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BOOK NO. 1173

BY

REV. T. W. STURGES, M.A.

Vice-President of the Poultry Club; President of the Leghorn Club; Vice-President of the Leghorn, Plymouth Rock and Andalusian Club, Black Leghorn Club, Black Minorca Club, Buff Orpington Club, etc. Author of "Poultry Culture for Profit."

ILLUSTRATED IN COLOUR AND BLACK AND WHITE

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1909



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PREFACE

When, little more than a year ago, I wrote a small book on *Poultry for Profit*, as an aid to the utilitarian side of poultry keeping, I purposed to write another of the same size dealing with Fancy poultry. It has proved a more arduous task than I expected, and has developed into a much more lengthy work, appealing not alone to the fancier, but to the utility breeder also.

It has been written amid the stress of many other occupations, and if at times the connections seem disjointed and the same thing be referred to more than once, I must beg the indulgence of the reader; though the reiteration of important points is not without its value in a book not meant to be a work of fine art, but a practical guide for the breeder.

So far as I could call it to mind at the time I have given the experience gained during twenty years as a breeder of very many of the varieties named, and some of every section.

I am indebted to many writers, and have endeavoured to acknowledge my indebtedness. The expert critic cannot be more conscious of the shortcomings of the book than I am myself. If it should prove as popular as the smaller work it will live to undergo revision, excision and addition, and I shall be glad to receive hints and suggestions for the improvement of future editions.

For the beauty of the plates which adorn the book I am greatly indebted to the kindness of Mrs. Comyns-Lewer, proprietress of *The Feathered World*, who has

kindly supplied many of the blocks, and to Mr. S. H. Lewer for the excellent way in which the coloured plates have been produced; also to Mr. G. Tyrwhitt-Drake for the frontispiece, and Mr. Hubert Wright for the two Partridge Wyandotte plates.

For such of the feathers which have not come from my own yards I am indebted to Mr. Bateman for Plymouth Rocks, to Mr. Brent for Indian Game, and to Mr. R. Watson for some of the Partridge Wyandottes. The undoubted skill of the Rev. J. N. Williams in making such exquisite drawings of them is a further cause of indebtedness, and will, I am sure, be appreciated.

I ought also to add my thanks to the proprietors of *Feathered Life* for the use of some of the black and white illustrations included in the book.

To the patience of my publishers and the willingness with which they have expended both time and money on its production, I offer my tribute of praise, and hope the circulation of the book may bring due reward.

THOS. W. STURGES.

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Midsummer Day, 1909.

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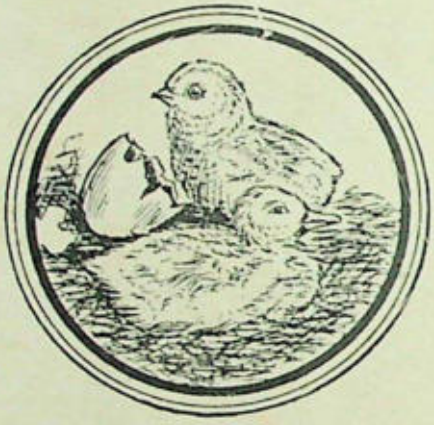
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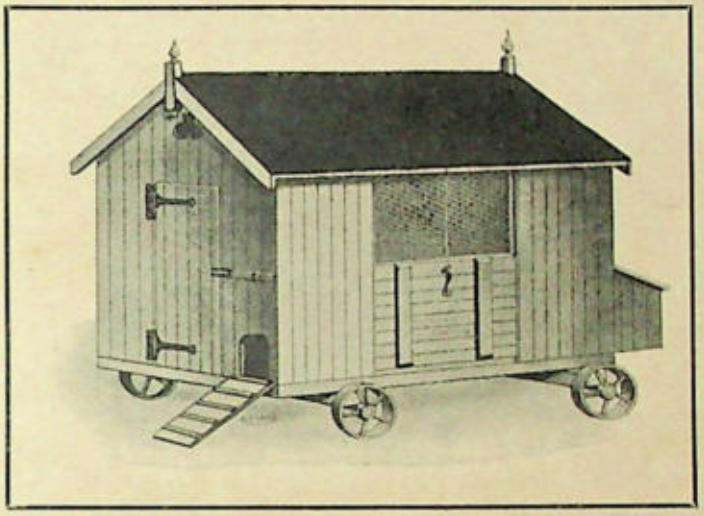
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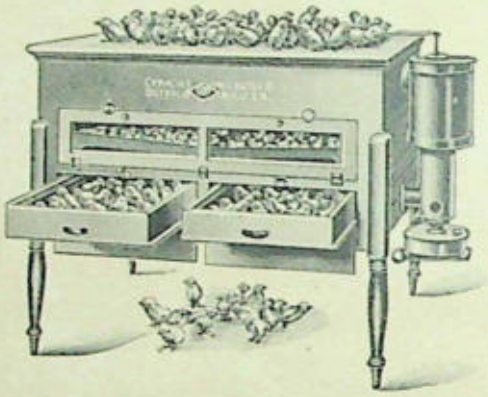
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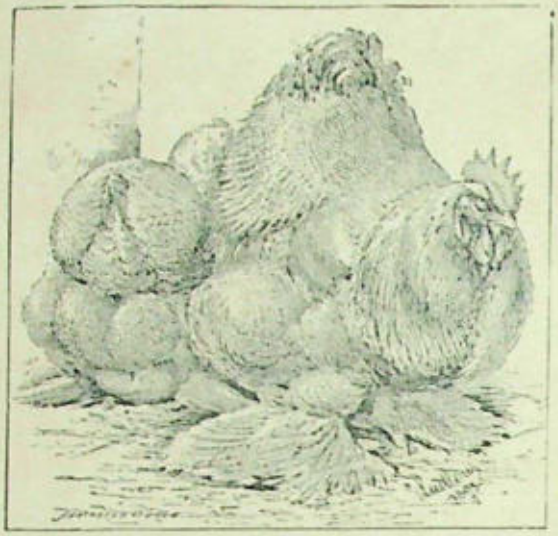
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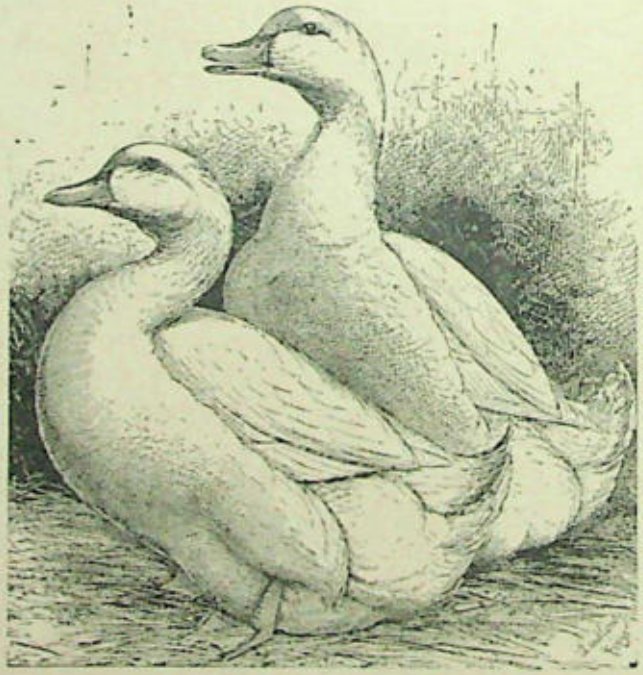
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THE POULTRY MANUAL

INTRODUCTION

This book has been written both to help those who keep poultry as a hobby and also those who desire to make a livelihood out of so doing. It is intended for all who love our feathered friends, and who find a pleasure in catering for their welfare; for all those who have a love of the quaint or beautiful, and who wish to add to that beauty or to perpetuate it. This aspect of poultry keeping has a wide field of view. It appeals to the best class among our cottagers, and to the humble artisan who has only the tiniest back-yard in which to tend his stock, and who yet likes to have the best procurable, just as it does to those whose circumstances are more favourably conditioned. We all like to see and to own the best, and to feel that our efforts are worthily expended. And our chief reward as poultry lovers lies in the pleasure of watching the growth and development of our stock, and in realizing that we have not been occupied in vain.

Poultry keeping has a thousand charms. It affords pleasurable occupation to a multitude whose hands would otherwise be idle, or, perhaps, be mischievously employed. It stimulates intelligence which would otherwise lie dormant, or be exercised in less beneficial directions.

Poultry keeping as a hobby has no social barriers. It is indulged in by prince and peasant alike. Peers of the realm and affluent men of business equally share its joys. And of the latter class, while many take to it as a foil to their other occupations—a real stay-at-home recreation to distract the mind from more sordid aims—others take to it on a larger scale to find employment for long and leisured hours, as one of the most delightful occupations of a country life.

It is to this large, varied and ever-increasing class

that the wonderful growth of the poultry industry in recent years is due. They are like the patrons of art, without which art would cease to flourish. As they learn to perceive and recognize the beautiful they desire to add to their gallery of living pictures, and desire grows with what it feeds upon. And the more it is realized that there is room in this pursuit for the profoundest knowledge and the most painstaking skill the more fascinating it will become. We all soon tire of a humdrum affair. There is little sport in a quarry soon caught or run to earth, and the pleasure is diminished when the game is bagged only for the gain it brings, though every man likes a good day's sport as a reward for his day's outing.

The problem of heredity looms largely on the horizon of thoughtful men and women to-day, and there is ample range for the exercise of experiments in the poultry yard; experiments which may add to the extent of our knowledge, and add intensely to the interest of our occupation.

The reader of this manual is commended to the perusal of the chapters on "Mendelism" and "Colour," and to the list of works on the subject which are mentioned. It may increase both his enjoyment and his profit, and show him that poultry keeping is many-sided in its interests and kaleidoscopic in its views. And as the instrument referred to "multiplies an object into an endless variety of beautiful colours and symmetrical forms," so he may learn something of the mysterious processes by which nature has evolved the many varieties and charms of poultry which delight our eyes, and perchance may be induced himself to take a part in humbly directing her energies, and thus gain a deeper insight into her endless and mysterious activities.

Like the Athenians of old we too delight "to tell or to hear of some new thing," though it would ill become us to "spend our time in nothing else." The breeders of such of the few ancient types which still survive the deluge which has swept most of them away may think our task a vain one. But they and us alike may remember that it was "the wickedness of the earth" which brought on the deluge. Many of the old types would have survived and have exhibited their undoubted

charms to-day had not a fancy-run-mad destroyed them for fancy's sake. We want, not beauty only, but utility as well, and it cannot be gainsaid that many of their descendants are as charming as these ancestors, while they undoubtedly repay in a more marked degree the labour bestowed upon them. It has been insisted upon again and again in these pages that while beauty should be our quest, as it ever has and ever will be while our true humanity remains, *that* beauty should be more than "skin deep." "Handsome is that handsome does."

It is the multiplication of the newer forms of beauty that has brought such an increasing interest into the poultry world. It has widened the field, and made the handicapping of the race more even. It affords the novice a better chance, at any rate for a time, and often fires the early stimulus which makes a fancier of him in the end, and sometimes leads him from indulging in his pastime as a hobby to take up poultry breeding as the business of his life.

These pages have been written to offer him assistance in either case, to stimulate his energies, and to fire his enthusiasm, as well as to save him from some of the pitfalls which surround his path. The chapter on the "Commercial Side of Poultry Keeping" will give him the candid opinions which I have formed as the result of twenty years' experience. I claim no monopoly of knowledge, and give my information for what it is worth. The various aspects of the question are briefly set forth. They are commended to the would-be poultry farmer ere he sets forth on a voyage which may be both pleasant and profitable, but in which he is sure to find rough and stormy seas, and also to meet with deadly calms which may prove more trying still.

If his enthusiasm is fired to indulge in exhibition poultry he is recommended to act considerately, and not to venture without a preliminary practical experience. Having decided which breed or breeds he will take up, he is advised to learn all he can about them, both by reading such information as he can obtain, and also by visiting exhibitions of poultry. Until he knows the points of a fowl and how to estimate values—and this is a difficult acquirement—he should not spend his money. If, as a first step, he spent both time and

money in gaining experience, he would find it the best and cheapest method of procedure. Even in the matter of fitting up a farm and buying his appliances he would save his fees over and over again, in that he would be able to purchase wisely instead of floundering on his way in the rough road of experiment.

As this book deals chiefly, though not exclusively, with fancy poultry, I shall find some readers and critics of this utilitarian age who will scoff at the trouble taken on fancy points. I shall be told that hens were meant to lay eggs and not to be gazed upon, and that both they and their mates were simply meant for food. To this I reply that "fancy" fowl excel in both these directions, and, indeed, owe much of their higher values to these economic qualities which the fanciers have preserved from extinction, and that they are not the less useful because they are the more beautiful.

Those who scoff at beauty insult their Maker and the work of His hands, for nature is a boundless field of beauty.

If I am told that, even if the beauty of poultry is granted, it is not necessary and is of little value, I reply that value is not to be weighed in a balance or measured by a two-foot rule. Value is not constant but ever varying, and the value of beauty in the eyes of those who desire it is measured by the labour expended in producing it. The value of the food we eat and the clothes we wear are equally fictitious if we measure them by a purely utilitarian standard, else we might dress in sheepskins and fig leaves, and eat only the fruits of the earth. We might as well measure all our works of art with a tape measure, and appraise them by the square inch, as attempt to decry the beautiful and its value. A living picture should be worth as much as a dead one; and if it does not last for as long a period, it has the power of perpetuating its kind.

Our Maker has implanted the love of the beautiful and the desire to attain perfection in the hearts of the best of His creatures, and in the culture of poultry many have found an outlet for this love and this desire, as well as an aid to the enjoyment of life, and an employment to occupy their energies, bringing, in its measure, due reward.

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CHAPTER I

ON THE HOUSING OF POULTRY AND GENERAL MANAGEMENT

To house the poultry well is a great essential, even if they are only kept as a hobby, or to supply the household with eggs. To the breeder who aspires to the honour of the exhibition world it is a *sine quâ non*. A generation ago it was a rare thing to find poultry decently cared for, except in the case of considerable establishments where expense was no object, and where a distinct portion of the home farm had been set apart for their use. Even to-day, in most cases, the "poultry yard" is the most dilapidated and disreputable part of the premises. Any odd, out-of-the-way corner, such as a disused shed, or even over the pig-sty, is deemed good enough. But there has been a vast improvement in recent years, and just as the "proper housing of the poor" is a phrase in everybody's mouth, so it is getting to be understood that every living creature, if it is to thrive, should have its house orderly and well kept.

There is little excuse for it to be otherwise in the case of poultry nowadays, since ready-made and artistic houses are on view at every poultry show of any pretension to rank, and may be bought at a price undreamt of a few years since.

I have dealt with this subject at considerable length in my former book on *Poultry Culture for Profit*, from which I take the following extracts—

"The true method is to get the houses first and the birds afterwards.

"In building a house, its form or beauty or size will depend very much upon the taste or wealth of the

owner. It may be made large or small, very ornamental or quite plain, but in any case there is no need for it to be ugly-looking. The chief aim should be to provide a healthful habitation for its occupants, and in order to do this there are certain principles which must be observed.

"It must be *weather-proof*, so as to keep the birds quite dry at all seasons of the year. It must allow for the supply of an abundance of *fresh air without draughts*, and it must be *well lighted*, and, if possible, occupy *a sunny aspect*. Its internal arrangements should be easy of access, and as simple in construction as possible. A very large proportion of the houses commonly found among poultry keepers of every class violate one or more of these principles, and as a consequence the birds suffer in health.

"**To Keep a House Dry** it should be well and substantially built of grooved and tongued boards. I prefer the boards to be 1 inch thick, and in no case less than ¾ inch. A great number of the very cheap ready-made houses are only ½ inch or ⅝ inch in thickness, and are very flimsy affairs. Where plain-edged boards are used they should be covered with laths nailed over the joints. But these are not so neat-looking nor so weather-proof, and are more difficult to keep sweet and free from insect pests.

"A most important matter is the roof, which should be quite sound, and come down well over the eaves some 2½ inches, so as to carry off the rain clear of the sides. It is better if provided with a spout to carry the rain away to a down spout connected with a surface drain. A puddle of mud round a poultry house is a very unpleasant and unwholesome sight. The roof should be covered with felt, and well tarred once a year. And, in nailing it on, care should be taken that the nails are not too long, and that they enter the boards and do not pass between the joints, otherwise they often act as conductors of the rain, and a house with damp walls or roof cannot be sweet. If the house is a lean-to, a very good roof is made of corrugated or sheet zinc. In this case there should be a lining of thin boards underneath, as zinc is a rapid conductor of heat, and makes a very hot roof in the summer and a very cold and damp one

in the winter, on account of the water condensing underneath it and dripping down.

"**The Floor of the Poultry House**, when not raised above the ground to form a shelter underneath (see Fig. 1), should be kept scrupulously dry. If the sub-soil is clay, or at all heavy and damp, the house should be raised on a sill of bricks placed end to end on all sides. The foundation should be beaten until solid, and raised to the level of the brickwork. A little cement on the top of the bricks outside will throw off any rain. On the foundation thus formed a bedding of two or three

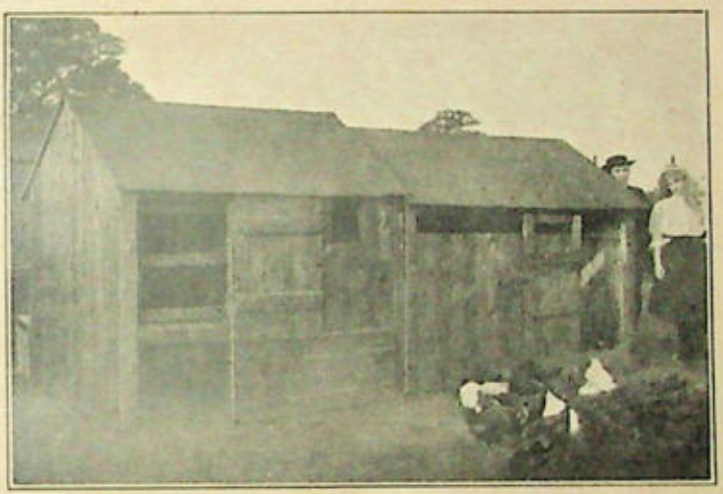


FIG. 1.—A House raised 2 feet from the ground and the shelter underneath partly boarded up. The door, on the left, is open, and a sliding wire-covered door is used during the warm weather. The Scratching Shed is to the right.

inches of peat moss, well broken up, will form a dry surface. Peat moss is a good deodorizer, but the droppings should be raked off at least once a week, and oftener if circumstances permit. I am not in favour of what are known as "dropping boards" placed underneath the perches to catch the manure. They are a clumsy device to save a little trouble, and are most difficult to keep sweet. They frequently soil the plumage of the fowl, who *will* sit on them, and they afford a perfect harbour for vermin. Where, however, space is *very* limited, and the floor of the poultry house is to be

made use of as a "scratching" shed during the day, they may be used to advantage if the most perfect cleanliness is observed, and the board sprinkled with earth or peat moss and cleaned daily.

"**Ventilation.**—Keeping the house quite dry and clean is a great help towards ensuring its sweetness, but this is not sufficient without ample ventilation. We are, as a nation, valuing fresh air in our houses, and particularly in our bedrooms, more than we did in past generations, and we are undoubtedly feeling the benefit of it in an increased vitality. It is a welcome sign of the times that the modern makers of poultry houses



Fig. 2.—Poultry House and Scratching Shed ventilated from the front.

are adopting this principle in their latest constructions. What is needed is some simple contrivance by which the *amount* of ventilation can be regulated according to the temperature and to the number of birds per square yard the house contains.

