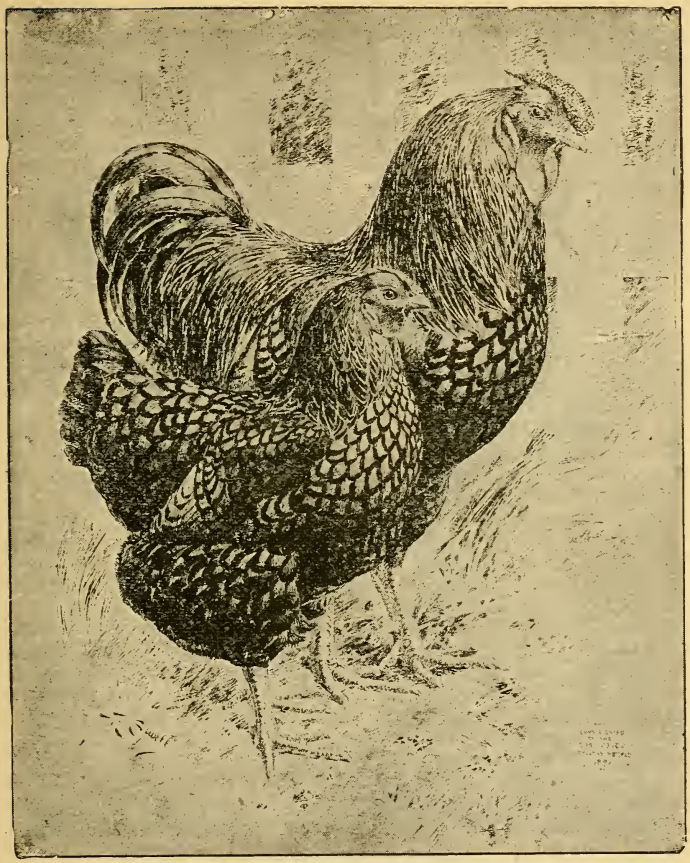
Golden Wyandottes

The early history of the Golden Wyandotte can be told best by their originator, Mr. Joseph McKeen, of Wisconsin. There are other strains besides this one that appeared after this was brought out. One which showed indications of the Partridge Cochin being used in its make up—through its many coarse features.

Mr. McKeen said: "The Golden American Sebrights were one-half of the Silver blood at the first, and my Golden Wyandottes are more than one-half of that blood now, and are descendants from the old Sebright Cochins on the female side."

"The Winnebagoes, the top cross that gave the American Sebright the golden color, were a black-red fowl of real practical merit, and were very handsome, especially the males with their golden and green-black plumage that glistened in the sunlight. The hens wore a plainer dress with irregular markings. They were bred more at the village of Waukan than in any other locality. They were considered by their owners the business hen. Some of the males had black breasts, others were of a deep cinnamon-buff throughout, except the wings and tail which were black."

There was a fineness and clearness about the McKeen Goldens that told of a very careful and thoughtful makeup. We have seen clearer color in Goldens than even in the Silvers. This after the much longer period of "making up" which the Silvers had, would lead one to believe that the Goldens possess a combination of coloring nearer to nature. The continual selection among Silvers for pure silvery white and black often tempts to keeping weaker or poorer specimens in other qualities, while



A Pair of Remarkably Well-Colored Golden Wyandottes.

vigor and strength in Goldens is found more often among the best colored birds. I think Mr. McKeen never claimed to use any other blood in the Golden Wyandotte's makeup than the Silver Wyandotte and the Winnebagoes.

The Wyandotte plumage has been variously described and idealized in many ways here in America, some demanding the open Sebright lacing, others being satisfied with very narrow cen-

ters of the light color, and some exhibited with backs of the female showing scarce more than the shaft of the feather colored with silver or golden as the variety might be. Our English friends, on the contrary, have always demanded the true open lacing as is found on fine specimens of the Sebright Bantam and on Laced Polish fowls. One English illustrator we saw showed even the tail proper so laced, and while this would be beautiful and desirable when it will have been secured, yet we do not know of it ever having been attained by any breeder. Such an accomplishment would make a fancier famous the world over, and bring calls from many an appreciative fancier for others like it, but we think this point is yet a long way off; no telling, however, in these times of ever-occuring surprises by our ambitious experimenters.

A Wyandotte with plumage of small feathers never can show its lacing to such striking effect as one on which the feathers are large and where the lacings stand out like large circles of color, "loop after loop" upon the clear white of the silver or the rich bay color of the Golden.

A few points as to the type of the Wyandottes, may help the novice to select his birds to the style desired. In no way should the Wyandotte appear narrow, but plump and full in every section. It is distinctly a select table fowl and should be generously filled out.

The illustration will best describe the comb, low and compact, nearly as broad as the skull in the male, not drooping at the sides, but extending up and widening from a firm base, each side alike, and the corrugations flat on top, no depression in the center. The spike at the back should follow the rocker shape of the top, turning slightly downward, but not falling against the head. The head of the Wyandotte is short, broad and arched, the throat rather thick. The beak short and well curved; the neck of the Wyandotte is fuller than in the Plymouth Rock, especially as it joins the head; the arch of the neck is quite pronounced; the back is broad and the cushion a little too full to be flat, slightly curved. The breast should be full and round as possible, deep and well meated, carried pretty well forward when the bird stands proudly. The shoulders broad and wings carried close, well tucked up, not drooping or bantam fashion. The tail, as low as forty-five degrees, well spread, as seen from the side, and opening out when viewed from the rear. The Wyandotte tail is of moderate size, but much more spread than in the Plymouth Rock, which is wanted close and compact. The Wyandotte has a considerable amount of under fluff which serves it well in cold seasons, but the surface of the fluff should be smooth, and but fairly rounded, in no way excessive or Cochiny.

The legs are stout and muscular, set on wide apart, of moderate length, rather of the short order for so large a fowl; toes

perfectly straight and flat on the ground. In selecting for color have the plumage rich and brilliant whether the shade be light or dark, and the black lacing should possess a gloss. Avoid all mossiness and keep the old hens that continue to keep their plumage right. If a bird is right at two or three years old she can be depended upon for clearly laced young stock, but Wyandotte pullets are often not so reliable as they promise in their first year's plumage.

Feathers From Male and Female Laced Wyandottes.

Breeding Laced Wyandottes.

Breeding the laced Wyandottes has been a puzzle to so many that we cannot refrain from giving the experience of those who have succeeded in producing and retaining the clear, open laced plumage:

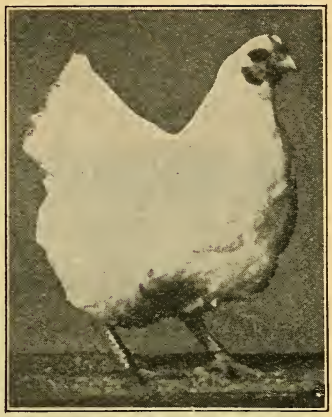
First, let me say that open laced females cannot be produced from males with necks and saddles having "a clear black stripe through the center of each feather," as described by our American Standard. Such a plumage is not the mate of open laced females, and will not produce plumage with a true laced effect.

In our sketches 1, 2 and 3, you have saddle and hackle of the male and the hackle of the female with open laced back, saddle

An Illustration Showing a Typical Wyandotte Head and Back.

and wings. In the hackle of the male the quill must be white, and the saddle next to the tail must show a clearly defined white stripe with no uneven edges or gray intermixed. Males marked in this way, when correctly marked in other sections, can be depended on to bring the coveted open lacing.

In figure 4 we have depicted the hackle, saddle and wing bar of the male we have just described. Figure 5 presents the type of head and neck as we have seen it on the best specimens of the breed. If we compared it to any other breed we would say nearest to the Brahma of any of the old races, though "finer" and not so broad in skull, nor thick about the throat.



White Wyandotte Hen.

White Wyandottes.

The White Wyandotte is by a wide margin the most popular of the Wyandotte varieties among the fanciers and has proven a great favorite as a market fowl, especially in New England markets, where yellow skinned fowls take the lead. In the best yards the type differs very little from that of the laced varieties, therefore they require no extended description. They are quite as hardy as the others, in fact should be hardier, as they require less inbreeding to retain their show points. For the novice they should be preferred among all the Wyandottes.

White Wyandotte Cock.

The Buff Wyandottes.

With the fancy for buff fowls, was born the "craze" for Buff Wyandottes. The shortest cut to this variety was through the Buff Cochin, and the best strains of them to-day must show a large per cent of Cochin blood. However, it is no discredit to

the Buff Wyandotte, and if we were selecting we would look for those possessing the greatest amount of Cochin blood. Doing away with the excessive feathering is easier than is the securing of true buff color without it.

The Black Wyandotte some years ago made its appeal for

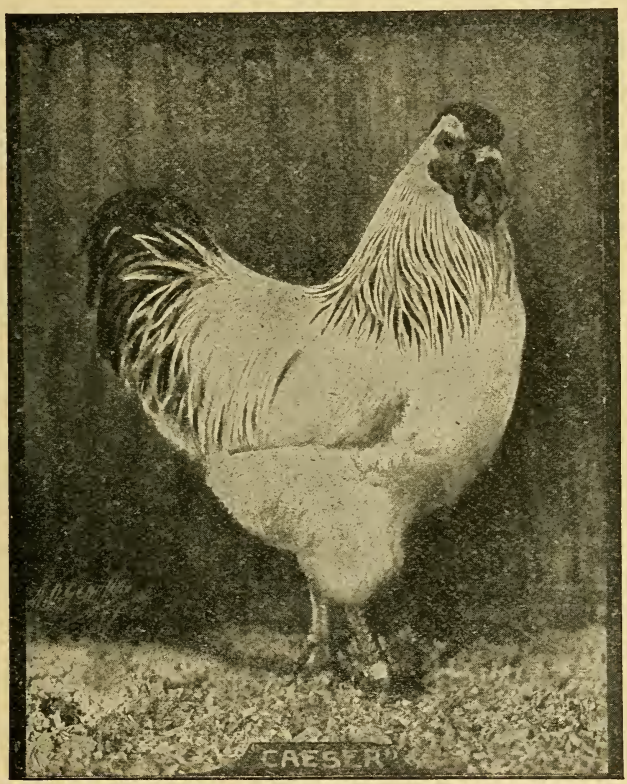
Prominent Buff Wyandotte Winners of the Northwest.

favor and we saw exhibited many very good specimens. But for some reason they seem to be preferred by only a few fanciers.

Partridge and Silver Penciled Varieties.

These two varieties originated in New York State, the birthplace of a number of other American new varieties, and first

began to be shown at the poultry exhibits of 1903 to 1905. The Partridge variety has plumage the same as the Partridge Cochin and the Silver Penciled variety the same as that of the dark Brahma. In other respects both are similar to other varieties of Wyandottes, the Standard requiring the same shape, the



A First Prize Winning Columbian Wyandotte Male.

same form of comb, head, ear lobes, wattles, etc. Therefore they have the same practical qualities as the older varieties if they are as well bred and as well handled.

Columbian Wyandottes.

One of the most attractive and one of the most popular varie-

ties of this breed (Wyandottes) is the Columbian. Birds of this variety have the same requirements regarding shape of all parts and color of all sections except plumage as the White Wyandottes. Its feathering is required to be the same in color as that of the Light Brahma except that, of course, the Wyandotte has no shank and foot plumage. This combination of color is very attractive on a clean legged bird and it is not surprising, therefore, that the Columbians are decidedly popular.

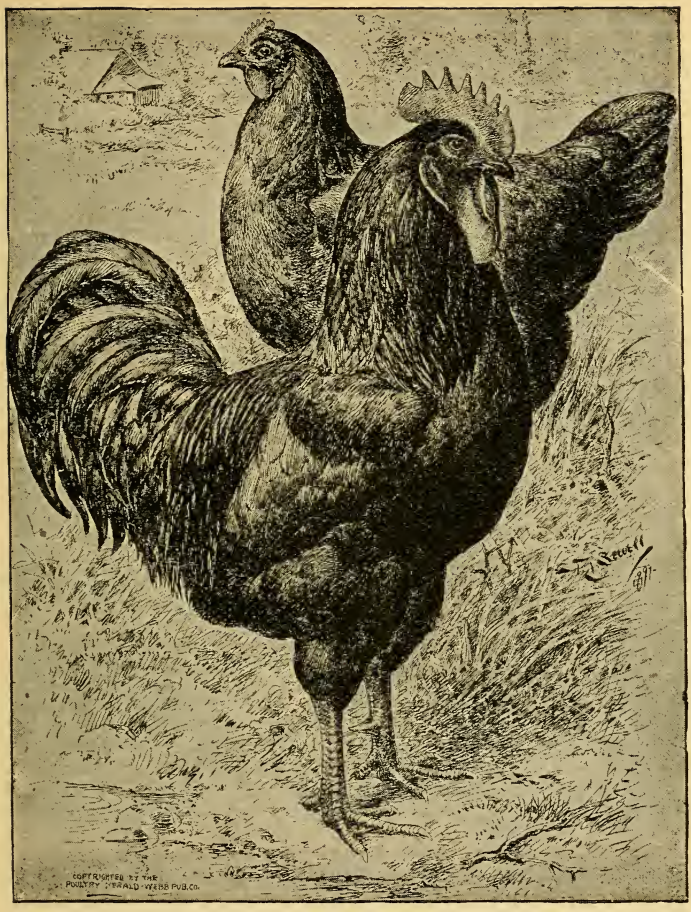
BLACK AND MOTTLED JAVAS

Two Good General Purpose Varieties with a Type Peculiar to their Own Kind.

Where the first Javas originated seems never to have been satisfactorily explained; we used to hear stories of a certain western doctor's coachman who sold, or gave away, some eggs of these fowls in which the good doctor prided himself very much, and kept very exclusive. Their produce or offspring managed to find their way to the Lattin Brothers of New York, who were their strongest promoters for some time, and who perhaps did as much to improve them as any one interested in them.

Of the Javas less seems written than perhaps any other race of fowl of so long a standing in our country. They have been known to the poultry industry as a thoroughly good, practical fowl. In fact, the Javas very closely approach the type of birds most selected by American poultrymen as likely to combine the best utilitarian qualities. In 1873, H. S. Ramsdell, of Connecticut, told of the Javas being used in the make-up of the Plymouth Rock. The Java hens which were used belonged to a Mr. George Clark, of Woodstock, and the males were Dominiques on the farm of Joseph Spaulding, who lived about a mile from Mr. Ramsdell. The Javas were the larger and stronger of the two races, with much the stronger bodies. The Plymouth Rock of to-day owes much of its quality to the Black Javas as they were in the 60's and we doubt if they are in any way an improvement over the Java for a money-making breed aside from the difference of a more popular color.

The weight of the Javas as shown to-day about equals the modern Plymouth Rocks. The ten-pound cock and eight-pound hen scarce present an equal appearance in size to the Rocks, as the Javas are closer and smoother plumaged. The body of the Java is longer and the plumage of the tail being much longer



A Pair of Typical Black Javas.

only helps to add to the apparent length. The outlines of the Java are more angular than in others of the American classes, the back long and flat, the breast deep and rather prominent at the point of the breast bone. The underlines of the body run more angular than in fowls possessing more fluff about the thighs.

The legs are cordy and strong, of moderate length, and the toes neat. The head is not carried quite so proudly back nor the neck so much arched as in some races, but rather high up in a manner to emphasize the square conformation of the bird's make-up. The back slopes from the shoulders to the tail where it forms an abrupt angle with a moderately narrow but well furnished tail, much larger than that desired in the Plymouth Rock, but not so large nor expanded as that found on the well-bred Langshan.

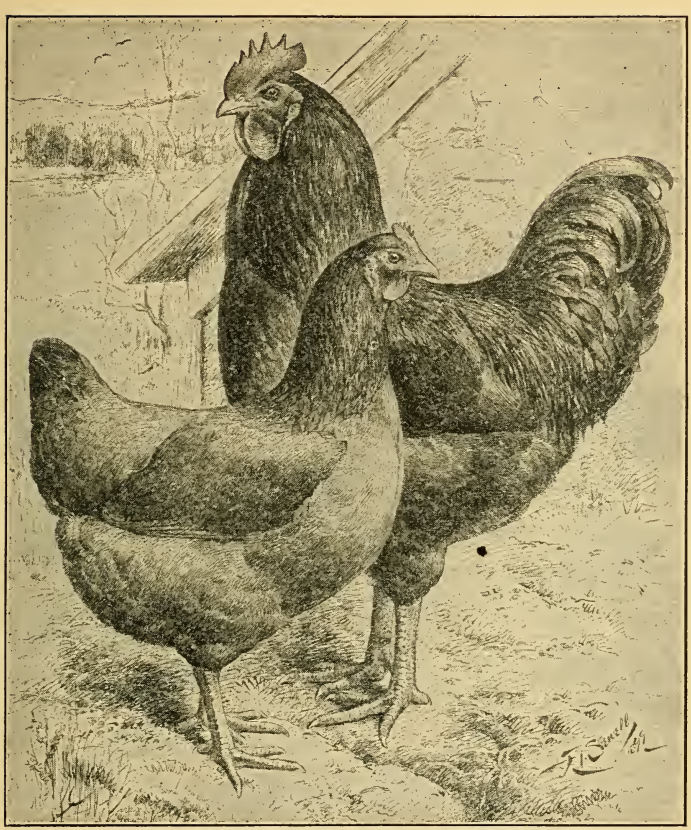
In the largest Eastern shows we are occasionally favored by a look at the attractively attired mottled Java. The type of these birds is identical with the black. The plumage at first glance much resembles the well broken color of the Houdan, though the black and white is more splashed in effect, and more evenly divided than in most Houdans seen of late years in our shows. These mottled birds about ten or twelve years ago bid fair to become quite popular, but, for some reason their owners did not continue their promotion, through advertising and in the many ways necessary to popularize them, until to-day they are really very scarce indeed.

RHODE ISLAND REDS

The Latest American Production to Gain Popularity as a Breed—Their Characteristics, Etc.

Years ago the poultrymen of Rhode Island who gained revenue from the selling of eggs and dressed poultry, made various crosses, using principally Asiatic, Mediterranean and Game blood, and from these crosses a bird of various shades of red and even with more or less black and white in plumage was evolved. These fowls had both single and rose combs but proved to be very productive of eggs, rapid growers of flesh and generally hardy and able to take care of themselves on the Rhode Island farms.

In the 90s they began to be shown in eastern shows as Rhode Island Reds and about 1900 the Rhode Island Red boom started. At that time they did not breed very true to either shape, color or comb, but in the few years following they made marked improvement in the hands of intelligent breeders and now they breed very true to color, type and comb, though the single comb variety seems to have made the most improvement, especially in regard to shape. Both varieties, however, have the same standard requirements and are not unlike the Plymouth Rocks in conformation though they are considerably different in the shape of back and shape and carriage of tail. Their rich



Rhode Island Red Male and Female.

red color makes them an attractive bird and several years of selection for color, etc., do not seem to have detracted much from their value as market fowls and egg producers. In size they are smaller than the Plymouth Rocks, though occasional specimens reach and even exceed the Plymouth Rock average.

THE BRAHMAS

These are the Heaviest of Domesticated Fowls and Among the Handsomest of the Standard Breeds—Their Origin, Development and Characteristics.

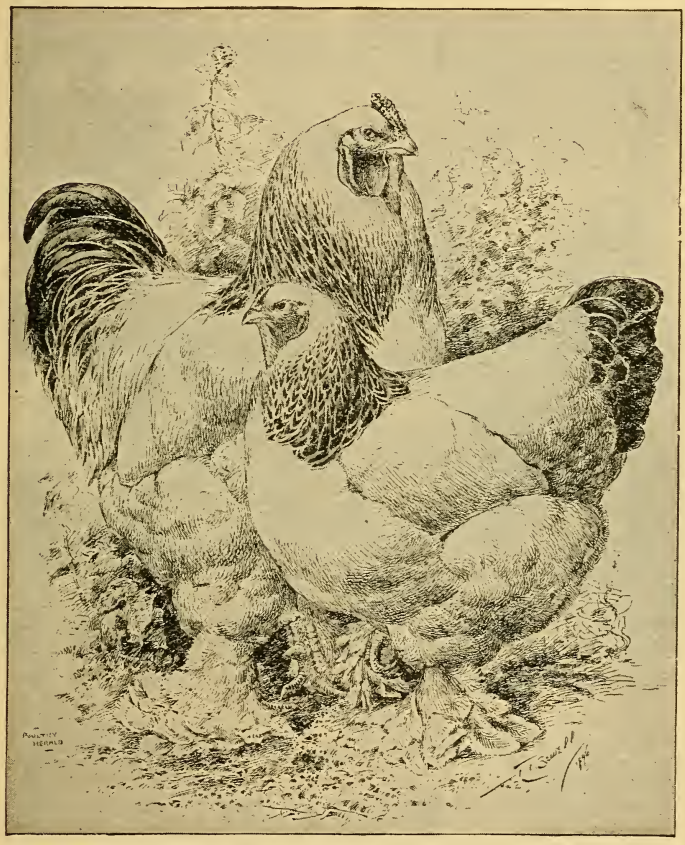
It was in the '40's and '50's that the large fowls known then as "Gray Shanghais" and "Gray Chittagongs" began to be brought into our country from Chinese ports, and by the early enthusiasts were blended into what were termed "Brahmapootras" early in the '50's.

These Asiatics have proven a valuable acquisition to American and English poultry yards. They have developed through skillful handling into one of the strongest types seen in our show rooms, and one of the best for producers of flesh and eggs. They have also entered into the composition of the best varieties America has produced: the Wyandottes and Plymouth Rocks. The English and French poultry growers also esteem them highly for the make-up of their best crosses for table poultry. The famous French "Favorelle" owes its size to this large Asiatic. At the best shows of dressed poultry in England, we have seen many carcasses exhibited that were claimed to be Dorking-Brahma, Indian Game-Brahma, etc., etc.

On the farm the often too generous feeding, especially of fattening grains, has given the Brahma, as well as most large fowls, a reputation of "loafers" and poor egg producers. These Asiatics should be fed only a sufficient quantity to keep them in good health and spirits. When possible have them scratch and find all they require. They are more productive when compelled to hunt and work for their food. The Brahmas have been selected to a type and plumage resembling more the Chittagongs than the early Shanghais. The preference has been for the Brahmas with a smooth plumage in contrast to the loose, fluffy feathering of the Shanghais or Cochins.

The Brahmas which were sent by Mr. Burnam to the Queen of England in 1852 and illustrated by Mr. Harrison Weir, possessed single combs about as large as are now-a-days seen on the Plymouth Rocks. These early Brahmas were about as heavily feathered as many of the cross-bred Brahmas and Cochins showed at the present day. Their throats showed less dewlap than is seen on the heavier show specimens of the present. Their middle toes are illustrated as being quite bare, and the shanks

feathered about as much as now desired on the Langshan. Their wings were about the same size as now. They also show well proportioned bodies, a good foundation for the Brahma of

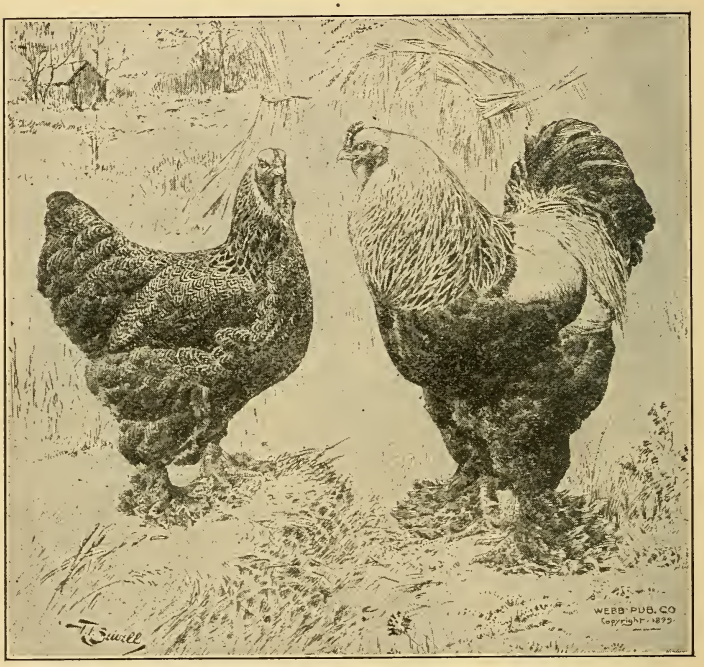


Winning Specimens of Light Brahmas.

to-day, excepting the pea comb, which was urged as the correct comb for an exhibition Brahma, about 1866.

The complete lacing of the tail coverts, as well as of the

neck hackle, has been strongly sought after, of late years; we noted several birds particularly good in this fine color point. Line breeding results in precision of color and when, by studious selection, it is so exquisitely placed as on the neck and tail



Dark Brahmas That Show Excellent Color but Not Typical Shape.

of the modern exhibition Light Brahma, the effect is that of elegance and finish.

The Dark Brahmas.

At the time that the ancestors of the present Light Brahma were brought into this country, fowls with like characteristics came with them. Some were very dark in color, almost black and red, and others lighter. From these lighter ones was bred the Dark Brahma of today.

In size the dark variety is about one pound lighter than the light variety, but the shape and style, type of comb and head,

etc., are practically identical. The color of plumage is decidedly beautiful, the male having the breast and body of a deep black and neck and hackle of silver white with black stripe extending down the middle of each feather. Its back is of silvery white and its saddle of the same color with a stripe of black down the middle of each feather, same as in the hackle. The main tail is glossy, greenish black.

The female has a hackle of the same color as the male with a body covering of gray with distinct dark pencillings in lines which conform to the shape of the feathers. This variety furnishes the coloring for Silver Penciled Plymouth Rocks and Silver Penciled Wyandottes. For some reason they are not as popular and not as widely bred or extensively shown as the light variety of the same breed.

THE COCHINS

An Asiatic Race that has Found Much Favor in America and Been Much Improved by American Fanciers.

Among the early importations of Cochins, then called Shanghais, were fowls of many colors. Various hues of red and gray, also black and white were illustrated and written of. Fanciers of differing tastes made their own selections and before many years had passed after the introduction into this country of this ponderous race, they were separated into four very distinct colors or classes, Buff, Partridge, White and Black.

Buff Cochins.

Of the four varieties the Buff is easily the most popular. The low compactly built bodies of the Cochin and thick, loose feathering often to the ground, make a remarkably fine setting for buff color.

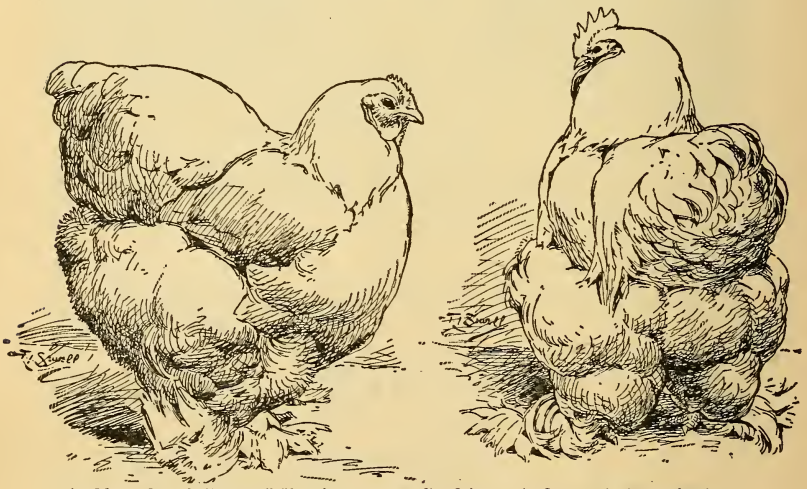
When the variety first began to be popular the shade of color varied all the way from a light lemon to a dark cinnamon, but of late years breeders have agreed upon the medium shade of soft buff and this very fact is responsible in a large measure for the popularity of the variety in the show room of the present day. The accompanying illustrations give a better idea of the good Cochin shape, the kind that wins in competition, than can any description of words.

Partridge Cochins.

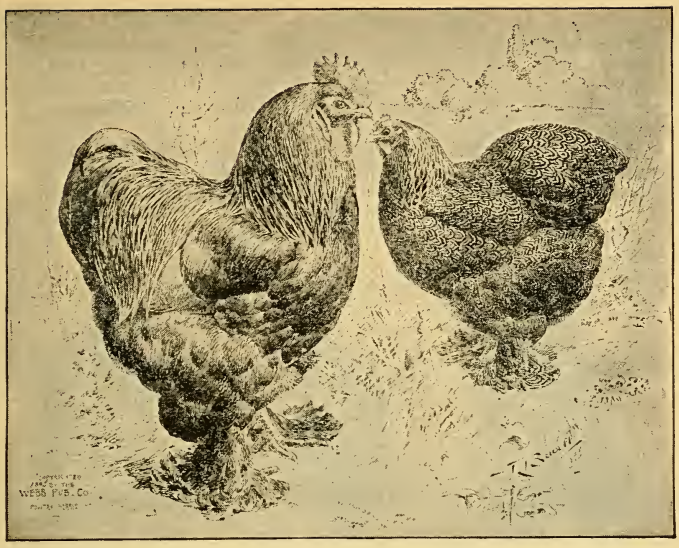
In America the Partridge Cochins are next to their Buff cousins in public favor, and among students of color the Part-

ridge penciling fascinates and holds many. It is indeed marvelous with what accuracy the plumage of some hens of the race are marked over the entire body. As a fancier once remarked to us when showing a very precise feather from a famous bird, "and I can pluck one in the dark, from any place on her, almost as perfect." This is one of the great ambitions of Partridge Cochin fanciers, to get the plumage of their females, with the penciling over the entire bird, even through the fluff and on the leg and toe feathering. The Standard has been rather inconsistent when demanding that the neck hackle of the hen must have solid black stripes down their centers. This not being in keeping with clearly traced penciling, but coming with hens which have the undesirable pepperings throughout the plumage—solid striping in hackle belongs with plumage such as we see on the Brown.

There have been great differences in shades of ground-color showing the Partridge Cochin from light brick-red to very dark mahogany brown, and some so dark that one was compelled to stand very close to the bird's cage to distinguish the penciling at all. Such very dark specimens fail to be as attractive as when the ground color forms a strong contrast with the black lines of penciling. The number of lines in the pattern and the width and strength of them has much to do with the beauty of the bird. We once heard an old fancier say, "I like the penciling strong and the contrast of color so startling that I can



A Sketch of Some Winning Buff Cochins at One of America's Largest Shows.



A Pair of Standard-Bred Partridge Cochins.

see the pattern of the markings clear across the yard." The feather "from an English hen" is a good example of this attractive style. The feathers were large and the pattern over the entire bird very bold. The black was glossy and the ground color as light as ochre, yet rich in hue. The bird made quite a sensation on her appearance at the Madison Square Garden Show, and was much sought after by several old breeders of the variety.

The same form is selected for in the Partridges, as in the Buffs, though few fanciers up to the present time have dared to expect such fullness of feather as the Buffs now carry would allow of precise penciling. The long, fluffy plumage is, however, being gained in many specimens with no apparent giving up of exactness of markings. It is length of feather rather than looseness of plumage which is sought for in the Partridge Cochin, and so long as the surface is not too much broken, the markings will show clearly.