"A very good plan is to admit all the ventilation from the front of the house (see Fig. 2). In a house 6 feet high in front, of the lean-to pattern, the lower portion should be boarded up to the height of 3 feet 6 inches or 4 feet, and the top portion covered with fine-mesh wire netting fastened from the inside. Over this should be arranged a light sash framework, which may be fitted either entirely or in part with glass, and the remainder with

$\frac{5}{8}$-inch grooved and tongued boards. This can either be lowered to the bottom of the wire-netted portion in hot weather, or raised to within a few inches of the top in frosty or inclement weather. This plan closely corresponds with our custom of sleeping with the bedroom window open and the door closed. The ventilation afforded by the open fireplace in a bedroom may be imitated in a house with a double-pitched roof by affording an outlet in the gable ends in the shape of a window covered with perforated zinc, or by boring a few holes of $\frac{3}{4}$-inch diameter. In a lean-to house it is

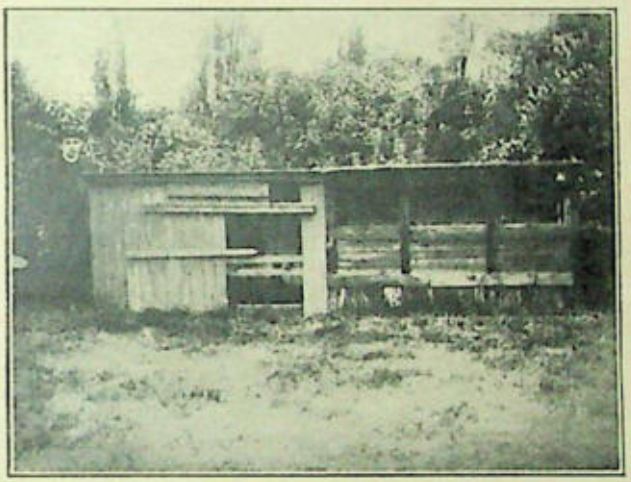


FIG. 3.—A COSY CORNER.

The Sleeping House to the left has a sliding door which may be left open in warm weather. When closed in winter, the slide at the top is opened. The Scratching Shed is on the right hand. Entrance from the end.

not needed, as the ventilation afforded by an open front which is never closed at its highest point is ample. Another method of securing the same end is by having a half of the entire front of the sleeping shed made to slide from right to left (see Fig. 3), in which the perches are arranged behind the covered portion. In this case, however, it is much more difficult to keep the floor of the house dry, owing to the rain beating in. In the old-fashioned houses, which usually have a small movable window about a foot square, and no other ventilation

except at the apex, it is a decided improvement to have fine wire netting instead of glass in the window-frame, and to fix a sliding door, made of a light framework covered with wire netting, *inside* the poultry house. The outer door can then be left open at night in all but the most inclement weather, and it should always be left open in the daytime, to give the house a good airing." (See Fig. 1.)

Some of the best houses on the market both from a sanitary and artistic point of view are made, and at a moderate cost, by Mr. A. E. W. Phipps, of Harborne. Two of these houses are shown on pp. 8 and 13. One of these (Fig. 2) is well ventilated and easily cleaned, and is useful for all seasons of the year. The sliding glass window can be lowered in the summer, and raised to make it more snug in winter. A style of house fast coming into use is one with canvas shutters, which are well creosoted or oiled to keep out the wet, and prevent the canvas from rotting. The ventilation filters through the canvas (which is placed near the bottom of the house) and finds its exit near the apex. The canvas shutter can be raised in fine weather, but even when closed it admits sufficient light for general purposes. These houses are well adapted for keeping light-plumaged birds, as they shut out the direct sunlight, which fades or destroys the purity of colour.

The Necessity of Shade for exhibition birds is dealt with in the chapter on "Preparing Birds for Exhibition," to which the reader is referred. It is a good plan to have some at least of the poultry houses built facing the north, where no direct sunshine enters, and if a large scratching shed is attached so much the better, as the valuable portion of the stock can get fresh air and exercise, which are so essential to health, without getting blistered or sunburnt, and they can be let out to an adjoining grass run or open yard when the weather is suitable.

Sunshine, the source of life, is as essential to show birds as to other stock in the earlier stages of their growth, besides during the breeding season, and means should be taken to provide for it.

Birds intended for Stock Purposes only should never

be deprived of it. And many breeders, having ascertained the true merit of a bird, and having selected it for stock, do not bother about shading at all. Even though it is discoloured in plumage they know that it will breed correctly, since colour damaged by the weather does not transmit its blemishes to the offspring.

"**The Value of Scratching Sheds.**—The benefits I have spoken of are most marked where what is known as the 'Scratching-shed System' is employed. This is nothing more than the use of a house of shelter for the daytime as the sleeping compartment is for the night, and the best arrangement is when they are placed end to end (see Figs. 1, 2 and 3). In these illustrations the scratching sheds are seen to the right of the picture. They are of the same width as the house, and may be of the same height, or a little lower will suffice. They should be as weather proof as the house, with a good roof. If boarded up in front to a height of 3 feet and the top portion filled with wire netting they afford protection against cold winds and ample shelter from rain.

"The door of entrance for the attendant is better placed at the end of the shed furthest from the house, and unless it faces a wet quarter, which should be avoided where possible, may be left open all day to admit all the sunshine possible. If a single perch runs lengthwise in the centre of the shed the birds will often be found resting upon it in the daytime to preen their plumage in the sun, or as a shelter from rain. There should be an entrance for the fowl from the house to the run, and this is better placed in the side of the house nearest to the front, so as to be out of the direct line of draught from the door.

"The shed, having one side less than the house and not necessarily built so high, or of such stout material, is less costly. It is better made longer than the house where space and convenience allow it. Mine were mostly made at first of the same length as the house, viz. 6 feet, but I am so convinced of their great utility that I have since extended them to 10 feet. I consider that one square yard of these covered runs is worth 10 square yards of the outside run upon the

grass, and that there is no portion of the poultry keeper's expenditure which repays him so well as this. The advantages are—

"(1) A dry shelter to which they may go as protection from rain and wind.

"(2) A dust bath always ready if the floor is covered with loose litter, or a portion of it set apart for the purpose.

"(3) A first-class place for early morning exercise. Fowls are early risers, and when the connection between the house and shed is left open, as it should be, they will come out into the sweeter air of the shed, and seek for any remnants of the last night's supper which may have been scattered among the litter.

"(4) It is the most convenient place for putting the laying boxes, which should never be put in the sleeping house.

"(5) It is a very serviceable place in which to feed the birds in winter, or more especially when the ground is covered with snow or hardened by frost, for the litter does not freeze if kept dry.

"(6) It is an ideal place in which to bring on an early moult. If a pen of fowl (without the cockerel) is shut in such a shed, in July or August, and fed on half rations in hard corn, which should be buried in the litter, the warmth and exercise afforded quickly starts the growth of new feathers and so more rapidly brings them into condition for winter laying."

(7) When the "fancier" is weeding out his stock, they are handy places to keep a score of cockerels, either to fatten or to await disposal. If these are properly tended and kept clean they will be in better health and condition after a month than if allowed to run amongst and pester the better birds. Scratching sheds soon repay their cost from a business point of view, and they add immensely to the comfort of a fancier's yards. They *look* better when built 6 inches to 12 inches less in height than the house. The roofing boards should slope from apex to eaves, and extend far enough over to throw off the rain, and the felted roof should be kept well tarred.

The Cost of House and Sheds depends much on the taste of the breeder. A convenient size is 6 ft. × 5 ft.

by 5 ft. to eaves, and 6 ft. 6 in. to apex, and may be bought at any price from 30*s.* to £3, according to the thickness and quality of material and the conveniences of shutters and screens. Like most other goods it is cheaper in the end to have a well-made article. Well-seasoned grooved and tongued boards of ¾-in. or 1-in. thickness are the best, and the boards should be placed perpendicularly, running from top to bottom, and all of one piece, not patched in half-lengths. The scratching shed having one end supplied by the house, and consequently requiring less material in its construc-

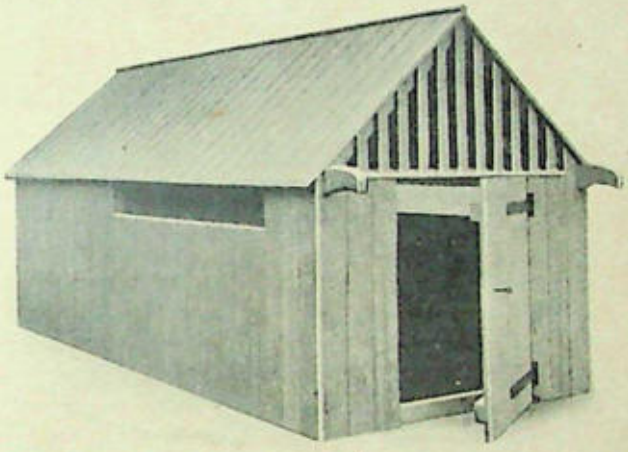


Fig. 4.—Cockerel Pen.

tion, costs about the same as the house though larger in area. Many fanciers find it most convenient to buy the house and erect the scratching sheds at home.

In all cases it pays best to have them built in sections, fastened together with nuts and bolts, which should be well oiled before putting together, and painted on the outside to prevent rust. They can then be readily taken to pieces and moved when necessary.

Houses of a Less Size, as shown above, 7 ft. × 4 ft., or a smaller size, 6 ft. × 3 ft. and 4 ft. to apex, are most convenient for moving about, either in a piece or in sections. They are much used by fanciers for keeping show birds in condition. Or they may be used for

half-grown stock, or for a few hens. The larger houses will hold a breeding pen of from 7 to 10 birds; and after the breeding season is over will house, if well ventilated, 20 birds, either adults or growing stock. Such a house is shown on page 22. If the open ventilated portions are turned from the sun the birds may be kept in good show condition, as they have plenty of light without any damage to plumage, and they may be moved to fresh grass every day.

Accommodation.—For permanent occupation about 3 square feet of area for each bird is quite sufficient, and if the ventilation is good and perch-room ample, half this is enough. Three perches may be placed in a house 6 ft. × 5 ft., running the 5 feet length, and 6 or 7 inches of perch-space for each bird is enough for Leghorns, and 9 inches for the larger breeds, so that 20 birds or more may be easily accommodated for a time. Where more birds are wanted in a run, perches may be placed in the scratching sheds. The autumn is the time when most birds are on hand and accommodation is taxed for a time, until the numbers are reduced. But the more room the birds get in the breeding season the better, and the same applies to the pick of the flock, where extra size and stamina are required. *Not more than* 20 to 25 *birds should at any time run together in one flock.*

The perches should all be placed on the same level to avoid scrambling for the highest spot, and at the end of the house, in loose slits, so that they can easily be removed for cleaning.

If taken out on a fine day and washed with a thin solution of creosote and water they will dry by evening. This should be done at least twice a year, to keep down insect pests, and to prevent the spread of elephantiasis, or scaly leg (caused by a mite), which ruins the appearance of the bird's legs.

"To keep the house and shed sweet it should be whitewashed twice a year. In order that the lime may keep fast, and not rub off upon the clothes of the attendant or the plumage of the birds, it should be *freshly slaked* before using, and to each half bushel of lime add 1 lb. of salt, and either add a little skim milk or a little tallow. Nothing is more annoying than

whitewashing badly done. It should not be laid on thickly.

"To preserve the outside of the buildings they may either be painted or, as I much prefer, be given a coat of creosote once or twice a year. This is a great preservative to new timber, gives it a most pleasing tan colour, and keeps away insect pests. It cannot, of course, be used over painted surfaces, but is intended for newly erected and unpainted houses. The colour is intensified by a second coating. A *little* of it, about a gill to a two-gallon bucket, gives the whitewash a wholesome odour without much discoloration and acts also as an insecticide."

Jeyes' Fluid, which can be bought at any chemist's or large provision dealer's, is also an admirable thing for the purpose, and has the advantage of being non-poisonous, even to young stock. Where whitewash is objectionable on account of its rubbing off, or creosote because of its colour, Jeyes' Fluid is one of the very best deodorizers, and a solution of it in water is easily applied.

Creosote can be purchased from many gasworks and any "tar" works. It is a product of coal tar, and in barrels of 40 gallons can be bought cheaply. When bought in small vessels it costs more on account of the can or drum in which it has to be sent away.

For the Floor of the Houses nothing is better than peat moss where it can be obtained in quantities at a cheap rate. From 30*s.* to £2 a ton is an average price, delivered in lots of a ton or more. It is a grand deodorizer and saves a lot of trouble in cleaning out. If the droppings are gathered from the surface once or twice a week, and the remaining moss be raked over, a good layer of a few inches in depth will last for three months or more.

For the Floor of the Scratching Shed peat moss may again be used, but the floor of the shed should be raised some six inches above the soil. If the shed is raised on bricks, and soil well rammed down be placed on the bottom, it makes a dry surface upon which the peat moss can rest. Otherwise, by drawing up the moisture from the earth, it soon gets damp, and this destroys its efficacy.

On such a surface of earth the chaff from oats or wheat makes a cheap and effective scratching material, and as long as it keeps dry this is almost as good as peat moss for the scratching shed, though it is not as good for the house.

Instead of feeding the thrashed oats or wheat in the shed, some breeders who have a stack of home-grown oats find it pays better to throw in a bundle of them for the fowl to help themselves. They do the work as efficiently as a thrashing machine, and the exercise keeps them in good condition. Where neither peat moss nor chaff is available, dry sandy soil or road sweepings are a good substitute. Many a humble fancier has to be content with this, and where there is a good depth of it in a dry state it is wonderful how it helps to keep the stock in glowing health, even in circumstances which would appear hopeless to those accustomed to larger areas and more favourable conditions. I have known a pen of half-a-dozen birds to be kept in a confined shed of not more than 9 ft. × 6 ft. all the year round, and not only to lay well but for the eggs to be fertile, and strong, healthy chickens to be reared. Such a space affords room for the cleanliness of a dust bath, and for abundant daily exercise in scratching for their food, which is only given in sufficient but not wasteful measure. It is needless to add that in such circumstances grit is always supplied freely, the soil changed at regular intervals, and an ample supply of green food given regularly. A cabbage or lettuce hung up two feet from the floor gives them additional exercise. Whenever the requirements of feathered life are understood, and the owner is fond of his stock, and therefore pays them due attention, it is surprising how well they do even under the most adverse circumstances. Many a winner is bred in such surroundings and triumphs over the exhibits of a more favoured fancier, whose more ample space and means are not backed up by the same intelligent interest.

Poultry Fences.—For whatever purpose poultry are kept they are best in small flocks, not more than 20 to 25, as I have said, being allowed to run together, except in the case of half-grown chickens, when a few more may be permitted in the same run, when space is limited.

In the case of grown-up fowls kept for the purpose of egg production, the number of eggs produced is largely increased by such a division. In larger flocks the weaker ones soon "go to the wall," and although it is more expensive to have numerous divisions, it pays better in the end to have three groups of 20 than one of 60. Overcrowding is as bad for poultry as for man.

When kept for breeding, although it is sometimes necessary for two or three cockerels to run with 20 or more hens, it is not successful except where they have extensive range; and, as will be described, when breeding exhibition stock, not more than 3 to 10 hens should run with one cockerel. This number is determined by the nature of the breed and the time of the year.

The male bird, if he has a sufficient number of hens in the pen, pays attention only to the birds about to lay. If it is therefore more convenient to mate up the entire breeding pen at once, it makes little difference whether you put 3 or 4 hens, actually laying, and as many more that have not commenced, but will lay in a month or so, or only put down the few and add the others at a later period.

The following table will act as a general guide:—

BREEDS	DEC. TO FEB.	LATER	NOTES
Brahmas, Cochins, Dorkings and other heavy breeds	3 to 4 hens	6 to 7	If eggs are wanted to begin incubating on December 11 in order to get chicks for January 1 the pens should be mated early in November, and any eggs laid after a week may be kept for hatching under hens. Incubator eggs are better not more than 10 days old
Leghorns, Minorcas and other light breeds	5 to 6 hens	8 to 10	When genial weather comes in February other stock birds may be added to make up the full number

The bulk of the best chicks of the heavier breeds, which include Orpingtons, Rocks, etc., as well as the above, are hatched in February and early March, and of Leghorns, Anconas, Campines, etc., in March and April, or even as late as early May. Those hatched earlier in the year are most useful for early shows, but chickens which are *matured* in June and July fall into

moult, and are useless for winter shows, while those *hatched* in June are too immature to breed from in the following year.

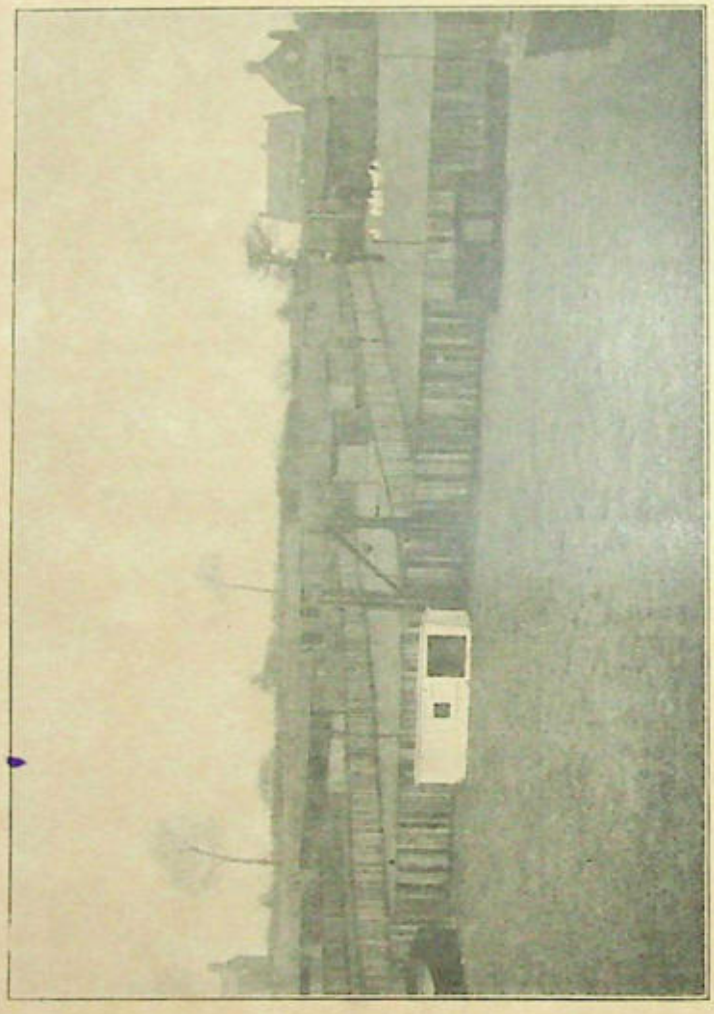


FIG. 5.—A range of the author's breeding pens, and part of the open square for rearing chickens.

In Planning Out the Poultry Run much depends on the space at command. When my space was more limited I successfully kept 12 breeding pens upon half an acre, as described in *Poultry Culture for*

Profit, each run having an average of nearly 200 square yards. In these confined spaces, on a light and well-drained soil, with the grass kept short in the summer-

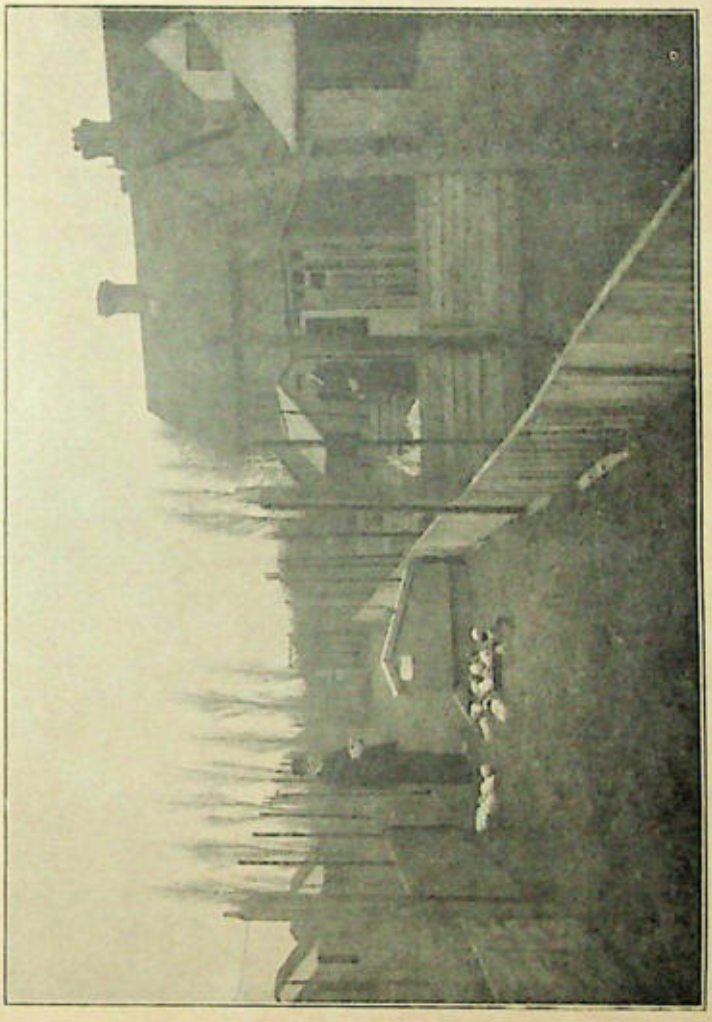


Fig. 6.—Part of a gangway 9 ft. wide used for chicken rearing with breeding pens on either side. Those on the left face the north.

time, I kept in perfect health from 100 to 300 birds, the number varying according to the time of year. The chief difficulty arose in finding ample room for the young and growing stock in the early summer and the autumn.

Now that the space at my disposal has been extended to nearly 10 acres the runs are naturally larger, and average 500 or more square yards to each pen. A run 20 yards by 20 yards is ample for any breeding pen, and for most breeds one 15 yards by 20 yards is sufficient. The larger runs are kept for the growing stock, and especially for the cockerels, which require ample range if they are to develop into well-grown birds. It is advisable not to have all the runs of the same size, as the smaller ones suffice for a few birds, and the larger ones either for growing stock or for the time when the breeding pens are broken up and amalgamated, the hens being grouped together and the cockerels removed to a small range of runs suited for one or more birds.

A general view of the arrangement of my own breeding pens is appended, the runs in the middle of the photograph being about 40 yards long by 14 yards wide; part of a square, some 50 yards by 50 yards (about half an acre) being reserved for young chicken rearing only, and allowed a rest from June till the new year. The method of arranging the pens is shown on the next photograph, where a range of four poultry houses and runs are placed on either side of an avenue or gangway 50 yards long and 9 feet wide. Each of these runs is about 35 yards by 12 yards—this area of 420 square yards being ample for a breeding pen (Figs. 5 and 6).

The Gangway is purposely made wider than is necessary so as to allow the passage of a barrow, and also to make room for a cool brooder for chicks which have left the warm foster-mother—the shelter of the fencing on either side affording a protection from cold winds.

The attendant, passing along this avenue, can feed and water the eight breeding pens in one journey, and water can be laid on to supply the whole, and so save labour. The other parts are laid out in the same way. I do not claim that my plan is an ideal one, but it is the one I thought at the time to be the best adapted for my purpose, and I refer to it in order to impress upon the beginner the advisability of having his poultry farm, be it small or great, properly planned out, so as to save him as much labour and time as possible. Many poultry yards I have visited are as complicated as a maze or puzzle garden, and look as if the breeder had set him-

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self the task of making his work as difficult as possible instead of the reverse.

The fencing in both photographs is of an average height of 2 ft. 6 in. It serves the double purpose of providing shade and shelter from the wind from whichever way it blows, and of keeping the birds in the different pens from fighting.

Unless made to order it will be found that the fencing supplied by most makers of appliances is very deficient in height. It is usually supplied from 18 inches to 2 feet, the latter being seldom met with. It should be at least 2 ft. 3 in., and is better when 2 ft. 6 in., since any of the taller cockerels can do each other serious damage over a fence 2 feet high. Where expense is not a first consideration the best protection at the bottom of a fence is *galvanized sheeting*, which is made in a uniform width of 2 ft. 2 in., and in any lengths from 4 feet to 12 feet to suit purchasers. This is absolutely wind-proof and sight-proof, which a wood fence rarely can be, and if the bottom is painted for a few inches up, when it is fixed, to prevent rust, and the body of it occasionally painted, it will last a lifetime. Where valuable birds are kept, worth from £1 to £10 each, or more, it is the wisest economy to use it.

A Wood Fence is easily erected. Its appearance and cost depend on circumstances and the breeder's taste. Any rough boards will suffice, and if the height is uniform and the posts sufficient to keep it firm, and the whole is well creosoted, it may be made presentable in appearance, even if made of odd pieces, such as bacon boxes or packing cases. If a timber yard is handy the matter is simplified, or boards can be bought in bulk ready for erection from makers of poultry appliances. When cheaper timber cannot be found, a good-looking fence can be made of $\frac{3}{8}$-inch grooved and tongued boards, which cost $1\frac{1}{2}d.$ per square foot, or by having the rough American boards of $1\frac{1}{2}$-inch thickness sawn into half-boards, when the cost is reduced to about $\frac{3}{4}d.$ a square foot. The cost of making a fence 2 ft. 3 in. to 2 ft. 6 in. high is about 6*d.* per lineal yard.

The Posts to sustain the fence and wire netting at each corner of the fence should be 3 inches square, and other posts 3 in. × 2 in. placed at intervals of about

15 or 18 feet, with smaller stakes about 1¾ inches square every 5 or 6 feet apart—two between the heavier stakes. If a 6-in. deal is ripped in two at the timber yard, and then sawn into four, it will make eight stakes, and a length of 15 feet makes 16 stakes 7 ft. 6 in. long, at a total cost of 3*s.*, or a trifle over 2*d.* each. The average cost of a deal 3 inches thick is 4½*d.* per square foot.

Creosote or tar should be applied to the bottom of each stake or post to prevent rotting. They are best driven into the soil to a depth of 15 or 18 inches, and the whole of the surface should be painted with creosote.

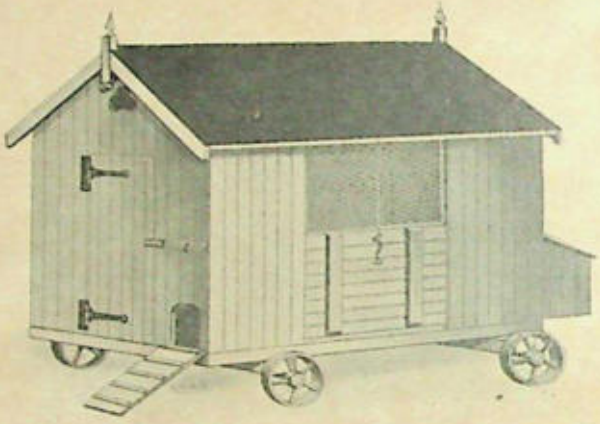


Fig. 7.—Stubble House.

Wire Netting is placed on the top of the wood fence, and the 4-ft. wire of 2-in. mesh is the one I use and the one generally adopted by other breeders. The cost of this varies from time to time. When cheap I have bought the 19-gauge wire at 8*s.* for 50 yards, 4 feet wide, but its present price is 10*s.* It pays much better to buy 18-gauge because it is stouter and heavier, and lasts twice as long. Its cost is 20 per cent. more than the 19-gauge. It is fastened to the posts with thin wire staples.

It will be seen that the cost of such fencing is rather high, and when all the materials have to be bought at the prices I have named amounts to 10*d.* or 1*s.* per lineal yard, and the life of the wire is not a long one. I

prefer all the fences of a uniform height of 6 ft. 6 in., as either light or heavy breeds can be interchanged as occasion demands. If I kept the heavier breeds only, such as Orpingtons, Rocks or Wyandottes, a 5 ft. 6 in. fence and 3-ft. wire would be ample, or if Cochins and Brahmas a foot less. It is the cost of the divisions I have named which deters most fanciers from adopting them, and this gives their poultry yards such a woe-begone appearance. Where natural fences provided by a thick hedge are at hand, a little wire netting at the bottom will often suffice. Where possible it is well to arrange for the runs to communicate with an open paddock or field, to allow the birds a more extensive run; while a movable house placed on the autumn stubble, or on a fresh clover run, is beyond price in its value for bringing on the growing stock into their full size and vigour. (See Fig. 7 and Mr. W. Calway's advertisement for excellent types of stubble houses.) I consider that there is no food in the world so good as a fresh crop of clover; and the short-growing perennial clover is the best to bring out the full quality of the stock, especially for the clean-legged breeds. And where this cannot be provided naturally, the best clover hay cut short, scalded and soaked well the night before it is given, or the clover meal so much favoured by American fanciers could be used with great advantage much more frequently than it is by English breeders. But this brings one to the subject of feeding, which is dealt with in the next chapter.

CHAPTER II

ON FEEDING AND FOOD-STUFFS

No part of the poultry breeder's work is more important than a knowledge of the correct way to feed his stock. If breeding and the right "strain" is the first element of success, feeding is the next, for the best-bred stock, if badly fed, will never develop into first-class specimens. And though this fact should be evident even to those who breed for "utility" only, since an over-fed bird, with its organs overlaid with fat, can never lay well, and an under-fed bird can never attain its true proportions for the table, it is constantly ignored, and the same monotonous ration is given indiscriminately all the year round. To the breeder who aspires to exhibit it is of far greater importance. A chicken stinted in food, or fed with the wrong kind, becomes stunted in growth, and in the larger breeds, where size is an important factor, success is more often due to correct and careful feeding than to anything else.

It is not many years ago, and within the memory of most middle-aged fanciers, since the majority of poultry keepers in England fed their stock almost exclusively on maize and potatoes!! In many country places, and among the humbler class of fanciers, the practice still continues, and it is perfectly surprising what wonderful results are obtained by this method, especially by those who keep the lighter breeds, such as Minorcas and Leghorns. Birds fed on these foods put on flesh rapidly, and it seems to have a wonderful effect on the growth and development of the lobes of show birds, although it has a tendency to make them yellow instead of white. But the practice is ruinous to the constitu-

tion, and is one of the chief sources of the perennial liver disease which decimates the farmers' yards every autumn. I only mention this prevalent custom to illustrate the slip-shod method of feeding often adopted, and not to condemn the use of maize, maize meal and potatoes, all of which have their place when used with discretion. The fancier of to-day is better enlightened, and his aim is "quality in the stock" more than cheapness in the cost of food, and the price he is prepared to pay for his food cannot be illustrated better than by a reference to the host of advertisers of patent foods ranging from 12*s.* to 20*s.* per cwt. This must be profitable to the purveyor, or there would not be such a rush to get the business. Many of the foods advertised are very valuable aids to the fancier, and it pays him to use them for the choicest portion of his flock, especially when growing the chickens or in preparing the adults for the show-pen. But the chief cause of their extensive use is either lack of knowledge or laziness on the part of breeders, who prefer to have the mixing of meals done for them rather than do it for themselves. It is a difficult and painstaking matter to feed poultry always to the best advantage, and it is heightened where many breeds are kept in the same yards, since laying hens want different food from table birds, and both require different food, alike in quality and quantity, at various seasons of the year—more nitrogenous food and in greater quantity when they are laying than when they are not, at least a third more. Previous to moult they need less in order to induce it, and when fairly started to moult more generous food to sustain the great strain upon the system, besides additional aids, such as boiled linseed, of which 10 per cent. to 20 per cent. should be given twice a week. When feathering is slow, flowers of sulphur, in proportion of one tablespoonful to each ten birds, sprinkled upon and mixed twice a week with the soft food, given as the morning meal, is a great aid.

The fancier has other difficulties, as pointed out in the chapter on "Preparing for Exhibition," since maize in any form is injurious to the plumage of white birds, and even red wheat is said to act in the same way, while it has no ill effect upon buff or black plumage;

and iron, so generally given as a tonic, has a similar effect in imparting a yellow tinge to the white plumage, while it is beneficial to black or dark-coloured birds. These effects on the plumage are much more marked when given at the period when birds are undergoing the moult.

These are only samples of the difficulties which attend the successful methods of feeding. They may seem trifles, but little points like these make all the difference in the keen competition the exhibitor has to meet, and they are important to all breeders whether they exhibit or not.

For the Egg Producer a valuable lesson may be learnt by the simple observation of nature. Eggs are plentiful in the springtime among *all* our feathered friends, not simply because the weather is genial, and all nature sings the love song and calls to mating, but because of the abundance and variety of food she offers in the springing grass of the field, in the plentifulness of insect life, and the myriads of worms and slugs. Note how the laying hen seeks for them and greedily devours them when she has an open field for exercise, while she passes them unheeded at other times when her system is not undergoing the strain of egg-producing. See how the young chick races after the tiniest insect within its reach, and devours to repletion worms thicker than its tiny legs, and learn that if we want eggs we must supply animal food at other seasons, when nature is dormant.

If we want eggs all the year round, we must plan an eternal spring so far as animal food is concerned, and provide for it in one of the many forms it can be obtained.

For the Young Stock in the same way, if we want them to form flesh and bone and sturdy frames, nitrogenous food must be given, especially in seasons when nature denies it them. The dried flies and ants' eggs found in the best dry chicken foods is one source, fragments from the table or bits of offal from the butcher is another, while finely-ground green bones, *i.e.* fresh bones with the marrow and gristle and clinging meat, provide not only flesh food but the mineral matter which goes to make the frame.

The Prevailing Fault is that fowls in confined places are fed too much on cereals, without a sufficient supply of animal food and of grass or green food in one form or other; and that those cereals which contain too small a proportion of albuminoids are too freely used.

The bane of the breeder is fat stock. It spells ruin in the breeding pen, it diminishes the number of eggs, and renders those which are laid unfit for hatching healthy stock. Eggs are either unfertile or contain weakly germs, and the chicks which hatch look as sickly as a child born with the jaundice already marked on its skin. It may sometimes be necessary to feed up a fowl for exhibition, but the lazy and inactive life it is forced to lead during its preparation, and throughout the show season, renders it, in many cases, quite unfit for breeding purposes. They are as useless for breeding as prize cattle at a fat-stock show, until a long time after the showing is over and they have been reduced, by scanty fare, the use of purgatives, and rigorous exercise and outdoor life, for the purposes of the breeding pen.

To Promote Winter Laying the same course has to be adopted. It is no easy matter to reduce to a healthy state stock birds that have been over-fed. The exterior fat may be taken down, but the internal organs retain it longer. The method is to reduce the rations, giving only half fare, to avoid fatty foods such as maize and wheat, and to give food rich in albuminoids, to feed chiefly on hard grain and to make them scratch for it by burying it in the litter of the scratching shed. For soft food, a plentiful supply of green stuff, such as cabbages, turnips and chopped clover hay, should be given, and well-scalded bran, which is rich in nitrogen, mixed with it, as well as lean meat. A dose of that golden remedy Epsom salts is an assistant.

But prevention is better than cure, and a fairly lean, hungry condition, flesh and not fat, is best kept up by judicious feeding from the time of moulting until the breeding season comes round again.

For this purpose I append a few notes on the values of the more common foods generally used, and, for those who will take the trouble to read it, a tabulated list by which the changes may be rung to any number of tunes, to please the varied circumstances. Few people care to

take the trouble, and some who would do so do not understand the subject. An analysis of food-stuffs is a good general guide; for even though samples differ, and no two tables are quite alike, yet they are near enough for all practical purposes. The mixer of meals for the fancier is like the dispenser of medicines for the ailing. He has his place in the community, but is often called in where a little knowledge practically applied would save his services. Good food is better than physic, and a doctor's harvest is sown by a bad cook and grown by the unwise eater.

In order that the reader may have a fairly complete list of the values of feeding-stuffs I append two tables of food values, No. 1 being taken from various reports issued by the Departments of Agriculture in the United States of America, and No. 2 from Leaflet 79 issued by our "Board of Agriculture and Fisheries."

The former gives a *complete* analysis of the *entire* contents, and the latter deals only with the "digestible nutrients," and leaves out of the account both water, ash and fibre, and the indigestible portions of the proteids, nitrogen-free extracts and the fats. This accounts for the difference in the percentages. They are given as the *average* of many samples. It is evident that some samples are richer in protein or albuminoids than others—the richer and better-grown samples having more carbohydrates, *i.e.* starchy matter, etc.

Meaning of the Terms used in the Tables—

Water.—"All plant substance, all animal tissue, all the material things with which man comes in contact in his daily life are made up more or less of water." This is evident in green plants and juicy fruits. It is equally true of, though less apparent in, cereals and hay.

Ash.—The mineral compounds of plants and feeding-stuffs. These are numerous and in varying quantities, the principal minerals being potash, soda, lime and magnesia, etc. It will be noticed that there is a large proportion found in the skin or husks of the cereals, *e.g.* oats, barley, bran, and in hay and the grasses. The amount found in clover in an easily assimilable form is one of its valuable properties in forming the frame of the growing stock. A hen with a good grass run rarely lays eggs without a good shell. Note the large pro-

portion in "animal meal" and in "green bone," and hence its necessary use.

Fibre.—The thread-like portion of the tissues of plants and animals. The indigestible parts. These are diminished in proportion when the cereals are finely ground, *cf.* maize and maize meal.

Protein.—The nitrogen compounds of foods both vegetable and animal. Of all the nitrogen compounds the albuminoids exercise the most general functions in plant and animal life.

Albuminoids.—The nutritive portion of food, of which the most concentrated familiar form is the albumen or white part of an egg. That portion of the food which provides flesh-forming material.

Carbohydrates.—Those parts of the food-stuff containing starch and sugars. These are designated in the first table as the *nitrogen-free extracts.* The elementary composition of this part of the food contains Carbon, Hydrogen and Oxygen. "They may properly be called the *fuel* of the animal world." They are the storehouse of sun-derived energy. They provide warmth and fat. Maize heads the list, followed by wheat, which is a hint for their use in very cold weather, but they are too rich in fat.

Fat.—Of the various fats found in food-stuffs it should be remembered that 1 lb. of fat equals 2¼ lb. of carbohydrates in heat production or fat formation, so that food like maize, which is rich in both carbohydrates and fat, is very fattening in its nature. Linseed, being rich in oil, gives the gloss to the plumage, as described in the chapter, "Preparing for Exhibition."

Albuminoid Ratio.—The feeding value of foods is often expressed in what is termed the albuminoid ratio, *i. e.* the proportion of albumen to the carbohydrates. For example, the albuminoid ratio of oats is said to be 1 to 6·8, that is, 1 part by weight of albuminoid matter to 6·8 parts of fat and carbohydrates, both expressed in carbohydrate value, or, as the farmer might say, one part of flesh-forming food to nearly 7 of fattening food. In estimating this ratio the percentage given to "fat" should be multiplied by 2¼ and added to the rbohydrates, and then divided by the albuminoids. Thus the arithmetical formula to express the

albuminoid ratio in oats is $(4{\cdot}3 \times 2{\cdot}25 + 44{\cdot}7) \div 8 = 6{\cdot}8$. (See Table II, where the fats in Oats are given as 4·3, the Carbohydrates as 44·7, and the Albuminoids 8.

There is some little difficulty in working out these various ratios, but the trouble is well repaid. Those who desire to go further into the intricacies of feeding should buy Jordan's *Feeding of Animals*, in the "Rural Science Series," which gives elaborate details.