Few succeed in getting good males and females both from the same mating, as solid striping of hackles and saddles and solid black breasts, thighs, fluffs and wing-bars do not often come on males that are from the best penciled blood. The com-

plications of the double mating are often resorted to with this variety—breeding one set of birds only for males and an entirely different lot for females. This in reality is producing two varieties, which is much to be regretted, but with the present Standard requirements, perfection can hardly be reached in both sexes without it.

In the males we look for the same contrast of color as in females, intense glossy black and orange red ground color for hackle, wing, shoulder, back and saddle hackles. The orange red contrasts more than do darker shades of red—however, the orange shade must be rich and brilliant, not the tawny faded yellow too often seen.

Plumage of a Female Partridge Cochin. From the Left, the First Feather is From an English Winner, the Second From a New York Winner and the Third a Feather Having That Undesirable Mossy Appearance.

The eyes of all Cochins should be red. The combs should be quite small. To gain size of body and length of feather without running up large, loosely set-on combs, has been quite a problem to many handlers. As the feeds which bring size and length of feather are apt to enlarge the combs—we have noticed that the best rearers of Cochins do not allow meat to their birds, when making ready for showing, and when we say, "making ready," we do not mean merely the few days previous to their going into the exhibition, but from the time they start the plumage they are to be shown in. Milk, with good feeding otherwise, makes long and lustrous plumage, but will also enlarge the comb on account of the oily and fatty substances in it. So the question arises, how can we get one without the other? Plenty of acid in the form of fruit—apples are excellent—will help keep the fattening food from spoiling the neatness of the combs by making them too coarse.

The Black and White Varieties.

Black Cochins have not proved very popular. Nevertheless they are a very handsome fowl. Every feather should be a

deep, lustrous black with a bottle green sheen showing on the surface.

White Cochins would seem to be very acceptable to fanciers because the pure white plumage displayed on a bird of its conformation makes a truly remarkable specimen and one which ought to attract much attention. In spite of this, however, comparatively few White Cochins are bred and showed. All Cochins are of the same shape and same characteristics, the only difference being in their color.

BLACK AND WHITE LANGSHANS

The Most Graceful of the Asiatic Breeds and Good General Purpose Fowls.

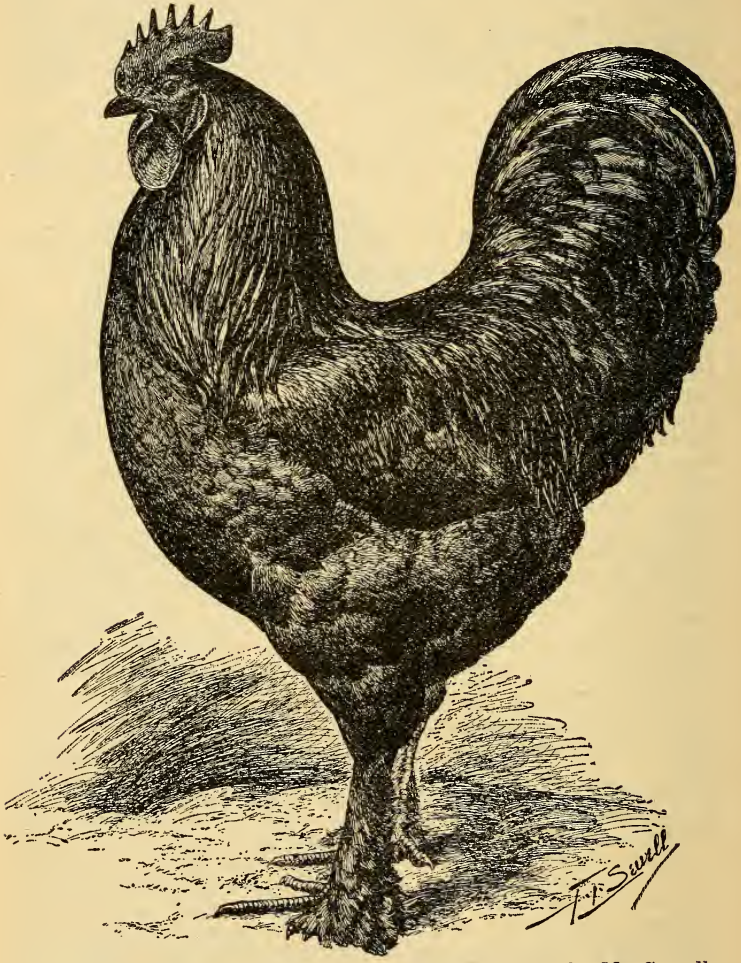
The Langshan is suspected of having sprung from the same foundation that produced the Black Cochins. They first appeared in England in the early '70s and from England came to America. Few breeds have been hampered in their advance by so much controversy regarding the correct type. Some of the English fanciers bred them to a shape which was so leggy and extreme generally that their Langshans almost resembled games. Interest, however, finally centered in a more practical type like that represented by the accompanying illustration of Paragon 7th. This conformation made the Langshan a very attractive bird and they proved good layers and very good table fowls.

In some American markets the lack of yellow color in the skin and shanks of the dressed specimen worked against its popularity. The Black Langshans are required to have pure black color throughout which is glossy and brilliant, with a greenish cast on the surface. Their beaks, shanks and toes are dark and the bottom of their feet a pinkish white.

The illustration of Paragon 7th, before alluded to, shows remarkable development of the bird at six months of age. He was a bird combining in a marked degree the fancy qualifications for a stunning show bird and a body of great substance as a market fowl—depth of body and plumpness of breast were at once seen. This with a delicate skin, fine bone, and early maturity, proved his value as market stock.

At the age of six months his promise for a high grade show bird was marked in every section: Symmetrical, imposing in carriage, well filled in body, round in breast, broad in back, with a sweep onto the tail, remarkable for his age; neck and limbs of a proper length; a tail growing into a splendid shape, and which, with a little more age would be carried at quite the prop-

er angle. A little fuller growth in hackle and saddle would give the back a shorter appearance and deeper concave of back; the legs and feet feathered to suit the Standard. The plumage laid smoothly over all sections, and was rich in greenish luster. In



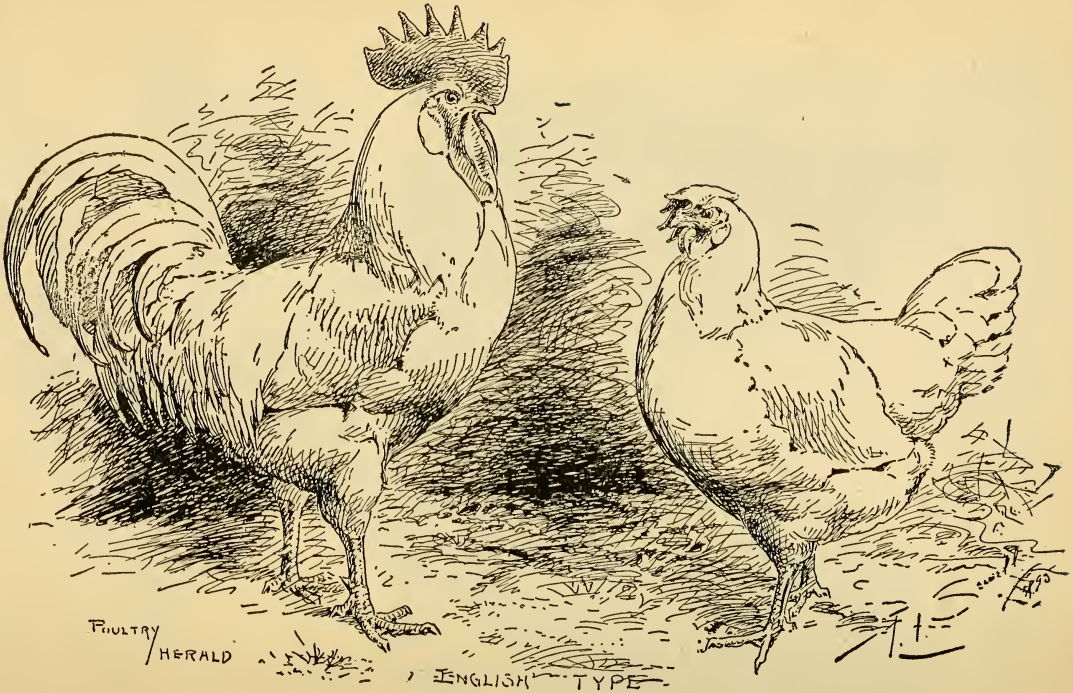
Black Langshan Male, Paragon 7th, Referred to by Mr. Sewell.

full plumage we found the bird had reached our every expectation.

The continual inbreeding of very short-backed Langshans, we have found, tends to lessen the size, so a longer backed female, if she is a real extra large one, will prove of value. However, we would never expect to get fine stylish show birds from long, flat-backed males. They tend toward a production of the Java type, which has a very "tame" outline to the eye of Langshan exhibitors.

Spare the knife and spoil the stock. Close selection must be resorted to if improvement is looked for among show or market stock. Your breeding stock should not grow up in crowded pens, and the quicker the roosters are got rid of, the better chance will the fine birds have. We have seen many fine Langshans "purple tinged" and "gray tipped" from only depleted constitutions, when with freer range and better care their plumage might have shown a healthier greenish luster and black flights. The purple barring in the plumage is hereditary and so is a weak constitution. The healthier the stock the less we see of it in Langshans. The practice of mating Langshans with scantily feathered outer toes to one of feet covered over the middle toes as well, cannot be too strongly discouraged; it can never be controlled that way. Plenty of outer toe feathering with clean middle toes can be secured and controlled if you see to it that the hens have heavy outer toe feathering. The female side seems to have the greater control over this point. We have noticed that middle toe feathering generally goes with coarse boned and fleshed fowls, features which Langshan breeders especially guard against.

White Langshans are the exact counterpart of the Black except that their plumage is pure white throughout and their beaks a little lighter in color, though not white or yellow.



A Sketch Showing the Type of Single Comb White Leghorn Male and Female Found in the Show Rooms of England.

THE LEGHORN FOWL

The Fowls of this Breed are Called the Egg Machines Among Poultry—The Various Varieties and their Characteristics.

It is claimed that Leghorns originated in the countries bordering on the Mediterranean, most writers fixing Italy as the most probable place. They were introduced into this country shortly after 1850, the importations including what are now Single Comb White Leghorns and Single Comb Brown Leghorns. It is claimed, too, that Rose Comb Brown Leghorns were brought over about the same time.

At that time they were far from the well-bred Leghorn of the present. In fact, it may be said that the real Leghorn has been developed since that time.

The Leghorns develop rapidly and on unlimited ranges forage for a large share of their food. The precocity of the Leghorn pullet is surprising and while it is a good sign in any strain of laying stock, we would not encourage it by stimulating food, but would feed grains and other food, such as will develop the younger stock in size and strength, reserving the most forcing diet until their full growth is attained and eggs are at high prices. Then it is that the little Leghorn hens show their true worth and ability to respond to liberal feeding by full nests of eggs. They can probably convert a given amount of food into a greater yield of eggs than any other race of fowls. That is their reputation in America, and I believe it is justly earned.

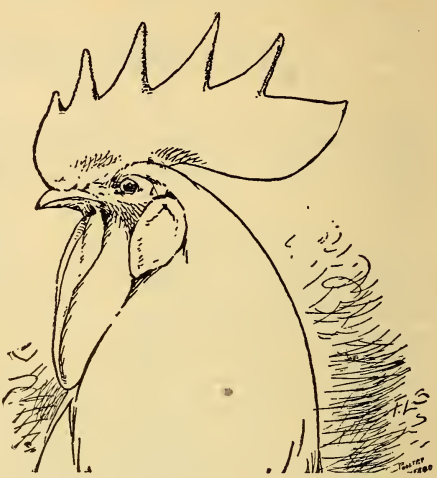
The rapid growth of the Leghorn has led many rearers of broilers for the early markets to use a large per cent of Leghorn blood in the crosses producing the parent stock for their early hatches. Leghorn and Brahma crosses are by some preferred. White Leghorn and White Wyandotte crosses mated to Leghorn and Brahma are also capital for early market chicks. The Leghorn gives precocity, the Wyandotte plumpness in the breast, and the Brahma adds size and feeding quality. Sturdiness and vigor of appetite are essential to rapid growth. It hurries them to the size and condition where they will be fit for killing.

The Leghorns have long been considered among the highest classes that are seen at our best shows, and in form the whites often lead the breed. Of late, however, we have seen that the fanciers of Brown Leghorns are developing a fineness of form

and character of style in their favorites, which the White Leghorn breeders will find likely competitors for the cups offered for "best style Leghorn of any color."

It does not take quite such inbreeding in the Whites as in the Browns to secure and retain the fancied color, so it is not surprising that the Whites have been the largest of American Leghorns. The importation of Leghorns from England has of late brought rivals to our American birds in point of size and plump breasts.

The Buff Leghorns, from the yard of Mrs. Lister Kay, and the Browns from Mr. Hurst, have proven to our people an immediate possibility of considerable improvement in the Leghorn's size and value as well for table fowls.



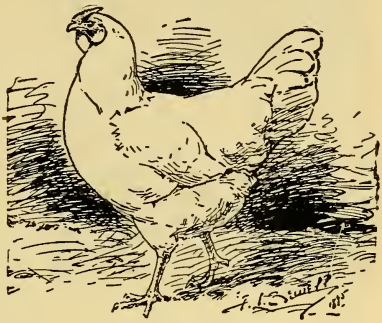
Head of an American-Bred Leghorn.

Head of an English-Bred Leghorn.

The English Leghorns, while they have been long bred to fancy points, have not been carried to that extreme "fineness" which is apt too often to be found lacking in vigor and fullness of body. There is, however, to be found in a few fanciers' yards in America, an elegance in the Leghorn type that is truly beautiful.

It may be interesting to compare Leghorn types as they have been produced in America and in England. There is char-

acter and style in each, peculiarly Leghorn, yet differing considerably to the trained fancier's eye. There is more "smartness of carriage" in the American type; there is more substance portrayed in the sketch of the English type. The English judge allows of a larger comb and coarser make-up in the Leghorn, than does the American expert. The neck of the English bird carries a fuller neck-hackle and higher arch, which is, in the original opinion of many, an original Leghorn characteristic; so is the large comb as it is in all Mediterranean races.



Rose Comb White Leghorn Hen.

The fanciers of our country have produced in the Leghorn a comb peculiar to the American Leghorn—a comb of clear-cut outline and fine, firm texture, surmounted with precisely formed serrations. This comb is thin but straight on the head, from front to back; all its lines are graceful and it extends back and away from the head and neck, showing its clean cut profile, as well as does the spike terminating the comb of the English Hamburg.

The neck of the American type has been bred more slender, and to taper finely as it reaches up the head, which has been selected smaller than in the Leghorns even now-a-days in English yards. In truth the entire build of our country's Leghorn has been selected to a type far more slender than have been the Leghorns across the water, and in many cases it is noticeably overdone so much that the body is pinched or cramped of form and lacking in that substance of body which the utility bird must have.

The White Leghorn.

The White Leghorn is one of the most active and best laying fowls among all the races of domestic poultry. Its requirements as laid out by the Standard call for a bird of beautifully graceful lines. The well proportioned single comb standing erect on the male and gracefully lopping on the female, with the pure white ear lobes and red face and wattles, make a head at once attractive and indicative of vigor.

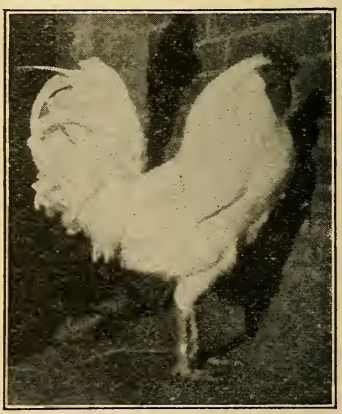
The attention they have received from the fancier and the changes they have undergone to improve their qualities as exhibition fowls, does not seem to have detracted from their value

Single Comb White Leghorn Male.

as egg producers. They are today used on more egg farms, and in greater numbers, than any other variety of fowls. They lay large, white eggs of good quality and no breed will make over a larger proportion of the food consumed into this marketable product.

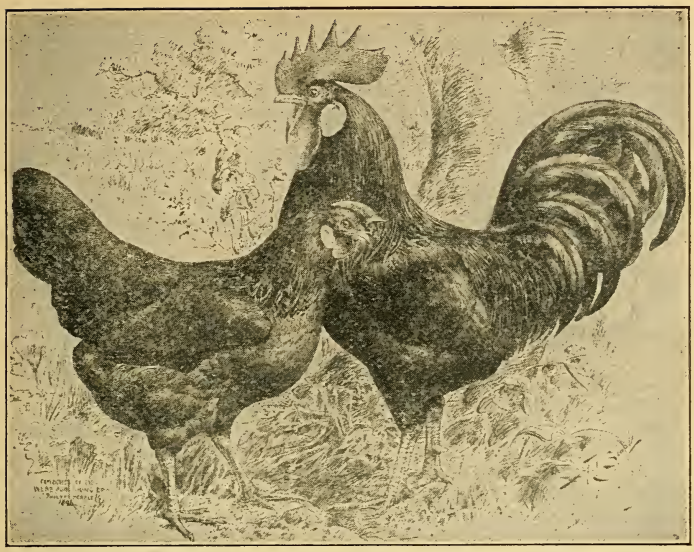
Brown Leghorns.

We do not find many fanciers of the Brown Leghorn of today writing that their favorite strain of birds, when they first kept them, would "hatch all colors, brown, black, dominique and white," yet this is just what W. E. Bonney, one of the earliest keepers of the variety, claimed. This was written in 1874, and Mr. Bonney had bred them since 1860--others who remembered them since 1855 and 1856 spoke of their red ear lobes, and wrote that some of the cocks had grey necks and that their legs were white, dark and yellow.



Rose Comb White Leghorn Male.

The American Brown Leghorn males are far in advance of those of other countries in point of precision and richness of color. In the best specimens we see at our leading exhibitions the black striping of the neck and saddle hackle accurately defined, and in some cases the red edging is of a fiery brilliancy that is exceedingly attractive, as with every turn of the bird the intensity and strength of color shows in the greenish black striping which extends downward to a point through the center of the feather. The breast is no longer "splashed with brown" but of spotless glossy black as also is the tail, the thighs and fluff and the bars which cross the red shouldered and bay tipped wings; the cordy legs are of waxen yellow, and above all this



Single Comb Brown Leghorn Male and Female.

splendid body is carried a finely chiseled head, with flashing red eyes and ear lobes in texture and color like the newest white kid. Drooping from the throat at the juncture of the beak are the pendent wattles, and surmounting all, the crowning attraction of the race, the coral-like comb with its long, finely tapered serrations. These genteel birds are the leaders for harems where beauty and industry go equally coupled, for the hard-working little Leghorn hen, though not so gayly dressed as her proud mate, has an elegance of attire quite her own.

The under color of Brown Leghorns has been carefully watched for some years past, the dark, slaty black being preserved and the "cottony" white or light gray being rejected, as this is followed by so much white in tail and flight feathers as to be regarded as a severe fault. The comb of Leghorns is selected with great care to avoid any wrinkles or twists in front, and it is quite important that the female's comb is thick and firm at the base, else that of the male hatched from her eggs will be apt to fall or be too loose, not perfectly straight and erect in its serrations. It is not, however, as some have practiced, necessary to keep straight combed hens to preserve the straight combs in the cock; the main importance is to see to it that the base is firm of texture and even on the head. Then

males can be expected with perfectly erect combs. The desired number of points or serrations on the male's comb has been a cause of much disputing, but as long as the comb is true and symmetrical, even though it may have seven points, we would not throw it aside if found on an otherwise exceptionally fine specimen. An extra serration evenly and symmetrically set on, is far preferable to even a very small side sprig or a wrinkle or "thumb mark." A perfectly chalk-white ear lobe is easy to find on a bird of weak vigor and constitution, but on a strong, hearty male with richly colored skin and plumage it is a rare quality for the show pen.

Large wide sickles that droop and are nicely curved, are also a great addition to attractiveness; greenish gloss in the breast, tail and wing bars is seldom appreciated; it is rare and a sign of good health as well.

The Buff Leghorn.

The Buff variety of the Leghorn family was brought out in England, Mrs. Lister Kay being one of the most prominent breeders of that variety. Among the first to bring them to this country was Aug. D. Arnold of Pennsylvania, who imported a large number of them at what were then considered fabulous prices. They are in every respect so far as Standard requirements go, identical with the other varieties of Leghorns and the three varieties, White, Brown and Buff, are also produced with the Rose Comb.

Black Leghorns are very handsome birds but difficult to breed according to Standard requirements on account of the demand of the Standard that the shanks and feet be yellow or yellowish black. Such color in these sections is extremely hard to get and at the same time secure a good black plumage.

Preparing Leghorns for Exhibition.

In fitting Leghorns for exhibition, it must be remembered that they are of nervous disposition and frighten easily. They must be accustomed to their pens, which should be as near as possible like those in which they will be shown. At first place a cloth over the top until, on being approached, the bird will not fly to the top of its cage. At the front a cloth should be placed to the height of 22 inches for a male, or about 20 inches for a female (coop all separately and exhibit them so). This cloth will give them only a chance to see out when standing well up. Feed them from the hand as often as time will allow, with such tidbits as they are very fond of, and make them "stretch up" for it. We are not fond of seeing a "stilty" limbed Leghorn, though one that carries a well proportioned body of the true type, at a vigorous pose, as if on the alert, we do fancy extremely.

BLACK AND WHITE MINORCAS

The Largest of the Mediterranean Varieties—Their Origin and General Qualifications and Characteristics.

To trace the history of the Minorcas in England, where our American fanciers first obtained them, would indeed be a long and difficult study. They are a very old race in England, which came from the Mediterranean side of Spain, and are the original parent stock of the well known White Faced Black Spanish.

The Minorcas were long known in parts of England as Red Faced Black Spanish, and as egg producers, have long held first place.

A good many years ago when asking an Englishman who was traveling in our country among the cattle breeders of Illinois, what race of fowls he considered the best layers in his country, he told me this breed of Minorcas was considered the best in his part of England. This was the first time I had heard of the Minorcas. A few years afterwards two pairs of them were shown at the Fat Stock Show in Chicago. I think this was in 1886. R. W. Sargent, the Captain of the Ohio of the Inman Line, and others, had been bringing them over and placing them in the yards of Eastern breeders who were delighted with the large white eggs which they laid for them, and with their early maturity and size. They were larger than other races of the Mediterraneans which we had in this country, excepting the White Faced Black Spanish which were about equal in weight. Great stories were told and written of the size and quantity of eggs which these handsome black birds produced, and the boom commenced for Minorcas until they were pretty well spread throughout American yards. Now the Minorca has settled into the hands of only fanciers who really want them for what they are worth, and are being improved and giving splendid satisfaction as egg producers.

The American breeders of Minorcas are doing their best to select to a type that is truly practical in every sense, a style that carries at once utility with beauty, a fashion that farmer and fancier can both safely adopt with every reason to expect the results will prove profitable in the highest degree. While the Minorca is to a certain extent more sober in carriage than the sprightly Leghorn, he still maintains an alertness and vigor that is possessed by all the Mediterranean types. Their early ma-

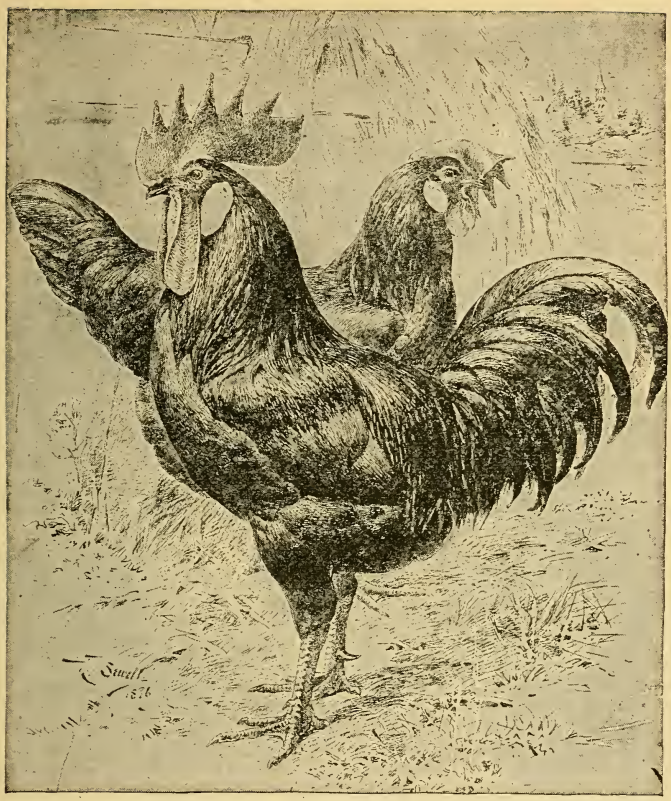
turity is remarkable. For the first six to eight weeks they grow with a rapidity that puts to shame the breeds which in as many months outweigh them by some pounds.

There are few breeds popular in the show rooms, of England or America, that have not undergone tampering with by hasty experimenters who have in their hurry to please certain judges crossed the pure race with other breeds to change or modify its type. The Minorca has not been an exception to this, but has suffered in its turn by those who have wished to lengthen its legs or tighten the feather or make smaller the comb by using stock crossed with the Leghorn and Game. This may result in a few specimens pleasing to a few, but is sure to give the mongrelized stock an uncertainty of breeding which proves puzzling and discouraging to many amateurs into whose hands it may fall. The true Minorca requires no crossing of foreign breeds to keep it valuable. The true, pure Minorca is the best Minorca, and should be selected by fanciers as well as egg farmers for its intrinsic value and elegance of form and carriage.

True Minorca Shape.

The true type is a long, squarely made body, rather angularly put together about the legs and tail, although more rounded about the front of the body and neck. Most fanciers desire the comb as large as can be kept firm and regular in the male. In the female the size of comb is in proportion to her sex, turning over without wrinkles about the front and the number of serrations equal to those of the male. The comb should extend on the front of the beak enough to apparently balance well and look in harmony with the elongated rear, but not to that extent which might be illshapen or be in the way when the bird eats from the ground. The ear lobes should be large, smooth and free from folds, and pure white, not yellowish or in any part tinged with red. The wattles are too often wrinkled at the joining of the beak; wattles which fall smoothly give a rare touch of elegance to a bird for showing. The carriage of the head and neck has much to do with the appearance of the wattles. It must of necessity be well up or the wattles hang in folds upon the breast in poor character. If any claim to market quality is to be sustained by the Minorca, the depth and fullness of breast must be maintained and improved. In fact the birds are stronger and better in vigor with good substantially formed breasts.

The Minorca is a long, flat-backed bird with the back coming at an angle against the tail, and underneath at the rear appearing long and square, not so tightly tucked up as some breeds appear which are fairly good layers. The tail of the Minorca is set on well back, and carried only moderately up; some prefer about forty-five degrees. It should not be so large for the bird, nor so much spread as in the Leghorn.



Standard-Bred Single Comb Black Minorcas.

The legs should appear to be set on at about the middle of the bird, and should stand wide and squarely with toes well spread apart. The legs and toes should be leaden black in young birds, and bluish black in adult birds, and should be sinewy and strong, and the hocks rather bare, not much covered with the plumage of the thighs. The skin is pinkish white, no tinge of yellow showing in any part of the body.

White Minorcas are essentially the same as the Blacks except in color, though the Standard calls for one pound less weight throughout. Both varieties of Minorcas are produced with rose combs.

WHITE FACED BLACK SPANISH

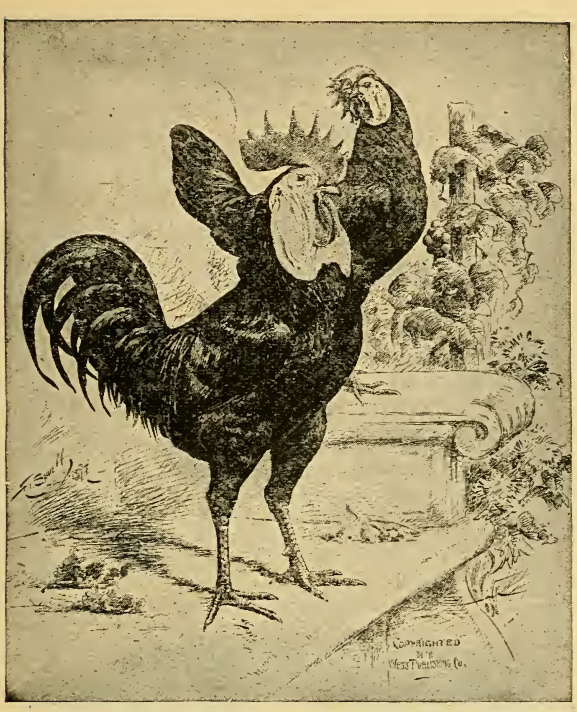
A Breed Having Many Remarkable Characteristics and that Was at one Time Very Popular.

The Spanish is distinctively a Mediterranean race of fowl. The English fanciers believe that they were brought into their country during the middle ages by the Spaniards, although this type of fowl, in form like Black Minorcas, Andalusians, Anconas, and others closely resembling them—have been found all along the southern coast of Spain, France and Italy, and even in some of the northern countries of Africa. These and the well known Leghorn families, there can scarcely be a doubt, all sprang from a common origin. Long before the poultry shows, as we know them, had become a feature, the Spanish were very popular fowls in and about London and were exhibited by societies for their promotion.

There are very few birds which can compare favorably with the White Faced Black Spanish in style of carriage or aristocratic appearance. Their elegance is of that rare kind, only secured by the most select fowls, artfully bred and reared. It is true that the highest type of White Faced Black Spanish are apt to lose in points of vigor and productiveness from the fact that their fancy qualifications are of a nature requiring constant recourse to a system of in-and-in breeding. The instant any unrelated strain (even though it be quite equal to the stock to which it is brought) be used in breeding these extreme and artful attainments are to an extent lost and the breeder is compelled, if he would keep up the fancy development to return to very close matings again.

The illustration is of the extremely bred, large faced type, the male possessing the largest face we found at the English shows. He was the second prize cockerel at the Crystal Palace.

Birds with faces so large as this bird has, as they develop and grow old, often require a deal of care and attention to prevent the white crowding the eyes. At times they are cut to lessen the overhanging, fleshy formation; in other cases tied up by threads over the head at the back of the comb. The white of the face is injured in its purity by the wind and sun. The face needs often to be washed, sponged and powdered (with oxide of zinc); in fact the toilet of one of these long pedigreed aristocrats is something only the most ardent of amateurs would



White Faced Black Spanish of the Extreme Large Face Type.

attempt to undertake after he has once seen all that it requires, even to the plucking of the many small hair-like feathers which persist in growing from his wonderful white kid-like face. But there are not a few fanciers who possess the patience to train and prepare even such a fastidious specimen as the white-faced Black Spanish.