TABLE I

The Composition of Poultry Foods

Reports of Agricultural Departments in U.S. America

Kind of Food	In 100 lb. Water	Ash	Fibre	Protein	Nitrogen-free Extract	Fat
Corn, or Maize	10·6	1·5	2·2	10·3	70·4	5·0
Barley	10·9	2·4	2·7	12·4	69·4	1·8
Oats	11·9	3·0	9·5	11·8	59·7	5·0
Rye	11·6	1·9	1·7	10·6	72·5	1·7
Rice	12·4	0·4	0·2	7·4	79·2	0·4
Buckwheat	12·6	2·0	8·7	10·9	64·5	2·2
Sunflower Seed	8·6	2·6	29·9	16·3	21·4	21·2
Cow Pea	14·8	3·2	4·1	20·8	55·7	1·4
Millet	13·3	2·6	7·7	11·4	61·3	3·7
Wheat	10·5	1·8	1·8	11·9	71·9	2·1
,, Screenings	11·6	2·9	4·9	12·5	65·1	3·0
Maize meal	15·0	1·4	1·9	9·2	68·7	3·8
Oatmeal	7·9	2·0	0·9	14·7	67·4	7·1
Barley meal	11·9	2·6	6·5	10·5	66·3	2·2
Pea meal	10·5	2·6	14·4	20·2	51·1	1·2
Animal Meal	5·1	28·6	—	40·9	—	28·6
Dried Fish Meal	10·8	29·2	—	48·4	—	11·6
Horse Beans	11·3	3·8	7·2	26·2	50·1	1·0
Linseed	8·1	4·7	7·3	21·6	27·9	30·4
Ground Maize and Oats, equal parts	13·0	2·2	5·7	10·5	64·2	4·4
Bran	14·3	5·9	8·1	16·0	53·7	4·0
Pollard (Sharps)	12·1	3·3	4·6	15·6	60·4	4·0
Dried Blood	8·6	2·7	0·4	86·4	1·5	0·3
Fresh Green Bone	34·2	12·8	—	20·6	1·9	30·5
Skim Milk	90·5	0·7	—	2·8	5·1	0·5
Potatoes	78·9	1·0	0·6	2·1	17·3	0·1
Turnips	90·5	0·8	1·2	1·1	6·2	0·2
Carrots	88·6	1·0	1·3	1·1	7·6	0·4
Cabbage	91·0	1·1	—	2·1	5·5	0·3
Lucerne (green)	71·8	2·7	7·4	4·3	12·3	1·0
,, (hay)	8·4	7·4	25·9	14·8	44·2	2·6
Red Clover, Green Fodder	79·8	2·1	8·1	4·4	13·5	1·1
Alsike Clover, in bloom	74·8	2·0	7·4	3·9	11·9	0·9
,, ,, dried (hay)	9·7	8·3	25·6	12·8	40·7	2·9
Mixed Grass and Clover Hay	12·9	5·5	27·6	10·1	41·3	2·6

To these may be added for comparison the following percentages of constituents:—

	WATER	ASH	FIBRE	PROTEIN	NITROGEN-FREE EXTRACT	FAT
Whole Body of a Laying Hen	55·8	3·8	—	21·6	—	17·9
Whole Body of a Capon or Fatted Cockerel	41·6	3·7	—	19·4	—	33·9
Dry Matter of a Hen's Body	—	8·6	—	48·9	—	38·5
Dry Matter of Eggs	—	3·5	—	49·8	—	38·6
Fresh Eggs	65·7	0·8	Shell 11·4	—	—	8·9

Note the close similarity between the constituents of the dried body of a hen, and of the egg she produces to form the chick. Note, also, the large proportion of water in the fresh egg, and the necessity for a constant supply of it—seeing that in every dozen eggs there is nearly a pint of water; and, further, that as 11 per cent. of the egg is lime to form the shell, the need for lime in the form of oyster shell or mortar, etc., where hens are kept in confined spaces, is obvious.

TABLE II

DIGESTIBLE CONSTITUENTS IN THE COMMONER FEEDING-STUFFS—(chiefly Wolff's figures)

Report of Board of Agriculture and Fisheries

FEEDING-STUFFS	ALBUMINOIDS [1]	FATS	CARBO-HYDRATES
	per cent.	per cent.	per cent.
Linseed Cake	24·7	9·6	29·8
Linseed	20·1	25·2	18·9
Beans	22·0	1·4	50·9
Peas	20·1	1·4	53·9
Dried Grains	14·9	6·4	33·9
Wet (fresh) Grains	3·9	1·3	9·9
Bran (wheat) coarse	10·6	2·4	44·4
Wheat	11·7	1·2	64·3
Oats	8·0	4·3	44·7
Barley	7·7	2·3	57·6
Maize	8·0	4·0	68·6
Malt Dust (combings)	18·5	1·1	48·5
Hay (average meadow)	5·4	1·0	40·7
,, (,, clover)	7·0	1·2	38·1
Oat Straw	1·4	0·7	40·1
Locust Bean Meal	2·7	1·1	74·2
Potatoes	2·1	0·2	21·8
Swedes	1·3	0·1	10·6
Turnips	1·1	0·1	6·1
Mangolds	1·1	0·1	10·0
Treacle (Molasses)	11·8 [2]	—	59·9
New Milk	3·2	3·6	5·0
Buttermilk	4·0	1·1	4·1
Separated Milk	3·9	0·4	4·5
Whey	0·8	0·1	4·9

[1] Some of these foods also contain Amides, but as these are comparatively unimportant they are included in the Albuminoids. The Amides is a nitrogenous compound found in plants and tuberous roots. They are soluble in water. They differ in many respects from the Proteids.

[2] This figure is got by the usual method of converting Nitrogen into terms of Albuminoids, but it is very much above the true figure for the digestible Albuminoids in Treacle.

From a large number of experiments made at the New York experimental stations, it has been demonstrated that simply to maintain a fowl when *not* laying, in good health, but without loss or gain in flesh, requires much less food in bulk, and a much less proportion of Proteids, or a lower Albuminoid ratio. Thus, while 4 lb. of food is sufficient for a day's rations to maintain 20 fowls of an average weight of 5 lb. each, it would need 5½ lb. for the same hens in full lay, and while the former need only a nutritive ratio of 1 in 7·4, they need a proportion of 1 to 4·6 when laying. In other words, fowls when laying need flesh-forming foods, Albuminoids, in the ratio of 1 part to 4 of Carbohydrates, while the hen at rest needs only 1 part to 7.

And the growing chick needs nearly the same ratio as a laying hen. The hen is parting with her albumen to form the egg, the potential chick, and the growing chicken needs it for the development of its body, which is composed almost exactly of the same constituents as the egg; whereas the fowl at rest needs only to maintain its bodily heat and vigour.

It will be seen, therefore, that the error is a great one when the breeder gives the same kind of food, and in the same quantities, to his stock all the year round. For some of these hints I am indebted to the analysis given in Mr. Jordan's book on *Feeding of Animals*, before referred to.

Hard and fast rules cannot definitely be laid down, and very much must be left to the fancier's intelligence, which is indispensable for success. No error can be greater than to suppose that poultry feeding is a simple matter, a mere child's play. It is true that poultry will live, like the slum child lives, in the most haphazard fashion. But to secure the best results intelligence, watchfulness and care have to be taken at every step.

Notes on Food Values

A few simple notes on the principal cereals and the ground meals which are made from them may be more easily understood than the tabulated list, and I arrange them chiefly in order of their importance.

Oats are almost a perfect food when the sample is a good one and they are short, plump and fat. They are better suited to adult fowl than growing stock on account of the large amount of fibre.

Ground Oats are equally good, but they should be *finely* ground. The husks of coarsely ground oats are apt to cause crop-binding and indigestion to chickens.

Sussex Ground Oats are the nearest to perfection on account of the fineness of meal, due to the special methods they employ in milling them. The best I have seen were obtained from Messrs. A. Thorpe and Sons of Rye, Sussex. Mixed with a little biscuit meal and a proportion of meat meal, or dried fish meal, it is an excellent food for chicken rearing as well as laying hens.

Oatmeal is again an excellent food for all but the very youngest stock. The "pinhead" form of it is valuable to mix with the dry food for young chicks.

Wheat is another first-class food, but too rich in carbohydrates, and is almost as fattening as maize. It is good, when kibbled or broken, for young chickens from a month old upwards, but they need green bone or meat meal, or the addition of kibbled peas, to bring it up to a proper ratio.

Sharps, Middlings, Thirds and Pollards are various names given to the meals which are cast aside in making flour. I have tried to arrange them in the order of their *fineness*, the Sharps being nearly as fine as the flour. These are exceedingly useful for the soft food, and are the richer in albuminoids—the white flour, the starchy carbohydrates, having been removed. Two of Sharps and one of Barley Meal is a staple diet, and the pity is that the foreigner sends us his flour and keeps the Sharps at home, hence the relative dearness of it, as there is a big demand for all we get made here.

Bran is excellent *if scalded* before use, as it is otherwise an irritant to the intestines. It has a high albuminoid ratio, and is first rate for putting on size after the chicks are half grown. It should be used sparingly at first to see how it suits the fowl. Its value is not sufficiently realized.

Maize.—The food more relished than any other by most poultry. It is too rich in carbohydrates and fat

if fed alone. Excellent in winter fed alternately with oats, if not overdone in quantity, and if flesh food is added. Maize should not be given to fowl with white plumage, as it discolours them, especially at moulting time. Cooked Maize is said to be more digestible and not so fattening.

Maize Meal is about the same in quality, but forms a capital mixture with Bran and with Sharps. It makes the mixture more crumbly and palatable.

Beans are not often given to poultry except in the form of Bean Meal, when it forms a very rich albuminoid food, and heads the list in this respect, and is valuable when added to other foods, such as Maize or Sharps, to bring up the ratio.

Peas and Pea Meal are much the same as Beans. Poultry eat them more readily, and there is less husk. White Canadian Peas are the best. Peas and Beans want using with caution, and only about one part in six mixed with other meals.

Buckwheat is rather a fattening food and not rich in albuminoids. If of good quality and free from dust if is a useful grain for young chicks, being small, but it is not easily digestible. It is useful boiled and mixed with Bran for older fowl. It is much used for fattening fowl.

Barley is not a good food, and is not much relished by fowl. When made into meal it is useful to mix with Sharps.

Dari.—Another fattening food. Chicks like it, but it is not flesh-forming.

Hempseed.—Rich in oil. Good for chicks when feathering, and a good pick-me-up at moulting time, but too fattening and too expensive for general use.

Linseed.—Very rich in oil, the highest percentage of any, but also good in albuminoids. Excellent for the moulting time.

Rice.—Useful as an occasional food for chicks, and when boiled whole much relished. It stops attacks of diarrhœa or scour when given once or twice, but it is not rich in nutriment.

Rye is not so much relished as most other cereals, but is very nourishing, and cheaper than others.

Sunflower Seed is not a general commercial com-

modity. Poultry relish the seeds, and they are a first-class conditioner, but few fanciers grow enough to be of much use. There is a great quantity of indigestible fibre in them, but they are *very* rich in oil, and the albuminoid ratio is one in four.

Skim Milk is one of the most valuable of all foods, and where easily obtainable should be in more general use for promoting the early and quick growth of chickens, and for putting on size. Farmer fanciers have a great advantage over others, and many a breeder of high-class poultry keeps a cow to provide the milk for his chicks. Note its richness in proteids.

Clover Hay is not as much used by us as by the American fanciers. They show us the lead, and as we learn to appreciate its value we shall use it more for winter feeding. Chopped finely and scalded the night before using, it adds to the bulk of the food, as well as to its value, and is easily digested.

Clover Meal is supplied from America, and is sold by purveyors of fanciers' foods. It is valuable if used with discretion, but it sometimes acts as an irritant to the bowels, and I prefer clover hay.

Other Green Foods, such as *Swedes*, are a most convenient form of giving green stuff in winter. Cut in two and placed in the scratching shed, or the outer run, fowls relish them when grass is not obtainable. *Mangolds* are better after Christmas, when they are riper. The average price of either of these is 15*s.* per ton, and no food is cheaper or more economical at the price. They should be protected from the frost, and any frostbitten portions should be cleared out of the way of the fowl. *Lettuce* is excellent food for chicks, and so are fresh cabbage leaves, or a whole cabbage hung up in the scratching shed finds food and employment at the same time. *Dandelion Leaves* and *Young Grass* cut short are very valuable additions to the food of young chicks.

Animal Food is a necessity both for building up the frame and for egg-producing. The most convenient way of giving it is in the form Crissel, as sold by Spratt's Patent Co., or beef scraps and the like, but a cheaper form is in butchers' offal. A sheep's belly or head can often be got for a trifle, and after cleaning and

boiling make a valuable addition. Green bones, *i. e.* fresh bones unboiled, can often be got at from 6*d.* to 8*d.* a score pounds, and when these are finely ground in a bone mill, which costs only a few shillings, is the cheapest food obtainable and very valuable for promoting growth. The mineral matter in the bones adds growth of frame, and supplies lime for the egg, while all flesh meat is rich in albuminoids, and helps to provide a well-balanced ration.

Where size is required an excess of flesh food sometimes destroys its beneficial effect by bringing on the birds to lay at too early an age. It should therefore be fed sparingly as they approach maturity. It also has the effect of developing the combs of the cockerels too rapidly, especially in the Mediterranean breeds.

Dried Fish Meal is another valuable aid, rich in protein, and is the basis of Liverine, a most excellent patent food alike for adults and for growing chickens. I prefer fish meal to meat for chicks, and for general use in summer for the older birds.

Patent Foods are valuable to the breeder of high-class stock. The makers are myriad, but a few old-established and high-class firms are the best. *Biscuit Meal*, scalded and dried off with sharps, ground oats or barley meal, makes a palatable breakfast. The chief objection is its cost for general feeding, though it pays the breeder of valuable birds to use it. Many of the patent meals have a perfect albuminoid ratio, made by carefully selecting the various cereals, and having them ground and mixed together, and though they are comparatively costly, it pays to feed them to young stock destined for the show-pen.

Grit and Oyster Shell should be at hand in every pen. The former to aid in digestion, and the latter for making the egg shells. Fowl deprived of it cannot be healthy when they are kept in confined spaces.

Grit serves the place of teeth to the fowl and assists the gizzard in grinding and masticating the food. A fowl without grit is as badly off as a person with imperfect teeth, and both suffer from indigestion as a consequence. When fowl have been kept without it for a short time, it is interesting to notice how greedily they devour it when freshly supplied. Even when it is

given at the same time as food to hungry birds they will consume the grit before their food. Nothing could show plainer its necessity. A hundred fowl need at least 1 cwt. a year of grit besides oyster shell. Both should be kept in a grit-box placed in each pen or covered run.

A Few Dietaries for the Morning Meal.

No. 1.		No. 2.	
Sharps	2 parts.	Indian meal	2 parts.
Barley meal	1 part.	*Bran	1 part.
Meat meal	¼ part.	Sharps	3 parts.
		Meat meal	½ part.
No. 3.		**No. 4.**	
Pea or bean meal	1 part.	Potatoes (boiled)	2 parts.
Sharps	3 parts.	*Bran	2 parts.
*Biscuit meal	2 parts.	Maize meal	1 part.
No. 5.		**No. 6.**	
Ground oats	2 parts.	Cut raw bone	½ part.
Maize meal	2 parts.	*Bran	1 part.
Ground bones	½ part.	Sharps	2 parts.
		*Cut clover hay	1 part.

Those marked thus (*) should be scalded.

These and other combinations can easily be formed and changed from time to time. Fish meal, meat meal or bone meal may alternate, and in winter time, when grass is not plentiful, clover hay, cut very short and scalded the night before, makes an excellent addition. A few swede turnips boiled soft the night before, and warmed up in the morning, or other vegetables, such as cabbage, lettuce, cauliflowers, treated in the same way, and mixed with any of the above, add to the bulk of the meal and form a cheap and beneficial diet. An ounce of salt (two small table-spoonfuls) should be added to the water for each 100 fowl. This acts as a preventive against feather-eating and the habit of pecking combs. Until the fowl are accustomed to the salt it is better to add rather less than the above quantities to the water with which the meals are mixed. My own custom has been to feed adult stock twice only during the day, viz., morning and evening. In cold and wet weather they are not let out till the time of feeding with the warm, soft food, but in fine weather an hour or so before the meal.

The Evening Meal should be given about an hour before dusk, or in the summer time about 6 p.m., so as not to keep them too long without food. It should be of hard corn, and alternated. Wheat or oats in warm weather, with an occasional feed of maize, and in the winter alternately oats and maize.

The following six dietaries are a modified form of some dietaries recommended by the "Board of Agriculture."

FOODS FOR PENS OF TEN FOWLS (AVERAGING ABOUT 6 LB. EACH IN WEIGHT) FROM THE COMMENCEMENT OF THEIR LAYING SEASON

MORNING		MIDDAY		EVENING	
WEIGHT OF FOOD Ounces	FOOD-STUFF	WEIGHT OF FOOD Ounces	GRAIN	WEIGHT OF FOOD Ounces	GRAIN
1.—2	Lean meat	12	Barley	15	Wheat
*2	Bran				
*2	Cut clover hay				
2	Barley meal				
2.—2	Cut raw bone	12	Oats	15	Maize
*2	Bran				
3	Chopped cabbage				
2	Sharps (middlings)				
3.—*2	Meat meal	12	Oats	15	Wheat
*3	Bran				
3	Chopped cabbage				
2	Boiled potatoes				
4.—2	Lean meat	12	Oats	15	Maize
*3	Cut hay chaff				
*3	Bran				
2	Pea or bean meal				
5.—*3	Bran	10	Barley	15	Maize
3	Chopped cabbage				
4	Rough oatmeal				
2	Lean meat				
6.—*2	Bran	10	Oats	15	Maize
3	Barley meal				
4	Fine ground oats				
*3	Cut hay chaff				

Those marked thus (*) should be scalded.

For laying hens during the winter a very good morning food-mixture can be made as follows—

Scalded bran	4 parts,
Well-cooked maize meal	2 parts,
Pea meal	2 parts,
Sharps	1 part,
Cooked lean meat	1 part,
Chopped and scalded clover hay	2 parts,

with a light midday feed of oats, and an evening feed of either wheat or buckwheat, or, if the *weather be very cold*, of broken maize.

No exact weight of food can be given as a measure, since the bigger fowl eat more than the smaller and more at one time than another, but for average fowls of 5 to 7 lb. weight 1 lb. of hard corn is enough for 9 to 12 birds.

Briefly, the rules are—feed regularly, and give only as much as they will eat greedily. Don't leave any food lying about from one meal to another. And should this at any time be found out, starve them for the next meal. Let an abundance of clean drinking water be provided, and have it kept in earthenware vessels in a cool place protected from the sun's rays. Zinc or iron vessels are wholesome enough unless it is desired to add medicine to the water, when a chemical action often takes place not favourable to health.

To Fatten Fowls

The feeding directions given so far have been intended for stock birds, laying hens, or growing exhibition stock, and a rich albuminoid ration has been insisted on. The book has not been written for the utility breeder chiefly. A few lines on the fattening of poultry may be useful, however, since the fancier has a number of mis-marked birds only fit for the table. If they are well fed they will be in good condition for killing when taken direct from the open run, and most fanciers do not bother about fattening; they either eat them, or sell to the higgler, or send them off alive, in batches, to the London Smithfield Market.

Where fowls are kept in sufficient number to make it worth while, or where the owner is sufficient of an epicure to desire a fatted chicken for dinner, a great deal of flesh can be added in a short time by the use of proper foods.

The Principles of Fattening to be borne in mind whatever the method adopted are (1) to give an abundance of fat-producing foods, rich in carbohydrates, in an easily digestible form, (2) to keep the birds fairly warm, (3) to induce rest and avoid exercise.

To do this they may be kept in groups in confined quarters, and given twice a day as much soft food as they will eat, but without leaving any lying about to spoil their appetites. No water should be given, but grit may be provided. Fattening coops are used by the fatters, and any fancier may buy or make his own. The coops are about 18 in. high and the same depth, and may either be divided into compartments of about 10 in. wide for single birds, or 24 in. wide to hold three or four birds. The bottoms are made of slatted wood to enable the excreta to fall through, and they should be raised some 2 ft. or more from the floor, supported on an open framework, with earth or ashes underneath to catch the droppings. A removable trough should be placed in front at feeding-time, and taken away or turned over after the meal, and not allowed to become foul.

The best foods are barley meal, maize meal, Sussex ground oats, oatmeal and boiled potatoes. No hard grain should be given.

DIETARIES

No. 1.		No. 2.	
Sussex ground oats	3 parts.	Sussex oats . .	2 parts.
Maize meal . .	1 part.	Barley meal . .	2 parts.
Wheat meal . .	1 part.	Boiled potatoes .	1 part.

No 3.

Buckwheat meal .	2 parts.
Maize meal . .	2 parts.
Barley meal . .	1 part.

The greater proportion of ground oats the finer is the quality of the flesh said to be. If mixed with sour skim-milk boiled, the digestive organs stand it longer. A little rough fat boiled with the water and mixed in the meal adds to its efficiency.

The food should be given in a moist condition. Two to three ounces each meal per bird is about enough, though they should be given as much as they will eat with a relish. If the appetite fails a change of food may induce its recovery.

The time usually taken to feed a bird plump is 14 to 21 days. They don't stand *long* confinement, which causes them to mope and go back, or die.