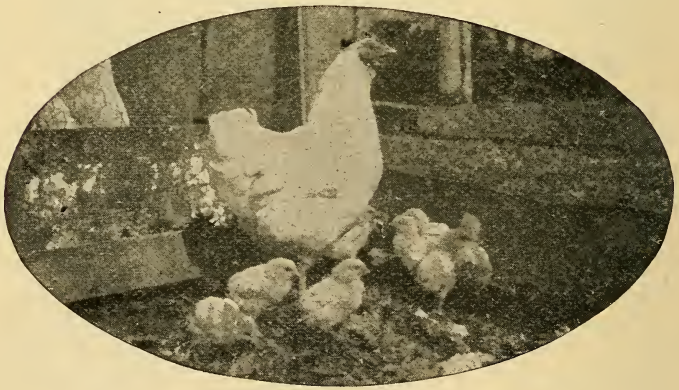
The style of the show Spanish is far more lofty and gamey of carriage than that of the Minorca, which we are accustomed to see at the present day. They are tighter feathered and more muscular appearing. The combs are hardly so large, although the difference in this, if any, is slight. The plumage of the Spanish is a brilliant black, very metallic on the upper parts, though not so green as in the Black Hamburgs or Langshans. The beak is dark horn color, and the legs bluish black, fading

to light bluish slate as the birds grow old. The skin bluish pink to white. The Spanish fowl are not considered a desirable fowl for the table; only for their beauty and the production of their large white eggs are they so much esteemed, but this is enough to those who have seen them and the eggs they so generously supply.

Blue Andalusians and Anconas.

In the same class with Leghorns, Minorcas and Spanish belong Blue Andalusians and Anconas. The Andalusian derives its name from Andalusia, a province in the southern part of Spain. It is a graceful bird, somewhat on the Leghorn order of build but is larger than a Leghorn, though smaller than the Minorca. Its color of head points is the same as that of the Minorca but its plumage is a slaty blue and bluish black throughout, with shanks of the same shade. Except the Minorcas and Spanish, it is the only Mediterranean breed supplied with a weight clause in the Standard.

Anconas are required to have the same shape as Leghorns and are about the same size, as a rule, as that breed though occasionally larger ones are found. Its plumage should be a greenish black with each feather tipped with white, the effect being one of even mottling all over the specimen.



THE DORKING FOWL

One of the Oldest of the Present Races of Domestic Fowls and Prized by the English for Its Remarkable Table Qualities.

It is not the history which the Dorkings possess that to-day makes them of value to American and English fanciers. Yet it will be interesting to know in what estimation they were held by old writers.

Mr. Harrison Weir, England, said: "Take our old English farm fowl the Romans brought into England nearly 2,000 years ago; judging from the bones found, they are the same kind of birds today as then. For centuries and centuries they have been most carefully selected, and bred to a type. Take drawings as far back as you can get them, and there stands the king of fowls, bright, strong, full of life and grace, fearless and bold—as he stands today—a bird of birds, a fowl without a peer. Look around at all the new mongrels that people call advance and see if there is one that can compare with his faultless form, his high lineage and pride of going."

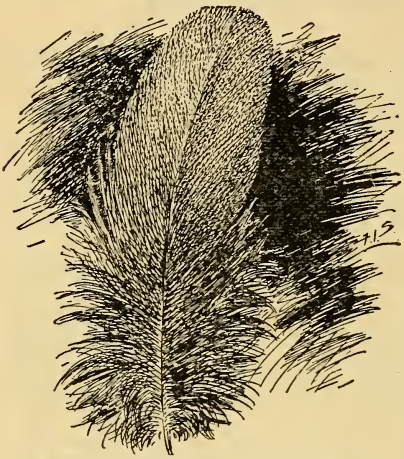
That the Dorkings were brought to England during the invasion by the Romans, all writers seem to perfectly agree, and that next to the Game fowl the Dorking is probably the oldest of the pure-bred varieties.

The varying styles and changing fancies for feather breeding have injured the purity of the Whites less than the Colored and Silver Gray varieties, which are shown in many types not to the credit of the true old race of Gray Dorkings. The only strife in points of color to obtain in the Whites is a "chalk white" plumage, free from the objectionable yellowish tinge, and the white legs, which are desired, showing as little color of any kind as possible. With the exception of White Game blood introduced into some families of Whites, we learn of no contamination of their purity since the Romans first brought them to British soil. This cross occasionally crops out in a single comb, the absence of the fifth claw, or the yellowish tinge in the skin or feet. All these faults should be carefully avoided, and birds showing them culled out—by those who pride themselves in the pure old race.

The Silver Gray Variety.

The Silver Grays have been the most popular in this coun-

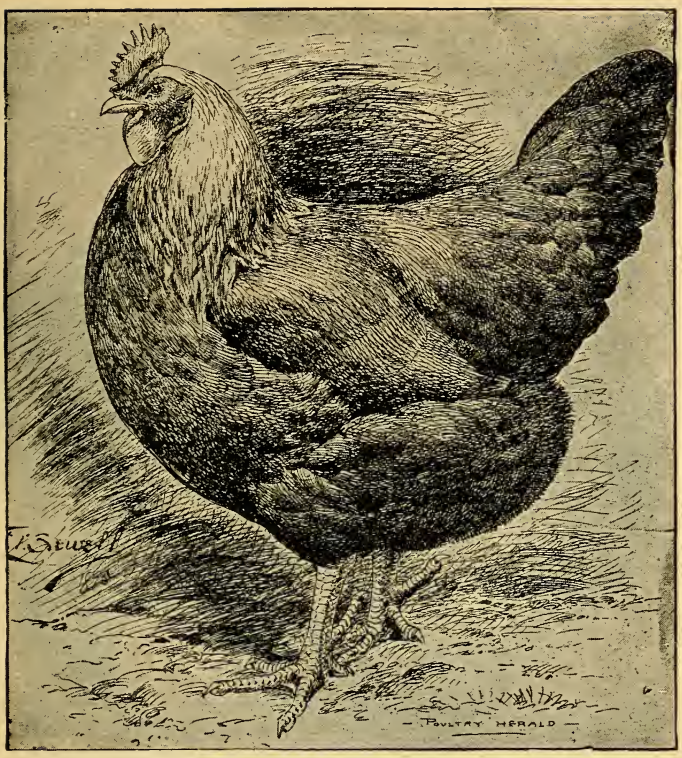
try. It is the truest of the dark varieties, and receives its name from the finely mixed steel-gray coloring of the female. We have selected to illustrate this variety a portrait sketched at the Counties Royal Agricultural Society's Show at Redhill, Eng., in 1892. The hen won first and special. She was a deep, full-bodied hen, of good substance, large and heavily meated where meat on a fowl counts.



Silver Gray Dorking Female Back Feather.

The ideal plumage of the Silver Gray Dorking female is a very difficult one to obtain to such a nicety as is produced in the best show specimens. It is that evenly broken color, giving a steel gray effect, known as "pepper and salt." In the earlier Gray Dorkings the plumage had more the appearance of rich, finely mixed silver brown; their necks were silver white, and breasts pale salmon; but for many years the selections by those admiring the lighter gray, have been towards the very light.

The cock's plumage of the Silver Gray possesses a purity and beauty of contrast belonging only to a race very nearly agreeing with natural selection and of long years' breeding. Although the silvery whiteness of the hackle and back gives way to a yellowish tinge if left to itself, it takes nice selection to keep that character to such a degree as the present fancy requires. The standards of to-day demand that all the section of surface white—the neck, back, wing bows and coverts shall be of the purest silvery white; the remainder the soundest of glossy black, excepting the narrow edge of the flight feathers (which are white); sound, glossy, greenish black breast, tail and wing bar, with the wing bow and coverts pure white; over these droop the silvery saddle and cape-like hackle. Then to this add thighs and fluff unspotted and you have a dress fitting to the faultless form of the old fowl of the aristocracy of England. Such a plumage is rare yet showy in the extreme, when obtained. Very few combine the two extremes in color. The common conditions are, either the hackle is tinged with straw color if the breast is lustrous or the breast is lacking in brilliancy where the hackle is seen pure. Shade will protect many and preserve

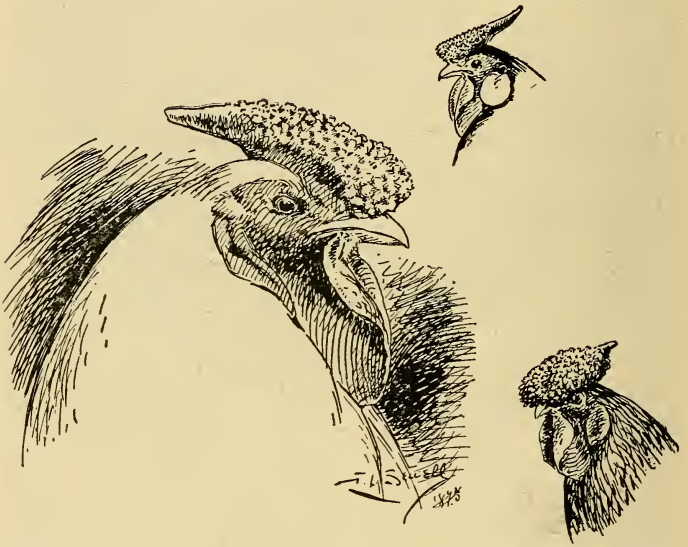


Silver Gray Dorking Female, Bred and Exhibited in England.

their whiteness, but it is the male whose plumage proves proof against the sun's influence that you most value, and whose stock can always be most depended upon to keep the desirable color for the exhibitions.

The rose comb of the White Dorking has a character of its own —it is neither the finely cut comb of the Hamburg, the close fitting rocker topped comb of the American Wyandotte, nor the unwieldy overgrown rose comb of the Red Cap, but a substantial-looking, well-set-on, medium-sized comb, not quite straight over the top from stem to stern, well above the eyes, calculated to give a bird a noble appearance. The wattles are well proportioned, and so are the lobes which are red, just tinged with

white. This feature is looked upon as a point indicative of true blood. The solid red ear lobe in the Dorking, coming from outside influence, is not at all to be desired; many we know have ignorantly judged against this white tinge in the ear lobe, as they would if found in the American class, but the oldest and best authorities value it as pointing to rich blood of the true



Rose Comb of the White Dorking Compared With the Rose Comb of the Leghorn and the Rose Comb of the Red Cap.

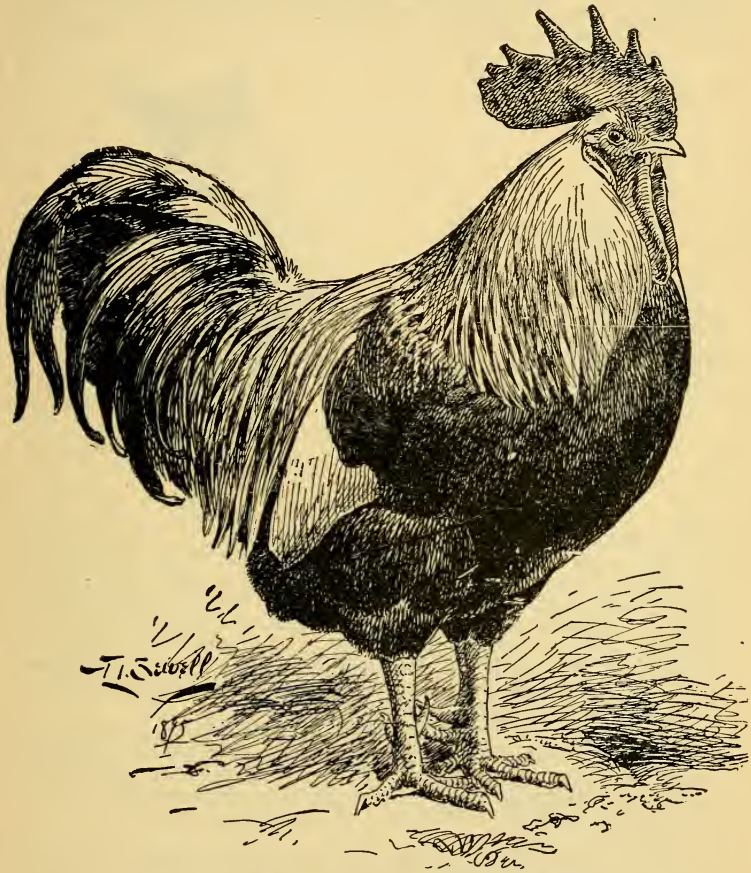
old race. The whitish lobe of the Dorking tells of its early maturity, good laying qualities and tender, fine-grained flesh.

Colored Dorkings.

The Dark or Colored are considerably the heaviest of the several families of Dorking. They are the largest class of Dorkings shown at the leading English shows.

The Colored Dorkings in England are bred very dark, so that in many specimens we saw there a beetle greenish gloss was noticeable on the back and wings of the females. This is very rarely seen in this country, except in lately imported specimens. The coloring of the back and wings of the female Colored Dorking is a rich brown, finely intermixed with black, a light tawny buff shaft, and shading to very dark at the tip and sides,

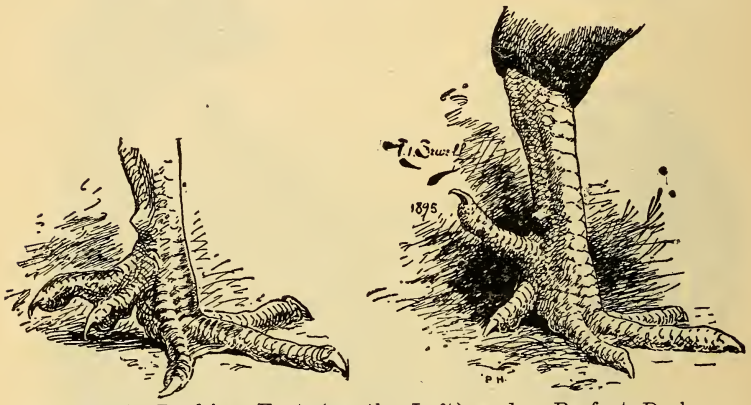
forming a laced appearance on the lighter specimens. The breasts of the hens are dull salmon, shading darker at the sides, near the wings, as though the coloring of the wings overran into the shades of the breast; all grows darker towards the tail, which



A Famous English Silver Gray Dorking Male.

is brownish black. Altogether it is a rich, pleasing, substantial color with a good, common sense look about it, and calculated to stay.

The very darkest shades are said to have been brought about by an oriental cross in about 1858. Some think the old Sussex fowl had something to do in bringing the rich, dark brown shades into the plumage. The oriental cross is said to have added weight, and for a long time in England preference was given at the shows for the coarse birds. This has, however, long since



A Faulty Dorking Foot (on the Left) and a Perfect Dorking Foot.

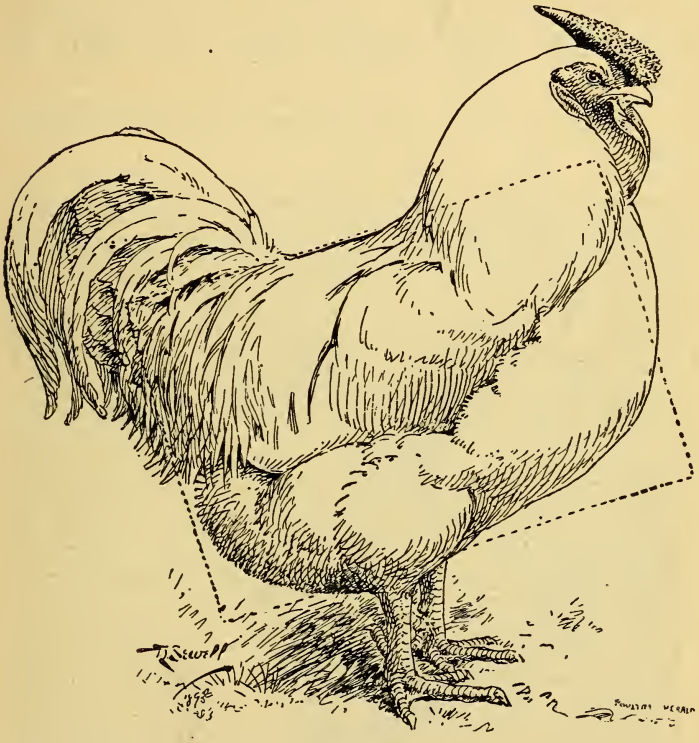
been counted a sad mistake, and the Dorking is now bred for the fine bone and delicate flesh of the old race. The cross brought another serious blemish—the dusky coloring to the feet, which is carefully discriminated against by the best breeders and judges. All now well know that the color of feet and legs and fineness of bone are good indexes to the quality of skin and delicacy of flesh, and as the greatest claims for the Dorkings' economic value are their table qualities, these are points worthy of consideration.

It may be well to notice the peculiar formation of the Dorkings' foot. They have been known for centuries as a five-toe race. The feet should stand squarely upon the ground and well apart; the fourth and fifth toes well separated, the fourth, or back toe resting well upon the ground and the fifth curving upward and away from it.

The accompanying illustration of what has been considered one of England's best Colored Dorking cocks, of recent production, can tell more than a lengthy description of the breed. American fanciers may think it strange to see white in a black tail; however, in England many fanciers consider it a feature of additional "smartness" of color; in the flights also a couple of

white feathers are not a blemish, but if gray or white should be indiscriminately placed in the wing flights, it would be counted as a weakness of color, and faulty.

The neck and saddle hackle of the Colored Dorking cock is



The Perfect Dorking Body With Dotted Lines Showing Its Near Approach to a Parallelogram in Shape.

striped with considerable precision and strength, and on the wing shoulders white and black are mixed, the white prevailing. The neck tapers up gracefully to a well formed head of moderate size. The face is quite clean of feathers; the eye clear and bright.

The Dorking's comb, in this country, has been much modi-

fied by a mistaken standard. In England both comb and wattles are desired of a size considered of fair size for a Leghorn (in this country), extending back but not at all down towards the neck, which is looked upon as a very coarse point.

The wings are strong and good sized, set on in a fashion to add roundness to the body. To extend the apparent length of the bird, the tail should be carried well back, not higher than forty-five degrees, and furnished with full, wide sickles and hangers.

The form of the body has been pictured with the diagram of an oblong figure over it. This expresses well the ideal Dorking form.

Well-Bred Red Caps of English Production.

RED CAPS

A Breed of English Production Known for Years in that Country as Unrivalled Layers.

The Red Caps are a hardy race of fowls which came to American breeders from Derbyshire, England, where they have been known for many years as unrivalled layers of richly flavored eggs. The true value of these fowls, as egg producers, is very little known in this country. A few years ago we used to see them at eastern shows and they bid fair to become well known and appreciated, but of late they have been exhibited but little.

Fowls with the disposition of the Red Caps should have free range to give the best results, and where this can be given them they will undoubtedly compare favorably with the two famous egg producing breeds, the Leghorns and Minorcas.

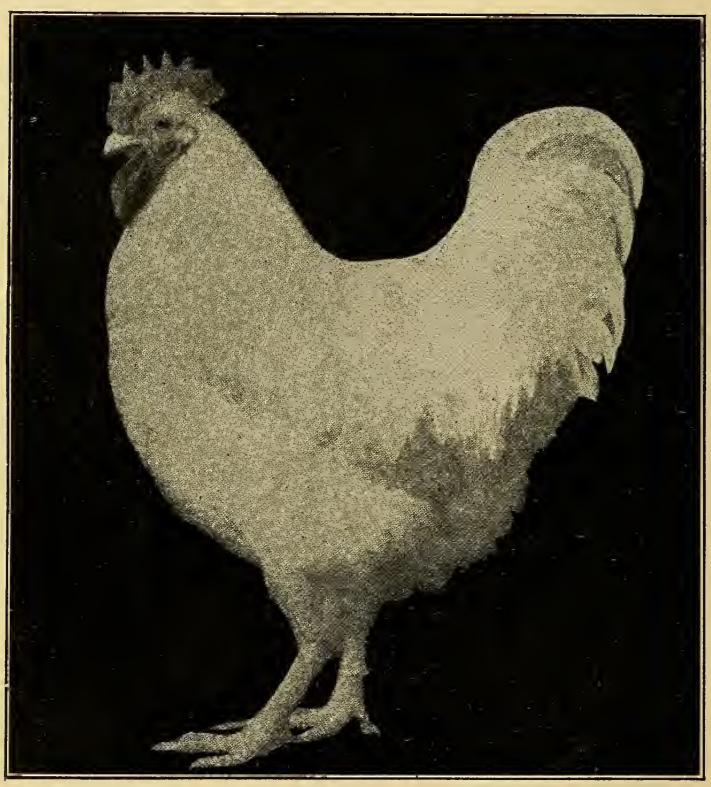
It may be interesting to note the fact that so many of our best egg producing breeds of poultry are possessed of large combs, of one form or another, and that the old prevailing theory is that a large comb points to great egg producing powers. This idea has not grown from mere speculation, but from observation by those who have kept poultry for profit. But the great majority of American fanciers follow the prejudice in favor of small combs and nearly every breed that has been imported, has undergone the process of selection for combs, sometimes non-typical of the race.

The Red Caps have been roughly described by some Hamburg fanciers as coarse Golden Spangled Hamburgs, and truly in plumage they do resemble a carelessly bred Hamburg, having the old time, moon-shaped spangles on a dark reddish bay ground color. The indications might lead us to believe that both the Red Caps and the Golden Spangled Hamburgs trace to the same ancestry. There was a time when the Hamburgs were known as Lancashire Mooneys, a name suggesting the moon shaped spangle of the Red Cap female. There is a wider difference in the color of the male and female of the Red Cap than in the Hamburg, the breast of the male of the former being often solid black, and the tail also is unbroken in its glossy black color, while the surface color of the Hamburg has been bred into a large spangle at the end of the feathers in both sexes. The ear lobes of the two races, as they are now, are entirely different, the Red Cap with pendulous red lobes, the Hamburg with large flat lobes of spotless white.

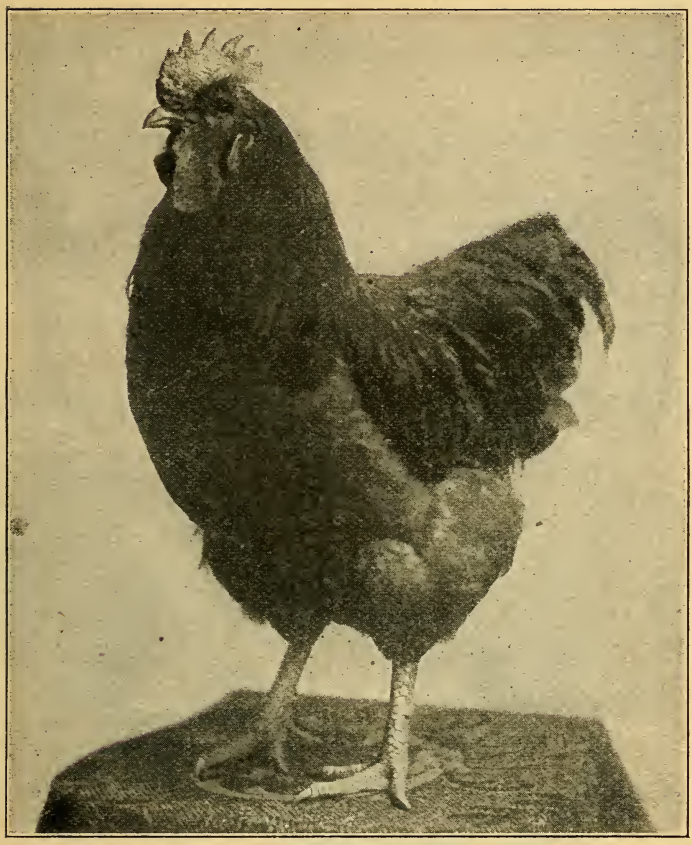
THE ORPINGTONS

An English Breed Comparatively New in that Country Which Has Rapidly Become Popular in America.

The late William Cook is credited with being the originator



Single Comb White Orpington Male.



Single Comb Buff Orpington Male.

of the Orpington breed, though some English authorities claim that he did not make up the original variety, the Buff Orpingtons, but simply took it up, brought it out and made it popular. In any event he was very closely identified with the breed from the beginning and made up and brought out the newer varieties, including the Whites and Blacks and the Rose Combs of all varieties. Orpingtons began to be bred in America shortly after 1900.

Orpingtons are comparatively large fowls, exceeding the

Plymouth Rocks in Standard weight and are more compact in build. In manner of feathering they approach somewhat the Cochin type. Their compact build enables them to carry a great amount of flesh and they are claimed to be good layers. Their skin and shanks are white with sometimes a shading of pink and this fact alone is somewhat detrimental to them in the more extreme of American markets where yellow skin is demanded.

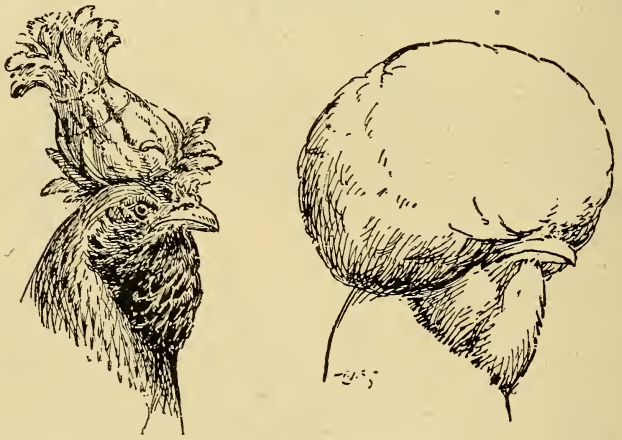
The principal varieties are the Single and Rose Comb Buffs, Single and Rose Comb Whites and Single Comb Blacks, though a variety termed Jubilee, with a plumage of brown, black and white, intermingled, is gaining some ground.

THE POLISH RACE

The Handsomest of the Ornamental Classes of Fancy Poultry —The Principal Varieties.

Among the most persistent layers and the most ornamental of fowls, can be counted the Polish—a very old race—to which the Dutch have probably paid most attention.

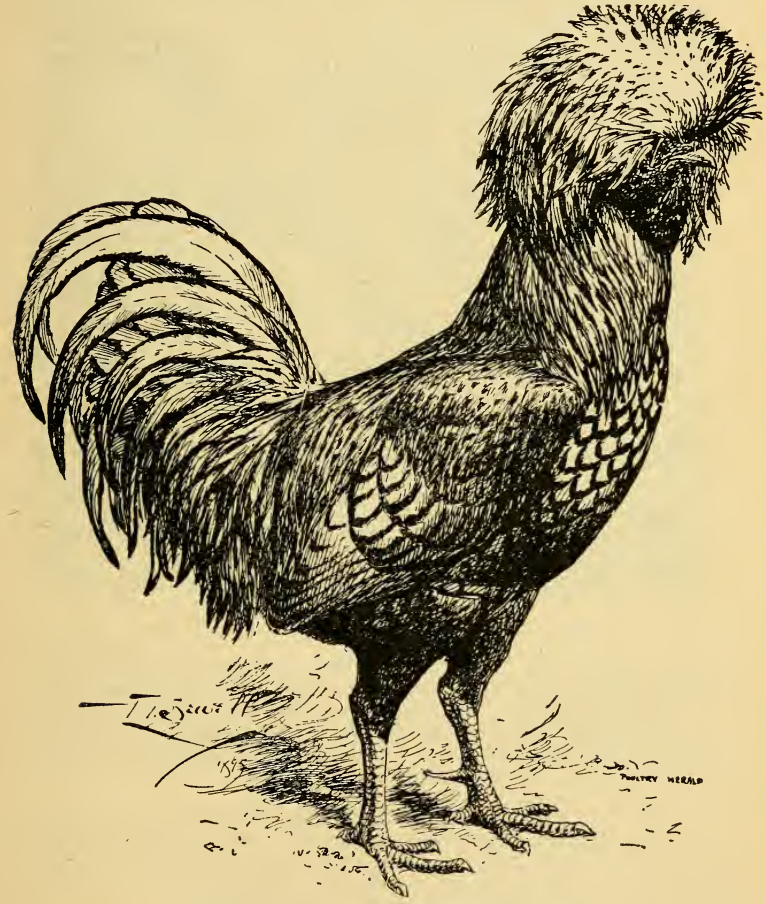
The White Crested Black is said to have been originated by the Hollanders, and for a long time a strain of Black Crested White fowls was carefully preserved by a number of Dutch fanciers, but the expense and the difficulties of retaining such a



Drawing Showing the Method of Tying up the Crest of a Polish Male to Protect it When Shipping to Shows.

contrary plumage proved too discouraging to keep it up. We have of late heard no more of effort to breed it, to this combination of color.

The White Crested Black, although lacking in the beard and muffs of the true Polish, is unusually striking, with such a contrast as the white crest and jet black body presents. It has



A Typical Silver Laced Polish Male.

Some Excellent Polish Heads and Crests.

been a favorite in America for many years, and is likely to be valued higher as it becomes better known and understood.

The plumage of the White Crested Black is more delicate in texture than that of the bearded races, and the crest falls closer to the neck, giving it shape of crest peculiarly its own. It is fuller in the top and drops straighter at the sides than in the race of laced or white.

The Buff Laced, White, Silver and Golden are larger, and coarser in body and plumage, than is the White Crested Black. The pure White Polish is a truly fine looking fowl in the show pen, although its beauty is not seen at its best until out on the green lawn. Then the bird shows off exquisitely.

The Buff laced, with many fanciers, divides honors in richness of plumage with the Golden—one is of soft buff with white lacing, the other of fiery golden, laced with black; and each has its peculiar charm that demands admiration.

The largest crests we ever saw were developed on the Silver laced variety, and we believe they are capable of carrying the greatest abundance of feathers in this section. The largest crest we know of measured fourteen inches from side tip to opposite tip, when held out, and was as large as a derby hat, when fallen about the bird's face.

An idea of how these birds' crests were protected for their journey to the show, may be of interest. The illustration will best tell the story. The crest is drawn up above the head and tied with strong, soft thread, passing the thread through the crest several times with a needle, so that the tie cannot slip off, or get out of place. This will protect the crest from being mussed and broken, and will also enable the bird to see its food in the coop. A little care at the journey's end will put the crest into nice shape again to go into the exhibtion pen. A hen's crest of good shape should form a pawpaw-like covering to the head, drooping well onto the muff and full and round on top.

Polish will be found capital layers of fair-sized white eggs. They are non-sitters. As table fowls I would select something else.

As the crest of the Polish is its great point of beauty, so also is it the greatest annoyance to those who do not understand its proper handling. The crest must be kept out of the wet. More sickness comes to the Polish through neglect of this than from any other cause. In fact, the only sick crested birds we ever had were ailing from cold in the head on account of being compelled to be in a draft after their heads had become wet. They should have access to dry shelter in all weather, and in rainy seasons they are better not out at all, except under covered runs.

The drinking fountain for crested fowls of all kinds should be so constructed that only the beak can be put to the water.

The Polish will most please those who love to gratify a fancy for extreme development of the unusual oddities of the poultry yard. Really good Polish are rare and it is only those that are crowded full of good plumage and character that will be prized in the best exhibitions by critics, and those in search of the extraordinary. They are among the races which require the most artful handling to develop well.

THE HAMBURG FOWLS

The Leading Representatives of the Dutch Breeds, Prized for Their Beauty and Possessing Much Practical Merit.

It is not a common occurrence for fanciers investing in good Hamburgs to lose money on them. The Hamburgs are always beautiful and interesting, and at the same time very productive of eggs.

An English writer tells of how in that country they have fallen into the hands of the "professionals" alone. That is because it takes such artful skill to produce birds of the breed that are good enough to meet success at their shows—they have been bred so fine in that land of skillful breeders.

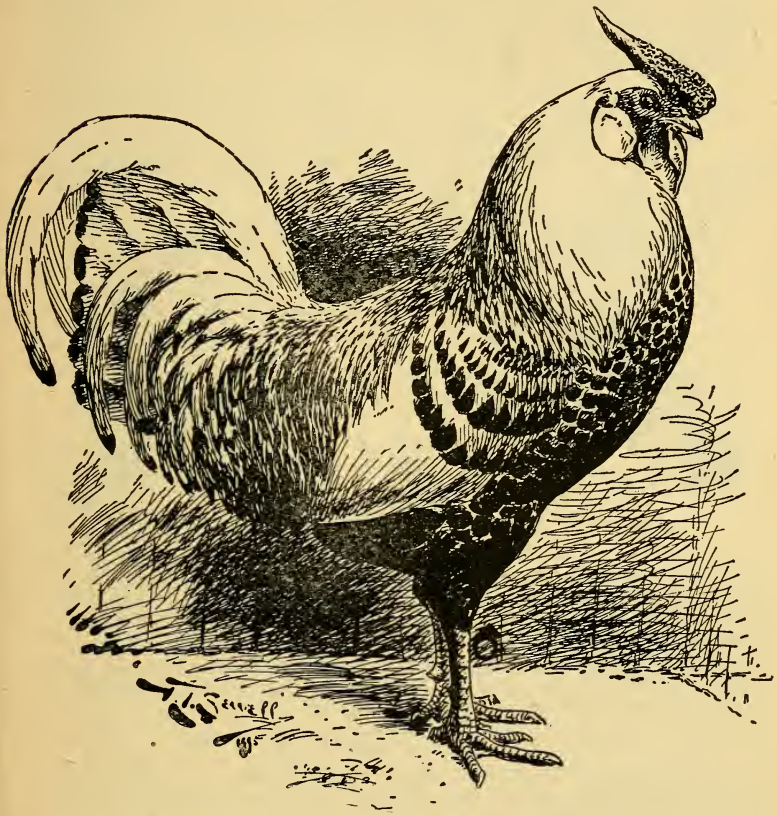
The subject of our leading sketch—a winner at the "Dairy" in 1892—is of the race that first inspired exhibits of fine fowls. The Silver Spangled Hamburgs were then called "Mooneys." "Pheasant fowls," etc., and the fanciers of Lancashire used to meet with their "Mooneys" to compare pullets, in some accommodating inn or tavern.

The strife was to get the largest and glossiest "moons," or spangles as we now term the spots at the end of the feathers. There was an old strain of "Mooneys" that produced "hen tailed cocks" (or hen feathered). These birds it is said possessed extremely large spangles and in years afterward when winning at shows in England had become so profitable—many searches for birds of this old hen-tailed family were made by Hamburg breeders and exhibitors. It has been considered by good authorities that this breeding from hen-tailed males had no good effects on the race for egg production, and it has been found in other breeds with a like characteristic, that with the continued use of these short feathered male birds (which are often nearly or quite sterile) their stock is almost non-productive.

But the Hamburg, in spite of all the close inbreeding it has in many cases undergone, can do well toward maintaining its record as a layer. The early home of the Hamburgs is credited to Holland and Belgium, but the show Hamburgs as we know them today, most certainly owe their fine feathers at least, to the energy of the British fanciers and the Lancashire breeders claim the chief honors.

The Silver Spangled Hamburg has no doubt had as much

study put upon its fine points of color and form by its admirers as any race of fancy fowls in the world can boast of, and today it is as precisely bred and trained for the show rooms as any race extant.



Silver Spangled Hamburg Cock; An English Winner.

There was a time when a bird with plumage furnished with spangles like Fig. 2 would have been valued in Lancashire and even narrow crescent shaped spots were considered handsome, but fancies and whims have long since changed and the style demands a "full moon." It was several years ago when asking

a fancier, who had led for some time with the Spangled Hamburgs, what he did with those birds showing the crescent shaped spangles, he shortly answered, "we eat them." Such fowls are not worthy show Hamburgs, they belong to the free range of the farm yard, where they will be valued as layers. The Hamburgs for the show room should be up to the present day perfections.

Figure three represents a tail-proper feather showing a very common fault, the mossy peculiarity in the web where it should be spotless white.

All the Hamburgs are best handled where they can have free range; one writer advised no one to venture in them unless they can be so reared. With such conditions and proper housing

Sample Feathers From the Silver Spangled Hamburg

and feeding strong constitutions can be counted upon, wide-awake and sprightly-carried show birds with enough vigor to put good feeding into glossy coats and bright combs, and to do justice to the egg baskets when the shows are out of season.

The Golden Spangled variety is essentially the same as the Silver Spangled, except that the white of the Silvers is replaced by the deep, reddish bay on the Goldens.

The Penciled Hamburgs.

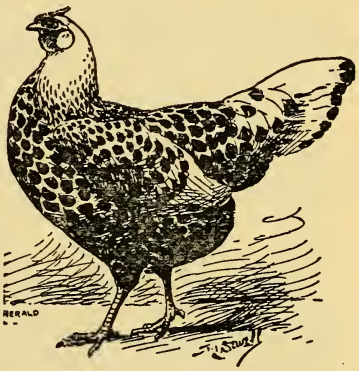
The Penciled varieties, Golden and Silver, are claimed by some authorities to be the original Hamburgs. They are less robust in build than the Spangled varieties and, as a rule, not as large.

The Golden male has a body color of reddish bay with black in the primaries, secondaries and coverts of wings and with a greenish black with an edging of reddish bay on sickles and coverts of tail. The female has a hackle of bright reddish bay and a body plumage of the same color with each feather crossed with regular, parallel bars of greenish black penciling. In

reality these dark bars do not look at all like penciling but more like the bar of a Plymouth Rock. The Silver Penciled Hamburg is like the Golden but changes the reddish bay for white.

White and Black Hamburgs find favor with those who like the Hamburg characteristics of shape, etc., but prefer a solid colored fowl. In other ways except color of plumage they are like the penciled varieties.

The form of the Hamburg is by some confused with that of the Leghorn, but a comparison of the two types will reveal that the Hamburg possesses more rounded lines, shorter head, rounder skull, more prominent eyes, a longer appearing body, for the size of the bird, more drooping and broader wings, lower carried and wider spread tail, and a very noticeable characteristic unusual for the cushion or saddle.



Silver Spangled Hamburg Female.

This is a point looked for by fanciers and preserved, as its form is an advantage in displaying the spangles, showing more length of the feather tip, than does a concave sweep to the tail.

The rose comb of the Hamburg also has a style of its own, square in front, rather flat across the corrugations of the top, in no way drooping onto the head. Solid and firm on the head, and finishing in the beak with a smooth, finely tapered spike, which turns gradually and slightly upward, it is a smartly carried, coral-like comb that gives a fine bit of contrast in color to the clear black and white plumage. The wattles are not very long, more rounded than is usually seen in Leghorns and not so pendulous or loosely hung. The face is rounded and often is seen on it the dark purple or black enamel giving use to the term "gypsy faced." The ear lobe is large and should be free from wrinkles, set on flat to the face, not standing out much or in folds—its color equal to a new white kid glove. The legs and feet are light bluish slate, are fine in bone and very trim and well-formed. The expert English fanciers favor in the show Hamburg that sprightly tip-toeing, or bantam-like walk, and encourage it by training.

We might say that our model for the male bird in the present article was overcrowded with good plumage, if such a thing

could be, yet we have seen some foolish judges who would not recognize a bird's quality that was over wealthy in quality. Here it is seen in the spangles being so large and the feathering so profuse that the spangles seem "trespassing" on each other's ground, or, as might be considered by some faulty for a show bird, overlapping. But such a bird among American Hamburgs would be worth his weight in gold. You could pluck from any spot on his breast such feathers as number one. The importing of a few such specimens would revolutionize Hamburgs in our country and awaken the interest in the old race on which has been spent so much artful breeding.

THE HOUDAN BREED

The Most Popular of all French Varieties and Held in High Esteem as a Table Fowl.

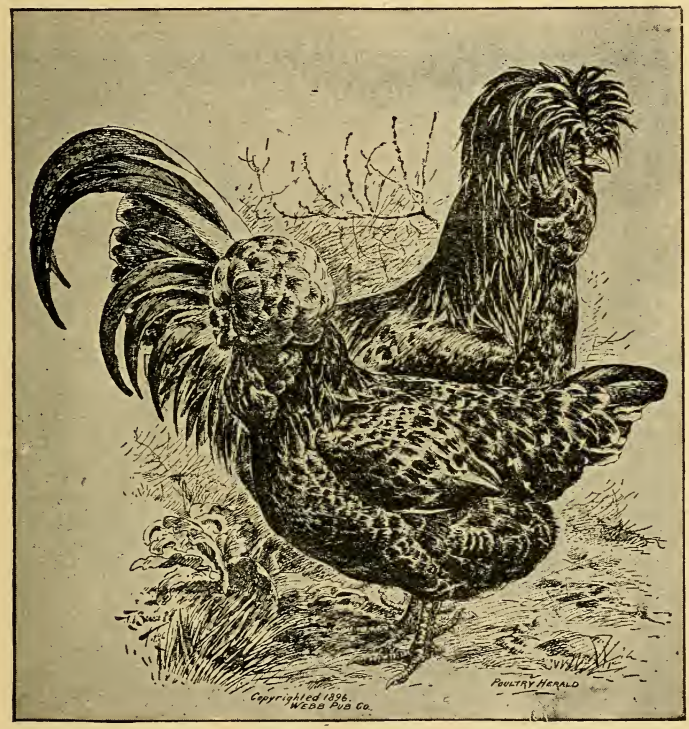
The Houdan: To the Frenchman, par excellence, as a market fowl, and the leading race of France according to American tastes. The Houdan has changed very little with American fanciers for twenty years. It is one of our earliest fancies and not by any means the least interesting or profitable.

Recent visitors to France, representing the London Feathered World, inform us: "All we can write of the Houdan at Houdan is that the type of comb is uniform, it is the true leaf, or butterfly comb we have always upheld. The two wings exactly correspond to each other, held well apart by the little twig or excrescence running up the center. The comb a la Francaise must be perfectly straight on the head, fine in texture, moderately serrated and free from spiky excrescences; would that we could have brought back one of these combs without the rough, puny crests; the straw, nay, yellow colored feathers; the small, tucked up bodies! It was impossible."

We trust the writer of the above did not see the best Houdans of France; we have seen fair specimens of the breed in their native country, though we must confess that they were not equal to the best models we found in the show rooms of England or America.

As a representative of the fancy show points desired by the English breeders in the Houdan, we cannot offer better than the portrait of Mrs. T. Aldworth's winner of the Lord Mayor's cup at the Dairy Show, England. The London Stock Keeper said of him: "The bird himself may, so far as correctness of shape is concerned, be regarded as one of the finest specimens of his variety that has yet appeared. The chief ex-

ception, if not the only serious one, that can be raised against him is his comparative smallness of size, but his shortcomings in this respect are amply compensated for by his feathering, shape, style, and excellent comb, the latter point being one of the most perfect that we have seen in a long time." It will be noticed that in the above special attention is given to the perfect



A Pair of Standard Houdans.

form of the bird's comb and also that this "leaf" comb is the same original type of comb selected and so closely adhered to by the French for their favorite Houdan. We do not know just at what time the Americans caused a change in the Houdan standard of comb, but it is to be regretted that many have been led to believe that the comb of the Houdan could be bettered by

selecting it, like that found on the Polish, viz.: the very small V comb. We look for the day when the Houdan fanciers of America will recognize the mistake, and that judges will encourage the true "leaf" comb of the true Houdan again.

The Houdan, like the Dorking, must have well-shaped toes, a fifth claw that ends downwards is a poor thing for the bird's comfort, continually being bruised and causing the bird to suffer.

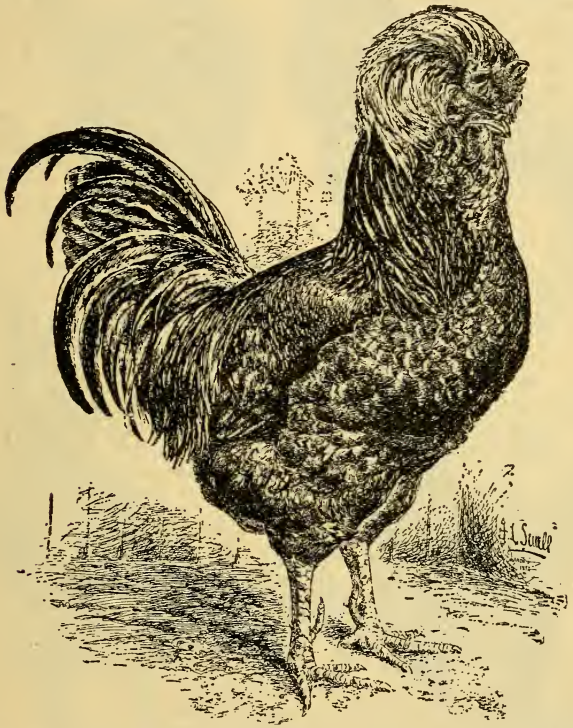
The French claim for their Houdans that they will dress one-fifth heavier in proportion to their size than any other kind of fowl. This only can be realized by those possessing deep keeled, long, plump breasted Houdans with a comparatively small amount of offal. Their flesh must be very fine grained, the skin smooth and white.

Houdan Method of Fattening.

We quote from the Feathered World to give an idea of the Houdan method of fattening these birds: "Plenty of heat, plenty of food, and perfect dryness, seemed the three objects in view. A simple, strongly built wooden house, which served also as a storeroom and food mixing house. This also was straw lined round the interior. On the floor two movable baskets a yard in diameter, and about eighteen inches high, contained six to eight cockerels and pullets respectively, from ten to sixteen weeks old, undergoing the fattening process. We were told that three weeks of such confinement with proper food added two pounds weight, and on our own authority we must add "of fat." Chickens extracted from either basket, certainly handled heavier than one would expect at such an age. Taken from such close quarters one was not surprised to find the feathers round the breast and thighs in a soiled condition, though the baskets were cleaned every two or three days. The skin beneath was fine and smooth, and the flesh a bluey white, and perfectly free from insects. The food consisted of finely ground barley meal, reduced with skimmed milk to a fluid state, and passed into the crop of the fowl through a tin funnel inserted into the gullet two or three times a day; the operation of feeding was performed more for our edification than for the unhappy chicken, and so quickly withal that the kodak could not snap it. To secure the desired flesh whiteness, death must be effected by bleeding. In this district a deep cut is made in the front of the neck just below the junction of the mandibles, severing gullet and windpipe and some of the arteries and veins. All the blood was wiped away from the wound before the fowl was carefully and slowly plucked. The primaries and tail feathers were left untouched. Then the fowl was subjected to several hearty smacks from a piece of wood shaped like a cricket bat, but very much thinner and lighter, administered on the back between the

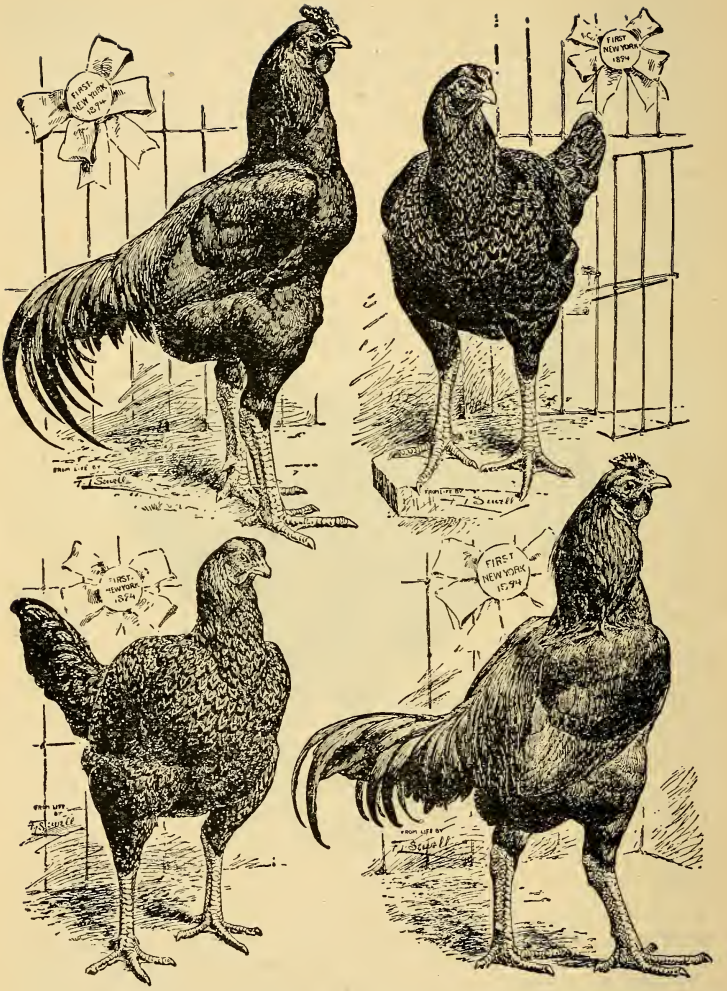
shoulders, on the breast and finally on the rear. This smacking process demands the skill of an adroit pedagogue; no bones are broken, yet the body of the fowl is shaped and plumped up, and the joints and muscles loosened to enable them to be twisted into most unnatural positions for the purpose of market."

This artful shaping of a fowl to suit any market is widely practiced by the French fatters and poulterers. If their market



Mrs. Aldworth's Winning Houdan at the Dairy Show, England.

requires a deep, narrow breasted bird, the fowl is laid on its side with a heavy weighted board on it while cooling, but should the handlers' local market wish wide breasted fowls, he has only to give it the proper hammering to loosen the flesh and joints and placing the birds on their backs in rows, rest the weighted board on their breasts while they are cooling, and when cold



New York Winning Indians Described by Mr. Sewell.

and set they will be pressed into, and keep, the required shape. And we do not know that it makes any difference on the table of the consumer whether the shape of the bird's breast is made before or after killing, so long as the same quantity and quality is there. The special housing and care of the Houdan to keep them in the best condition is the same as with other crested breeds. Perfect shelter from wet weather is the greatest requirement in point of housing. In cold, wet seasons the Houdans are very apt to suffer if their crests are allowed to become wet, and bad colds are easier prevented than cured. The Houdans are fair layers of large, white eggs, and almost never set. It is as table poultry that they excel, either pure or crossed, and where consumers look for genuine quality of flesh they will be appreciated.

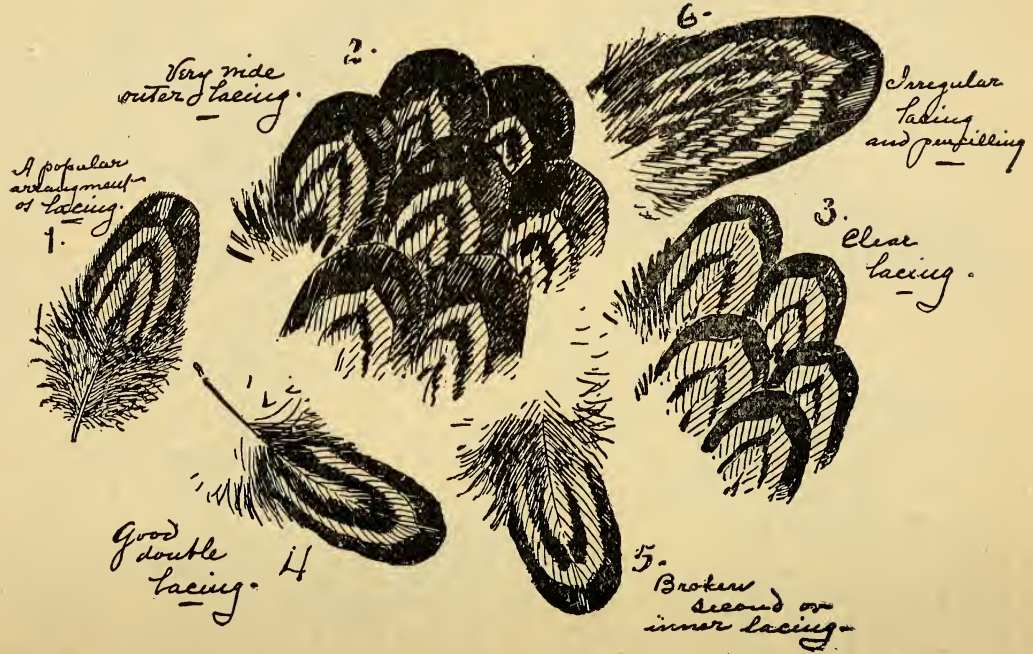
INDIAN FOWLS

A Breed of Oriental Extraction Much Used for Crossing to Improve the Market Qualities of Heavier Breeds.

It is the table qualities of the Indian that has given it such popularity in England, where it is much crossed with the Dorking and Langshan by the market poultry producers, to give breadth and roundness to the breasts of their birds that are to find the highest paying buyers at the London markets. The carcasses possessing white skins and the fifth claw bringing, perhaps, the top prices in England by those of epicurean tastes, but the larger number of buyers go in for a carcass possessing a combination of quality and quantity of flesh on the best parts of the fowl, and it is just here wherein the Indian is of greatest value, for on thigh and breast they possess a wealth of flesh such as will rarely be found on the bodies of other breeds. It is not uncommon to see in the farm yards of the south counties of England a Dorking-like crowd of hens presided over by a staunch looking male of the Indian order. In our own good country, progressive farmers are placing thoroughbreds at the head of their flocks that scratch up and down their dung heaps, and not a few will make their choice of males from fanciers of the heavy-typed Indian.

We cannot offer better types of the exhibition Indian Game of America or England than our sketches of Mr. Sharp's four first premium winners at New York in 1894. Each bird standing, after the award went up, at the head of a very strong class.

The old cock shows a breast and thigh grandly developed; his head is fine, his neck, limbs and tail are so perfectly set on



Sample Indian Feathers Showing Different Grades and Styles of Penciling.

and all is carried so proudly on a strong pair of feet and shanks.

Both hen and pullet show fine forms, the hen especially broad and plump, and the pullet grand of shoulder and legs. They are such birds as one seldom meets for real quality of type, and for feather each wore a complete dress of richly colored double laced feathers.

The cockerel was one of those smart finished looking fellows, which always attract both fancier and judge. He was also as gamey a bird as I ever saw, giving us no little trouble to sketch, as the moment our hand would enter the cage he would attack with both beak and claw, and strike "to kill." It was this that led us to illustrate him in such a gamey temper.

It is only just to add here that it was through the untiring efforts and expenditure of many thousand dollars on the part of C. A. Sharp & Co., of New York, that the American fanciers were brought to see the true value of the Indian.

The interest the fancier has shown in them has been remarkable since their first introduction into America in 1877, and since the Sharps made their extensive importations, bringing to this country hundreds of England's best specimens, the desire for them quite became a mania.

In England we found that the birds most prized for marketing were those showing not a great deal of center-color but possessing those contrasts which present attractive effects to the eye, when seen on the bird in the pen, a clean sharp lacing with only enough color within it to prove the character of the race—such feathering as shown by figures 4, 5 and 3. 4 and 5 both were from a famous English prize pullet. Four is the truest marked, although 5 would be the most showy, if it had not the defective inner lacing, breaking as it joins the shaft at the lower end. Such marking as figure 3 makes a bird very attractive, and is difficult to find to a nicety. Marking like figure 2 makes a bird too black, leaving not enough of the lighter color for strong contrast, giving a gross effect. Six shows a covert feather so broken and irregularly laced as to appear massy; it is a common defect on this section of the body, yet when the coverts extend, with perfectly clear and nicely traced penciling, up against the tail proper, as we have seen it in rare specimens, the bird is far more showy and of much greater value in the fancier's eye.

White Indians are in every respect the same as the colored (Cornish) variety, except that their plumage is required to be pure white. They have not attained such perfection of form as the colored variety though excellent and typical specimens are exhibited at the larger shows.

TURKEYS

The Largest of the Poultryman's Flock—Principal Characteristics—The Different Varieties

Turkeys were originally from North America, and were found from the east side of the Rocky mountains to the Atlantic and from Canada to the Isthmus of Darien.

In reading early histories of the race we find that as late as 1860 they were occasionally found in the mountains of Massachusetts, though they are now considered quite extinct in the New England states. They were also found in the wooded district of the larger islands of the West Indies. In Central America is found the Honduras or Ocellated turkey, not so large nor with quite so long a tail as the more widely distributed species, but for luster of plumage it far outshines it. The glossy plumage is a coppery green. Its specific name is derived from eye-spots of bluish gloss, surrounded by a black ring, found at the end of the tail coverts.

The turkey was probably first introduced by the Spaniards into Europe, about 1530, and it is possible that the Ocellated turkey found its way to Europe among the first that were taken over. The domestication of the turkeys appears to have been commenced in England near the beginning of the 16th century. It was successfully naturalized in the royal park of Richmond near London. In the first half of the 18th century this park contained about two thousand of these grand birds, but it is said that the frequent fights between poachers and the keepers, to whom the protection of the birds was entrusted, led the owners to destroy them.

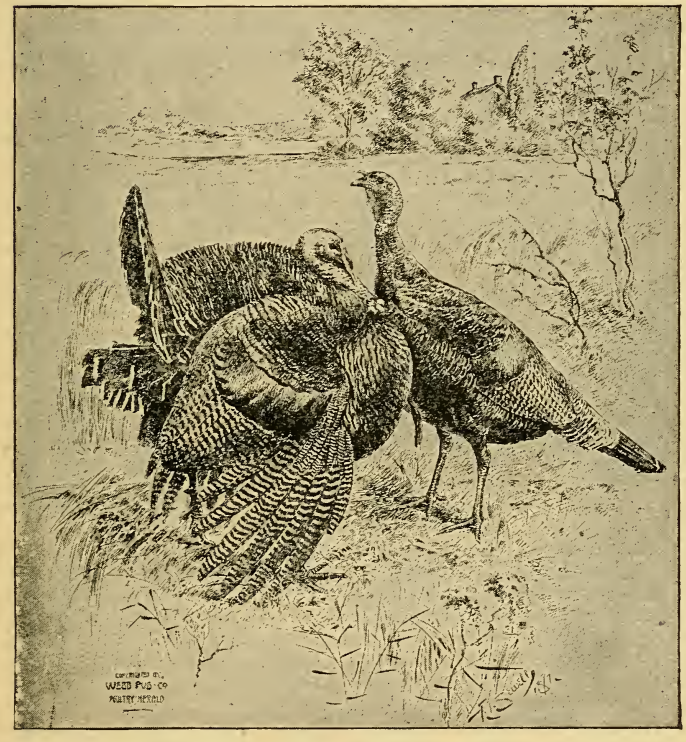
The pure wild turkey has been bred with a degree of success by some in America during late years, although their tendency to stray is, as might be expected, more troublesome than with families which have been for many generations domesticated and under the care of man.

Many of our best strains of Bronze turkeys have a cross of wild blood in them, of not many generations back; these lately wild-crossed turkeys are considered by many to be hardier for the introduction of vigorous blood.

In the wild state, the males associate by themselves in flocks of one hundred or less, and seek their food apart from the females, except in the breeding season. The females go about either in flocks or singly with their young until the young

are about two-thirds grown. The females with their young, all avoid the males, who are liable to attack and destroy the young by repeated blows upon the head. These different flocks, however, all travel toward the same direction on foot, unless molested and frightened by the hunter, or unless compelled to take flight over some river in their course.

The wild turkey makes her nest in some secluded spot and



A Pair of Standard Bred Bronze Turkeys.

is exceedingly guarded so as not to be seen as she approaches it. This instinct of caution about returning to her nest is scarcely less noticeable in the domesticated birds, when they are allowed to select their own nesting places. The slightest

crackling of a twig or branch by the nest seeker and mistress turkey goes picking about as unconcernedly as if such a thing as a nest never entered her head. Cunningly she will avoid you and we have had her, when failing to steal from our sight, and perhaps thinking her eggs liable to chill from staying away too long, take flight to nearly a hundred yards in the undergrowth of the woodland where her nest was hidden, however, not in the direction of her eggs, but to a distant angle of it, and only after long and patient search were we rewarded by discovering her place of nesting. The crows have sometimes assisted us in locating the nest of our turkey hens which have selected the woods as their hatching place, by destroying some of the eggs and dropping the shells near the nest.

There are many who succeed in rearing the young turkeys by hatching under common hens and keeping the young poults in enclosures until the turkey chicks are large and strong enough to jump out over the foot high boards. Others stake the hen with a string tied to the leg to keep her from wandering with the young, giving her close shelter in case of storm and wet, in the form of some box-like coop. In our own experience we found little difficulty in rearing young turkeys under hens until weaning time came, then they plainly showed a lacking in their "bringing up." They gave no end of trouble in their care, while those with the hen turkeys which were allowed to select their own nests and bring up their own broods, and which were scarcely given a thought, reared nearly all they hatched to grand birds weighing 18 to 28 pounds by November. So with limited time, and vigorous stock that has the range of meadow and woodlands such as our turkeys enjoy we have decided it was more profitable to give the turkeys the reins of management in those seasons when food is plenty on the farm, and to supply them grain only in small quantities to keep them "at home" during the summer and to help them to a fat condition at the season when they are desired for the market. As for shelter our turkeys will not accept it, preferring apple trees to coops and the peak of a barn to the warm interior. Though we know of an old gobbler who earned the distinction of "weather prophet" by wisely taking shelter in the hen coop on the eve of nights during which severe storms took place. And his owner grew to have such confidence in his wise old bird that he took the bird's actions as conclusive of the coming weather.

The domestication of the turkey has had its effect upon the plumage. Melanism as with the Black and Alcanism with the White has taken place, also the intermediate colors of slate, buff and many mixtures are to be seen. The bronze is almost, we might say, the counterpart of the pure wild turkey in color. Fanciers select it with stronger contrasts of shades, however. The darkest shades darker, and the lightest shades almost white is the present fashion for the show room. Clean cut, precise

pencilings and regularity of barring is obtained by exacting selections and careful line breeding, so that the bronze turkey in some instances has been produced with color and form that could scarcely be criticised by the present standard. Twenty-five to thirty pounds in young turks and thirty-five to forty pounds in old gobblers is not unusual in show rooms, where the best birds compete.

The largest hens are not always found to be the best breeders, yet they show what the race is capable of and what selection may yet bring them to in time.

If great size is attended with a proportionate amount of flesh on the most desirable parts, and of good quality, fine grained and succulent, then we would encourage such breeding. Past experience has generally led men to conclude that birds as well as animals can be too large to be fine and good in quality. Still we do not wish to be understood to discourage selecting for size; the fault usually is in the other direction with the birds themselves. But we do wish to urge the selection of birds for breeding that possess round, full breasts, with deep keel bone, and that come from stock which produced many eggs and stock noticeably vigorous and free of disease of any sort.

The Bronze, although the largest of all races of turkeys, is generally found of firm, fine flesh.

The finest grained flesh of any turkeys we have ever seen was on Western Bronzes, which showed the wild blood strongly, even to the flesh-colored leg; their plumage was wonderfully glossy and firm, and when we examined them, found the skin unusually fine-grained and smooth, although the birds were considerably over standard weight.

The turkey does not reach its full maturity and growth until its third season. It is, therefore, best to use only birds that have reached at least their second season to breed from when improvement in vigor and size is desired.

Free Range Required.

Free range is requisite to the vigor and successful rearing of turkeys. These birds belong to the farming fanciers. The town is no place to keep them; in close confinement they are poor property and no little source of annoyance on account of their restless desire to wander. We have heard of turkeys whose owners claimed were content to stay about the dooryard and not trouble the neighbors, but the profitable kind are those that will forage out over the meadows and stubble fields, and into the woods, gaining the greater portion of their food for themselves. Our experience with the dooryard sort led us to favor those that kept away from the buildings, except at roosting time. We have had birds so tame that they would come up under the windows of our cottage and take food held in the hand from the open window—in fact one old hen seemed to pre-

fer to get her living that way, but she was always so fat that her eggs never produced us anything.