They may be crammed by hand with pellets of food moistened in milk. But this is a troublesome business, and it is better to get a cramming-machine, which does the work more cleanly, rapidly and with greater efficiency. It is easy to feed 100 or more in an hour by this method. There is a hopper to contain the food, an attached indiarubber tube is passed down the mouth into the bird's crop, a pedal is worked by the foot to eject the food until the crop is filled. The birds look forward to meal-time, and in the earlier stages do not seem at all to object to it. But food is given independent of the bird's appetite until it is fatted sufficiently. The extra amount of *flesh* put on a bird's body by this process is surprising—its food value being doubled in a short time if the birds are of the right kind and are taken at the proper age, either between the moults at about 12 weeks old, or later, just as soon as the adult moult is finishing. The object is to put on rich flesh, infiltrated with fat, and not layers of coarse fat.

There is a prejudice in England against yellow-legged and skinned birds, white legs and flesh being the favourites. Orpingtons, Faverolles, Dorkings, Game and their crosses take first places, but Wyandottes and Rocks are good. The lighter breeds do not fatten so rapidly, and are better killed at about 12 to 14 weeks, when they are plump and excellent eating. For their values see the chapter on the "Commercial Side of Poultry Keeping," which may help the fancier to sell what he has to dispose of in this way. Values are various, and the intrinsic value of a fowl not wanted for stock or exhibition purposes is simply what it will fetch in the open market.

CHAPTER III

INCUBATION BY NATURAL AND ARTIFICIAL METHODS

Natural Incubation.—Old-fashioned people prefer old-fashioned ways, and many others who would scorn to be called old-fashioned, yet, through innate cautiousness and conservatism, fight shy of incubators of every kind, and prefer to hatch all the chicks they need by means of "the broody hen."

At the outset there is this to be said for their notion, that they prefer "Nature's way." And when the hen, moved by Nature's impulse, either chooses and makes her own nest, or the owner makes a decent one for her, and she takes kindly to it, "Nature is hard to beat." Moreover, it may safely be estimated that nine small poultry-keepers out of ten hatch all their chicks in this way, and even in farmsteads where large numbers are hatched the incubator is only just beginning to find its way.

There are many fanciers also who swear by the hen, and whenever possible hatch by Nature's means and allow the hen to brood her chicks afterwards. Some large breeders rear a broody race for this purpose, the aim being to have sitters of medium size, well feathered, with clean, or only slightly-feathered legs, and of thoroughly broody instincts. In this way they are spared the trouble of hunting all over the district to find a broody hen, and avoid the danger of introducing disease from this source.

Like every other plan there is something to be said for and against trusting to broody hens.

Against the method it may be noted—

(1) *Hens are very difficult to find when wanted*, e. g.

although I keep about eight pure breeds which become broody in summer, I have often hatched out a thousand chickens in the early months of the year, by means of incubators, before I have had a single broody hen. If I had trusted to hens alone these chicks could not have been hatched. Some years the scarcity of broodies is remarkable, especially when the season is late and cold. But, whatever the season is, the fancier desires early chickens, and this alone should be sufficient reason for the employment of an incubator. The hen does not want to sit till she has *finished* her batch of eggs, and in many cases even the sitting breeds will keep on laying for three months or longer without becoming broody. The fancier wants the *first* eggs to hatch as much as the last, and often more so.

(2) *Broody Hens are often uncertain in Temperament.*—Nothing is more provoking than to have a valuable lot of eggs spoilt by a hen refusing to sit to the end of the twenty-one days. This is a constant occurrence, especially with cross-bred hens which may have a large element of non-sitting blood in them. The fancier who pins his faith to the broody hen should always have an incubator at hand in case of such an emergency.

(3) *Hens are often Dirty or Clumsy.*—An egg broken in the nest quickly breeds fleas, unless the greatest care is taken to remove all traces of it, and this often necessitates re-making the nest, and washing in warm water all the other eggs, much to their detriment. Nothing is more fatal than to have a hen sitting near a cindered path, or to have ashes from the hearth to dust in. The cinders adhere to the feet or the feathers, and fall to the bottom of the nest, when the weight of a hen pressing the eggs upon a hard or pointed surface breaks the shell. The hen is often blamed for the carelessness of her owner. A *dry* dust-bath of *fine* soil should always be at hand.

Lice breed apace on the hen's warm body during the period of incubation, and, unless she is well dusted with insect-powder and kept clean, the chicks themselves are infected and so have a bad start in life.

A heavy hen often crushes the weakened shell when the chick is about to hatch, and a vicious hen will peck out and eat the crushed chick, and sometimes after

being thus started, will serve the whole hatch the same way. When it is found that the shells are unduly brittle it is best to remove them to an incubator to finish hatching, and to replace the chicks, if necessary, under the hen after they are hatched and dry. It is better to leave either two or three of the eggs under the hen to keep her steady on the nest, or if all are removed to place a few common eggs or platter ones for the same purpose.

The Advantage of the Hen.—On the other hand, if the hen is a good sitter, of proper size and weight, and if she is kept clean, nothing can be better. Wyandottes of any breed, Orpingtons of small or medium size, or Rocks, make excellent mothers, or a cross of either of these breeds with the Game fowl or the Silkie cannot be surpassed.

To obtain Broody Hens.—Hatch the stock early so that they will lay in the winter months and become broody early in the year. Remember that a hen does not want to sit till she has *finished* laying, and therefore, where they are kept for this purpose and not for breeding, give them plenty of flesh-food to hasten the output of eggs, or give a little ovary tonic for the same purpose. By this means the clutch of eggs is sooner laid and broodiness comes earlier.

A hen will hatch delicate eggs from inbred stock where an incubator will fail. The finest mechanism does not approach Nature, and the gentle and regular heat of a good hen will produce and maintain the life that an incubator will smother.

For this reason bantam eggs are better hatched under hens, even if they are removed for the last day or two and placed in an incubator to hatch out.

Stale eggs are best placed under a hen. A hen that brings a brood of fifteen or eighteen chickens from a stolen nest, must have laid the first of the eggs from which the brood comes at least *a month* before she began to sit. Such eggs would not hatch out in an incubator, and very few practical workers of a machine would place eggs in for hatching if more than ten days old, and they certainly hatch better if not more than a week old.

For this reason eggs which have been sent from

abroad, or dispatched to foreign parts, should always be placed under the hen, and not in an incubator. After a journey eggs should be allowed to rest on their sides for twenty-four hours, or more, before being placed in an incubator or under a hen.

Selecting the Eggs for Hatching.—Not every egg which is laid is fit for the purpose of incubating, and, in cases where birds are kept in confined runs or have been overfed and allowed to become too fat, the proportion of eggs suitable for the purpose is not a large one.

Any eggs which are much above, or below, the usual size laid by the hen should be rejected, also any which have a rough surface, or are covered with nodules at the end, or have any irregularity in their contour. That this caution is needed I know from the fact that eggs are often sent out even when purchased at a high price, quite unfit for hatching. I have paid forty-two shillings a dozen for eggs from noted stock, of which over a half have been either double-yolked, or hardly bigger than bantam eggs, or rough or thin-shelled; and if they are sent to me others must have the same experience. Senders of such eggs are either ignorant, or are guilty of gross carelessness, or act from unworthy motives. It is quite possible to get a dozen eggs, each of which would prove fertile, and therefore not returnable, but none of which would hatch a healthy chicken. It is a waste of both time and money to attempt to hatch eggs not suitable for the purpose.

Sometimes a valuable hen will lay eggs which are rather *thin in the shell.* If placed under a hen these would be certain to get broken. But they may hatch out in an incubator. If it is found that a hen is breaking her eggs, an examination of the shell may show this to be the cause, and all similar eggs should be removed from her and placed in an incubator. It will usually be found that such eggs are either very large or have a suspicious-looking surface, and this occurs more frequently in hens of the non-sitting breeds, or in cases where egg-production has been forced by the use of condiments or stimulating foods. The remedy is obvious in the case of birds kept at home, viz. a diminution of

the food-supply, and an addition of Epsom salts to the drinking-water, and a supply of oyster-shell to make shell-forming material.

How to make the Nest.—A hen by nature makes her nest on the ground, in a shady and secluded spot, usually in a hedge-bank when she has free range, or under a clump of timber. It is a simple affair, a shallow, circular hole in the soft earth, very lightly covered with hay or grass, and lined with feathers from her breast. Frequently nothing but the bare earth suffices. The fancier has to provide the nest when he keeps his birds in limited runs, and it is necessary that he should make it of suitable material and of the correct size. The best plan I know of I have described in *Poultry Culture for Profit*. Nest-boxes should be about fifteen inches square, of sufficient height to allow the hen to walk on and off the nest comfortably, and the top sloped to throw off the rain. If made too large, eggs are apt to roll into the corners, or the hen makes her nest awkwardly. If too small, the eggs get crushed. It should be round in shape, of well-beaten earth, very slightly hollowed, so as to allow the eggs to roll together, but not so steep as to render the eggs liable to roll on the top of one another. I prefer the bottom of the box to be of half-inch mesh wire-netting, and to be placed on the bare earth. This helps to keep the nest slightly moist, and prevents rats from burrowing. A strip of wood three inches deep nailed over the front at the bottom keeps the earth in its place, and the lid at the front should either be hinged to this, or loosely fitted, and have at least an inch of open space the whole length of the top to admit light and air. Many a valuable lot of eggs is lost through the hen being too closely shut in, and most nest-boxes supplied by the makers fail in this respect.

The nest should be lightly littered with soft hay, and pressed into shape—an inch in depth is sufficient, a little more being required in winter months than in summer.

When the nest is ready place the hen gently on it, with a dummy egg or two placed in the nest, and shut her in. When she has quietly settled you may place the eggs under her.

The number depends on the season and the size of the

hen. In winter nine to twelve is ample for a good-sized hen, while in the summer thirteen to fifteen may be safely given. She should have as many as she can comfortably cover. If too many are given, first one egg and then another may get chilled during the period of incubation, and so the whole clutch be lost.

Feeding the Hen.—At regular stated periods each day the door of the sitting-box should be opened, and food and water placed in sight of the hen.[1] If she walks off comfortably herself, this is the best plan. But if she is a close sitter, or reluctant to leave the eggs, or where many hens have to be attended to and time is valuable, it is better to lift off the hen at once, gently placing the thumb over the wings and the fingers under the thighs, taking care that no egg is clipped beneath the wing. The door of the nest-box should be closed, and the hen allowed about five minutes, or less in winter, to feed and relieve herself, and in the warmer weather a longer time to enable her to take a dust-bath, which should always be handy. Where several hens are sitting close together, they may be got off the nest at the same time and allowed to feed together, *if* they agree. When time has expired, allow the hen *to walk on the nest herself*. Any attempt *to put* her on may lead to disaster with the eggs. Care should be taken to see that the hen goes on her own nest, and, above all, that *two* hens do not get on the same, otherwise broken eggs may be the result.

A date-ticket should be fastened on the front of the sitting-box, stating the time of setting and the number and breed of the eggs. And, where hens are due on different dates, it is a good plan to have tickets of different colours, *e. g.* all red tickets for one date and blue for another. When many hens are set this is a great help, as you can see at a glance which eggs are due to hatch.

The structure of an Egg.—The section of an egg on the plate subjoined will give some idea of its wonderful mechanism.

[1] The period of broodiness is a great strain upon a hen, and she should be well fed with as much maize or wheat as she will take. She has to take two meals in one, and should have enough to maintain the heat of the body. Grit should not be forgotten.

A. *The outer shell*, which should be strong and even in its surface.

B and C. *Two layers of skin*, a double membrane, one of which (B) is attached to the shell over the whole of its surface, and the other (C) separate from the shell, leaving the air space at the thick end. These membranes are attached at all parts except the air space. The empty shell of a new-laid egg may be skinned, and the air space be seen between the two layers. They are drawn apart in the sketch to show their distinctness.

D. *The air space*, which performs the function of taking in oxygen from the air to sustain the life of the chick. It enlarges, as shown in the diagram, while the process of incubation proceeds.

E, F, G. *Layers of albumen* which are super-imposed about the yolk as it passes down from the ovary.

H, H. *The chalazae*, which hold the yolk suspended, and always convey the germ at the top of the yolk, to the upper side of the egg nearest to the body of the hen, as it lies in the nest. It has been suggested that always turning the eggs in an incubator *in the same direction* may so twist this elastic mechanism as to break it.

I. *A membrane* which encloses the yolk which holds it in a sac and the ends of which form the chalazae.

J. *The yolk*, which, like the white of the egg, is formed of various layers.

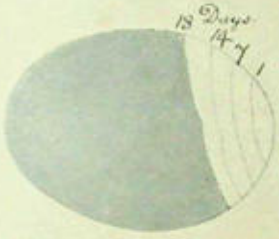
K. *The Central Cavity or Utricle*. The womb in which the germ lies and which is connected with the albuminous portion from which it is fed.

L. *The germ*, which is too minute to be seen with the naked eye. It is enclosed in its sac before it leaves the ovary of the hen and before the albuminous folds envelop it. It is impossible to tell the sex of an egg from its outward shape or appearance.

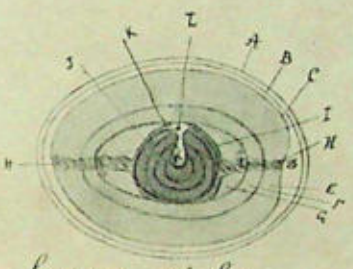
Testing the Eggs.—A great deal of valuable time is saved by testing the eggs to see whether they are fertile or not. Where a darkened room is available the eggs may either be tested when the hen is taking her daily meal, or at any convenient time in the day. They should be carefully carried in a box or basket lined with hay or wool to the darkened room. A



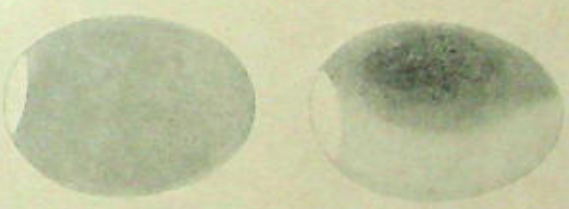
Fertile Egg at end of 7 days
as seen when held 2 ins from
Paraffin Lamp flame 6 ins
from the Eye.



Shewing Air Space
on different Days.



Section of Egg
Shewing germ floating.



Clear Egg (infertile) Rotten (abortion)

J. A. Williams B.A.
1909.

duplex paraffin lamp is the best light I know of for testing. The egg should be taken in the fingers of *both* hands, and lifted from the box in the position in which it has lain, and held between the eye and the light, so that all the illumination is excluded except that which passes through the egg. If the egg is fertile, after six or seven days' incubation the top half of the egg will be opaque, and in a good light the eye and head of the chick can be seen encircled with a network of veins. If it is *quite clear*, like a new-laid egg (which the novice should have with him as a guide), it is sterile or unfertile. If a faint, thin red line appears, and the body of the egg is otherwise clear, the yolk is broken. If a dark circular blob of black appears, the chick is dead in the shell. Learners should mark doubtful eggs with a ?, and test a few days later.

It is better to err on the safe side, especially in the case of valuable eggs. I have often had eggs returned to me after a week's incubation, as unfertile, which contained live germs; and on more than one occasion I have placed such eggs in the incubator at once, and have hatched out strong chicks, despite a journey of twelve to eighteen hours by post. It is possible to be too clever. On some occasions I have boiled the supposed unfertile egg and then cut it in half, showing the dead chick embedded in the albumen, and have returned them, with additional eggs, to the indignant purchaser for his inspection and information.

A little experience is the best guide, and testing is simplicity itself after a little practice. The late Mr. Wm. Cook gave me my first lesson, on the occasion of a visit some eighteen years ago, and I have never ceased to be grateful for the help afforded, and I have in turn helped many others. A little help by one who knows saves a lot of time. With a good light a hundred eggs can be tested in five minutes when taken from an incubator. When taken from a hen the eggs should not be kept away more than a few minutes and not allowed to get cold, and the eggs should not be turned and twisted about, nor held for more than a few seconds near the strong light and heat of a lamp.

The advantages of testing are many. In the early part of the year, December to end of February, accord-

ing to the severity of the weather, many eggs are unfertile. Probably 50 per cent. are clear on the average, for while one breed or one particular pen of fowls may do well, another may fail altogether.

(1) Where three or four hens are set at the same time, the fertile eggs may often be transferred to half the number of hens, and the others started again, or the contents of two incubators may be placed in one.

(2) The presence of unfertile eggs is detrimental to the others, as they not only do not attain the same heat, but more readily lose what heat they have when the hen is off the nest, or while the eggs are being turned or cooled in the incubator, and the delicate germ in the living egg is chilled.

(3) Testing also shows the breeder which of his hens or which particular pen of birds is at fault, and his attention is called to the fact a fortnight earlier than would have been the case if he had not tested them, and so leads him to remedy the evil. One pen of birds he may find too fat, or the cock is inactive or clumsy, or may have too numerous a harem. I count the advantage gained in this way the most valuable of all the results of testing.

(4) As a general rule it will be found that the pen which has most unfertile eggs has also the weakest germs in the eggs which remain, and the germs will only partially develop, or the chicks come to the birth and have no strength to come forth. The patience of the fancier is often tried by a series of provoking stages. First, unfertile eggs, then weak germs, then chicks fully developed but dead in the shell, and then a few weakly chicks hatched.

The main causes of this series of disappointments in hatching are—

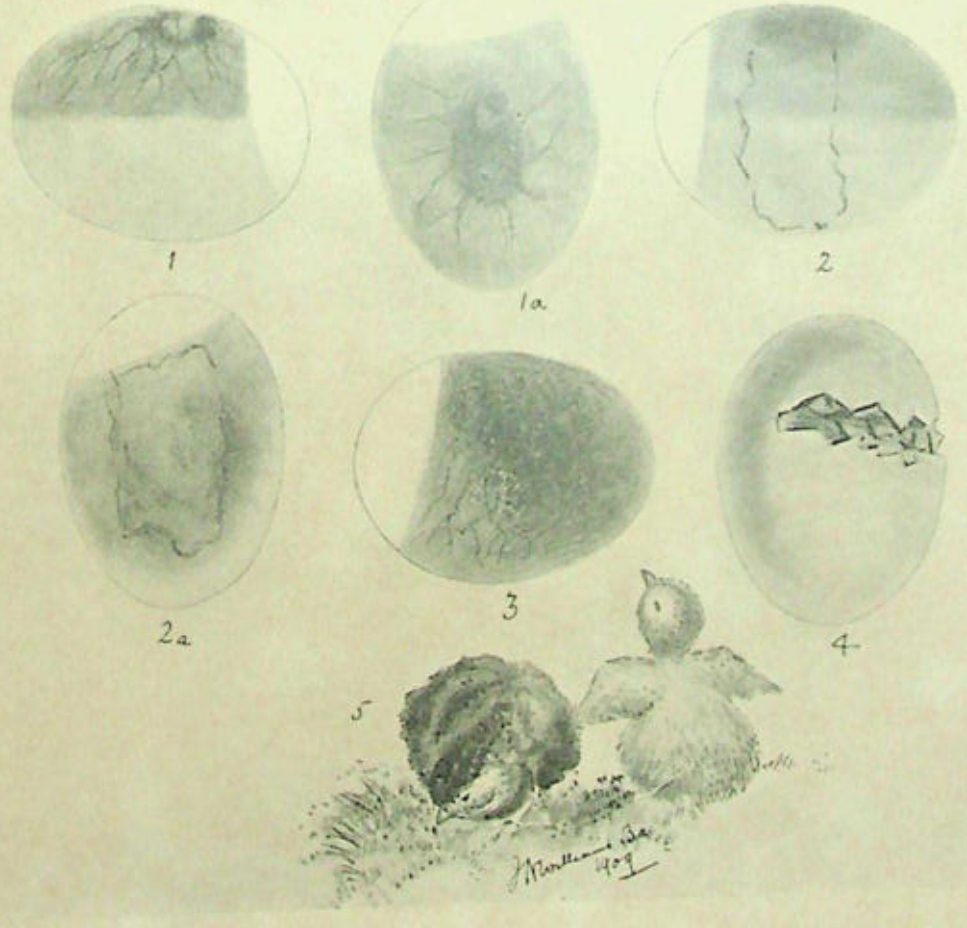
(1) The hens have been overfed in the autumn, or overshown.

(2) The cock has been overshown, or kept penned up too long without sufficient exercise.

(3) The stock is unhealthy from other causes.

Testing helps to discover the cause at an early stage, and points out the remedy.

When the chicks are hatching it is best not to disturb the hen too frequently. Hens, like mortals, differ in



EGG TESTING.