In Rhode Island, at the Experimental Station, turkeys kept in the best health when strictly without housing of any kind. In the climate where we are located, in Michigan, across the lake from Chicago, turkeys rarely seek buildings for shelter. In Canada, however, some of the most successful turkey rearers house their turkeys at night but are careful that the buildings are well ventilated. The crowding of turkeys in poorly ventilated sheds is considered the main cause of most of the diseases which the birds fall heir to.

Care of the Young.

The turkey hen succeeds best when allowed to sit on the nest of her own choice. We never had one select a poorly suited place except when choosing barrels which we had placed near the barnyard, and which proved altogether too small for a turkey hen of good size to get into without injury to her eggs. When the young poults are hatched, the hen turkey will return to her nest for the first few nights, if left alone, to care for them; after which she will often nestle down in any convenient place that she seems to consider safe, which may not always prove so safe as she supposes. Foxes or other animals are apt to discover and destroy both mother turkey and chicks. So it is advisable to accustom the turkey hen to a roomy shelter or coop with slat front, placing her in the coop after the young are about 24 hours old, or so soon as the hen leads them off the nest. Feed them from the hand five or six times the first day after being cooped, not allowing the youngsters to go from the coop. Their first food can be bread crumbs soaked in milk, the second day adding a little middlings or shorts to the soaked crumbs. Finely chopped onions and dandelion leaves will prove excellent green food, aiding digestion and keeping up their appetites. Continue feeding the bread crumbs the first week, increasing the amount of shorts. Some advise baking the grain or making up into a sort of meal cake for them. We always have had better results in feeding fowls with cooked grains, especially young stock. The heat destroys any injurious germs that might sicken the birds. After a week or so, ground meat and bone is valuable in their feed, in small quantities. Clabbered milk, brought to a boiling heat and with the water squeezed from it, is often mixed with the ground grain food—the young birds are fond of it and it is good for them.

A very essential point in the care of turkey chicks is to move their coops to a clean spot of ground each day. This is practiced by the painstaking pheasant keepers with noticeably successful results. Nothing sickens young birds quicker than eating from the ground where their excrement has been allowed to accumulate.

Water and milk should be constantly before them, mixing them half and half is all right. The drinking vessel should be frequently cleaned.

A plentiful supply of small grit should be furnished. Avoid damp ground and wet grass for young poults; it is very injurious to them.

After the fifth week the turkey hen, with her chicks, can have their liberty and do well. The hen will teach them to forage, and they will find nearly all their food on most farms. At night they should be enticed into their usual coop and given a liberal feed of wheat, which with all the insect life, small weed seed and vegetable food of various sorts, which they find during the day, will be the only feeding they require until grown and ready to fatten, when corn will hasten their weight and marketable condition.

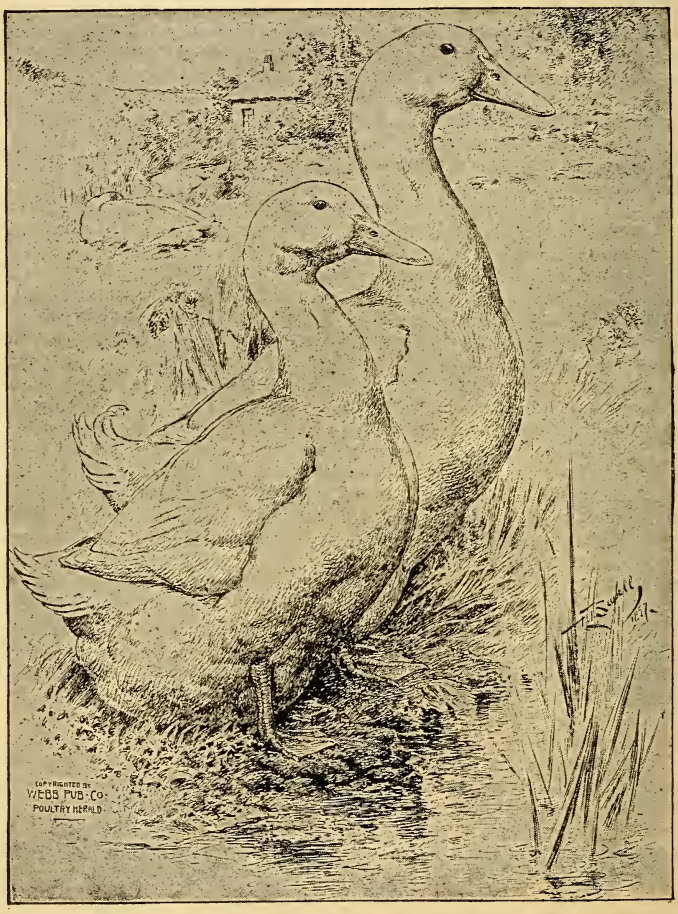
The turkey row always seems of unusual attractiveness to the general public who visit our poultry exhibitions. It is seldom they enjoy the sight of such a near-by view of a mammoth Bronze in all his pride and splendor of plumage. Turkeys intended for exhibition will improve in gloss if liberally supplied with oily seeds, such as those from sunflowers, hemp or flax, and every precaution to induce tameness and confidence in their handlers is desirable. A wild, frightened bird in the show room is a poor object for exhibiting fine points. It will not show its true quality or beauty. Exhibition birds should become accustomed to handling and once in a while be placed in a cage, like their exhibition pens. This can be done at night, and let them have something they are especially fond of from their keeper's hand before being turned out on their usual range in the morning. Constant confinement will, however, lessen their vigor, weight and beauty of feather, and cannot be forced upon them often without injury to them. If turkey owners will patronize and encourage the dressed poultry display at the shows, they will, by showing the carcasses of finely grown birds, help to popularize the thoroughbreds, by showing the public their excellent quality in comparison to the too often inferior meated fowls, which they are compelled to accept on account of the absence of birds of choice condition and flesh.

Varieties of Turkeys.

Of the six varieties of turkeys recognized by the Standard of Perfection, the Bronze are considerably the largest. Adult males are required to weigh thirty-six pounds and adult females twenty pounds. The Narragansetts are next in size, the adult male of which should weigh thirty pounds and the adult female eighteen. The Buffs, Slates and Blacks come next and are about three pounds lighter for the adult male. The White Holland variety is the smallest, the adult male being required to weigh but twenty-six pounds and the adult female sixteen. All varie-

ties are bred to the same shape, the only difference is in the color.

In richness of color and luster of plumage none of the varieties can compete with the Bronze. The male especially is very brilliant. His neck, back and breast are a brilliant, rich bronze



Mammoth Pekin Ducks.

and his main tail feathers, evenly crossed with lines of brown penciling ending with a wide black band with an edging of white, covered at their base with dull black coverts with the same markings of brown ending in a wide dark bronze bar which is in turn edged with white, make a plumage of remarkable beauty.

The color of the female is much like that of the male except that the white edging is more prominent and is seen on the feathers of the back, breast and body, ranging from narrow at the front of the bird to quite wide as it reaches the tail.

The Narragansetts possess a color scheme very much like that of the Bronze differing in that each feather ends with a band of grayish white on a ground of metallic black. When the color is of strong character on the Narragansett it makes a very showy bird.

The names of the solid colored varieties sufficiently describe them except that the Buff turkeys are in reality a sort of chestnut and most of them show almost a clear white in some parts of the plumage. The Black turkeys are bred to a very good shade of black but none of the solid colored varieties, except the White Holland, have become very popular. The latter stand second to the Bronze in favor.

STANDARD DUCKS

The Pekin Has Taken a Prominent Place in the American Poultry Industry—The Other Prominent Varieties.

The Pekin Ducks have been reared extensively in China for a great many years, in fact, longer than European or American travelers have been able to learn or give us any accurate account of. Stories have come to us of the curious duck boats and rafts, those strange floating gardens on which the celestial duck-man rears his thousands of ducklings annually, but nothing of the early history of this grand race of ducks. The selection and improvement of these large white ducks kept on and along the great waterways of China, would, no doubt, be a long, but interesting story to those who are so deeply interested in this race of ducks, which have proven such good money makers for many extensive growers here in America. The general report is that the Chinese are not fanciers, hence the probabilities are that the improvements of the Pekins in their own native country was led by the demands of the most paying markets, just as the White Wyandottes are, in our country, the outcome of the whims of the Boston poultry dealers and the growers, who cater to them.

It was in 1873 that the first importations of these fine ducks came from Pekin to America. A Mr. Palmer first brought them to this country and Mr. Keele, during the same year, imported them to England.

Their improvement has been continued in America, especially since the establishment of the farms which have exclusively grown these ducks for the markets and whose entire aim has been to preserve and improve the points of the Pekins which go to make them profitable. One of the essential points that has proven the fitness of the Pekin to these immense ranches, is that it thrives well in large flocks.

To James Rankin, of Massachusetts, belongs the distinction of being the pioneer of duck raising; he was the first to prove that a good living could be made by handling Pekins for the markets in large numbers. Now there are numerous duck farms which handle the Pekins by the thousands.

The body of the best Pekins appears quite distinct in type, unlike that of most other ducks which tapers in form as it approaches the neck and the tail. The outline of the Pekin more nearly fills that of a parallelogram carried at an angle of forty-five degrees.

Some of the deepest keeled and heaviest bodied birds we have seen carry the breast lower than those we have portrayed, though not on the level, as seen often in Show Aylesburys. Some breeders have told us as we admired those deep keeled ducks that they feared that ducks of this low type were slower to mature and not such good layers as the more up-standing style. Those we have experimented with at our own farm have not seemed lacking in vigor or egg production, and certainly weigh heavier and are more attractive on account of their size. Still we would rather take the experience of those who handle them extensively and have more opportunity of practical, every day comparison. To the practical duck rearer the question of vigor, large egg yield and early maturity means everything. A four-pound duckling in early April is worth more than a six-pound one by the middle of May that consumed food, took time and attention and valuable space for two weeks longer. So it will be seen that it is the duckling that makes a good sized body quickly that is wanted for profit.

Different foods have different effects for coloring the plumage and the skin of the birds; fat produced from the feeding of corn results in a very yellow skin and plumage. In the Boston markets of late there has been a call for ducklings that showed a very light colored skin, with the result that many duck growers have lessened the quantity of corn as the fattening term grew near its end, and fed a large proportion of middlings, shorts and cheap grade flour. The wheat diet fits the ducklings to meet this fancy demand and probably gives the birds a more delicate flavor. A number of growers have practiced the feeding of

celery and cress to their ducks which they are preparing for market and realize fancy prices by the extra flavor imparted to them in this way. In localities where much celery is grown, the trimmings of tops from the celery could be utilized in this way and would be found valuable in imparting to them the flavor for which the wild canvas back is so noted, and highly prized. One farmer told us he had fed pepper grass to his ducklings, which gave them a flavor much like the cress-fed ducks.

Young ducks should not have access to water except for drinking, until their entire plumage has been taken on. At twelve weeks those that are to be retained for breeding stock may enjoy the brook or pond, but until nearly that time they grow better without it. For the first few days the stale bread crumbs moistened with milk or water should form the largest part of the duckling's food, aside from some short cut grass or green rye. Later or for the first few weeks, to their mixed food may be added, to the stale bread or stale broken crackers, (which can be bought of large baking establishments at $20 to $25 per ton) boiled potatoes, turnips or beets, ground grain foods such as middlings, shorts, cornmeal and oatmeal. A small amount of ground meat is a valuable addition, and ground shell food should be mixed with their food at least once a day in small quantities. Corn sown in drills and when a few inches to a foot or two high cut fine, will be a valuable addition to the food, either alone or mixed with ground grains. The food should never be fed sloppy, but just damp enough to stick together when pressed in the hand; it should be given in clean troughs and clean water should be close to the feeding troughs. Some growers construct the troughs so that the feed and water are side by side and the birds have but to reach from one to the other—it is a good plan for ducks.

The ration should be studied to give the young stock plenty of bone and muscle-forming foods. Too much fat-forming food at the start often results in weakness of the legs or of the organs, and sometimes causes so much heat as to result in bowel trouble, though ducks as a rule are very free from this last difficulty. Oatmeal is one of the best flesh and bone forming foods. Avoid feeding a large proportion of cornmeal until the seventh or eighth week, increasing it only as the marketing age approaches, when the meat meal and cornmeal will help to fatten. Lessen the green food at the last week, and increase the meat meals if the best flavored flesh is desired.

The types of Pekins most desired are those showing as near as possible the same depth and girth from breast to stern; look for those showing quantity of breast, a long deep keel bone well meated, giving the breast a rounded plump appearance, and when handled, to be found carrying an abundant supply of firm flesh, good stout thighs set very broad apart, good sized feet with straight firm toes. The head should be of good character,

neatly chiseled where the beak joins it, well rounded cheeks not wrinkled about the throat with a goose-like dewlap, good, bright, wide-open eyes—deep set, heavy browed eyes are rather indicative of a dull sluggish nature in ducks. What you want for a money making duck is one that gets up and goes a hustling about for its living.

All Pekins should stand high in front, and low behind, but do not mistake a duck that is over-fat and heavy behind for a good Pekin; an elongated pear-shaped body, little in front and heavy in the stern, where the heaviness is made by abnormally large entrails, is not to be desired by either a fancier or market duck man. The weight should be influenced by a well developed breast, then when the bird comes to the table its value can be appreciated.

Other Varieties of Ducks.

Following the Pekin the Aylesbury, Rouen, Cayuga and White and Colored Muscovys are the most popular and therefore the most widely bred. Their popularity is due mainly to their practical qualities, as is the case with the Pekin.

The Aylesbury, Rouen and Cayuga varieties are, like the Pekin, large, long, deep and full in body and breast. The Muscovys are equally large and have long, broad and deep bodies. Their wings are more fully developed than those of the other large varieties, sufficiently so that they are able to fly. Also unlike other varieties they can roost on fences and in trees. The Aylesburys are pure white in color of plumage as distinguished from the Pekins which are required to have creamy white feathers. The Rouens carry much the same color as the Wild Mallard but have more beautiful markings even, especially in the plumage of the female which suggests the coloring of the Partridge Cochin hen.

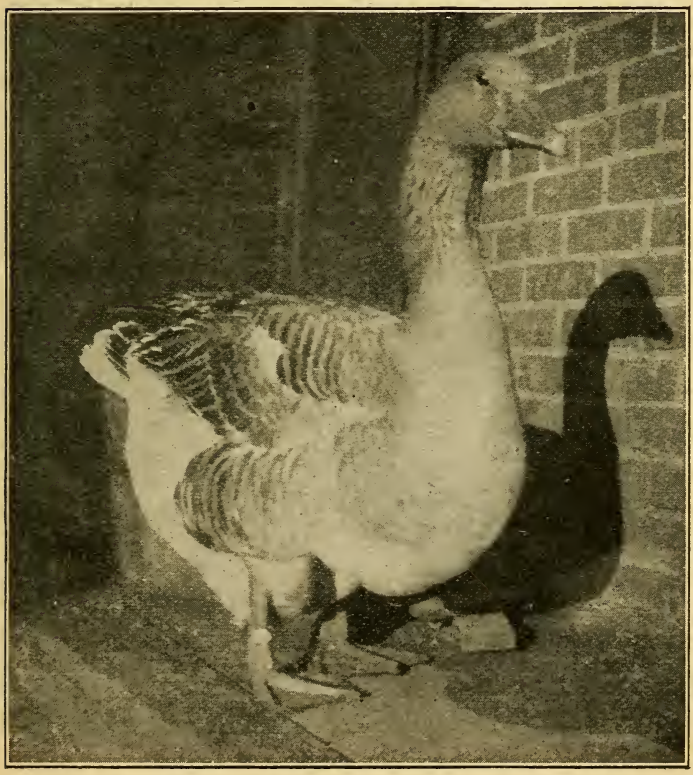
The Cayugas are black. The plumage of the Colored Muscovy is black, broken occasionally with white, those with less white being preferred. Both varieties have faces and sides of heads heavily carunculated and on their heads a sort of crest-like formation of feathers which lies down smoothly when the duck is in repose but which raises when it is disturbed.

A handsome duck is the Blue Swedish, which is of a bluish color, somewhat resembling the Blue Andalusian fowl but often marked with white, usually on the breast and occasionally under the wings, toward the tail, and on the lower body. White Crested White ducks are pure white throughout with crests of soft feathers growing on their heads.

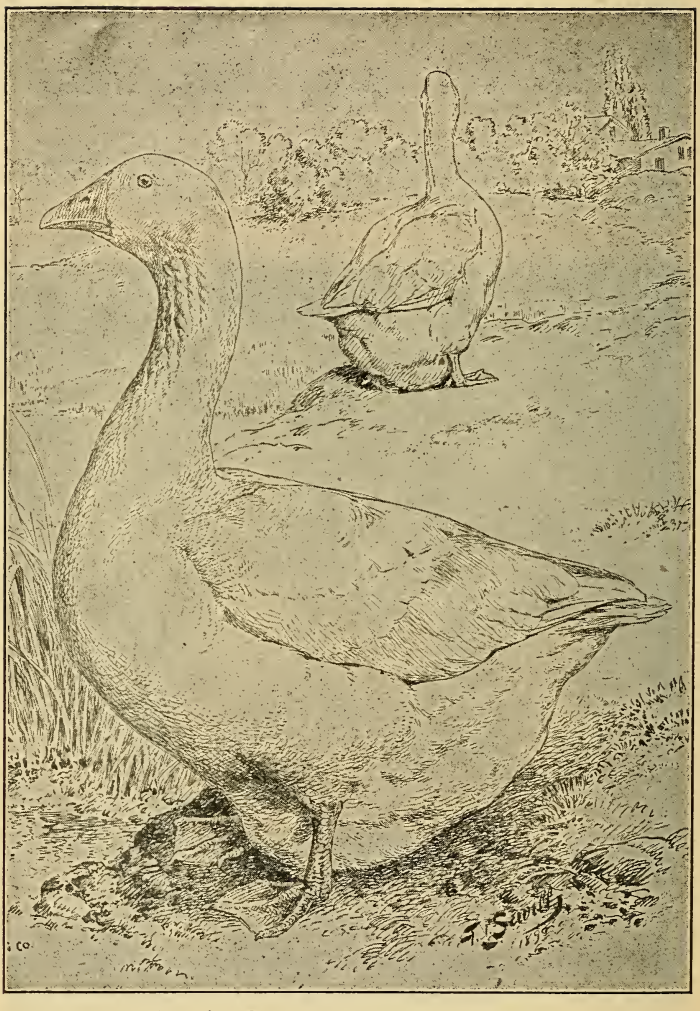
Some years ago the Indian Runners were heralded as rivals of the Pekins as general purpose and market ducks. They were taken up by a number of well-known duck growers but were not

found satisfactory for the purpose. They are much smaller than the Pekins, the Standard calling for a weight of only four and a half pounds in the drake and four pounds in the duck. They are, however, excellent layers, probably the best of the duck family. In color they are white on the upper part of neck, lower part of body and points of wings. In other sections they are a light fawn color approaching gray.

The smallest of Standard ducks are the White and Gray Call and East India, these bearing the same relation to ducks as do bantams to fowls.



A Prize Winning Toulouse Gander.



A Pair of Excellent Embden Geese.

BREEDS OF GEESE

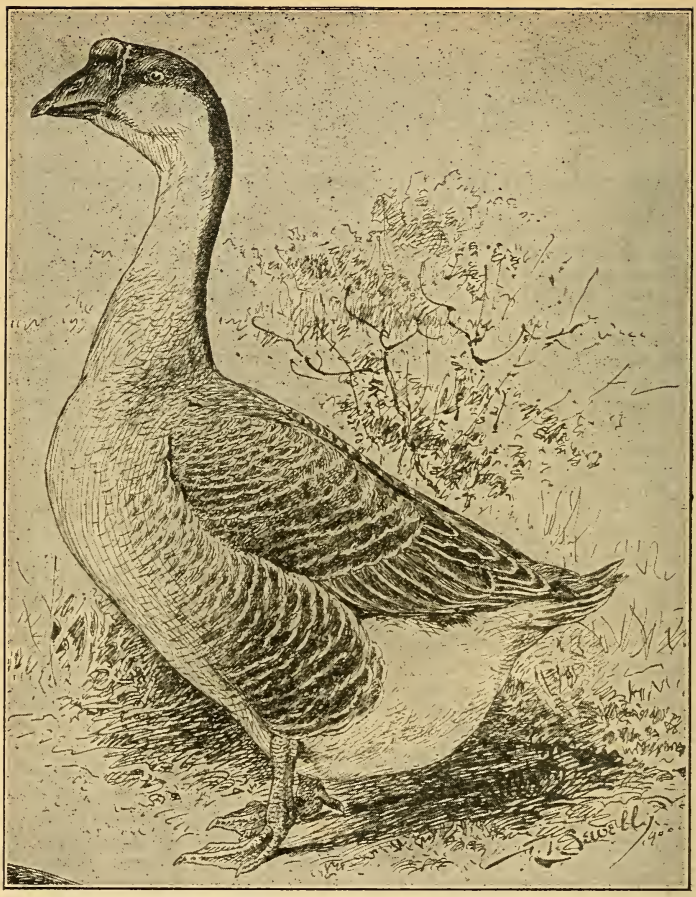
Their Value for Utility Purposes—The Leading Varieties.

All of the Standard varieties of geese, (Toulouse, Embden, African, Chinese, Canadian and Egyptian), were originated in foreign countries, though they have received much benefit from the handling of American breeders. They are usually profitable for utility purposes. They live and remain useful as breeders until from twelve to twenty years old and instances are on record where they have bred for twenty-seven consecutive seasons. They require new blood far less frequently than do domestic fowls and turkeys. One of the earliest breeders of Embden geese is authority for the statement that a flock which originated from six imported birds were kept for fifty years without adding new blood and without any depreciation of the value of their characteristics.

Geese are becoming more and more in demand for their flesh and goose-fattening establishments, where geese are collected from the farmers and fattened for market, are becoming numerous throughout the country, though more particularly in the east. Very few of their eggs are marketed for table use for, were there no other reasons, they are much too valuable for hatching. Their soft feathers and down sell for high prices and some goose raisers claim to make the greatest profit from the plumage.

The most popular variety in America is the Toulouse which is claimed to have originated in France but which certainly was bred to its present color and form in England, and from that country came to America. The second in popularity are the Embdens, pure white geese, which were earlier called Bremen geese, so named from a city of Germany. The next in order are the Africans and they are called by that name only in America. In England they are not favored with classes at the shows but compete in the same division as the Chinese geese. Some authorities claim that they are often confounded with off-colored Brown Chinas and perhaps some of the latter are occasionally sold as Africans to the uninitiated. As a matter of fact the true African is a much heavier built bird with a larger, coarser head and heavier neck. Its back, too, should be flat while that of the China should curve slightly upward toward the neck and tail.

These three varieties, Toulouse, Embden and Africans, are the heavy weights of the goose kingdom. The Chinese, of which there are two varieties, Brown and White, are much small-



A Young African Gander.

er than those we have described and extra weight in those varieties is not desired. They are claimed to be the best layers among geese and quite considerable egg records are claimed by some breeders of the white variety. The Canadian, or wild, geese have been domesticated in small numbers and are very handsome geese. They are not bred to any considerable extent

for practical purposes though are occasionally used in crosses with Toulouse or Africans to produce market geese.

Egyptian geese, although of rather attractive color, are not bred to any extent. They are the smallest of geese according to Standard requirements for weight.

CONDITIONING FOR EXHIBITION

A Plain and Complete Description of Common Sense Methods of Developing, Fitting and Showing.

Successful showing consists of two things, having the quality and showing it properly. The gardener who raises roses for the market strives to place them on the market when they bring the greatest price. The man who raises broilers for a living times his product for the highest market. It is the exhibitor's business to time his birds for the exhibition just as the gardener and market poultrymen time their products to be at their best at the most advantageous season.

The phrase "Every dog has his day," will never be applied to anything more forcefully than to exhibition poultry; the bird that was a "Never Beaten" last week is a "Has Been" this, and we see it time and time again. It is best then to estimate the time when your birds will be ripe by your experience of years previous, as the growing proclivities of two strains are seldom the same. Remember the progress and development of your birds last year, with reference to set dates during the season. If your memory fails you, keep notes.

Condition is All-Important.

Condition is the all-important, overshadowing essential to a winning bird, and without approximately perfect condition it will seldom win in close competition. With some varieties, the relative places on the award list are but expressions of the degrees of perfection of condition in the specimens shown. Most prominent of these varieties that depend largely upon condition to win are all black and all white varieties, Brown Leghorn males, and many varieties of game and ornamental bantams. Some will object to this statement as too broad and certainly condition with nothing back of it will never win; but just as certainly, will perfect condition cover many defects and enable a bird of average exhibtion quality to win over one naturally superior.

What then, does condition mean? What does the word embrace? Many things and various things. In Cochins, it means

the proper fluffy effect or looseness of feather. In games, it means hardness of feather. In all varieties, the necessary weight, the health and vigor that gives a bright eye, glowing face, slick appearance and gloss of plumage. Correct shape and poise in the exhibition coop are largely matters of condition.

In acquiring good or perfect condition, two principles are involved.

The Winning Quality is Hereditary.

The first principle is heredity. You have often observed, if you are an exhibitor, that some birds condition easily, while it is almost impossible to make others acquire the smoothness of feather and the style or poise that gives them the winning quality.

Both of these characteristics are hereditary in fowls just as much as good combs, strong under-color or straight barring. I would reject a Barred Plymouth male that lacked a certain amount of style just as quickly as one that failed in under-color. And I would not consider seriously a Brown Leghorn male that did not possess the attribute of smoothness of feather as a candidate for one of our breeding yards. So much for condition and heredity. Do not take my word for anything, but make careful observations if you wish to develop a line of winners. Good showing qualities and aptness for good condition are just as surely transmitted from generation to generation as any characteristics of the species.

Fresh Plumaged Birds Win.

The second principle involves the science or art (I might say knack) of properly rearing a bird and timing it for the exhibition.

Young birds that have just attained maturity are fresh and bright in plumage and fresh and bright birds are the ones that usually win. This necessitates quick growth and that calls for free range, and judicious feeding. This is the problem then to solve: How are some birds to be pushed forward and some held back, so that the entire string may be shown in uniformly perfect condition?

Right here is where I shall prove disappointing. I know of no magic that will mature the immature or freshen the fading colors of those that are past prime. There are a few who cling to the idea that there are sublime methods for accomplishing anything. There are a few who believe that winning specimens are made so by occult means. Were we to find some agent which would effect such a marvelous transformation in our flocks, we should have accomplished no less than the alchemists of old undertook when they sought to find the Philosopher's stone, a re-agent that would form a panacea as well as transmute the baser metals into gold. As well dream the dreams of the

old alchemists as to expect to make winning show birds by any except the most thorough process of nature.

The Pleasing Bird Has an Advantage.

The question naturally arises, "what is a winning bird?" The answer would seem to be one that most nearly meets the requirements of the Standard of Perfection. But is it? I am afraid it is not always, even with the most conscientious and keenest judges. There is in some birds a certain quality that is very hard to describe unless we limit that description to one word and call it "catchy" quality, or a "pleasing bird" as it is expressed by the more refined exponents of the craft.

Under our present more of comparison judging, and this mode has its advantages as well as its drawbacks, the order seems to be that the catchy or pleasing specimens are picked out and then examined for defects according to the judges' interpretation of the Standard. Under this method the bird in poor condition and the one that has not catchy qualities fare alike, being passed by, while the pleasing bird, if he has no glaring faults, has a good chance to win.

Too Close Cooping Spoils the Bird.

There are several methods for fitting for the show room of more or less merit. The best is to let the bird fit himself; the poorest, and that which is more generally used, consists in confining the bird to an exhibition coop two and one-half or three feet square and either starving him or stuffing him as the fancy of the owner dictates. In these quarters, this bird has the pleasure of moping around for two or three weeks. He has a clean coop, and perhaps plenty of the best of food, a nice bright tin cup to drink out of, but after all that has been done, this bird is being subjected to the most unnatural life that a fowl could live. If the coop is kept clean, the bird is also clean, but his appetite soon diminishes, his digestion is soon disordered, his feathers soon become rough and his head loses color. The bird deteriorates from the moment that he is put in the coop. The only advantage is that you have a tame bird. Unless he is endowed with an unusual amount of vitality, he soon becomes so lifeless and docile that he should not even, in may cases, be admitted to classification in the gallinaceous division. Of all the idiotic methods that I have seen poultrymen employ, this strikes me as the most stupid and foolish.

Range the Best Conditioner.

Those of you who have exhibited at the early winter shows, say the early part of December or the latter part of November, may have been favored by one of our occasional warm falls, when the weather permitted you to keep the birds out in the summer runs. Under these circumstances you probably put into the shows the best conditioned birds you have ever shown.

If such is not your experience, it is mine. It is, therefore, my aim to afford the candidates for show honors as near natural conditions as the usual severe weather and several feet of snow will permit. The best advantage that a bird can have is, of course, range. Under the conditions mentioned, range is out of the question. How then can we give them a substitute? By affording a chance for exercise and compelling him to exercise if he is not so inclined, and by supplying him those things that confinement and the season of the year rob him of. Added to these, there are some artificial methods that are simple and harmless that we shall speak of later.

Food and Exercise.

Take the case of a fairly mature bird. He should have a pen to himself. The larger the better, but one eight-by-nine will answer for most birds. The floor should be dry, clean sand, covered with a litter of dry straw. The straw need not be cut, as the bird, if he is properly trained, will break it up in a short while. This litter should be from two to four inches deep, varying with the size of the bird. The larger the bird the deeper the litter. In the morning throw in a small handful of scratch feed, scattering it well. In an hour or so, give him some warm mash, but do not allow him to stuff with it. A heaping teaspoonful or two is about the right quantity, but unless he eats this eagerly and rapidly, it is too much. An hour or two later throw him more scratch feed and put him to work again. If the bird is immature and you wish to force him a little, feed him another mash at noon. An hour later a few kernels of small grain will keep him busy, while at night he should have a good square meal of good grain.

Green food, he should have a little of and but a little. Grit and oyster shells he should have in abundance at all times.

A Good Mash Makes Flesh.

A mash helps the bird to flesh up, but much of it is too heavy in his crop and makes the bird logy and he refuses to exercise; consequently he will not eat as much nor can his system assimilate as much. This mash may be made in several ways. Corn meal and bran may be mixed with a very small quantity of wheat flour middlings in such a proportion that the mash is a substantial but not a sticky mass. It should be mixed with boiling water, merely hot water does not do. It must cook to get the desired effect. To that end it should be packed closely together and covered for a time. After standing for half an hour, uncover and stir. Allow it to cool until it is warm but not hot; then you have food for a meal that the fowls will relish. Other ingredients make good mashes and I like the mixture of ground oats and corn meal commonly called provender.

For scratch food, any of the small grains will do. Oats are

good, so is wheat if you are not using it for a night feed. But above all I prefer the prepared scratch feeds, if they are made of good grain, for two reasons; first the variety and second, for the fact that the grains are cracked into small pieces which make the fowls do the maximum amount of work for the minimum amount of food.