1, 1a. Fertile egg, 7th day. 2, 2a. Broken yolk, showing blood-vessel. 3. Fertile egg, 14th day.
4. Chipping shell, 20th-21st day. 5. Out and about, 21st day.

temper, and while one is docile and patient and will allow frequent handling, another grows peevish and will crush her eggs or kill the chicks.

If she is gentle and doing well, the shells may be removed once or twice during the day, but the chicks should be allowed to remain under her till they are dry and strong. The hen should have a feed of hard corn, either on the nest, or after gently lifting her off. In the latter case it is best to remove most of the chicks till she settles down again, when they may be placed under her and allowed to rest for twenty-four hours without food. It is a mistake to feed chicks as soon as they are hatched.

Before removing the chicks to a coop the hen should have a good feed, and then she will settle down quietly, and feed the chicks instead of gobbling it all up. The dainty morsels provided for them are too great a temptation for her after her prolonged fare on hard corn. (For further details see chapter on "Rearing.")

Artificial Incubation.—It is now time to add a few notes on the management of an incubator. Some of its advantages have been already noticed. The fancier wishes his birds hatched in the early months of the year when broody hens are scarce. In most cases he has *finished* his hatching for the year before his neighbour has thought of starting, or indeed before he has any hens wanting to sit.

This feat he accomplishes by the use of a good incubator. His "utility" friend who pokes fun at the fancier as a mere "breeder for feathers," and who fights shy of "them new-fangled machines," and who still holds the deluded opinion that hens "hatched by machinery" cannot be expected to lay, waits in patience, or impatience, for broody hens, which become broody late in the season, because they began to lay late, and then at length hatches out a few broods in May or June. These late-hatched chickens in their turn commence to lay only when warm weather comes, while the fancier's fine-feathered stock, early-hatched, lay their store of autumn and winter eggs, because their owner knows the value and use of an incubator.

Few up-to-date fanciers are without an incubator, and many farmers and utility breeders also know their

worth, and have learnt by experience the aid they bring in producing early and vigorous stock.

To choose an Incubator.—It is "penny-wise and pound-foolish" to buy a *cheap* incubator. My advice to the novice is to avoid them as he would poison. Buy a machine which has made a name, and has stood the test of time, and let others buy the new ones, which are puffed up to the skies as "hatching every fertile egg." Those who advertise their claims to the extent of improving upon Nature, can only go one step further and state the capacity of their machines to "bring a chicken out of *every* egg," whether fertile or not!!! There are incubators made which cost as much to "puff" in the press as they cost to produce in material and labour. A good machine for one hundred eggs costs £4 or more if skilfully put together, of the best materials, and well finished. Examine a cheap incubator with its ill-seasoned timber, rough-moulded brass fittings, utterly lacking in accuracy, a machine-made, jerry-built incubator, albeit highly lacquered and varnished, with the well-made, sober-looking article, and the sight of it alone ought to be sufficient. If you want a good article you must pay for it, and you will find it the cheapest in the end by far. Distrust instinctively the overwrought and bombastic statements which claim all the virtues under the sun. Common-sense flouts the nostrums of the quack.

There are several reliable incubators on the market, and, generally speaking, they rank in merit in direct proportion to their cost. The man who likes a bargain may often buy a good second-hand one, if he has a good practical acquaintance with them, and is able to test the vital parts of the machine, but the novice had far better trust to the maker and order a new one.

With the incubator the maker sends out a book of instructions which describes the mechanism of the machine and gives directions for its successful working. He is as anxious as the purchaser that good results should be obtained, and if any difficulty arises he is usually willing to explain it, though it must be added that some makers and their agents are as ignorant as they well can be, and have probably never worked an incubator in their lives, and their "directions" may be

described as "comical directions to achieve tragic results." The best general directions for working a hot-water incubator are given in *The Problem Solved*, by Charles Hearson. An incubator should not be looked upon as a "slave to do the work of an idle owner, but as a helpmate to be treated with intelligent understanding." It supplies the heat of the hen, and your intelligence takes the place of her instinct. Read and understand the directions sent out with the incubator, and try to understand its mechanism.

The best place for the Incubator.—I have seen them working in all kinds of places, both indoors and out, from cellar to garret indoors, and from any odd kind of outhouse to incubator-rooms constructed on purpose, and many of the latter have been the worst places of all, built and placed in defiance of every known rule for successful incubation. A very great deal of the success or otherwise depends upon the place where the incubator is worked.

The essentials are threefold, viz. evenness of temperature, quietude and freedom from vibration, and good ventilation without direct draught. The first is the great thing, and for this purpose nothing is better than a dry cellar, or a room built partly below the surface level. If built of stone or of 14-inch brickwork with a cavity wall so much the better, and the windows should be so placed as never to allow the direct rays of the sun to alight upon the machine. A north window, or north-east or north-west is all right, and a south aspect the worst of all. In cases where the only building available for the purpose has a southern aspect venetian blinds should be placed before the window, and if placed outside as well as within, so much the better. The essential point is that the temperature within the room should be kept as equable as possible, and therefore a steady northern light is the best, and this is also the reason why thick walls are preferable.

Many of the so-called incubator houses built of $\frac{7}{8}$-inch grooved and tongued boards and placed in an open, exposed situation where the sun can beat upon them, are the worst of all places. In the spring and early summer, when the outside temperature varies from 30° in the morning to 70° or 80° at noon, these houses vary

very greatly in temperature, and *no* incubator, however delicately regulated, can hatch well in such circumstances. The safe temperature in the incubator drawer may vary from 102° to 106°, though not long at the latter height, and if it reaches 107° or 108° every germ would soon be destroyed or so weakened that the chick when hatched would not survive. It will therefore be readily understood that sudden rises in the temperature of the air with which every machine must be fed, cannot have anything but a detrimental effect upon hatching.

In the summer all machines, wherever placed, have to be watched and seen to occasionally, and when the maximum heat is attained, and the lamp is burning at its lowest height, it is better to put out the light for a few hours, until the machine falls to 102° or 103°, than allow it to get over-heated. For the same reason it will be noticed that an incubator is easier to work in the winter and early spring, December to end of March, than from April to June. And the same is true of artificial rearing. When warm weather and variable temperature arrive natural methods are better than artificial, except in circumstances where the conditions for hatching and rearing are of the best.

A wooden building, such as described, is better if built with stout 3-inch battens, and lined inside, having a *3-inch cavity wall*, and the roof the same. But even then it is not as safe as a building of brickwork.

The floor of the building is best of brick, stone, or cement, so as to be free from vibration, though this is not as essential as equable temperature.

The ventilation should be ample, so that the air may be always fresh. When one enters in the morning the room should not smell of lamp fumes, or feel "stuffy," as it will be very apt to do where several incubators are at work and several lamps burning, when the ventilation is not good. Even a hen cannot hatch out her brood if shut up in an ill-ventilated nest-box. The rule must be: the more fresh air the better, if without direct draught.

Crippled chickens are the outcome not only of sudden noises or vibrations such as are caused by the slamming of a door, or the jolting of the egg-drawer (though this

is an undoubted cause), but also of anything which diminishes the vitality of the germ. There are always more cripples from a pen of birds where the stock are not in first-class health than from a vigorous breeding pen. There are more when the hatch is either hastened or unduly delayed by irregularities of temperature, or by trying to hatch eggs which are stale, or from immature stock; and I am disposed to think that insufficient ventilation is another cause.

When the conditions necessary for healthy incubation are not provided, only the very strongest chickens hatch, and if the remaining eggs are examined it will be found that a large proportion of the *matured* chicks which have failed to hatch have deformed feet or beaks.

The Dead in Shell mystery is not yet solved, but more will be found in incubators than under hens, providing the hens have had proper nests, and I am inclined to think that the causes will be found to be those I have described, and that many of the "dead" would have been crippled had they survived. The great cause is undoubtedly lack of vitality in the parent stock, and when this is not the case it is through improper conditions when hatching. Some of these will be mentioned later on, when typical incubators are described. Where the incubator beats the hen is in not breaking the eggs or not forsaking them, and in not crushing the chickens when hatched.

Those persons who only wish to rear a few chickens, and do not wish to hatch them early in the year will do best to keep to the hen, and to keep a few of a broody race, such as Orpingtons, Wyandottes or Rocks for this purpose; but those who wish to rear early chickens, either for egg-production in the winter or for exhibition, must use one or more incubators. And if the breeder has valuable birds, and wishes, as he naturally will do, to hatch every egg, he should have at least three incubators, so that he can start a fresh one every week. Eggs for an incubator should not be more than a week old, though a few days longer is not a serious matter.

It is not advisable after starting an incubator to add fresh eggs at intervals, it is better to defer the start for a few days, and then keep the next lot of eggs for another week. In cases where it is necessary to put in

a few more eggs the cold eggs should not be allowed to come into contact with those already started, but a piece of cotton wadding or a thick layer of flannel should be placed around the eggs already in the incubator. This can be removed after 24 hours, as the newly-added eggs will have become warmed. But it should be remembered that they will not be as warm as the eggs a week or more older. On and after the 14th day the animal heat of the chick is added to the imparted warmth, and eggs with a live chick in them will remain warm for a much longer time while the eggs are being turned, or the drawer open for airing, than fresher eggs.

The presence, therefore, of the newly-added eggs is apt to chill and retard the more advanced. Hence the advice to hatch out one lot before adding others. During the last two days of incubation the eggs should not be turned at all, or the drawer opened, whereas if any eggs are in a less advanced stage they need turning. The difference in heat is so marked that an expert could distinguish, by handling, between eggs 14 or more days old and those a week or less, as also between those containing dead and those containing live chicks.

The number of various incubators now on the market is legion. They are practically of two types, known as hot-water and hot-air incubators.

Hot-Water Incubators

Of the hot-water or tank incubators there are many, but the best and most widely known and used is that known as *Hearson's Patent Champion Incubator*, which is now the property of Spratt's Patent, Limited, who are the proprietors. This was patented in 1881, and to-day there are probably more in use than of any other make. For some 20 years it stood practically alone. But after the patent expired a host of competitors sprang up. Some few have approached it for efficiency, and may be obtained at a less cost, but none have excelled it, so far as my experience goes, and very few are at all fit to be compared with it. I have had one of Hearson's machines working for 19 years, a period of six months each year, and it is in nearly as

good a condition now as when I bought it. The capsule, which was the main secret of the patent, is still at work, and has never wanted attention. In no other incubator that I know of is it safe to work without having a spare capsule at hand in case the one at work should fail.

This capsule, which is seen in position in the section of Hearson's Incubator below, consists of two copper plates superimposed and hermetically sealed at the

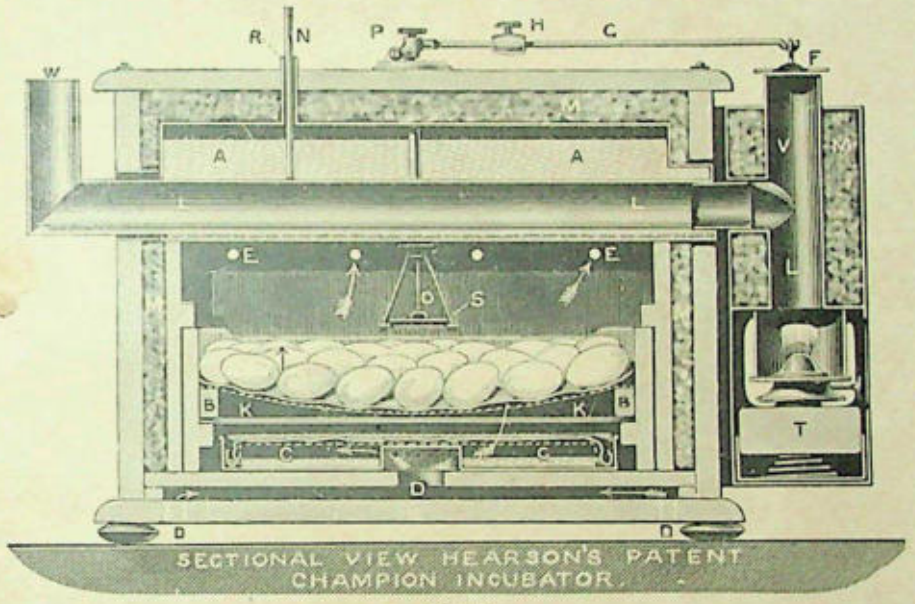


Fig. 8.

edges. Within the two plates are a few drops of a liquid composed of ether and alcohol, etc., which boil and expand at a temperature of 98°, just as water boils at 212°. When the capsule expands it raises the lever which rests upon it, and this lifts the damper over the lamp-flue and lets off all excess of heat. There is no other capsule so delicately adjusted or so strongly made.

The mechanism of Hearson's Incubator will be readily understood from the sectional view shown above—

A A is the tank of water, filled at tube R.
B B—Movable egg-tray.
C C—Movable water-tray covered with perforated galvanized

cover and canvas cloth to allow absorption of moisture and air without draught.

D D—Holes in the bottom and false bottom for admission of fresh air, the arrows showing its course.

E E—Holes for admission and exit of fresh air in back and front of incubator.

F—Damper over flue V, which lifts to let out the heat, which would otherwise travel along L, the copper tube which passes through the tank.

G—Lever.

H—The lead weight which is used to slide nearer the damper to increase the pressure on the capsule S, and so increase the temperature at which the damper lifts.

K K—Slips of wood which are placed *under* B B to raise the eggs nearer to the tank. These are removed when duck eggs are being hatched.

L L L—Lamp chimney and flue which passes through the tank. This flue makes a *return* passage, and the heat escapes at W in a chimney placed behind the flue F, and *not* as shown in the section.

M M—Sawdust or other non-conducting packing materials used to insure an equable temperature. (In cheap machines this is very scanty.) The external measure of Hearson's 100-egg machine is about 29 inches and the internal measure of the egg-drawer 20 inches.

N—Tank thermometer.

O—Strong steel needle or lever resting on the capsule S and communicating with the lever G at P. A *slight* elevation at P causes a much greater elevation at F, and so the slightest rise in temperature is automatically adjusted.

P—Milled head screw beneath which the lever O is placed.

R—Filling tube.

S—Thermostatic capsule, resting on a platform placed above the eggs, just to allow the egg-drawer to be moved without interference.

T—Petroleum lamp with chimney. (These lamps are so well made that they outlast, many times, the life of any other I know of.)

V—Chimney for the discharge of heat when not needed.

W—Chimney for discharge of heat after passing through the incubator tank.

How to start a Hot-water Incubator.—First select as directed a room with equable temperature, a firm floor, and good ventilation.

Then provide a platform upon which to place the incubator. This should be *not less* than 30 inches square for a 100-egg machine. A convenient height is 24 inches. If much higher it is awkward to turn and test the eggs.

See that this table is perfectly firm and quite level,

and after the incubator is placed in position see that it is perfectly level as adjusted by a spirit-level, on the *bottom* of the egg-drawer, when the drawer and the water-tray are removed. This is essential to obtain the best results. The incubator should stand at least 8 or 10 inches away from any outside wall.

See that the capsule is in position and the platform not bent or twisted in transit, and further that the lever O rests in the centre of the capsule and works freely, without catching the side of the tube through which it passes.

See that the lever O rests under the milled screw P in the hollow made to receive it, and that the fittings are truly adjusted, and that the screws which fasten the lever G to the base of the machine are not binding but allow the lever to work freely, and also that the damper F covers the chimney exit completely.

Now slide the lead weight H back close to the milled screw P, and then screw down the screw P until it just raises the damper F, and then ease it by a slight turn till the damper rests lightly but firmly on the flue. Then place in the water-tray, half-filled with water, covered with zinc tray and the canvas cloth. See that the latter is first soaked in water before being placed over the zinc tray, and that the edges are tucked under. If carelessly placed and the edges are allowed to overhang the water-tray, capillary attraction will draw out all the water and wet the wooden floor upon which the tray rests. On the other hand, if the cloth is not wetted, it will not draw up the moisture for distribution, but will remain dry.

Next place the egg-drawer in position.

Afterwards the water-tank may be filled until the water escapes by the overflow, which is provided by a screwed plug at the side of the Incubator. In winter it is better to warm the water till it is milk-warm. In summer weather this is not necessary. It is much better for the machine to warm slowly than to start it at once with hot water.

Care should be taken to fill the tank with *soft water*, as very hard water has a bad effect on the solder in the tank.

Next trim and fill the lamp, taking care that the wick

is not turned so high as to smoke, and remembering that the flame increases in height as the heat increases.

The machine may now be left till the heat increases and the damper rises. If it has been set correctly this will occur when the thermometer in the drawer registers 97° to 98°.

As this heat is not sufficient for incubating purposes, the weight H should be slid a few inches down towards the flue F, and when the damper again rises, if the temperature is not 103°, slide it further until that heat is attained. The drawer is then ready for the eggs.

How to put the Eggs in the Incubator.—They should first be selected as already described, rejecting any that are too large or too small, any with either a greasy or a rough surface, or misshapen.

It is best to mark the eggs on one side with the date when they are put in, and with the initials of the breed, so $\frac{21}{M}$ may mean put in on the 21st instant, Minorca eggs, or $\frac{21}{Orp.}$ on the same date, Orpington eggs. On the opposite side it is sufficient to mark with a ×. These marks are useful when turning the eggs. Better results are obtained when the drawers are not filled to the utmost extent. It is better to leave the corners empty.

It is better to put the eggs in with the date uppermost, and when they are turned at night to leave the × uppermost, as it is a convenience to have the date uppermost when testing the eggs before turning them in the evening.

Taking the Temperature.—The temperature of the egg-drawer should be taken twice daily. The best time to do this is in the morning before turning the eggs, and at night before repeating this operation. The thermometer should rest either between two fertile eggs, or just above them, as the machine is made for one or the other.

It is not safe to take the temperature at other times, as a record, *e.g.* if taken shortly after turning, the heat of the drawer might not have regained the normal, or if taken two hours after turning, the thermometer may read too high, since the water in the tank would have risen while the damper was down after turning, and the eggs have become a degree or more too warm, until the excess of heat thus gained had been let off.

Notice should also be taken that the damper is slightly raised before testing in the morning. If it is down and the eggs are a little below the right temperature, you will then know the cause of it, and see that the lamp is turned higher another night.

You should also see that the mercury is right in the thermometer. A particle sometimes gets detached and hidden at the outer end furthest from the bulb, and so it would read lower than it actually was. This should be shaken into position, or the bulb placed into water heated to say, 110°, and when the mercury meets remove the thermometer at once and the broken parts will join. You ought also to have at least one officially tested thermometer by which you may judge of the accuracy of the others. This may be done by placing both in a vessel of water heated to 105°, and seeing that they both register the same degree of heat.

Turning the Eggs.—The eggs should be turned in the incubator twice each day. It is better *not* to turn them *exactly* to the same place uppermost each day. The object of turning is to prevent the germ from adhering to the skin of the egg lining. The germ always floats to the top of the egg, and either allowing it to remain in one position too long or always turning it *exactly* to the same spot may have injurious effects.

If the young germ, during the first few days, gets attached to the shell, the yolk to which it is attached becomes broken, and a thin, red, circular line denotes the catastrophe when the egg is held up to the light for testing. This is illustrated on p. 53.

There are more broken yolks in artificially hatched eggs than in those placed under a hen. The causes are: (1) the egg remaining too long in one position; (2) overheat in the temperature; (3) weak germs.

Position of the Eggs.—It is advisable, on turning the eggs, to change also their position in the incubator. Those from the corners should be moved and placed near the middle. The corner eggs do not seem to receive either the same amount of heat or the same ventilation, and therefore a change is best. Hearson's is as good as any machine for regularity of temperature in all its parts, but one or more clinical thermometers, self-registering, placed in various parts of the drawer

will show which parts have registered the greater heat, and so guide the experimenter.

Cooling the Eggs.—The drawer should be left partly open for a few minutes when the eggs are turned. In cold weather there is no need for this during the first week. A few minutes the second week, and from the 10th to the 18th or 19th day from 5 to 10 minutes, but in no case long enough for the eggs to feel cold to the *back* of the hand.

The best test is the length of time taken to regain the required heat after the drawer has been put back. It should regain it in an hour, or a little longer at most. If it takes longer the eggs have been aired too long.