For the final feed at night, nothing compares with white wheat of the best quality. This is the main food but may be alternated with barley with good results. For fowls that are inclined to get too fat barley is preferable to wheat.

Feeding White Birds.

By white birds, I refer to those that have white in their plumage, not necessarily only the solid white varieties. Barred Rocks and Silver Spangled Hamburgs, for instance, should be fed precisely as pure white birds are.

It is a generally recognized principle that the pearl white color cannot be obtained in its clearness and purity when allowing these white birds oily foods. Therefore, yellow corn, scraps, meat fats are excluded from their diet. Those who wish to feed meat and are still very cautious, may boil fresh beef, allow the liquor to stand and cool, when the fat may be skimmed off. The meat and broth may be stirred into the mash. Try this with your cut green bone and you will find an amount of fat that will surprise you.

Foods That Develop Gloss.

For the class which requires a gloss, the fats and oils are a great help if not an absolute necessity in getting good condition. The best foods for gloss are corn, buckwheat, sunflower seed, beef-scraps and suet or beef tallow. These cannot be used in quantity or as staple foods, as they "age" the plumage if given to excess. Many exhibitors are so situated that they cannot attend their fowls during the day. I believe that the best method they can pursue is to feed the mash late in the afternoon and in the morning give the birds grain to scratch for during the day. A cabbage may be hung so high that they will jump a little to reach it.

Taming the Show Bird.

A show bird should be tamed so that it does not become frightened when handled. The advantage that a bird that will pose while the judge is in front of the coop and handling it, has over the one that gets all out of shape the moment the judge touches it, is obvious. While continuous cooping of any fowl is a crime against good sense and good condition, a half hour a day is necessary for all candidates for show honors. The bird will become tame quickly by offering tid-bits such as meat and kernels of whole corn from the hand. By stroking with the hand the bird can be taught the correct poise for the show coop.

In these days of strong competition an unwashed white bird is practically debarred from winning. An unwashed bird, be it ever so white, looks very cheap beside a well washed one of much less good natural color. This is a branch of the industry in which a certain few have become so proficient that it is practically impossible for anyone not an expert in this line to defeat them. There are many soaps and preparations used for washing white fowls but Ivory soap and soap-bark are the most generally used. The best washers thoroughly lather the birds to the hide and use two rinse waters. The last water contains a very little blueing. This will show in the feathers if too much is used and beginners are almost sure to use too much. If not thoroughly rinsed, so that all the soap water is removed, the feathers will curl and crinkle.

In late years much is hinted at concerning the use of bleaching agents that bleach a creamy or yellow bird, otherwise fine, so that it becomes a winner. No doubt hydrogen peroxide, the active agent of which is a free atom of oxygen, is used to a certain extent. So is ammonia and other cleaning agents. Their value lies more in their power to remove stains and dirt than in any real bleaching process that takes place.

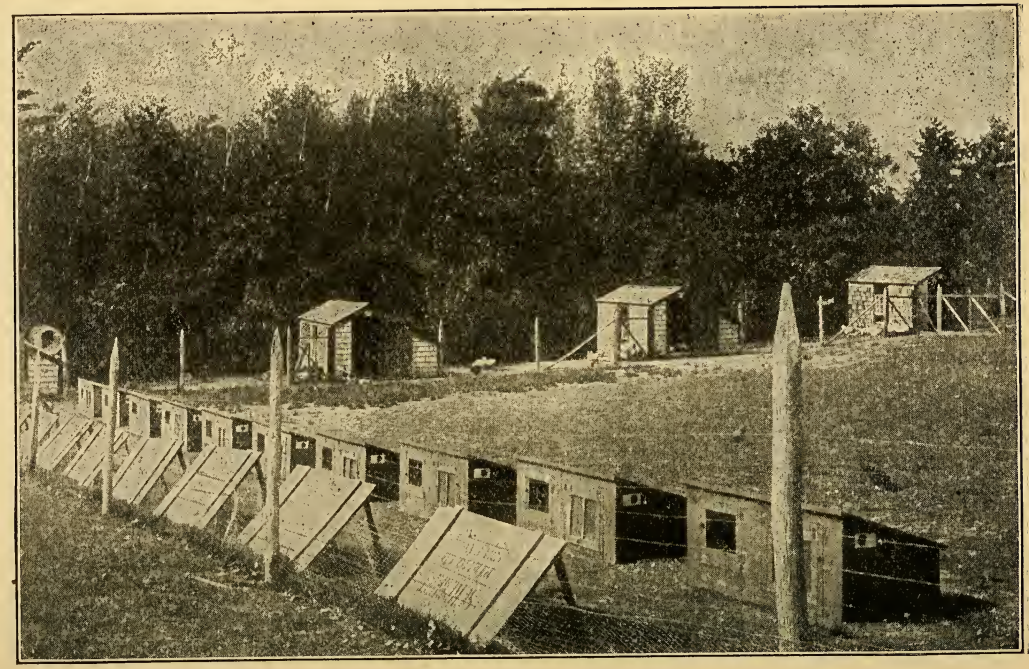
The most effective method of whitening a bird is to repeat the washings. Persistency in this counts as in everything else. The best treatment for the comb, face and wattles of a perfectly healthy bird is to wash in soap and water, dry and let alone. When the face does not show good color, massage and treat with a very small amount of vaseline. To keep the color in the face, repeat the massage. This treatment is simple and will bring more color than would be supposed. There are many lotions and drawing, burning liquids that are applied, but they are all at best but temporarily efficient. A short while after the application the head possesses less color than before.

The first thing to do is to see that there is plenty of sawdust or whatever bedding is used, in the coop, so that the bird may stand properly. Nature gave the bird toe nails in order that it could scratch for the early worm. Their nails are curved downward and the curved ends were intended to go down into the earth. When there is no substance that these nails can penetrate under its feet, the curvature in the nails prevents the specimen from straightening up or standing naturally. The next thing is to clean, and if possible to scald, the drinking and feed cups. This often eliminates danger from roup and canker.

Feeding the bird counts for much in the shape sections. The proper amount of food in the crop at the time of judging means credit for better breast shape; too much means a bird without life or style. As a rule the bird should not be tampered with for an hour before judging. He should be allowed to become "his natural self;" unless he does so he is at a disadvantage.

PART TWO

The second part of this book is devoted to practical poultry culture, or the production of table poultry and eggs, for market or for home consumption. It treats of the laws of practical breeding, housing, foods and feeding, destruction of lice and vermin, diseases with their causes, symptons and cures, poultry on the farm and kindred subjects. The subject matter is by Ida E. Tilson, well known as a successful poultry keeper, student of poultry culture and lecturer.



The Poultry Department on an Up-To-Date Farm.

PRACTICAL LAWS OF BREEDING

Heredity and Prepotency—Crossing and Crosses—Grades—How to Select the Profitable Fowl.

Like produces like. Both original and acquired characters tend to be inherited.

Two birds of like desirable qualities, mated together, give their progeny a double tendency to develop those qualities.

The oftener and longer such qualities are transmitted, the greater becomes their prepotency or predominance over all else.

While inbreeding fixes quality, it impairs vigor, hence should be ventured only with fowls of uncommon merit, and for a limited time.

Without continuing the same conditions of food, shelter and care which first made them possible, even inbred characteristics cannot altogether be retained.

A first cross of unrelated and superior stock best secures size, vigor and endurance.

A first class fowl generally derives its condition and size from the mother, and its quality from the sire.

Pullets generally follow color and shape of the cock used, while cockerels are more like the hen.

Large roosters crossed with smaller hens, give "leggy" chickens. Small roosters with large hens cause a fine, compact shape.

Fowls without some maturity themselves cannot perfect their offspring, hence a mature male is better with pullets, and hens with a young male.

Nature's law of good breeding is rigorous selection. Drought, famine, flood, frost and enemies permit only "the survival of the fittest." By other means we must likewise "weed out" all fowls deficient in constitution and energy.

A strain, according to the "Standard," is a "race of fowls that has been carefully bred, for a number of years, by one breeder, or his successor, and has acquired an individual character of its own."

Crosses and Results.

Sam'l Cushman exhibited a number of cross-bred carcasses at Eastern Fairs. He says "marketmen, veteran breeders, and poultry judges unanimously pronounced the Cornish Indian and

Light Brahma cross pullet the finest carcass. The finest cockerel was also of that cross. The White Wyandotte and Indian pullet was pronounced second best by most. An Indian and Golden Wyandotte cockerel was considered second best cockerel. It was found that Indians and their crosses were harder to pluck and more difficult to caponize than any other of the crosses."

This same Indian apparently does not rank so high for early maturity, hardiness and laying, as when first imported, hence promises more improvement to adult carcasses than to broilers and laying stock.

A cross of White Wyandotte male on Light Brahmas gives a fowl which, for both eggs and market purposes, is not easily surpassed. A White Plymouth Rock with those Brahmas would secure no more eggs, and not so blocky a body. A White Leghorn, Light Brahma cross would produce more eggs and nearly as fine meat. Brahma crosses are easy to caponize.

A White Leghorn, Barred Plymouth Rock cross has been my favorite many years, and is difficult to beat in early maturity and egg production. Leghorns with Cochins, Brahmas, or Wyandottes, produced for me "general purpose" fowls, but I see much risk and no advantage in crossing equally fine but very dissimilar laying breeds, like Leghorns and Hamburgs, or Leghorns and Minorcas, nor in mixing breeds already satisfactory for "general purpose," like Plymouth Rocks and Wyandottes.

Cross-bred chickens survive more generally, and come faster to maturity, hence excel as broilers. Cross-bred fowls, on account of their hardiness, lay earlier and oftener than pure fowls not noted as layers, but do not prove more prolific than full bloods bred for laying qualities. A second cross has a mixture on each side, hence no one can certainly predict results. A "crazy quilt," unsalable flock follows.

Since a first cross demands considerable annual outlay

Colony Houses in the Orchard on a Fruit and Poultry Farm.

A Suburban Poultry Plant with Berry Bushes and Garden in the Foreground.

for new fowls or eggs, I advise farmers and amateurs to reserve the best of their present pullets, choose a rooster of any breed they prefer, and thereafter, each season, or at least second season, buy others of his same kind, and thus, in a few years, build up a high grade flock, practically full blood, so far as results go, though, of course, not thoroughbred nor fit for sale of settings. Its original foundation of common or mixed stock, suited to that farm, its care and conditions, often produces more satisfaction than a full blooded flock transported there bodily at first.

Shape and What it Indicates.

Shape makes a breed, color a variety of a breed. Every breed has an ideal shape, peculiar to that breed alone and independent of color. A Buff or White Plymouth Rock, first of all, should be shaped like a typical Barred Rock, or else not claim the name. A White, Black, Buff or Golden Wyandotte must have the shape of a typical Silver Wyandotte, or else not claim relationship. Hence form, less easily described and recognized than color, should be especially studied.

The shape of good layers is best seen when looking down upon a feeding or resting hen. Good breast development means use of wings and activity. Breadth of body through shoulders, measured across at bottom of hackle, proves ample respiratory and digestive organs. A body of fair length gives form for reproduction. This must not be confounded with length of back, because the position of tail and size of hackle often put short

backs on fair bodied fowls, like Leghorns and Langshans. A triangular body, apex at rear, well tucked up behind, provides no attachment for fat where hens naturally lay it on. Rather short legs, well apart, and a firm carriage, show vigor. A bright eye and red, tremulous comb indicate good circulation. These signs, first learned by actual trial of common hens and crosses, I afterwards saw covered the Standard requirements for shape of those great laying breeds, Leghorns, Minorcas, Red Caps, etc.

Hens selected by both shape and actual egg record, soon establish a laying strain, because parts are developed by use, or from lack of use remain undeveloped. If this change of tendencies is continued for generations, it becomes hereditary.

POINTS ON HOUSING

Selecting a Location—Scratching Shed House—Foundations and Constructions—Poultry House Fixtures.

The first thing to be considered in establishing poultry quarters is their location, which if too far from the dwelling makes a caretaker extra steps, and if too near promises frequent visits from hens, hence dirty walks and lawn. If the quarters are away from garden and around an orchard, the fowls will range over the latter and destroy many injurious insects. Prof. Sturtevant of the State Experiment Farm, Geneva, N. Y., placed a dozen hens in an inclosure of 50 plum trees. Only three per cent of the fruit was curculio stung, while all outside was nearly ruined. Others report good done in peach, apple and orange groves. Biddy's scratching and pulverizing put a manure heap in fine shape for spreading over the fields, and a barnyard near by, where there will be warm manure to work in, and scattered grain to seek, helps out the exercise of fowls having no scratching shed.

A sandy soil is best, as it absorbs moisture and dries off quickly, hence is the only one at all hopeful for a "dugout." A slight elevation well drained on all sides, prevents standing water after rainfall.

Snow can easily be shoveled down and away, while making winter paths, so drifts do not accumulate to make torrents when they melt. My first house, built upon a level site, was occasionally damp enough for a fish, till banked with earth, and two ditches dug near with drain pipes put in. That earth is rotting the sills, hence my next house, by a few loads of sand, a scraper and team, was put beyond danger, and on its artificial

site has been perfectly dry. Dampness causes or aggravates many diseases, like roup, diarrhea and sore eyes. Success with a basement is doubtful, unless in such an elevation that the bottom of basement is still above level of surrounding land.

The more protection on the north and west the better, whether by trees, straw stacks or other buildings. An ingenious young Minnesotan who built his hen house between granary and pig pen, with barn in its rear, seldom found the fowls' drinking water frozen.

A south exposure must be preserved, because scientists find sunshine one of the best microbe killers and consumption cures. Dr. Stalker, Iowa State Veterinarian, discovered, on his trips through that state, those cattle stalled nearest the light in basements, were freest from disease. When my poultry quarters were located, there was a windmill tower south of them, casting but little shadow, however. Over the oft frozen water-tank, it later became necessary to put a building which shades one hen house till about nine o'clock a. m., and begins to shade the other at perhaps three p. m. Whichever house is then shaded, according as my observations on the thermometer are at night or in morning, is from six degrees to twelve degrees colder than its companion, although both houses at noon of a sunny day, or any time a clouded day, are seldom more than one degree apart.

Comfortable Houses Save Food.

A warm house lets more of the food eaten go into egg production. Many experiments at stations and on private farms, conclusively prove that all live stock can be kept on a much lighter ration during cold weather if properly sheltered. Once spend money for a comfortable place, and you have it, but a cold house means extra grain bills every winter. Because hens and all other animals make their bodily heat out of their food.

We herewith reproduce a plan of house and shed, which can be built single or indefinitely extended and will give excellent results for the expense. Total cost in my own case of two separate houses, each with shed, was about $1.00 for every five square feet of ground room.

The height of houses illustrated is 6½ feet in front, 4 feet back, and each combined pen and shed is designed for 25 fowls. Some prefer an alley running along the back, from which any room can be entered, instead of passing directly from one to another, but that entails a wider, higher, more expensive building.

Manager Gilbert of Ottawa, Canada, Experiment Farm, suggests utilizing a corner of the barn, something I have seen successfully done in bleak locations.

A scratching shed, or room, according as the situation is comfortable or exposed, has been provided for, it will be seen,

in every plan presented, because by trying houses both without and with scratching places, I have learned the latter's value. However great lights of poultry culture may differ on other points, they all commend the scratching shed plan. With our cold climate, a house large enough for fowls to exercise in days, is too cold at night when hens are quiet on their perches, and a house sufficiently small for comfort then, is too cramped daytimes. It is most satisfactory to build a snug roosting-room, and add a cheaper arrangement for the other uses. My first shed was crotches and poles covered with cornstalks, and till farmers have tested it they can make a cheap protection mainly of straw. No front is needed except in stormy weather or windy localities. Instead of wire or muslin doors there, as shown by designs given, frames or curtains might be arranged to swing up inside of shed roof. Swinging out, they would be exposed to weather and shut off sunshine. Those who have used white cotton cloth, tell me it admits sufficient light.

To entice the fowls out and keep their toes warm, plenty of litter under our shed, autumn leaves, chaff, straw, poor hay or shavings will do. An acquaintance utilized even pine needles. Hide the grain fed in this rubbish. Biddy is feminine, hence very curious, and will search for the last kernel. In front of the shed bottom, a temporary fender, composed of a 4-inch board held upright by little stakes, keeps the litter from scattering and wasting.

The scratching hen is always a laying hen, provided she finds something to scratch for. I often compare a fowl's interior to a machine with its wheels connected by bands. Start one wheel, and all are bound to move. The muscles which attach the thighs to trunk are very spreading, hence exercise biddy's legs and her egg machine will finally start. If we give hens nothing to do they will do something, like eating feathers and eggs.

Size of the House.

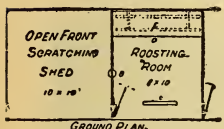
The size of house and shed are next to be decided. Formerly, 3 square feet of ground room per fowl was called plenty. By trying both that and a larger allowance, I find 4 or 5 square feet none too much for the best results with farmers' fowls. Poultry papers say village birds need 7 to 10 square feet apiece, of shelter, besides their yard. I was once asked, at an Institute, "Why not reckon by cubic feet?" Air to warm up does not replace ground to scratch on and get warm on. In cold climates, fowls endure cramped quarters better than elsewhere, and, especially, small roosting rooms, but a Minnesota woman told me her only hen to lay one winter, which laid almost daily, was a Brown Leghorn that insisted on living in the horse stable, where there was warmth, room and exercise.

Foundations and Floors.

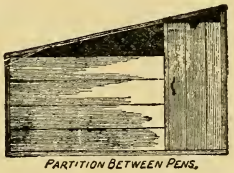
A stone foundation, put down into ground 1½ or 2 feet, thus compelling rats and skunks to dig below it and then up again, so misleads them that in 12 years there have been less than a

GENERAL PERSPECTIVE.

A SHED AND PEN.

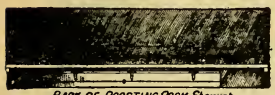


GROUND PLAN.



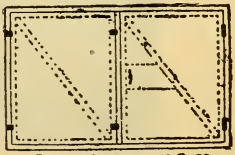
PARTITION BETWEEN PENS.

PARTITION BETWEEN TWO SHEDS.



BACK OF ROOSTING ROOM, Showing Roost, Platform & Nest Boxes.

FRONT OF SCRATCHING SHED. (Showing Wire & Studding.



FRONT OF SCRATCHING SHED. Showing Cloth Curtains (Dotted Lines Indicate Frames.)

Illustrations Showing Construction of the Scratching Pen. House Referred to on Page 105.

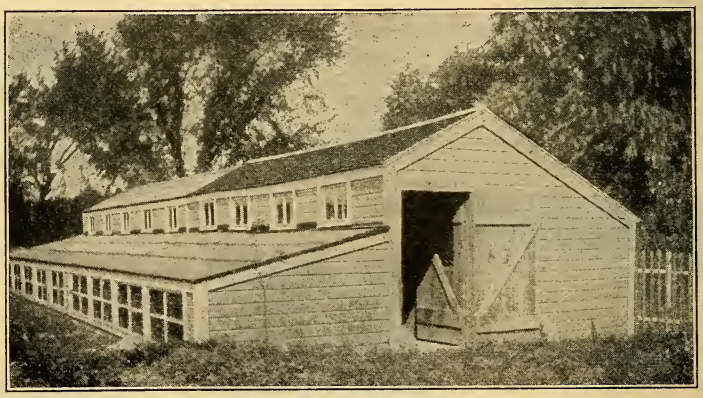
half dozen entrances effected to my houses, yet such creatures are very numerous around. My foundations are simply laid stone but I recommend a finished job with mortar.

Cement or board floors are liked by many, but are cold and hard unless well covered with sand and then litter. A board

floor must be kept very clean, or its cracks will afford another lurking place for parasites. If much elevated, a board floor is colder; if not raised high enough for cats to follow the rats under, it becomes a resort for the latter. The site must be prepared and graded for cement as for earth floors, because I know of two dwellings on damp locations, where water filters through sides and bottoms of their finely cemented cellars. One case of rats digging through cement has been reported to me. To prevent this, some builders cover with wire netting, of one inch mesh, the foundation and ground before cement is applied; others put four inches depth of pounded stone below.

I prefer the earth floor. Once at least, usually twice a year, a load of clean, dry sand is put in each of my hen houses, to replace what is carried out gradually on wings, feet and tools. Sand prevents that dampness which is such a floor's only objection, and dampness is what we are fighting against under any arrangement. Some excavate about 3 feet of earth, put in gravel to half that depth, press down well, then replace dirt on top well packed, and thus secure a drained, dry bottom.

In a severe climate, a high house is too cold. A Minnesota



One of the More Expensive Types of Poultry House. It has Roosting Pens on the North of the Walk, Which Passes Through the Center, and Scratching Pens on the South, the Birds Going From One to the Other Beneath the Walk.

friend tried to utilize a building 14 feet high, and her hens froze on their roost. Bumped heads, however, will discourage the "men folks" from lending a helping hand, hence I would have a pen high enough for the tallest "hired man" to enter

and clean. Posts from 6 to 8 feet in front, are the range I recommend.

"A" roofs are on my houses and dripped on me working in front, till we added troughing to carry away the water. Some

Colony Houses For the Accommodation of Growing Stock in the Fall and Breeding Fowls in the Spring.

like more than half the "A" in front, to catch the sunshine, hence do not put the ridge in the center. The more snowy a country, the steeper roof-pitches should be. A single roof sends its drippings to the rear, but the longer the rafters the thicker together and stronger they should be.

Brick we know is a good filter of water, but water-tight joints can be made of wood, hence brick hen houses will be, as reported, cold and damp, unless well painted outside and double-walled, with wooden connections, or ceiled, or lathed and plastered inside.

Lumber is easy to work in and to move. Unseasoned material gives off moisture at first, and through its cracks later lets in both dampness and cold. I have found by experience how much harder it is to whitewash and paint unplaned than planed lumber, but, thanks to machinery, the latter now costs only a trifle more. Boards and timber come from 10 to 20 feet long, so plan your house and order your material as to cut all to good advantage. I keep my house painted, because that preserves and purifies as much as adorns.

Perches should not face a window, or any probable source of draft. A side draft is the worst possible, because it cools one-half of the body faster than the other half, and destroys the system's equilibrium. Whatever the style of perch or nest, let both be movable and simple, a combination greatly appreciated in house-cleaning time. A perch that takes apart and takes out of doors, can be kept more free from parasites. Avoid nailing parts together; use mortises, straps, bolts and nuts, cleats, etc.

From one and a half to three feet is about the range of height to prevent fowls from bumble foot. Perches must be lower for heavy than for light breeds, because the latter climb and fly better, and usually have large combs which are brought into warmer air up high. A stair arrangement is not so good as perches on a level, since fowls, like politicians, all want highest places.

Heavy birds need wider roosts, to throw some weight on shanks and off breast bone. Scantlings, 2x3 or 2x4, broad side up, with rounded edges, are popular perches. Sassafras poles and horn bean, also called blue or water beech, make good roosts, but if tamarack and poplar are to be used they must certainly be cut in winter, when the sap is out, or they will check.

A dropping board demands the same cleanliness as a floor, but saves the whole bottom of the house for hens to walk and scratch in. Many economize space by putting Nest Boxes under the roosts, thus joining the two most infested parts of a poultry pen, and letting each help stock the other with parasites. United, they may prove too much for a poulterer, while singly they could be conquered.

Movable boxes, on table, or ground, or hooked to the wall, I have seen and commended. My own nest boxes, 13 inches square and 17 inches high, have no tops, but rest on and slip under loose boards lying across brackets or cleats, the last being the only stationary fixtures in my houses. I have replaced some cumbersome nests of 1-inch stuff, by those made of ½-inch, out of dry goods boxes bought at stores. Heavy breeds need nests lower down, but mine are 18 inches from the ground, so hens walking about do not look in and get tempted to eat eggs.

Fences and Yards.

Start yards with good turf, and the latter will last quite a long time. If there is no vegetable growth to absorb liquid droppings, the best raked yards get foul. Plant them double, and while fowls are in one, spade the other, and sow to lettuce, sweet corn or winter rye. In due time, turn the birds on and treat first yard similarly. Make long yards rather than square, thus inducing as much walking as possible. For best results, 75 square feet per fowl is none too much. A limited range, if it is a range, perhaps puts fowls under more perfect control than does farm freedom.

FOOD AND DRINK

Requirements of the Fowls—Composition of Foods—Food Value of Grains—Drink and Drink Dishes.

It is difficult to give absolute directions for amount of food, because there are so many modifying circumstances. The colder the climate or season, the more we feed. A French savant gave the general rule of one quart solid matter per day to every 8 large or 10 small hens. Although I wish biddy to work and lay, so she will not come out spring fat, I am willing she should enter in good condition upon a Wisconsin winter, or be as fat then as I shall ever allow her to become, till ready for eating.

Not altogether size, but quality of range, its greenery, grains and bugs, decide how much we shall add. A square mile of sand, for instance, might furnish little except grit. Fowls which exercise daily, and breeds naturally active, utilize more food than confined or sluggish fowls can. Farmers' poultry in general, and Leghorns in particular, least often overeat.

The age of birds must be considered. The mature need less food than those growing. For this building of frames, the Creator has provided, by making the digestive apparatus proportionately larger during youth, that is, the digestive apparatus does not increase in size as fast as remainder of body. Therefore, it becomes a law of animal development that liberal feeding accomplishes more in youth than at any other period.

The following table of growth, the result of careful experiments, is suggestive, though not universally applicable:

Weight of fowls in lbs.	Ozs. dry matter per lbs. of live weight.	Total ozs. of dry matter daily.
1 lb.	1.24	1.24
2 lbs.	1.03	2.06
3 lbs.	.94	2.82
4 lbs.	.87	3.48
5 lbs.	.82	4.10

An increase of water is demanded, to rinse and empty the system of its waste, to lubricate organs, joints, etc.

It is rare that hens and pullets in one flock, both do equally well, either the former become overfat, or the latter stunted. The question of retaining layers a second year, properly comes here.

	6 months.	6 months.
1st year	No eggs.	Many eggs.
2nd year	Eggs all through the year.	

By actual trial, I feed less the second year, yet I have as many eggs, but our properly reared pullet presents most of her eggs in the winter, with prices high, whereas our hen distributes her product more. Considering the labor of rearing, I retain my layers two years.

If food is left, I reduce the amount. If they seem very hungry, give more, and watch whether they get fat, because a very fat hen either does not lay or else lays soft-shelled, bloody eggs, "unripe ones," a boy said, her egg organs being crowded and degenerate.

The layer is a brood animal, therefore appetite should be almost satisfied, never cloyed. Even "Cramming," fattening or "finishing" fowls can be carried on only about so long. Then the clogged liver ceases to act well and the fowl ceases to gain.

In a state of nature, birds are constantly picking. Their nervous system is highly developed, which is an aid to digestion, hence I hang up hogs' heads, unthreshed grain, etc., to distribute food and yet not deprive of exercise. My hens will now strip a cabbage, and they tear down a tender liver. Feed lightly morning and noon, but send them with full crops to their night's fast.

The French scientist, Reaumur, to ascertain whether fowls prefer cooked grain, furnished them daily with several sorts and preparations. Sometimes all kinds were devoured alike, at others nothing but dry grain, then again nothing except boiled and no permanence could be discovered in the preference shown for any particular kind of boiled grain. The kernels swell in cooking, hence corn, wheat and barley thus treated, went farther while oats, buckwheat and rye were so heartily eaten after boiling, that there resulted no saving, but a slight loss. Although there be no economy of these latter by cooking them, his experiment teaches us how we may induce fowls to eat them, and thus economize dearer grains. I have boiled many oats.

The potato, belonging to same family as tobacco and henbane, is more wholesome cooked. Clover becomes more natural and less packing and constipating. Carrots, which help color biddy's egg-yolks, like brindle's butter, my hens will only eat boiled, and then I have to flavor with an onion or two.

All kinds of ground grain swell upon the application of heat and moisture. If this swelling is not done outside fowls, it will be done inside, where there is certainly plenty of heat and moisture, but I find, by observation, that packed crops, etc., result. Fowls, in fact, lack capacity for the operation. Hence, from the hatching to killing, I scald or bake all their puddings, and never mix with any cold water. The fault of most puddings, as well as of bread and milk or other soft preparations, is sloppiness.

Feed every such thing as dry as it can be and yet be wet, if you would prevent diarrhea. Having several times dissected the crop and seen how softened and swelled were the grains, etc, within it, I know it is a stomach. When we add the esophagal

pouch with its gastric glands, and the gizzard with its grinding movement, we find a very different digestive apparatus from a pig's simple stomach. Here the Creator hints that fowls must not have food run immediately through them, but, instead, stay a while. As soft food digests rapidly, it should be given early in the day when fowls are suffering from their long nightly fast. The question whether fowls must be fed or watered first, mornings, mine practically solve by eating little till they have an opportunity to drink, which is wise, because the food is not then too rapidly washed along.

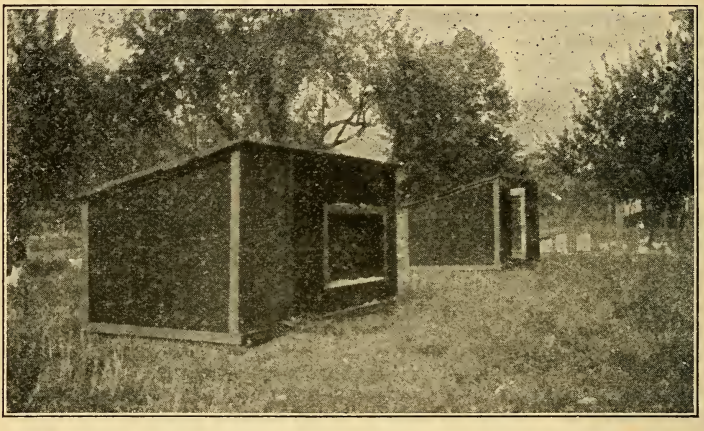
In winter, a few hours before use, I simply put each pan of grain under one of our stoves. By a little forethought, I take no extra steps for that grain, but bring it in when out on errands. When a hen warms up inside her the cold food taken she has used some of her stored energy and heat. Our stoves, already going, might as well do more good as to tax biddy so. Put warmth into her by means of warm food, and she and you are that much ahead.

Just the time when you take hot coffee and cakes give biddy a warm mash, because in all but nocturnal animals, life's tides are lowest mornings, after night's long fast and little change of position, sleep being better for nerves than for circulation. Warm food digests and gets to work quicker than anything cold, because a stomach takes a little time first to warm up later. They sustain the same relation to each other as dry and green wood do. Women who must start the family breakfast promptly can, as I do, send out a few handfuls of warmed grain, by the "men folks," and "stay" the fowls, till ready to make and feed their pudding. Some prepare it night before, leave covered, and it is well steamed, but nearly cold. Because that warm mash has been abused, hens have over-eaten, stood idle all day afterward, and acquired dyspepsia, is no reason for entire discontinuance. A. G. Gilbert's plan is to "throw all waste of the kitchen, in the shape of meat scraps, pieces of bread, uneaten vegetables, etc., into a pot; heat up in the morning till nearly boiling, and then mix bran, shorts, or whatever is most abundant or cheap, with the hot mess, dusting in a small quantity of red pepper before mixing. Let the mixture stand for a few minutes, until the meal is nearly cooked." Pepper is a stimulant, not a food, hence a little is good, but too much irritates. I consider 1 quart of pudding to 18 or 20 hens sufficient, because they can eat it so rapidly and easily that they would otherwise gorge. My standard mixture is one-third each, bran, shorts and corn meal, by bulk, with usually a little pea, bran or linseed meal added. Sometimes ground oats have taken the place of bran.

Do not burn the hens' throats, but also make allowance for the cooling effect on food of icy troughs or frosty boards. I admire the latter for a table. When fowls are done, scrape the

boards clean, with cob or knife, stand on one end, and the table is already set for next meal.

I once bought some cheap grain musted from being kept over a horse stable. When used, I had to brown it in the oven, or scald with hot water, to destroy mould plant and arrest diarrhea caused. By several times picking out all other seeds from a handful of wheat screenings, then comparing wheat left and price with solid grain's price, I found the latter cheaper. Shrunken wheat, unmolded, is not bad, because containing all essential



A Row of Colony Houses on the Plant of a Village Poultry Keeper.

elements, though less starch and water. Occasionally an elevator burns and charred grain is thrown on the market, but much of it is nearly consumed, and so smoked as to be actually poisonous. Utilize your own poor grains, etc., but buy the best.

Composition of Foods.

Hens may be overfed with some elements, and at the same time underfed in others, unless we know what to feed.

Scientists differ a little in application of terms, but the word protein generally covers all food substances containing nitrogen, whether their names be albuminoids, gelatinoids, or whatever. The work of protein, or its contained nitrogen, is to build tissues and frame, then keep muscles and bones in repair, supply albumen for eggs, etc. Protein, aided by some mineral matters, provides the machinery, we may say. If we feed nothing else, a part of it will be converted into heat and energy, but the latter work can be done by cheaper foods, while its own proper

work cannot, just as beautiful walnut and mahogany can be burned, like pine, but pine cannot fill the higher places in art.

Carbo-hydrates is a term including starch, sugar, cellulose and other allied substances, all of which are carbonaceous or heat formers. They are the fuel.

Fats, in moderation, are generally aids to digestion. They are the oil for our machinery. Starches and fats fed abundantly will, either one or both together, form a reserve of fat in the system, piled up fuel under cover, we may call it. Fed in excess, they produce obesity, or else pour through the system undigested, just as too much coal clogs the fire or rushes through stove into ash pan below.

Prof. W. O. Atwater gives the model pound of food for an average man as:

Protein.	Fat.	Carbohydrates.
2 ozs. 13 drams.	1 oz. 1 dram.	12 ozs. 2 drams.

Dairymen prescribe a not very different one for milch cows. So we may accept the above as a fair scheme to try upon laying hens and growing chickens. Broilers and fattening stock should receive much more carbon and oil, hence we usually find Indian corn the basis of their food preparations. Various scientific papers and U. S. Agricultural bulletins have given food analysis from which the following is arranged.

The poulterer can profitably spend his evenings studying it, though accepting all "with a grain (or more) of salt" or common sense:

In every lb. of	Protein.		Fat.		Starch.		Min. Mat.	
	ozs.	drs.	ozs.	drs.	ozs.	drs.	ozs.	drs.
Oats	2	1		15	7	8	4	5
Middlings	2	14		15	8	8		13
Bran	2	9		10	6	14		15
Wheat	1	15		8	9	4		5
Buckwheat	1	15	1		9	4		4
Barley	1	12		5	9	10		5
Indian Corn	1	12	1	4	10	7		2
Linseed Meal	4	11	1	1	5	5		1
Beef Scraps	8	6	4	11				
Green Bone	9	8	2	11			4	
Skim Milk		12		8		13		2
Clover Hay	1			3	5			3
Grass		6		2	2	2		6
Potatoes	1	1		5	6	9		5
Beans or Peas	4			5	7	11		5

The following list gives effect of certain articles on the bowels as my own hens have been affected thereby. The poulterer should not only study constituents of foods, but carefully watch the droppings of his fowls, and regulate their diet somewhat according to latter.

Constipating foods include shorts, corn meal, curd, charcoal, dry hay.

Laxative foods are salt, bran, rye, linseed meal, beef scraps, meat, oats, grass, vegetables, sour milk.

Any grain fresh from the threshing machine is loosening till after it has time to "sweat," etc. Laxative foods continued till they irritate, produce a dangerous form of constipation. The worst case of the latter I ever saw was a hen's lower bowels packed with oat hulls.

Although Indian corn produces eggs with yolks of dark color and rich flavor, it is so fat-forming and warmth-giving, I feed little except winter nights, and then on the cob. Northern fowls and those on farms, will bear more of it than Southern birds or those confined. Many breeding exhibition poultry believe maize not only makes yellow shanks, but imparts that shade to otherwise pure white plumage.

Oats, though a nerve food, and well proportioned in elements, are harsh and indigestible because of their hulls. The better and heavier our oats, the less hull in proportion to body. They are a good summer grain, and I give them occasionally in winter, to reduce fat hens and set them laying. There is so much hull gone from rolled oatmeal, the latter becomes an elegant ration for chicks, while common customary ground oats have proved fatal.

Barley and rye are midway between corn and oats. The former is popular with English poulterers. The latter, my hens only eat cooked or fresh from the thresher.

The best single grain to feed is wheat. The accusation that, in large quantity, it produces diarrhea, I believe only true of screenings. Bran varies greatly in quality and irritating effect on the bowels.

Buckwheat is the basis of poultry rations in France, but that country raises better buckwheat than ours. It is reputed to heat the blood and to cause white flesh and egg yolks. I give it as a change in winter.

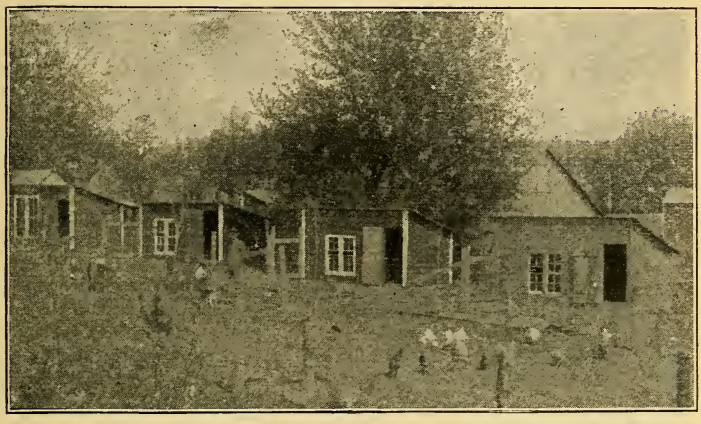
Millet and rice are both rather fattening.

Peas and beans. Some may be glad to learn I have no trouble in getting them ground at any ordinary custom mill. A pint of such meal, added to a 4-quart pudding, replaces meat.

Sunflowers aid digestion and oil plumage. The North Carolina Experiment Station has demonstrated what I long suspected, that the black-seeded sunflower is richer than the "Russian." The latter, though prolific, oftener blights here, and its seeds are awkwardly large. Plant later than corn, and cultivate similarly. Large heads stored for winter, can be saved from molding by cutting a large patch from back of each.

Where range is large and insects abundant, fowls will help themselves in summer. For winter, I know of nothing better for meat food than the bone cutter.

Green bones (those from the butcher) can not be ground, as they are too tough, and contain a large share of water or blood. They must therefore be cut with a bone cutter. When bones become very hard and dry they can be ground in a mill, but will then have lost a large proportion of their nutritious matter. Green bones are rich in nitrogen, and therefore serve as food. When a bone contains a large share of adhering meat it is all the more valuable.



Colony Houses on a Fancier's Place.

Bones serve several purposes when used for poultry. Being phosphate of lime, they are capable of being digested, which is not so much the case with oyster shells and grit.

My bone cutter does excellent work on breast bone, backbone and ball and socket joints, especially when the bones are frozen. Gambrel joints and hind shins must be thrown out entirely. Boiled bones cut very easily, but baked or fried are pretty hard. Higher priced machines cut anything. The cutter also shaves in fine shape, vegetables and beef scraps or cracklings. One of the Eastern Experiment Stations analyzed about 150 different specimens of bones, and found all essentially the same, after slight variations in solidity, solubility and proportion. While clams, old plaster and oyster shells, which contain considerable carbonate of lime, may do well for egg shells, also containing that, there is nothing like bone to make bone, or grow strong, valuable chicks. The egg itself contains some phosphates, and the following test shows green bones' effect on egg production.

Three pens were made up, of 10 hens and 10 pullets each, for the 85 days, November 1 to January 24. They all received

gravel. The first lot had also 14 pounds green ground bone; the second, 6 pounds oyster shells; the third, gravel alone. The egg yields were respectively 195, 83 and 65.

We have successfully fed 1 lb. ground bone per day to 20 fowls or when we had not the bone, beef or pork scraps at same ratio. There have been reports of forced moulting from overdoing green bone.

Burned bone is better than nothing, but most of the phosphates are lost, only a superior form of lime remaining. Hens will not eat crude lime. Make and frequently pulverize some mortar for them, as the least possible provision for mineral matter.

Milk, if sweet, is one of the best animal foods. Sour milk is so laxative I always add enough soda to take off the edge of the sour. Buttermilk needs both sweetening and diluting. Curd, made slowly, so it is not ropy, about equals meat. I put the milk in a pan reserved for that purpose, and set upon my asbestos stove-mat, where it cooks itself, without watching, then strain through a perforated tin pan.

Eggs are a concentrated food, chiefly suitable for and afforded to chickens and poults. Some commend eggs, while other authorities declare they produce bowel complaint. As so often true, both are right. An egg boiled 5 minutes, has its albumen or white, turned into indigestible leather. Boiled a half hour or longer, that leather itself becomes no worse, and the yolk grows more digestible. In finely mincing whole egg, with a knife or fork, lies one secret of successful use, or eggs put in cold water, just brought to boiling point, immediately set off, and left in the water till cold, will chop well and yet are wholesome. Raw eggs thickened with bread crumbs and custard are good, because one is natural and the other thoroughly cooked.

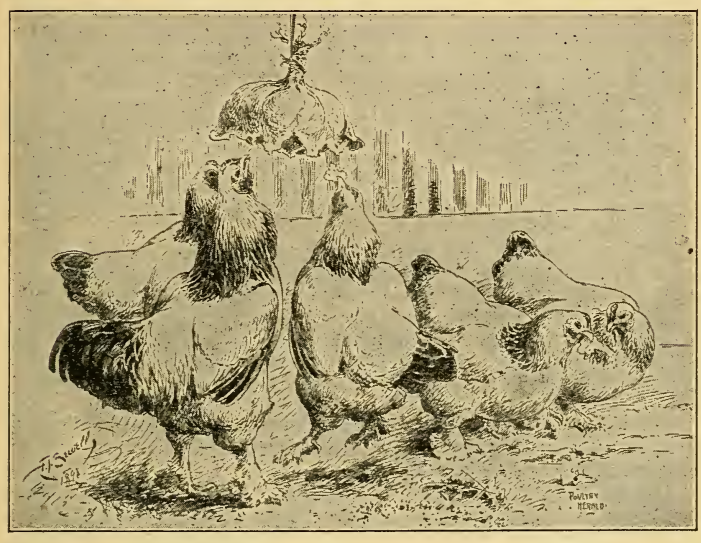
Use of Green Foods.

Green food furnishes bulk, and dilutes a concentrated grain ration so that it fills, distends and exercises the stomach, without much expense or wearing it out. There is nothing equal to a grass run, because grass has the salts of lime and other elements, in a soluble, more easily appropriated form than grains have. Ten geese need as much pasture as a cow, and 200 hens will eat the grass on 1 acre.

Hay made from nice grass or clover, may become nearly as palatable as when fresh, by running it through a cutter and then scalding, steaming or boilng it. Several dairymen who have ensilage and hens, report the perfect agreement of the two. All kinds of chopped vegetables help make summer in a chicken's heart and in the egg basket. Beets, rather fattening, are relished like beef. Turnips are a little more nutritious and cabbage is especially rich. Our crab apples are carefully gathered in autumn, and chopped at intervals for the hens, and our refuse cranberries are boiled with their potatoes.

I hardly know how to class our butternuts. We have many trees, and crack many nuts for the hens, which enjoy the frolic, and pick the shells perfectly clean. Walnuts, related to butternuts, are used in England to give poultry a fine flavor.

The secret of winter laying is an imitation of summer's conditions, when everybody's hens lay. Variety of food, is a summer characteristic. Three of my neighbors have each adopted a



A Head of Cabbage May be Suspended so High That the Fowls Can Reach It by Jumping For It, and Will Then Furnish Green Food and Exercise At the Same Time.

hotel in town, where they keep boxes for scraps. Beware of fish bones, however, if you enter such a scheme. To variety of food, I ascribe my hens' good egg yield, about 140 apiece per year, with "a fair count and no favors," and that in two large flocks of 50 each; also general good health of my flocks, once for six months of cold weather there being not a death nor touch of sickness, nor any vices developed. At the Cornell Station, a company of hens were fed on nitrogenous foods, like cabbage, clover and oats, another company on carbonaceous, like corn and potatoes. Large and finely flavored eggs came from the latter. The former produced more in number, but small and of poor keeping qualities. Good as onions are for the liver, and rich as fish are in phosphates, any such strong food will flavor eggs, unless com-

bined with a great variety of other articles. I can thus feed onions twice a week, and yet an invalid who prized my poultry products, said "I am so glad you don't give onions," till I laughingly told her the truth.

There are things, not exactly foods, yet indirectly valuable in a diet. Like their owners, hens need grit, only another kind. We get artificial assistance when we have no teeth, and how shall toothless fowls grind their food, unless aided? H. B. May says all diseases, but "old age," have practically passed away from his poultry yards since the free use of gravel. My own testimony is similar, and a friend thus cured feather eating. Surface gravel is worn too smooth. It needs be dug from a pit or specially prepared.

Charcoal and salt I rank among the cures for egg and feather eating, and preventives of cholera. Charred corn is relished occasionally. In addition, I buy the true and more valuable charcoal of commerce, burned under a smothered fire, with its carbon nearly all preserved. Pulverize a little at a time, as it soon loses strength.

Salt prevents gapes and worms, and increases egg yield, but is very physicing if improperly handled. I have known pork brine and water from the ice cream freezer, when thrown out, to kill fowls that drank, but mine never took any harm from the clear salt for years exposed to cattle on our farm, and one teaspoon pulverized salt to a quart of meal, mixed dry through the dry meal, before the latter is cooked or scalded, is perfectly safe.

The simple V trough any farmer can make, is better than a flat one, because it affords less footing, should hens "forget their manners," and try to step in.

As an egg is more than 80 per cent water, a generous, constant supply of the latter is needed. Cold water is most refreshing in summer and warm in winter. Stale water is at precisely the temperature in which microbes best flourish. Prof. Russell says although melted ice and water from driven wells are not free from microbes, they present fewer specimens. A tube conveying waste water from our well cleaned ice box into an often cleaned iron dish, provides my summer outfit. In winter, my father puts a hot brick on the ground, sets over it a segment of a keg, and in the latter puts his pan of water.

Pans and crocks to be emptied, dried, and aired at night, are excellent. A cob minus its corn, is my daily dish-cloth. (No patent.)

Mondays, when we have plenty of hot suds, these dishes get an extra washing.

PARASITES AND MICROBES

The Pests that Prey Upon Poultry and How to Destroy Them

A parasite is an organism which lives on another, and the name is generally restricted to those large enough to be discovered by the eye or by an ordinary magnifying glass.

Microbes is a general, indefinite term for very much minuter organisms, or germs of organisms, both animal and vegetable, now believed to cause many infectious and contagious diseases.

The following classifies the best known animal parasites of fowls:

Insects.—Gnats, blow flies, fleas, lice, bedbugs.

Spiders.—Red mites, feather mites, scabies of leg.

Worms.—Flat, round.

Articulates are composed of joints or rings. Insects, likewise spiders, have dissimilar segments, while the segments of worms are all similar. Insects in their mature stage, have a body with three distinct parts, abdomen, thorax or neck, and head, and six wings. Spiders have eight legs, and a body of only two sections, head and thorax being in one.

The effects of lice. fleas, etc., are that fowls cease to gain flesh, lose what they have, get rough plumage and scabby skins, and sometimes desert their homes and young, occasioned not so much by loss of blood, as from the constant tickling and want of rest and sleep.

So far as my observation goes all these parasites breed in filth, darkness, dampness, and quiet.

Institute audiences have asked little about the early history of poultry parasites, but again and again repeated the question —"Will these creatures injure other stock?" Prof. Neumann of Toulouse, acknowledged an excellent authority for such matters, has devoted attention to that phase, and assures us there is little danger except in one or two cases hereafter mentioned, each animal, in general, having its own enemies, which, though they may travel over and vex others, do not breed thereon. For example, lice on horses and cattle are distinct from each other, and both from poultry lice.

There are, at least, a half dozen species of lice for the hen, and nearly as many slightly differing ones for peacocks, guineas, etc. They are dirty white, yellow, or fawn in color; "tawny" I called the latter before I met them in scientific books. Prof. Law unites with Prof. Neumann in saying none are true bloodsuckers, but possess strong, biting jaws. With microscope I

have examined many of the gray "head" lice, and even borrowed them off my neighbor's fowls, but though large headed, they seemed to lack a proboscis, presenting the same cavernous mouth and general characteristics as all poultry lice, yet while others move quite rapidly from spot to spot, especially the species popularly known as "large bodied, fast-running yellow louse," (Goniocotes Gigas) the gray ones fasten themselves to head or throat. A sharp thumb nail or pin is needed to dislodge them. It remained for Minnesota's distinguished Prof. Lugger to discover the latter's proboscis. Others killed their specimens slowly in oil. He killed his so quickly that the probosces were not returned to their sheaths, where they are folded when not used.

Little chicks are soft, and broody hens, quiet, hence both are especially troubled, but being easily caught and handled, there is no excuse for not often dusting them with pyrethrum, or any other good preparation. Procure a twenty cent bellows with large, easy opening for introducing powder. Its long tube gets down to the base of feathers where pests are. A few times a year go over the whole flock. Mine roost while yet light enough for me to examine them.

When you can, exercise biddy, instead of she exercising you. A filled dust box six inches deep, will be her great resort and remedy for lice. I sift ashes with a coarse sieve from the fanning mill, because biddy can do better work after clinkers and coals are removed, which I then throw down for her to eat and play with. Wood ashes bleach plumage, and road dust is rather filthy. My preference is one-fourth air-slaked lime or sulphur, and the remainder coal ashes.

In the South and Southwest, gnats sting the heads of young fowls. I used to anoint bad cases with a little glycerine or vaseline.

Maggots occasionally infest the accidental wounds of geese or other old fowls. Chloroform is a neat remedy.

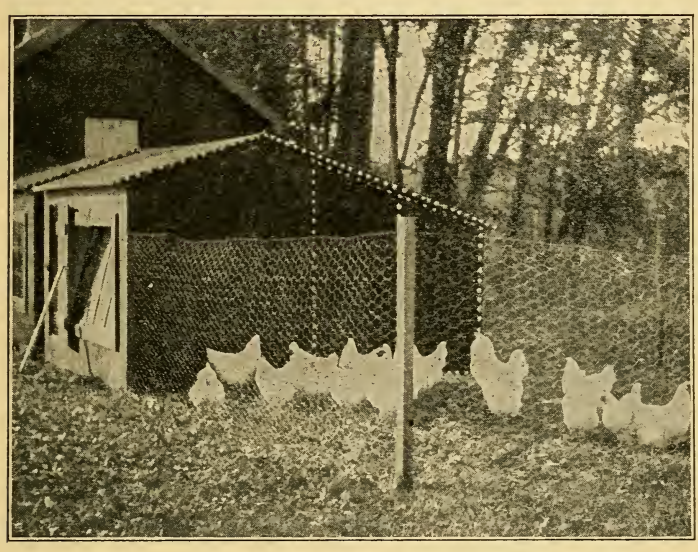
Ticks are common on turkeys and fowls which roam over old fields. The tick has a labial dart with recurved teeth, remove, therefore, by gently working from side to side, or by touching with a drop of kerosene.

Various depluming mites live on feathers and scurf. They are not generally dangerous, but cause dryness and breaking of plumage, or red, scabby skin. They cluster around quills of feathers on back and near vent. Pluck and burn. Apply hen's oil.

Scaly leg is caused by a mite (Sarcoptes Mutans,) which commences to dig under the large scales on front of legs and on upper side of claws. From thence it spreads all over leg. The scales are raised and broken by the irritation, the leg enlarged and some fowls have inoculated their heads in scratching with their claws.

The progress and contagion of disease are slow, but affected

fowls gradually wear out, and chicks are sure to take the parasite from an affected mother. A pullet given me from a place where this scabies had appeared, infected several companions, though carefully anointed before placed among my flock. Asiatics are especially subject to the complaint. Old fowls, the skin of which is less oily, are most troubled, hence nature indicates an oily application. I scrub legs clean with an old toothbrush and warm soapsuds. Then anoint with hen's oil which I am



A Flock of White Wyandottes Which Keep the Family on a Small Farm in Fresh Eggs.

now using everywhere. I formerly used sweet oil, having accidentally learned the former's virtues by being out of sweet oil once. Kerosene applications are too severe; they have lamed fowls for me, and killed them for acquaintances. Isolate affected hens, never set such, and disinfect the perches.

There is but one species of common flea on poultry and it troubles pigeons more than other fowls. Though fleas breed in dirt, they sometimes accomplish their complete evolution on the body of their host. The Southern "jigger" is of the flea family. The remedies for fleas and bedbugs or Nest Bugs (the latter not identical with dwelling-house bug) are same as those given under Red Mites or Dermanysses, all being creatures which live in cracks and crevices of walls, floors, nests and perches, rather

than permanently on fowls, but regularly visiting the latter to draw their nightly or daily supply of blood as food.

Destructive Red Mites.

Red mites look like exceedingly minute spiders and vary from yellow to dark red, according as they are fasting or full. Sometimes they become permanent parasites, in great colonies, on sitting hens and feeble chicks, but ordinarily nothing can be discovered daytimes, except a flea-bitten aspect of the skin. Pounding nests will sometimes bring them out, and wiping underside of perch with a white cloth, on which they show well, discloses their presence. They are found most easily early morning, before well hidden away for the day. They are probably our worst poultry parasites. Besides being extremely prolific, they can exist months without eating, and are not limited to birds, but pass to man and quadrupeds. They transfer themselves to horses most readily. Schumaker, however, reports a cow in Germany which became mad and had to be killed, owing to colonies of these creatures in her ears. Her stall was separated from a hen roost by only a plank partition. It is thought those red mites on canary birds and swallows are the same, the canaries perhaps infested from poultry, and poultry from swallows. Red mites are particularly pestiferous in Minnesota, Iowa and the West. If any are present in your poultry quarters, delay not, or you may have to do like one Minnesota man who tore down his henhouse.

Remedies. Hot coal tar applied on perches is said to dry well, not stick, and be efficacious. Kerosene, taken in time, I know to be a sure remedy. I frequently paint perches with it, using a discarded paintbrush, and choose the morning, so enough oil will evaporate not to cause roosting fowls sore feet. I turn the filling out of the nests, wipe off nest-eggs and pour kerosene, from nozzle of can, into all joints, especially four top corners, also pour into bearings of perches. A twig, round on one side and flat on other, stuck in the nozzle, will halve stream if unmanageable. The force pump for spraying trees will do good work on inside walls and space behind them with kerosene emulsion, made from one-half bar of soap, one gallon hot water, and one gallon kerosene, well churned together. Here appears the beauty of movable nests and perches which can be taken to the light of day and reached in every part. I lately saw a fine new henhouse, with great economy of space, but, under nailed perches, were nests built into the wall. I told its owner I trusted she was accustomed to spending much time on her knees, and suggested she quarantine every fowl bought, thus not infesting quarters so difficult of access.

Various Insecticides. Oil of sassafras, lavender, or cedar, each about five cents an ounce, are strong, when one can not stop to apply more of the cheaper kerosene. Gasoline and bi-

sulphide of carbon, said to be good, are exceedingly explosive in presence of any fire or lantern. Cedar, elder, sassafras, persimmon, and eucalyptus twigs, tansy, tobacco, wormwood leaves and onion skins are all more or less distasteful, and can be placed in nests or tied to perches.

A frequent sweeping of walls and ceiling is helpful. Two coats of hot whitewash a year, make the interior of house light and sweet, and reach all these creatures. Slosh it on, remembering that execution, not art, is your purpose. I keep water on the stove, to thin and reheat the whitewash as often as necessary. Salt helps stick it to exterior walls, but might "kill" the odors I put inside, like one ounce carbolic acid to a pail of wash, or sulphur, turpentine and kerosene at pleasure. When stirring these in, turn away your face from the hot fumes.

A pound or two of brimstone, smouldering two hours on a good bed of coals and charcoal, in an old iron kettle, set in a dishpan, will produce a satisfactory fumigation. A poker thrust and left in mass, prevents packing and helps burning. First get every hen out, and tightly close doors and windows. A doctor who has had hospital experience told me there is little danger of sulphur smoke taking fire, but I faithfully stay near the henhouse, and look through window. Water in the dishpan adds safety, and steam has an affinity for and carries sulphur fumes.

The droppings should be removed daily, if possible. Neither dropping board nor ground is improved by saturation. Wood ashes destroy much manurial value, hence coal ashes, road dust, sawdust, or autumn leaves, are more economical beddings to receive the manure, which is so strong it needs be composted, before use, with three or four times as much rubbish.

A fowl may gape because it is sleepy, or has swallowed a feather, or outside of its neck is bitten by gray lice, but the dangerous disease Gapes is caused by a round red worm, syngamus trachealis, attached to inside windpipe. This worm appears forked, but in reality consists of a male and female permanently united. The mouth or sucker of each part draws blood from the mucous membrane. Affected fowls droop, cough, open their mouths wide, and, with a double curving movement of neck, gasp for breath. The disease is most common in July and August, and particularly destructive to the young on old farms where the taint lingers from year to year. The infection comes from swallowing embryos with dew and impure water, or adult worms coughed up by other fowls, or earth worms which in their digestive tract, contain the syngamus.

Remedies. Air slaked lime sprinkled about, cleanses the premises. Frogs keep our tanks much freer from all impurities than fish did. Drinking water with a little camphor in is excellent for an affected flock. A piece of raw salt pork, size of a corn kernel, given each fowl, is a pretty sure cure. Keep chicks and poults out of the dew.

DISEASES OF POULTRY

A Classified List of Principal Diseases, With Their Causes, Symptoms and Cures.

A classification of diseases by their location is less scientific than one by their causes, but amateurs see first the location of trouble, then search for its cause.

Diseases of the Head.

WHITE COMB, SCURVY OR FAVUS. Causes: Decayed food, impure water, overcrowded, ill-ventilated, dark, dirty quarters. It is a contagious, fungoid growth. Symptoms: White, warty, scaly, expanding patches on comb and wattles. It may extend over body, become serious around vent, and gradually destroy plumage. Treatment: Salt, charcoal and sulphur in the food, as already directed, and more vegetable elements. W. B. Lloyd recommends an ointment of one-fourth ounce tumeric powder with an ounce of cocoanut oil. Prof. Neumann, 1 part of carbolic acid to 20 parts of soft soap. Dilute if too strong.

CHICKEN POX. Causes: Similar to above. Symptoms: Successive crops of contagious, watery blisters, chiefly on head and neck, though often under wings and over whole body. Treatment: Diet as above. Wash with castile soap suds. A tablespoon of Douglass mixture in each quart of drinking water tones the system.

SWELLED HEAD. Causes: Similar, if the trouble is not connected with a cold.

Symptoms: Fever, drowsiness, general swelling of the head, Treatment: Some have success with a dessertspoon of citrate of magnesia and ten drops of nitre, added to half a pint of drinking water. Anoint with sweet oil.

APOPLEXY OR EPILEPSY. Causes: Undue flow of blood to the head, resulting from overfeeding grains or spices. Symptoms: Staggering, fluttering around a circle, falling down, jerkings of the limbs and neck. Treatment: Hold the head a few minutes under a small stream of cold water. Give a teaspoon dose of castor oil. Follow with a light. largely vegetable, diet and plenty of gravel.

FROSTED COMB AND WATTLES. Causes: Exposure to severe cold, especially at night. Symptoms: Edges of comb and wattles first purple, then pale. Treatment: At night, put any

choice rooster in a barrel with an old carpet thrown over. Apply a little vaseline, glycerine, or tincture of myrrh to comb.

COLDS. Causes: Lack of sunny places for exercise, exposure to dampness, draughty roosting places. Symptoms: Varied, like those of a human subject. Sneezing, watery or matterated eyes, a slight discharge from one or both nostrils, face swelled on one or both sides, hoarseness. Treatment: Give each affected fowl a 1 grain quinine pill, or put 12 drops spongia or 6 drops tincture of aconite to each pint of their drinking water. Assafetida, 5 cents' worth, tied in a rag, can be used in drinking dishes sometimes.

CATARRH. Causes: Numerous colds. Symptoms: Like colds, but chronic and milder. Treatment: Same as for colds. Tincture of iron, one-half teaspoon in a quart of drinking water is a good tonic.

Diseases of the Throat and Lungs

CANKER AND DIPHTHERIA. Causes: Violent colds, in filthy surroundings. Canker is milder, and located in the mouth, while diphtheria dangerously clogs throat and windpipe. Symptoms: Stiff neck, difficult swallowing, noisy breathing, a red then purple mouth and throat, filled with a thick mucus, ulcers, and finally a membrane. Treatment: Warmth and quietness are essential. Open the bill, and powder mouth and throat with a mixture of pulverized borax and chlorate of potash, or with powdered burnt alum. Feed only cooked food. I feed a little warm bread and milk, sprinkled with a trifle of mustard, pepper, or ginger. Disinfect the quarters by sulphur fumigations and scatter slaked lime. Kill and burn all severe cases, because, both through the air and by use of a common drinking dish, other fowls rapidly catch canker and diphtheria, as well as roup.

ROUP. Causes: Neglected colds. The word roup is probably derived from croup. The affection is distinguished from simple colds by its offensive smell. The name roup, though often, and perhaps properly, applied to canker and diphtheria, describes a more generalized and lingering complaint. It closely answers to influenza and grippe in man. Symptoms: All or any of those in colds, canker and diphtheria. Sometimes the discharges from eyes, nostrils and mouth grow gummy and cheesy. Fever, loss of appetite, loose bowels and emaciation attend. Severe cases last from five to twelve days, mild cases may linger for weeks, recover, or periodically relapse. Some are left with permanent Bronchitis or Asthma, showed by whistling breath, frequent twisting of neck and swallowing. Treatment: In addition to remedies earlier, I have found kerosene applied to throat and nostrils an excellent counter-irritant. The drinking water should be flavored with camphor or alum.

CONSUMPTION AND TUBERCULOSIS. Causes: Colds, roup, insufficient food, poor constitution inherited from roupy,

consumptive, weak or inbred ancestors. Symptoms: Persistent cough, emaciation and diarrhea. Tuberculosis is the more intense. Treatment: Kill, burn or bury all evident cases. Never purchase nor breed from tuberculous fowls. Tuberculous persons and fowls on a place are sources of danger to each other and all others.

PIP. Causes: Like a furred tongue and dry cough in man, pip is a sign of an inflamed mucous membrane, from colds, roup or indigestion. Symptoms: A cheesy or horny accumulation on end of tongue, and a sharp spasmodic cough. Treatment: Discover and remove the cause.

GAPES. See Parsites.