Trimming the Lamp.—This should be done daily. The best way is to *turn out the lamp* before one opens the drawer to turn the eggs. This prevents the heat of the tank increasing while the eggs are out to cool. After the eggs have been aired and the drawer returned, trim the lamp. It is better to turn all the eggs before trimming the lamp, as one's fingers are cleaner and less liable to soil the eggs.

Testing the eggs has already been partially described, together with the advantages of so doing. The various stages of incubation, as shown on p. 53, will be a help to the beginner.

The fancier who would like to observe carefully the various stages in the growth of a live chick in the shell from the 1st day till the 21st can best observe this, if he has fertile eggs of little value, by taking an egg out each day, and after testing by holding it up before a strong light, in a darkened room, lay the egg on its side. Then gently remove a part of the shell and the skin on the upper side, when he may observe the embryo floating quite at the top. After thirty-six hours he may see the heart pulsating and the little network of arteries. By the 4th day the network of arteries is much enlarged, and the curved position of the embryo may be seen with the head and tail meeting. By the 7th day the chick begins to open out, the head is largely developed and the eye is plainly seen, and the chick is capable of movement, and the day following the head is larger than the whole of the rest of the

body, and the eye a large black speck as large as a small pea. From this time the development is very rapid. Of course this is *not* the way to test chicks you wish to hatch out alive. But it shows what you may expect to see while looking through the more or less transparent shell when you are testing.

The 7th or 8th day is the best time to test.—A white-shelled egg is the best to try at first. On holding the egg *erect* with air-space or thick end at the top, the body and head of the chick will be seen in the centre with the blood-vessels branching on either side, looking more like a black spider with red legs than anything else. This is shown on the plate (p. 53). The best way to test is to take up the egg as it lies naturally on its side in the drawer, holding an end with the fingers of either hand. Hold this up to the light of a duplex lamp with the chimney (but without the globe), and hold the egg so as to intercept the whole of the light. The light is better if placed 6 to 12 inches *below* the level of the eye. As the chick floats at the top with the yolk beneath it, covered with the network of veins, the *upper half* of the egg will be opaque, and the lower portion clear. The difference between such an egg on the 7th or 8th day is observable in an instant, and where the egg-drawer and the light are conveniently placed, two or three minutes is ample for testing 100 eggs. By testing them in this position, holding them in a horizontal position (and not erect), there is no disturbing of the position of the embryo, and so less danger of injury as well as more speedy testing.

An addled egg, or one containing a dead germ, is cloudy in its appearance, and the veins are indistinct, or if the death has occurred a day or two before, not observable at all. And as the dead mass has no network of veins to hold it *in situ*, it moves about with the slightest turn of the shell. These eggs should be removed, as they soon taint the air in the egg-chamber, as well as chill the other eggs every time the drawer is opened.

An unfertile egg is as clear at the end of 7 or 8 days as on the first day, and when such an egg is broken the yolk will be found intact and quite distinct from the white, and without any smell. Such eggs are

as good as new-laid eggs for making cakes or pastry, or even for frying. If simply boiled they have not the same fresh appearance, and they are apt to taste a trifle musty if used for making a custard. Those who prefer to feed chicks on boiled egg or custard will find them useful for this purpose.

A Broken Yolk.—There are nearly always a few eggs in which the development has been stopped after the first few days by the germ having become attached to the shell. All the arteries break and the blood flows to the line of attachment and makes a circular line round the egg. This is shown on the plate (p. 53, Figs. 2 and 2*a*). On opening such an egg the yolk will be found to be as fluid as water. These should also be removed or they become decayed.

On the 14th or 15th day they should be tested again. A living chick will have filled the entire egg, except for the yolk not yet drawn into its body. The egg is opaque throughout except at the thin end, and perhaps a few veins may be seen at the other end. The air-space is enlarged and *clear*. Chicks that are not developed, but only partly fill the egg, like those tested on the 7th or 8th day, should also be removed. Examine one as a test of your judgment, and you will find a dead chick. If in doubt mark the egg with ? and look at it again later on. Such eggs are a danger, especially those which only half fill the shell, as they smell badly, and may explode owing to the gases which result from the decomposition of the chick.

After the 19th day it is better not to turn the eggs, and it is not necessary to air them on the 20th day.

A higher temperature is often observable during the last week of hatching, as the heat of the living chick is added to the heat from the tank.

Burn the lamp with a lower flame, or even alter the lead weight H by moving it back a little if the heat rises above 105°. And if your room is unfortunately one that gets hotter in midday turn out the lamp altogether for an hour or more to prevent undue increase of temperature.

If the room keeps a fairly steady temperature of from 50° to 60° in all weathers there will be little need to alter any arrangements, and the same is true of winter and

early spring, but there is *no incubator on the market* which can adjust itself perfectly, if the room in which it operates is liable to great fluctuations of temperature. In this respect the hen is supreme. Her body keeps fairly constant in temperature in all weathers, and where there are only few chicks needed I prefer the hen for summer hatches and summer rearing.

Do not be fussy and open the drawer too often when the chicks are due. The eggs need moisture during this period. If you feel under a hen when hatching she is like a vapour bath. Opening the drawer too often lets out the moisture and chills the eggs. It should only be done for an instant once or twice at most in the day, to take out chicks that are dry and can stand well on their legs, when they should be removed to the drying-box at the top of the machine, with which all good hot-water machines are provided.

Moisture.—The question of moisture is still *the crux* in dealing with artificial incubation. Beyond all question many chicks die in the shell which should have hatched, and the cause of death is either too much or too little moisture. After twenty years' experience I think no better plan than that suggested by Mr. Hearson has been devised. I find better results when moisture is supplied from the start as he suggests. Many writers suggest no moisture till the 10th day. I do not find this to answer as well, and there are certainly more "broken yolks" when no moisture is added till so late a period.

The water in the trays should be changed once a week, and fresh canvas cloths used. The old ones should be washed before using again, and at the first they should be made sufficiently large to allow for shrinkage. The water-trays should also be rinsed and scoured with a hand-brush to remove the mucous, and if a *few* drops of Jeyes' Fluid be added to the water all the better.

There would not be so many complaints of over-moisture if the eggs were sufficiently aired, and if the room was properly ventilated.

Where many incubators are at work and eggs are put in at various dates it is better to have one day of the week fixed upon for water to be freshly placed in all the trays.

After every hatch the drawers and the bottom of the

incubator should be lightly washed with water (to which a few drops of Jeyes' Fluid have been added) and allowed to dry before a fresh hatch is begun. Dirt and foul smells must be avoided at all costs.

After the hatch is over, remove any eggs that may not have hatched. A well-regulated hatch should be finished exactly in 21 days. Some few eggs may not have had the same heat as the rest, or the germ may not have been as strong, and therefore the hatching is delayed. If any of the chicks have not pipped the shell by the 21st day they should be tested by placing in a pail of water heated to 105°. If they are alive the egg will wobble about. If dead they remain still. If alive the shell should be gently broken at the thick end, in that *portion which floated above the water-line*, which is the air-space. If the chick is living its beak may be liberated, but care should be taken not to make the enveloping membrane bleed. If it does not bleed when moved it is a sign that the chick has absorbed the yolk and that the inmate is fit for liberation, and more shell and membrane can safely be removed. Chicks are *occasionally* saved in this way, but, as a general rule, it may be taken for granted that a chick which cannot liberate itself is weakly, and has a poor chance of survival, even if it be set free.

It is interesting to examine *all* eggs which fail to hatch, and to try and ascertain the cause of failure. Some will be found dead at various stages of growth, from the 7th day onward to the 18th. These I usually mark in my list as dead in the shell. Others have even pipped the shell, or are ready to do so, and these I mark as "failed to hatch."

If the yolk is burst or unabsorbed, and the contents are sticky, it is a sign of overheat during some portion of the hatch. If the skin is dry and the air-space large, there has probably been a lack of moisture, or the shell has been too thin and porous. If, on the other hand, the egg is packed like a sausage and there is no room for the chicken's head to liberate itself, there has been too much moisture, or the eggs have not been "aired" sufficiently.

In some cases where the chick has not hatched it will be found that the legs and feet are misplaced, and the

toes, instead of being folded like a half-closed hand, are either sprawling open, or the legs are crossed, or the toes bent and crippled. This may be the result of a violent shaking, or noise, or through the chick being suffocated and the limbs being displaced in its struggles.

A tabulated list of results should be kept by every one who hatches on a large scale; recording the number of eggs put in, the number of unfertile, broken yolk, dead or addled, "failed to hatch," cripples, etc., together with a list of temperatures. An ordinary note-book, such as a quarterly rent-book, with its 13 columns and cash columns makes a handy and suitable book to record the hatching season for a year, and a comparison of the one list with the other and noting the results proves an excellent guide for future operations. Crippled chicks will mostly be found either living or "failed to hatch," from weakly stock or hens which are too fat.

JAN. 1. HEARSON 100-EGG INCUBATOR Due Jan. 22.

BREED	EGGS IN	UNFERTILE	BROKEN YOLK	DEAD	FAIL	CRIPPLES	HATCH	REMARKS
Black Orpington .	30	10	4	4	—	—	12	
Buff Orpington .	20	4	—	—	—	—	16	
White Orpington	24	2	—	1	1	—	20	
Black Leghorn .	30	0	2	—	—	—	28	
	104	16	6	5	1	—	76	=86 %.

In arriving at the percentage the 16 unfertiles are deducted from the 104 put in. The total hatched is divided by the number of fertile eggs left in the incubator, so $76 \div 88 = .86$.

A list should also be kept of the temperatures, thus—

DATE		TEMPERATURE					REMARKS
		OUTER AIR	ROOM	TANK	DRAWER, MORNING	DRAWER, EVENING	
Jan. 1	Eggs put in, 104	36°	42°	131°	103°	103°	
,, 8		30	40	135	104	104	
,, 12		42	48	126	103	103	
,, 14		50	55	124	104	104	Air eggs 10 min
,, 18		43	48	127	105	105	,, ,, 15 min.
,, 21		43	48	126	105	105	Eggs chipping.
,, 22		—	—	—	—	—	76 chicks hatch.

Thus, if in my list of temperatures I find the incubator has been on several days too low a temperature, I can account for the lateness of the hatch; or if it has been too high I can account for a premature hatch, or for broken yolks or cripples.

If I find, as in the "Black Orpingtons," a large number of unfertile eggs, I am led to expect a larger number of delicate germs showing "broken yolk" or "dead in shell," and I am led also to look to the health, or the mating of the stock birds.

I can look back for nearly 20 years and see the record of every hatch of eggs, and though "all mysteries" are not cleared up, because "all knowledge" has not arrived, yet many things are clear which once were puzzles.

When Nature has taught the hen to hatch every fertile egg, and especially the eggs of prize-bred stock, then, and not till then, can we expect the incubator to do the same. Most practical men will agree that the incubator will hatch out a greater percentage of strong chicks during the cold months, and, if well-managed, as many in the warm weather also, and mortals should expect no more than this.

The Hot-Air Incubator

I have written so much about the hot-water incubator that little space is left to speak of the more recent hot-air machines, which are so popular in America, and are becoming increasingly popular with us.

Many English fanciers use them exclusively. The cautious man uses both, and finds by experience which kind suits him best, for the situation has a great deal to do with the matter after all.

Personally, I have had as good results from one as from the other, and the great merit of the hot-air incubator is that it is less trouble to manage, and its initial cost for a good machine is also less. The hot-air machines, like most things American, are not made so substantially as English-made goods, and I doubt very much whether their life of usefulness would be so long. But they do their work effectively and are very ingenious.

From actual use of various kinds I find the most

useful to be *The Cyphers Standard Incubator*—the cost of one for 140 eggs being a trifle over £5.

They are sent out ready to start work, except the fixing on of the legs, which are numbered and attached

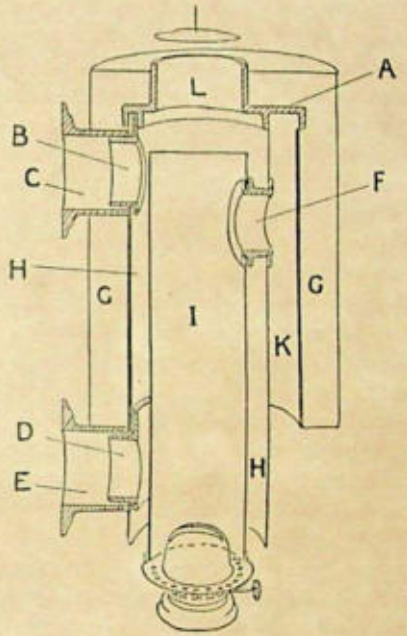


FIG. 9.—SECTIONAL VIEW OF INCUBATOR HEATER

A—Top-cover casting. B—Warm-air pipe casting. C—Upper flange casting. D—Exhaust-pipe casting. E—Lower flange casting. F—Connecting chimney casting. G—Air-spaced asbestos jacket covering entire exterior of heater, 2¼ inches thick. H—Fresh-air chamber, in which pure fresh air drawn from outside the machine is thoroughly warmed before it passes into the machine through the warm-air pipe, B. Lamp fumes or carbonated air cannot gain access to this chamber. K—Large escape flue connecting with primary lamp-flue or chimney, I, by means of connecting casting, F. This insures all lamp fumes and gases of combustion being discharged in the outer air, where they cannot gain access to the incubator. The outline of lamp-burner shows position of lamp in relation to heater. L—Escape-flue for surplus heat, which is controlled by the tin disc shown above it, and which disc is operated by the regulating device.

by screws—a very simple affair, which any person can do in a few minutes. Full directions for working the

machine are sent out with each incubator, with diagrams showing the adjustment of the different parts. As each machine stands on legs which raise the height of the top to 3 feet 6 inches, there is no need of a table.

It must, however, stand perfectly level and firm, and should not be placed too near to an outer wall, but be removed some 8 or 10 inches away.

In these machines there is no tank for hot water, and there are no water-trays to be placed beneath the eggs. The whole of the moisture needed is supplied (*a*) by the egg itself, and by (*b*) the moisture in the air which is diffused by means of a woollen diaphram placed over the top of the egg-drawer. As there is not direct admission of air to the egg-chamber the moisture of the egg is not stolen from it, and the fresh air which is taken up into the machine from the outer air, by a fresh air passage by the side of the central cone of the lamp, is heated on its way and then diffuses itself through the diaphram over the eggs, and out by another chamber underneath the eggs. This operation is best explained by the sectional view of the incubator heater, which is appended.

Important improvements have *recently* been made in the Standard Cypher Incubator, and the latest form of it should be obtained. The appearance of the machine is very attractive. The latest development is shown in the accompanying illustration. The advantage of this style of incubator is that there is no bother about supplying moisture, and less danger of fouling the machine through neglect. The arrangement for turning the eggs is of the simplest. The double-panelled glass door shows the way the chicks are hatching, and is a source of great pleasure and astonishment alike to children and grown-up visitors, as the chicks alight when hatched from the egg-tray upon a canvas bottom underneath, which serves as a drying-box, and the door *need* not be opened till the hatch is completed.

When it is found that a little moisture is required, an arrangement is made and sent out, to provide this during the last few days of incubation. Or a simple and effective plan is to moisten a cloth in hot water and spread it out on the tray which is beneath the eggs.

The warm air soon absorbs the moisture. In cold and wet weather I have never found the addition of moisture in any form necessary or desirable. A guide to its need is found by judging of the air-space in the egg when testing on or about the 18th day (see plate of eggs, page 49). If it is unduly large, moisture may be required. Directions are given in the book sent out with each machine.

In this incubator the eggs need very little airing or

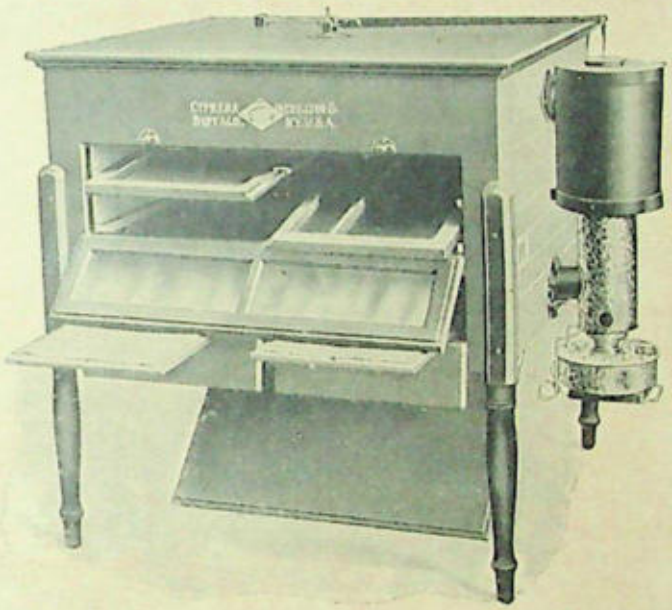


Fig. 10.—Standard Cyphers Incubator

cooling, as fresh air without direct draught is supplied all day long. The eggs should not be turned after the 19th morning, and the drawer should not be opened.

As there is no hot-water tank with its solid body of heat to overcome, should the outer temperature rise, there is less danger of overheating, and I have found fewer eggs with broken yolks than in any hot-water incubator.

The regulation of the heat, in this, as in the hot-water machine, is largely dependent on the management of the lamp, which should only be turned high enough

to give sufficient heat. In either class of machine, hot water or hot air, the damper should only be lifted about $\frac{1}{16}$ inch when the proper heat is attained. Unnecessary heat is not only wasteful but dangerous, as the raised damper does not let out *all* the heat but only a portion of it.

In hot weather, this type of incubator, like the hot-water type, is best worked in a room of equable temperature, and though it is less difficult to manage in ill-adapted places, it does best in such suitable situations as I have described.

When the chicks are hatched, if not too many in number, they may be allowed to rest in the drying chamber for 24 hours. If, as often happens, this is overcrowded, the strongest of them should be taken out and placed in a rearer, which has been prepared for them, or under the hens which are to brood them.

Marking the Pedigree of the Chicks.—Before treating of the methods of rearing, a few notes on the best way to mark the chicks is desirable.

It often happens that the fancier desires to distinguish the chickens hatched from some particular hen, or more frequently to mark the progeny of one pen of birds from those hatched from another pen of the same breed.

Pedigree Hatching-trays.—One of the advantages of the Cypher machine is that in addition to the ordinary tray upon which the eggs are placed for hatching, the makers issue pedigree-trays which have several distinct compartments into which the chickens fall when they hatch, and from which they cannot escape to mix with other chickens until they are liberated by the attendant. This tray is only brought into use on the 19th day, when the eggs are turned for the last time. These eggs, all of which should be *marked on the small end* the day they are collected from the nest, or at least on the day they are put down for incubation, may then be placed in distinct divisions of the pedigree-tray, and then replaced in the incubator and let alone till the hatch is over.

Whether the pedigree-tray is used, or other methods are adopted, such as taking out particular eggs and placing in another incubator to hatch, or under a hen,

the chicks should be marked before being put into the brooder.

Toe-punching.—The best method, because of its simplicity and the readiness with which it is done, and the indelible nature of the mark when once impressed, is by punching a small round hole in the web of the chicken's foot.

Instruments for this purpose are supplied by many makers and only cost a few shillings. So many breeders are now using the toe-punch that the mark is no longer a distinguishing one between one breeder and another, and the Poultry Club has given its sanction to the use of a toe-punch which makes a *small round* hole only. The breeder should make his chart of marks at the beginning of each season and always have it at hand, taking care that the same pen is always marked in the same way.

The marking is quickly done and practically painless, and it would not be difficult to mark 100 chickens in a few minutes. If any of the tiny holes should show signs of growing up again after a few days, the operation should be repeated, when the hole will be permanent. I append a simple chart for one breed only. It is very seldom indeed that so extended a list would be required.

Chart for Marking Chickens

No. of Hen or Pen	Breed	Right Leg	Left Leg	Remarks
1	White Leghorn	o		Palace cock and 1st Dairy hen
2	,, ,,	o		,, ,, and V.H.C. Dairy
3	,, ,,		o	
4	,, ,,		o	1908 Club Show cock mated to his own daughters
5	,, ,,	o o		1908 hen mated with her son
6	,, ,,		o o	
7	,, ,,	o	o	Utility pen
8	,, ,,	o	o	
9	,, ,,	o	o	
10	,, ,,	o	o	

Thus ten distinct pens could be marked with not more than two marks for each chick, and the number could easily be widely extended.