Digestive Tract Diseases.

CROP BOUND. Causes: Dry hay, rowen or grass roots impacted in crop. Pieces of bone, bacon rind, etc., lodged across opening out of crop. Symptoms: Continued hardness of crop. Treatment: Proper feeding has yielded me but two cases in twelve years. Mix a teaspoon each of castor oil and hot milk, and pour through throat into crop, then, with your fingers gently knead the hard mass, working it in or out, as may seem most hopeful.

INFLAMMATION OF CROP. Causes: Irregular feeding and watering, overdoses of spices or patent foods, swallowing unslaked lime, etc. Symptoms: Soft, swelled, dropsical crop. Treatment: Empty crop by holding head downwards. To complete the clearing, give a baking soda pill the size of a pea. Feed lightly on cooked food or table scraps, several days. Make the drinking water slightly acid with vinegar, alum or nitric acid. Try flaxseed tea's soothing effect on lingering cases. When a whole flock was affected, evidently from some impurity of food and water, I successfully prescribed soda in the drinking water one day, followed by quinine in the water for two or three days, each solution no stronger than fowls deprived of other drink would willingly take.

INFLAMMATION OF THE LIVER. Causes: Too much corn and other starchy foods, filthy surroundings, neglected crop diseases. Symptoms: Comb first purple, then black, dumpishness, yellow, watery diarrhea. Treatment: Allowing no drink but milk, lime water or quinine water, cures early cases. One-half teaspoonful sulphate of magnesia dissolved in water, given once a day, combined with a vegetable diet is recommended. I find chopped raw onions the best food for either chicks or fowls affected with any kind of liver complaint.

ANAEMIA. Causes: Overcrowding, defective light and ventilation, insufficient food. Symptoms: Pallid, lopping comb, white tongue and mouth, emaciation, languor, scanty voidings. The term anaemia signifies poverty of blood, general invalidism.

Treatment: Remove causes. Put a tablespoon of Douglass mixture in each quart of drinking water.

DIARRHEA. Causes: Chills, coarse, uncooked, unvaried or sour food. Symptoms: Continued looseness of bowels and thirst. Treatment: A little baking soda in their drinking water sweetens and stimulates; lime similarly used, soothes; alum disinfects; while liquid carbolic acid, one-half teaspoon to one quart of water is a regular germ killer. Use whatever one the severity of the case demands.

DYSENTERY. Causes: Neglected diarrhea, filth. Symptoms: A watery discharge, often streaked with blood. Treatment: As above.

CHOLERA. Causes: A contagion which has originated in filth. Symptoms: Pale combs, afterwards dark, drooping wings, thirst, weakness, frequent frothy voidings like sulphur and water. This is distinguished from liver complaints and simple diarrhea by its rapid execution and spread. Treatment: As for diarrhea. Joseph Wallace has said there is no sure specific. Prevent by rigorous cleanliness and by including charcoal and salt in the food. Allow no one from cholera-infested places to come near your quarters, nor visit theirs. Isolate every suspected bird. Kill and burn or deeply bury severe cases. Follow the disease by thorough whitewashing of hen-houses. Spade up the ground around, and sprinkle on ashes of slaked lime.

A few years ago, some prominent shippers at Waukegan, Ill., who often temporarily kept hundreds of fowls crowded in small yards, gave, what I have tested with the utmost satisfaction, as their secret of freedom from cholera, the following condition powder, to be used whenever bowel trouble is apprehended, a heaping tablespoon or so for four quarts of mash. Equal parts rosin, alum, sulphur, red pepper, powdered together.

DOUGLASS MIXTURE, the tonic most often recommended for poultry, is made as follows: Dissolve a pound of copperas in two gallons of water, then add two ounces sulphuric acid. Make in a stone jar or jug, and keep well covered or corked.

Diseases of the Oviduct.

EGG BOUND. Causes: A heavy grain diet and lack of exercise, producing internal fat which clogs the organs and weakens the muscles. Symptoms: Depressed tail, frequent and useless visits to the nest. Treatment: Dip a finger in sweet oil or hen's oil, then introduce it into the vent. Put the hen by herself, in a dry place, feed on soft, non-starchy food and warm water.

SOFT SHELLED EGGS. Causes: In addition to above, overdoses of spices or patent foods, worm in bowels, ventral gleet, fright. Treatment: Correct by lime water, oyster shells, cut bone, and a vegetable diet.

Diseases of the Leg and Foot.

LEG WEAKNESS. Causes: Fattening and stimulating, but not bone-forming food. Lack of gravel. Symptoms: Slow walking, trembling, then sitting down upon the legs. Females are more subject than males, heavy than light breeds, and young than old fowls. Treatment: Bathe the legs daily with tincture of arnica or Johnson's anodyne liniment. Give a one grain quinine pill, plenty of gravel, cut bone and vegetable food.

RHEUMATISM. Causes: Same as above, and exposure to dampness. Symptoms: Fever, swollen, tender joints, drawn up toes, and final inability to walk. Treatment: Similar to above. Dr. Sanborn recommends as drink, 15 grains iodide of potassium in one quart of water.

SCALY LEG. See Parasites.

BUMBLE FOOT. Causes: Jumping from a high perch, or roosting on a narrow one having sharp edges. Symptoms: Bottom of foot puffed, hot and tender, matter gathers and a tumor follows. Treatment: Paint with tincture of iodine. If pus has formed, make a cross-shaped incision in the swelling with a clean, slender knife, and put the fowl on clean straw a day or so.

BROKEN BONES. Treatment: Immediately kill fowls with broken wings or thighs, before inflammation starts, and they can be eaten. Put a bird with broken shank by itself and let alone, or straighten bone, wind a two-inch cotton bandage around fracture, place two thin pine splints opposite each other, up and down over the bandage, take two more turns with the latter, over splints, cut off cloth and firmly sew end down.

DEPLUMING SCABIES. See Parasites.

FEATHER AND EGG EATING. Causes: Mr. Gilbert's experiments, at the Ottawa Station, demonstrated that lack of exercise is chief cause, hence the small, nervous breeds are most troublesome. My experience is that layers always get these habits first, then teach non-layers, hence some needed food elements are lacking, like meat, salt, etc. Treatment: See "Housing" and "Foods."

General Directions.

Learn to recognize and arrest disease early, not wait till all the symptoms appear, for they may not be present in any one case.

Several medicines mentioned are poisons, keep them strictly from children's reach. Never mix nor pour carbolic acid, sulphuric acid, etc., with your mouth open. Use earthen or wooden dishes, rather than tin, for medicine.

Do not overdose such little creatures as fowls. I found lime water, which, used two or three days, stops diarrhea, would, if long continued, produce the same complaint. A little kero-

sene so scattered parasites, that I poured it on, and made my hens lame and scabby.

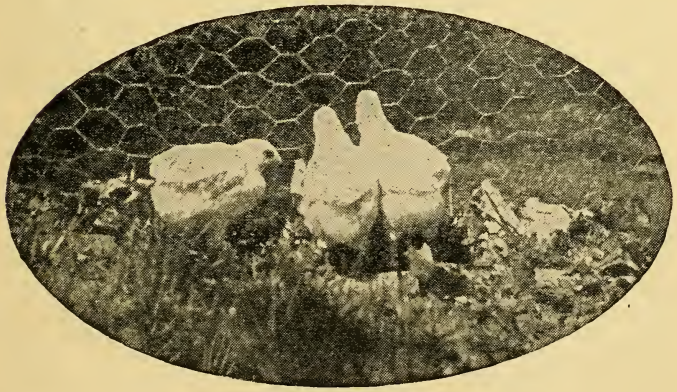
If possible, separate every sick bird from the well. Unless your fowls are costly, or you wish to experiment, kill instead of doctor, because every 25 cent invalid will cost you $2 in time and medicine, and may never become fit to eat nor breed from.

Bury or burn the carcasses, because hogs, dogs, and even hens themselves, will eat them, spreading contagion. Eating dead hens teaches animals to attack live ones.

"Josh Billings" says, "The best way to cure anything is to stop it before it happens." Chinese doctors are hired by the year to keep families well. Their salary only stops when their patients get ill.

Carefully read the causes of foregoing diseases, and see whether past or present carelessness is not mainly responsible and most expensive.

The theory is doubtless familiar and true that air and water are full of germs which cause and aggravate many diseases. But science's latest researches prove that normal healthy blood of any animals is one of the best destroyers of all classes of germs, and kills in proportion to its quality and richness. The lesson is plain. Do not reduce that blood by poor shelter, improper food and parsites.



FARM POULTRY

Practical, Successful Methods of Hatching and Rearing the Farm Flock.

"Counting chickens before they hatch,"is wise, if we count both what we have and those we expect. A few well cared for are better than many neglected fowls. I know a man whose 250 hens last year ran him $20 behind, while in his same neighborhood, a woman's 50 hens cleared her over $60. Five times the poultry we now have will yield us five times our present profit only if we devote five times the amount of space, care and study. Begin at the foot of the poultry ladder, climb up, and never overcrowd quarters.

Prevent broodiness by a varied diet. When P. H. Jacobs gave his Leghorns heavy grain rations, they were broody. Brahmas in the next pen, differently fed, were not. The succeeding year he reversed conditions and results.

I would never break up sitters by immersion in water, since I have heard of sudden deaths thus caused. Place in a light, airy room, with plenty of water and a laxative diet, but no nests. A rooster would divert their thoughts, but all the other cocks who can get at him will insult and fight him upon his release from temporary confinement. Broody fowls, treated at once, break up easiest. When allowed to try sitting for a week or more they find some prosy elements of work and break up most permanently.

Suppose you purpose, by culling and selling adults, to make room for chickens, you can tell age of hens by employing a 25-cent marker.

Poulterers have told me about using punches for leather, conductors' punches, etc. I operate upon half-grown chickens, place their feet on a barrel-head or something solid, and discover no sign of pain. A tiny circle is taken out of the web between the toes. By varying position or number of marks, and remembering their meaning, a flock's whole history can be written on their feet. An old hen has paler, rougher legs, with a neck apparently longer from shrinking of shoulders. Large fowls are rarely profitable after the second year, or smaller breeds after the third.

Winter layers promise plenty of early sitters, and only early chickens get mature enough to become winter layers. June and July chickens grow fast, have size, but not that maturity. I

found January hatches would moult by December. March ones were taken by hawks, which were raising their young then, so the middle of April is my customary hatching time, which I would not prolong beyond May 15th.

According to the experiments of C. E. Spires, if the roosters are separated from hens during winter, mating should be at least five days before setting eggs, if none have yet been laid, and eight days if the hens are already laying, eggs within them then having various positions and stages of development. Fertility lasts ten to fifteen days after separation.

A dozen hens with a rooster under village conditions, and twenty-five with him on a farm are very good averages.

My tame hens are good incubators, always hatching over 70 per cent, while old users of wooden incubators claim about 50 per cent average. Ventilation, moisture and temperature never perplex biddy.

A thorough trial of sprinkling eggs convinced me that it is not advisable in Wisconsin. In Colorado and dry climates, that is sometimes done near the close of the hatch with warm water and at night when the sitter will not be terrified.

Setting the Hen.

Never set a thin egg, because it will break and smear the others, which must then be wiped off with warm water as quickly as possible, or the chicks inside will smother. While breaking eggs for household use, learn to tell thin shells by their feeling. By that method, I had, one year, not a broken egg in any sitter's nest. A shining shell, though thick, is generally brittle. I once received eleven chicks from a sitting I selected and myself brought home. From the same place a few days later came a fresher sitting, brought by a boy who swung the basket uncovered in a cold rain and climbed our fence instead of opening the gate. There were one flat and two cracked eggs, with an outcome of seven chicks.

An egg is composed of rings, inside each other, separated by delicate skins. If these membranes become broken, hatching is hopeless.

Eggs brought on the cars need to rest a few hours before setting, so that any portion near rupture, may resume its normal condition. A Lake Park, Minnesota, lady had good success with a setting two weeks on its way, around by the Great Lakes. Quality and care are more than nest fillings, of which I have tested a great variety. Dry earth with a little hay on top, clean sand or chaff, and fine shavings are all good. A pet biddy hatched every egg, eighteen, inside a horse-collar on a bare board shelf. My favorite filling for every purpose is sawdust, which retains heat well and shapes easily. An old spoon cleans off the top at any time.

My favorite number of eggs to set is eleven. Early broods

cannot be large or doubled, like summer ones, because complete covering and warmth are so essential. I like nests not too dishing, well packed in corners, and warmed before introducing real eggs, hence drill the biddies a few days on Gourd or China nest eggs.

As the latter are such cold things to hug a hen's vitals, I raise Japanese egg gourds. Three months brings them to maturity. They need poor land and late planting, or grow too large. I wait till I have about a dozen broody hens ready, because a poulterer can care for that number in the same time he would fewer. Since a few hens show "ways that are dark and tricks that are vain," always leave one or two extra or substitute sitters unprovided with real eggs. I tell any sitter disposed to come off her nest irregularly, there are "other fish in the sea" and other cluckers in the house, then throw her out and try a substitute. In two or three days, all behave like clockwork, and I can be gone hours. They seemingly say, like Scott's hero,

"Come one, come all! this rock shall fly
From its firm base as soon as I."

I formerly had and tried a separate sitting room, putting in drink and grain for the sitters to take at pleasure, but when one came off, the others imitated her, and they got mixed in nests and feelings. Now I set them where they choose, because early, before all get to laying and sitting, there is plenty of room in my hen-house.

My nests have a narrow front platform, not large enough for hens to live on, but so that one jumping up in the wrong spot, can walk along till she finds a suitable place. This illustration shows my simple protectors for sitters, a wide shingle held in place by a brick.

Later I tacked up curtain of cloth or paper, and a neighbor screwed on side of each nest, a shingle, just loose enough to shove and tight enough to stay.

Accustom the hens to these protectors. Every morning, take all the broody ones off together, replace protectors to keep out layers, and see that the sitters have a dust bath. water, and plenty of that corn which undesirably fats at other times, but now maintains just the heat we want. If a sitter appears dull or shivering I add a little wheat, bread and milk, or something to sustain her appetite. As they come back, one by one, I open protectors, and in twenty minutes the work is done for all day.

I mix eggs or chicks, so broods are pretty uniform, hence no hen can "stick up her nose" at another's chickens and peck them.

The sitter is dusted with insect powder at frequent intervals throughout. Grease must never be used on her, because it spoils the hatch by closing the pores of eggs.

The most critical time is at first. A consecutive twenty-four

hours' heat, insures the best hatches, so I set my trained hens in the morning, directly after they are fed, but should need to set wild ones at night.

Taking off the Hatch.

When the 18th or 19th day comes, I no longer take off the sitters, because the shells are brittle then, and many pipping chicks would be crushed on biddy's return. Food in a dish or

Hens With Broods on Farm Range.

pan is offered. Some sitters partake gladly, others refuse. None but an old experienced hand, or one experienced if not old, should try to find empty shells. Those in plain sight I pull out, because biddy has her own way of working them to the edge, and cuddling the chicks near her. I have known hens to die when set the second or third time, hence never tax biddy beyond the first sitting.

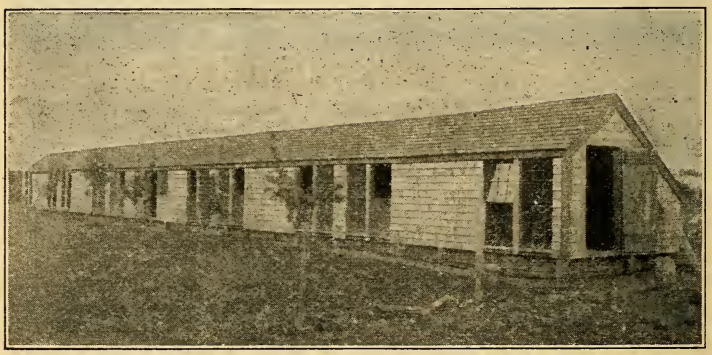
Chicks need no food for twenty-four hours. Then the clucker is put under my left arm, her legs held by that hand, and her chicks are carried in a little basket lined with hay brought warm from the house. If stormy, a woolen cloth is laid over. The hay in the coop has also been warmed, is fine, well packed with a cane, and not deep.

Chills is the worst enemy to chicks, and lice come next, each severer than improper food, because a healthy, hearty system can throw off much of the latter, while a congested or enfeebled one can do nothing. Keep chicks' toes dry, their backs warm, and their bodies clean, then they will comb their own heads.

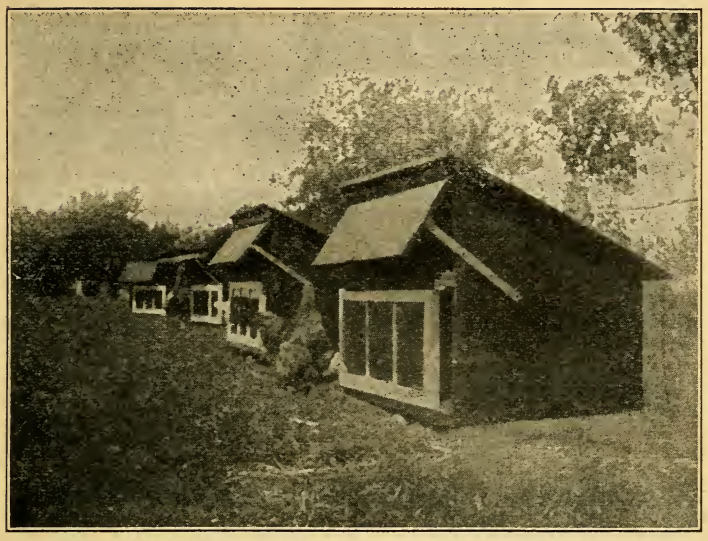
The coops are whitewashed every fall, and stored away, ready for instant use in spring. I once whitewashed a coop, and put in brood same day. They died and the hen nearly. For an average hen and brood, about four square feet of floor, is right. My coops are 24x26 inches, 19 inches high and behind, and 22 in front, with 2x4 pieces on the bottom to keep them from the damp ground.

A floor is necessary to guard against rats and skunks. It might run in and out, on two cleats, thus being easily cleaned. An "A" coop, with doors and floors, is good.

Convenient handles can be made of old harness, and buttons of wood. Before I had everything buttoned, hooked, or otherwise securely fastened, a few chicks were smashed by slamming doors. A lath yard with top, and one open end fitting up to or over the coop makes a hen comfortable, yet prevents her dragging a young brood around in dew or storm. With their mother thus restrained, chicks cultivate a garden finely. I lodge them in a hen-house at three weeks' age, before they are weaned, so their mother can introduce and teach them to roost. A tame hen can be driven in. A wild brood must go into coop, as usual, and after dark be carried to the house. When coops are put away, the open ends of coop yards are placed together, two and two, making several complete yards, which I keep full of grain for chickens to work on. Slats are 2½ inches apart.



A Long Poultry House on a Farm Where the Owner Regards Poultry as One of the Best Paying Departments of Farm Industry.



Brood Coops For Early Chicks Which May be Well Ventilated by Raising the Front and Opening the Window.

Half-fledged fowls suffer so from sunburn and lack of shade that I try to provide sunflower groves.

Feeding the Chicks.

The general principles of feeding, on which I once raised 200 chicks out of 201 hatched, and again 199 out of 207, have already been given. As a first food for little creatures of every kind, I find nothing else equals bread and milk. Rolled oatmeal, cottage cheese, cut bone, custard and onion tops furnish variety. My favorite pudding, one-third each of shorts, corn meal, and bran or ground oats, is introduced by degrees. Eggs or lean meat, boiled and chopped, are rather forcing, hence fed only every other day. Chop the shell with the egg. If egg shells are always crushed before thrown out, egg-eating may not thus be learned. Wheat is cracked in our family coffee mill, till chicks are able to swallow whole kernels. Corn is not fed till they are nearly grown, but gravel is constantly around. I do not sift out the fine for them, but give that the hens have picked over.

For the first two weeks, chicks do best fed often and little at a time, five meals a day, then four, then three. A general

rule for 100 chicks is 1 quart of food a day the first week, two quarts of food a day the second week, three quarts a day the third week, four quarts the fourth, etc. Better give all they will eat up clean, leaving none mussed nor sour.

Clean boards, shingles or pieces of brown paper make good tables, for it is a mistaken idea that chicks thrive on filth.

Regularity establishes best health and habits. Fowls will not then loaf around, waiting for a bite, but dig till their regular meal-time, and come in a body, each getting its proper share. It is amusing to see our chickens gather and sing around the hammock, at four o'clock summer afternoons. They are not fed there, but know where my father starts from.

The old-fashioned rule of withholding water ten days, I successfully followed, but chicks long for drink very early, and I learned it was mainly the coldness of water or milk that did the damage to bowels.

Boiled milk, often recommended, is constipating. Clear, raw milk is the opposite, unless diluted with one-half or one-third warm water, when we secure a model drink.

A pancake baker, with its shallowness, its rim on which to perch, and its iron flavor, makes a good drinking dish.

So does a flower pot inverted in its saucer, leaving just a ring of water. If a fountain is desired, cork the hole in bottom of pot, notch its rim ½ an inch in one or two places, fill with water, turn saucer over top, and quickly invert the whole. If

A Large Brooding House and Growing Ducks on a Successful Duck Farm.

you have pans or troughs of water standing around, put in stones or bricks, that chicks which fall in may get a foothold and not drown.

Early separate the sexes of precocious breeds, for best growth. Larger kinds mature slower, hence this is not necessary if cockerels are promptly sold when two or three months old.

Chickens allowed to roost in trees in pleasant weather, stay there through fall rains and even till they freeze to the boughs. A bamboo fishpole as a weapon of dislodgment, fills a long felt want.

TURKEYS, DUCKS AND GEESE

The Principal Breeds and Their Proper Care and Management.

One gobbler to 12 hens is sufficient. Those who change male birds every year, to avoid the evils of inbreeding, make a mistake. Secure the best possible gobbler and hens, then keep them as long as they live and do not fail, selling their progeny instead. There is such a differnce in turkeys that this is the only plan which lets a farmer know what he can depend on.

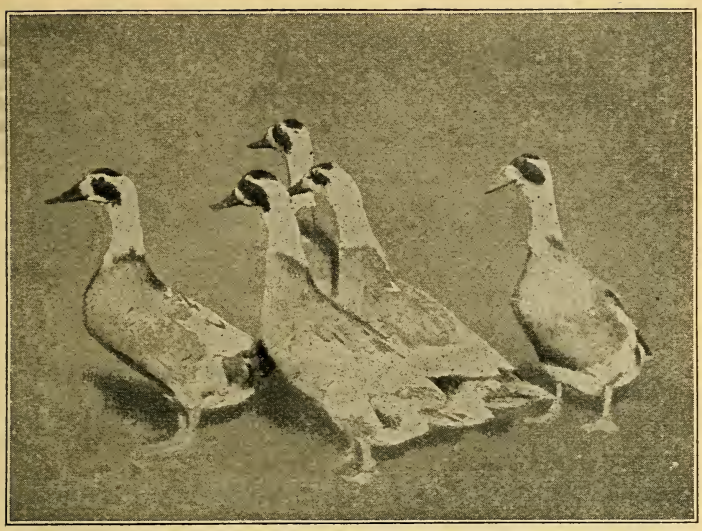
Turkey eggs take 28 days to hatch. Glass or gourd nest-eggs should be used, and their own eggs gathered daily, dated, and put on soft cotton or oats. This prevents chilling, and enables us, if there are several hens, to set together those eggs near an age.

If inclined to steal their nests too far away, shut the turkey hens up each day till they have laid, or till 10 o'clock, say, then when let out they will be in such haste and go so directly, that they can be traced. Old barrels, with a little hay in, and laid on their sides in fence corners, then decorated with cornstalks, are especially attractive. If these be fitted over the headless ends with doors tight at bottom but admitting some air at top, the turkey hen can sit in the place of her own choosing; otherwise foxes, skunks and rats would make short work. Turkeys also like strawstacks and nests under sheds. One Wisconsin woman has good success by turning all her breeding stock into a small, dry field enclosed with a tight board fence where they nest, lay and hatch at pleasure. Of course marauders could dig under but have not. If all the hens get to sitting, the gobbler may become so discontented, he must be confined. I once saw a ferocious old fellow shut in a deer park. My mother, who has been very successful, says the more petting and handling tur-

keys have, the less wild and suspicious they become. Her gobblers never disturbed nests, but often assisted in the care of young. She thinks there is "too much fuss" made about raising them. Although generally believed that turkeys' eggs need considerable moisture, and should always be set on the ground, or sprinkled with warm water near the close, we found nothing of the kind necessary in Wisconsin's reasonably moist climate. We seldom used hen turkeys as mothers, because they drag their little ones around so, but put seven to nine eggs apiece under common hens, set and cooped precisely as for chickens. Because they stay longer with their young, it is well to set one turkey hen and coop her near the former, since she will eventually adopt all the poults and lead them to the fields, which should always be your own and not your neighbor's land. Fifteen eggs are enough for her, and there can be little doubling of broods, because complete covering and warmth are so essential to the poult's welfare.

If a turkey hen is uneasy when she begins hatching, she should be quieted by feeding her on the nest, from the hand. The little ones require nothing for 24 or 36 hours. Bread and milk, not sloppy, is unsurpassed as a first food. Having more wild nature than chickens, they especially need green food, like chopped onion and lettuce, and animal food, like curd, shaved bone, lean meat and eggs. Corn meal preparations must always be scalded. Green oats, new corn, sour milk, etc., are especially

Mongrel Geese Being Fattened For the Holiday Market.



'Indian Runner Ducks, Called the Leghorns of the Duck Family.

dangerous. A common hen teaches the little ones to eat better than their own mother does. We may feed them much as chickens, only more carefully and lighter because exercise is absolutely necessary for turkeys.

Coops.

3½ feet square, 3½ feet high in front, and 2¼ behind, are large enough for turkey mothers, which some confine for about two weeks, till the poults are able to walk far and well. Others make a board pen one or two feet high, which holds the little ones, and their mother will not go far away. A light board tied over shoulders to prevent flying leaves the bird at the mercy of dogs. As the safest, happiest arrangement, I commend a small yard, wired in overhead and all, where mothers and offspring can be together. Frequently move coop and yard and when the poults are old enough for general liberty, never let them wander about in the dew, and be sure to get them in before a storm and every night. Start early, while they are yet feeding, and can be discovered, do not step on the little creatures lying flat, perhaps at their mother's warning command, accustom them to the sound of your voice calling and always give a good supper when you get them back. A turkey raiser, when tired, must be able to walk two miles more, any time.

Water dishes should be shallow at first, because little "turks" are rather simple. I once had one drown even in an oyster can, lying on its broad side, of course.

Though the hardiest of fowls later, poults succumb much quicker than chickens do, to dew, rain, chills, improper food and lice. They frequently die from applications of grease, so be liberal with insect powder, and look for lice on quill end of feathers, upper and under sides of wings.

Samuel Cushman, of Rhode Island, tried a shed, and found that the turkeys, when about one-third grown, roosted on fences and trees, were much healthier. The sickliest turkeys I ever saw had a fine house. I should enjoy trying a shed with roof only, like a band stand, because rains are bad and jumping from high trees is injurious.

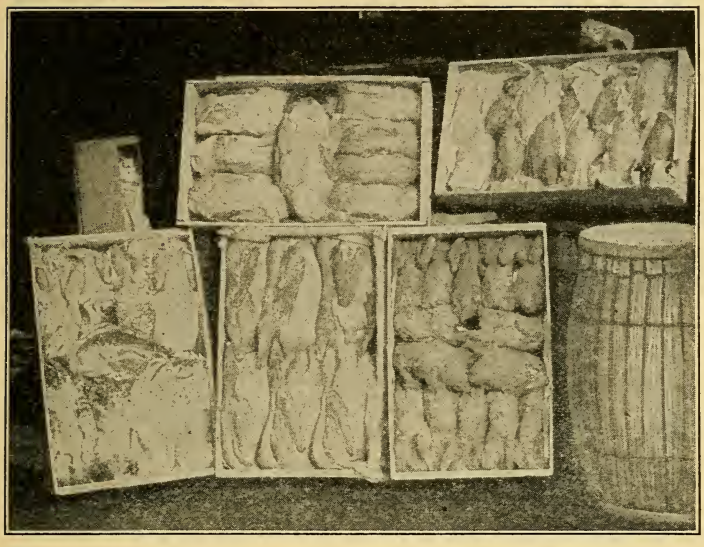
Rearing Ducks and Geese.

One drake is usually assigned to five ducks. Geese prefer to live in pairs. When laying these fowls should be confined at night and held till their eggs, which they generally lay everywhere, are secured. Otherwise they are not fastened in at night, because they sometimes feed by moonlight.

Hatching, etc. Though good incubators, geese and ducks are poor mothers, hence it is better to set their eggs under hens. Ducks' eggs usually hatch in 28 or 29 days; geese eggs need from 29 to 31. Rats are fond of the young, hence a coop having a board floor covered with sand, is best.

Water dishes must be deep enough for them to bathe their heads, or nostrils will get clogged with sand, and beaks with food. The best food we have ever found for young ducklings is one part hard boiled egg, and three parts stale bread crumbs, the first three or four days; after that, equal parts of wheat bran, cornmeal, boiled potatoes, with a little beef scraps thrown in. Cornmeal exclusively is too concentrated, and will cripple them in their legs and feet. The Long Island breeders add about a pint of coarse sand to the mash for grit purposes.

Geese and ducks are remarkably healthy and hardy after the first three or four weeks, during which they should not be allowed to swim nor get wet in dew and showers. Afterward a pond or marsh land is better than a running stream, on which they may stray or get stolen. The presence or absence of water makes no difference in weight, but does add to their cleanliness and happiness. Mr. Rankin says, "My ducks never see water, except to drink, the year round. They are confined in yards 24x100 feet, some 40 in each yard, 24 feet square being size of pens inside of breeding houses. They are confined in these yards for nine months, or till August 1st, when they are removed that the land may be disinfected. This is done by plowing and growing a crop of barley or rye, when the land is ready for the ducks again." A double yard, with geese or ducks



A Consignment of Chicks, Ducks and Geese As They Arrive In the Storerooms of the Wholesaler.

spending a fortnight in each part alternately, is a good plan, half an acre to each family of goslings. They are so hardy that they would sit among the cattle, under the latter's sheds, but there they would be in great danger of being stepped on, hence better have their own pens, heavily bedded with hay on an earthen floor. The duck is a home bird, but the goose rambles over and injures grain fields. Both, though no scratchers, pull and strip leaves, and tread down the vegetable garden. They are not good companions for chickens, because they eat very greedily, and muss their food and water dishes so. Geese are not constituted to be reared in such large flocks, as ducks, because they require more pasture, or else will crop it so close as to injure the sod. All kinds of vegetables, coarsely cut up eke the grass supply. "For about 20 days after shutting up, market goslings, feed them mainly cornmeal mixed with beef scraps, about ¼ scraps, and, at night, whole corn. We mix the meal and scraps together while dry, pour boiling water over, and stir till thoroughly mingled. Give them fresh, clean water to drink, and have a box of grit or clean, sharp sand by them."

It will do to pick geese two or three times a year, whenever the feather is "ripe," which will be known by examining.

If it is bloodless and pulls easily, it is ready to pluck, but if filled with blood it is "green" and not mature. Commonly, when ready to pluck the feathers drop more or less. It is a simple and sure protection to draw an old stocking over a goose's head during the operation.

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