This method is far more simple than placing a ring on a chicken's leg, as this requires changing from time to time, and there is a danger of its growing into the leg,

and so laming the chick for life, or of the ring becoming detached and getting lost. The toe-mark need be a guide to the operator only. It should prove an invaluable guide for future mating, and when used in connection with the trap-nest should give him the pedigree of each bird in his yard. As the chick grows, a *numbered* ring could be worn to give the date of hatching, or such further particulars as may be worth recording.

CHAPTER IV

ON REARING CHICKENS

It is easier to hatch chickens than to rear them, and many a chick of champion pedigree, which might in turn have been the champion of the year, has been lost through the ignorance or indiscretion of its owner.

Moreover, valuable chicks can be bought for two or three shillings apiece when a day or two old, and, if properly reared, would be worth as many pounds apiece. The value of rearing is, therefore, a very great part of the poultry-keeper's business.

The rules for correct rearing are, in the main, only such as common-sense and a knowledge of the chicken's constitution will dictate. Treat them as you would treat little children. Give them suitable food, of the right kind, at frequent intervals, and not too much at a time. Exercise special cleanliness both in feeding and bedding. Let the water or milk be sweet and clean. Do not overheat or overcrowd. Let them have plenty of exercise and fresh air, and there you have the whole thing in a nutshell.

Like many other directions this is easier said than done, and a few detailed hints must therefore be given. A whole treatise might be written if all sorts and conditions of chicks were to be considered, and much must be left to the reader's discretion.

To start at the beginning, when a chick is hatched Nature has provided it with food enough to keep it alive for a week. If you want a demonstration of this break open a common egg on the 19th or 20th day of incubation, and notice the large umbilical sac which contains the greater part of the yolk of the egg, unabsorbed in the process of the chick's growth.

It is only waiting for the chick to breathe and to break its shell before being drawn up into the body, there to be absorbed as the chick's food.

Notice further, that when you hatch out a weakly chick, or a cripple which you have not the heart to kill, and allow it to remain in the drying-box, it will live for a whole week without either food or water.

Note again, if a chick should die at the age of 3 or 4 days, and you open it for examination, you will find part of the yolk still unused.

A chick needs little food for the first few days. This is Nature's lesson. *It is better to keep the chick without food or water for* 24 *hours.* If incubator-hatched allow it to remain in the drying-box. If under the hen leave it in the nest. And for the first few days feed sparingly. Thousands of chicks die through being gorged with food, from diarrhœa and indigestion thus set up. Of course, chicks *will* eat at once, and often survive and thrive if fed on unsuitable food, in the same way some children would live if fed on half-bricks or hob-nails! You simply cannot kill them. But this is no more the manner of feeding a young aristocrat than a prize-bred and delicately-born chick. And just as some children are born with livers, and are jaundiced from birth, so are some chicks, which absorb enormous yolks, many of which are of too bilious a nature.

Is Wet or Dry Food best?—The dread scourge of chickenhood is diarrhœa, and many fanciers firmly believe that soft food is the cause. Other fanciers declare that chicks fed on dry food never attain their proper size. Both are right. The best food for the first few days is a collection of small seeds, such as is supplied by Armitage Brothers, the original vendors, or Spratt's Chikko, or similar "dry chick food." A little hard-boiled egg and stale breadcrumbs is not a bad start, if given sparingly, and only as an alternative meal with Chikko. The point is not to give much for a start, and always to provide fine grit for the chicks to peck at from the first.

Soft food undoubtedly builds up the body faster, and to greater size, and after the first 10 or 14 days, when the chick has got well on its legs, soft and dry food should be given alternately, with hard grain for the last

meal. To continue hard corn *only* for any lengthy period may be useful to grow Bantams, or to produce hard and short feather, but can never provide bulk and bone, which most fanciers desire in the popular breeds.

A Chicken Dietary

For the first few days chicks want little and often, and should be fed every two hours, and as above recommended, but dry food should predominate.

Or they may be fed on canary seed and groats or pinhead oatmeal.

After the first few days a little biscuit meal scalded is a good food midday or between the feeds of dry food, or a feed of boiled rice, boiled whole and dried off with finely ground oats or sharps.

A good dry chick food is made up of

3 parts canary seed,
2 parts millet seed,
1 part hempseed,
2 parts groats,
1 part finely cracked peas.

Some of the patent foods, such as "Cereal Meal," are first-class food to be given after it has been scalded and dried to a crumbly mass—alternating this with Armitage's dry food or Chikko.

After the first three weeks the above combination of seeds is improved by the addition of half as much by weight of cracked wheat. A kibbling mill should be in every fancier's yards. They can be regulated to grind to any size.

After the chicks are a month old a little kibbled maize may be added to advantage. Flesh food should not be forgotten, and a little soaked Crissel, or scraps of meat finely cut up, is greatly relished, and should form one meal a day, given about noon. A feed of biscuit meal mixed with skimmed milk, or stale bread crusts served the same way, or a little boiled potato, all form a varied and nutritious ration of soft food.

The order of meals for chicks from 2 to 8 weeks old may be as follows:—

7 a.m.—Armitage or Spratt's Chikko.
8.30 „ —A warm meal of soft food.
10.30 „ —Another meal of dry food, cracked wheat being added after the third week.
1 p.m.—A meal of finely chopped meat or Crissel.
2.30 „ —A soft feed of biscuit meal, to which may be added an equal part, sharps, oatmeal, or finely ground oats. Either in combination or alternately.
4.30 „ —Another of the same.
6.30 „ (or later)—Another feed of hard corn.

Three feeds of soft food and three of hard and one of flesh food. A little chopped green food, fine grass, clover, lettuce, or dandelion should be given at least once a day, and may be given with the meal at noon. Soft food should *always* be fed in troughs and none allowed to lie about and get sour. The coop should be moved daily. Even the hard food is best fed in troughs to prevent waste, and one designed so that the chick can eat yet not scratch out the food is the best. Do not forget that chicks need fine grit from the first. Provide it in a small separate vessel.

After the age of 8 weeks or so, 4 or 5 times a day is enough to feed, and after 3 months only 3 or 4, diminishing to 3 times, when they are 4 or 5 months old. The same food as fed to laying hens is a suitable dietary, but biscuit meals, and some of the patent foods, are excellent for the purpose. Chickens need a high albuminoid ratio, and flesh food or fresh green bone should not be forgotten. Scalded bran and Sussex ground oats are first-rate foods. (See Chapter II on "Feeding," p. 33.)

Artificial Rearing or Natural?

There are two methods of rearing as of hatching. The fancier who wants early chicks must use artificial rearers, as he will want chicks before there are any hens to brood them. The method of feeding is much the same for both, and each method has its advantages and

the reverse. For small numbers of chicks in the spring and summer hens are best. For winter rearing and large numbers foster mothers are indispensable.

Natural Rearing

The hen welcomes her brood and deserves the enjoyment and rest of it after the arduous labour of hatching. It is best to allow the chicks to rest under her wings on the nest for 24 hours. She may either be lifted off and fed with hard corn, or, if she is restless, a little food be placed near her on the nest. Maize is as good as anything for a few days. If smaller grain is given she will persist in inviting her brood to share it with her, and it is laughable to see her try to make them eat even the huge grains of maize.

A keen eye for colour is one of the hen's instincts, but she has apparently no capacity for numbering. She is as happy with 2 or 3 chicks as with 20, and her brood may be augmented or diminished without disturbing her serenity, if the chicks are either added to or taken from her while she is on the nest. She will also take to chickens of any colour if they are added before she has commenced to brood them in open daylight. But, as a rule, if chicks of another colour than those she hatches are put to her, she is spiteful and will soon kill them. There are exceptions, and some hens are so gentle for a few days that chicks of any colour may be added to their broods. When several hens are put out together with broods it is better either to place wire netting to make separate runs so that chicks confided to one hen cannot escape to another, or to place chickens of various colours under *all* the hens, when they will not distinguish a neighbour's chicks from their own if they are of the same age. But a division is the better and safer plan at all times, as it is annoying when a brood, say of a dozen, has been entrusted to each hen, to find at night a score under one and four under another.

When day-old chicks are bought, and a hen has not been purchased with them, any *quiet* broody hen will take to them if she has been sitting for a few days. It is better to remove a few of the dummy eggs from under her,

and place *part* of the chicks with her before entrusting the lot, to see if she takes kindly to them, and then add the rest of the brood. They are better left under her on the nest for a few hours, or for a whole night, before placing her out in a coop. Hens differ as much in temper as their mistresses. One will adopt a brood at any time, even as soon as she *commences* to be broody. You may remove a single platter egg, and add a brood of a dozen or more chicks, and she will take to them regardless of the miracle of production of a dozen chicks

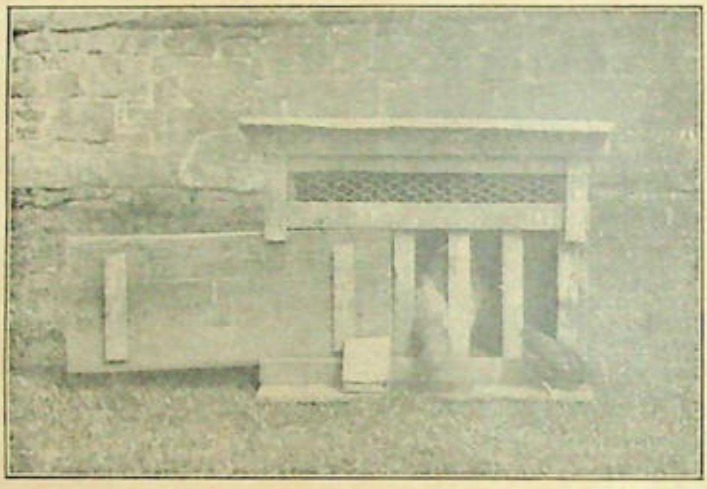


FIG. 11.—A Roomy Chicken Coop made from a bacon box, with sliding door, and well ventilated.

from a single egg. Whereas another, after sitting three weeks, will not take to a single chick. It is well, therefore, for the purchaser of chicks to have more than one broody hen in readiness, or to have his "nurse" in the shape of an artificial rearer ready for any emergency.

The hen should be dusted with insect-powder a few days before the chicks are due. If this has been neglected it should be done before she is placed out with her brood. Otherwise the body lice, with which she may be covered, leave her to prey upon her tender brood. Lice cause as many deaths among young chicks as bad feeding.

The coop into which she is placed should be roomy in dimensions; not less than 24 to 30 inches square, so that the chicks may have pure air, and room to escape while she dusts and shakes herself.

She should be fed first with grain or coarse food before the more delicate morsels are put down to her brood, otherwise she may devour it all. I prefer the hen to be cooped up, and the chicks allowed their liberty to get in and out through the open bars of the coop. A warm sunny aspect in winter and a cool shady one in summer are desirable.

Water should be placed always within her reach. It is best in a vessel she can only just reach with her beak, and a chick vessel is ample, so that they too can drink without getting drowned. It should be changed several times a day in warm weather, and always kept out of the sun's rays. Warm and fetid water is one of the main causes of diarrhœa.

I like the coop to be *lightly* littered with fine peat-moss. Too much is apt to suffocate the chicks for the first week or two till they are robust.

Both hen and chicks should be periodically examined to see that they are free from lice, and special care should be taken to see that the heads of the chicks are free from the insect known as the "tick." (See next chapter on "Insect Pests.")

No soft food should be left about to get sour, as this is also a common cause of diarrhœa. If the chicks are seen to suffer from this complaint, *boiled rice*, boiled with the grain *whole* (and not in a pulpy mass) and sprinkled with a little powdered chalk, is a good preventive. It should be remembered, however, that diarrhœa is sometimes hereditary in chicks hatched from diseased stock, and may not be due to sour or improper food.

The coop should be frequently moved so as to prevent the accumulation of food on one spot.

If the chicks are feathering badly a little flowers of sulphur sprinkled on their food is a help.

The age they should be taken from the hen depends on the weather and on the hen herself. In cold weather they may stay till seven or eight weeks old, if the hen broods them kindly. But care should be taken to see

that they are not overcrowded, and when they go to rest around the hen or on her body they are better without her. In warm weather they may do without a hen after a month. Care should be taken in the summer that the combs of the Mediterranean breeds, especially of the cockerels, do not get "sprung" or overgrown through too close contact with the hen's body, or from the heat of the rearer.

Ventilation.—The front of the coop should not be shut up too closely. Chicks must have sufficient ventilation. It is not sufficient to have a few holes bored in an otherwise closely shut-up coop. A 3-inch space either of open bars or of fine-mesh wire-netting should be allowed. And in summer weather, where there is no danger from cats or vermin, the whole coop is best left open.

The number of chicks to a hen depends on the size of hen and of the coop, and also on the weather. Nine or ten are plenty in winter, and twelve or fifteen in summer are about the usual limits.

A cool brooder may be provided after they leave the hen. Or if the coop is ample in size they may rest in the coop they were reared in, with a good thick bedding of hay or peat-moss. The first few days after the change from the hen to loneliness is the particular time to notice. After they have got over the change they thrive better without than with the hen. If the nights are cold and the hen has been taken out, or neglects to brood her flock, a storm-lantern may be placed in the brooder, as described in my smaller book, *Poultry Culture for Profit*. The Dietz Victor lamp is the best I know of, and costs only 2*s.* 6*d.* The lamp should be protected by a coil of wire-netting fastened to a board, and the lamp placed inside the circle. If the wire is covered with sacking to keep out the dust so much the better.

One of the small poultry houses, about 4 feet 6 inches × 3 feet and 3 to 4 feet high, makes a capital cool brooder. If vermin are about, the house should either have a wooden floor, or be covered at the bottom with fine-meshed wire-netting, so that rats cannot burrow underneath.

Green bone is one of the very best foods to form bone and frame in growing chickens. If given in large

quantities it forces the growth too rapidly. One pound is ample for a group of sixty chickens, eight weeks old, and for forty chicks when four months old.

It should not be given when chicks approach maturity, unless it is desired to bring them on to lay at an early period.

Artificial Rearing

There are very many good rearers on the market, both hot-water and hot-air machines. One of the best is at the same time one of the oldest, *Hearson's Hydrothermic Rearer*. It has three compartments: (1) A sleeping chamber, which is heated by a copper tank, the water of which is heated by a lamp placed on the outside; (2) a nursery, which has a wooden floor, and is covered with a glass roof; (3) an outer run upon the grass. It is an expensive rearer, but is well-made and has a long life, and is invaluable for rearing early chickens. It is as easy to rear them when snow is on the ground and keen frost is in the air as in the genial springtide. This is a *Hot-water Rearer*. There are other good hot-water rearers in which the tank only partially covers the surface, around which copper tubes run, raised a few inches above the heads of the chicks. Only rearers with *copper* fittings should be used, as others speedily corrode and get out of order. The hot-water rearers, if well made, are naturally the most expensive on account of the copper fittings, and the necessity for their having a good wind-proof lamp attached to them. I find these the best for winter and early spring rearing.

Hot-air Rearers, like hot-air incubators, are cheaper to buy, and if a good one is selected and managed with care they do very well. In all these rearers the heat is gained from a paraffin-oil lamp. These may be divided into two styles. (*a*) The *English machines*, which have the lamp in the centre of the rearer, surrounded by a guard of perforated zinc, or fine-meshed wire, with a metal cone or hot-air chamber over them, which refracts the heat; or (*b*) the *American type*, in which the floor of the rearer is raised, and the lamp placed underneath. In this case there is a bottom of galvanized iron, with a raised cone to receive the heat of the

lamp, and a wooden floor on the top upon which the litter is spread, and upon which the chicks are placed. The raised zinc cone in the centre of the sleeping chamber gets heated. This is surrounded by a wire guard, and covered with a revolving top, which can be raised higher as the chicks develop in size. A fringe of woollen material encircles the top, and under and between this fringe the chicks nestle. Arrangements are made for the admission of pure air from outside, and this is warmed, and allows a constant current of fresh air to circulate. Such a rearer as the last one described is made by the *Cyphers Incubator Company*, and I have used it successfully for several seasons. The bother with them is the difficulty of trimming and

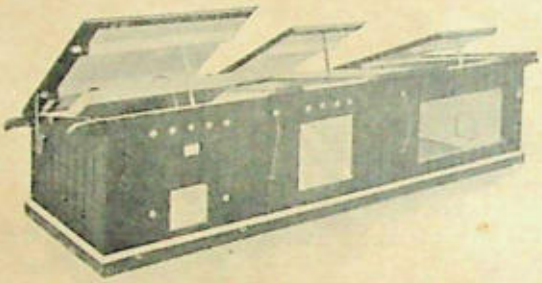


Fig. 12.—British Chicken Rearer.

tending the lamp, especially in boisterous weather. With a little experience they are easily managed, and if they are kept clean they give highly satisfactory results. These rearers are rather heavy and cannot easily be moved about, and the exit to the grass on the lawn wants banking up with earth to make a decline. They are best fixed near a wall or upon a cindered path, otherwise the earth and grass in the vicinity get quickly soiled.

There is one of these rearers seen at the extreme left-hand corner of the view of the open chicken rearing space on page 18, Chapter I on "Housing." Another American rearer is seen in the "Avenue" photo on page 19, which is useful either as a rearer for young chicks, or as a cool brooder.

The British rearers are mostly after the type of

the white rearer shown in the centre. These are 6 to 7 feet long and 2 feet wide. The space on the left is the sleeping chamber, the centre with the smaller window is the chicken nursery for feeding, and the wired-in run on the right admits to the grass run. This type as well as the hot-water rearer on the right of the picture are easily moved about daily to fresh ground. One of the best is the "Perfection" rearer made by Phipps, of which an illustration is shown, p. 88.

The heating lamp is of the hurricane type, and is placed in the centre of the sleeping chamber. There are cavity walls around this, and fresh air is admitted from the outside at the bottom and emerges at the top of the inner chamber. If the lamp is kept well and carefully trimmed there need be little smell; but after all the care which can be dispensed they are not so pure in this respect as the American type with the lamp outside and underneath, nor are they as free from draughts. Still, I have used them with considerable success for many years.

The chief danger in all these rearers is in not being able to regulate the heat properly. If the chicks get overheated they contract diarrhœa or colds, which are detrimental to their growth. Their success depends on the care and attention of the attendant, and in seeing that they are not overcrowded.

The feeding of artificially-reared chicks is the same as that of those reared naturally. This has already been described. The water should be placed in the middle chamber for the first week, and in the outer compartment on the grass run afterwards.

The grass run should be used from the first, or after the first few days. The sooner chicks are hardened off the better, and as soon as they are strong on their legs they should be allowed to run on the open grass, in an extended run encircled with wire-netting 18 inches or 2 feet high, and of 1-inch mesh. Get the chicks upon fresh ground by constant moving.

There are a few don'ts to be observed.

Don't overheat the chicks. For the first week from 85° to 90° is ample, and afterwards 80° is sufficient, and 70° to 75° after a fortnight. They want greater heat in cold weather, and more when tiny than after-

wards. The true test is that they lie comfortably about the whole of the sleeping compartment, and neither pant for breath nor huddle together in one corner.

Don't overcrowd.—A rearer that holds 50 to start with is overcrowded when they are three weeks old; 30 is a good number to run together, and more than 50 in a group should never be attempted, even in the largest rearer, unless as a temporary expedient, and when you are likely either to sell a part of them or are prepared to divide them. Economy in the number of rearers is false economy.

Don't neglect to clean the rearer out regularly. Never let it smell foul from the accumulation of excreta, and *don't neglect to trim the lamp daily*, and to change the wick frequently. Remember the lamp is always burning, and even with *best oil* (which should always be used) the wick soon gets choked with dirt, and then combustion is not perfect. A good brand of oil is known as "White Rose" which is better than "Royal Daylight." Russian oils should never be used; they are too gross.

Don't overfeed the chicks. Keep them hungry and expectant for the next meal, and don't leave food to lie about to get soiled or sour.

Don't let the water get warmed either by sun or the rearer, and see that the vessels are well rinsed out and the water changed constantly.

Don't forget to disinfect the rearer from time to time. A few drops of Jeyes' Fluid and water removes all traces of bad smell and prevents stuffiness.

Keep the chicks growing.—Any check in chickenhood from malnutrition, lice, or colds means stunted growth in the adult stock.

If well attended to chicks will grow and develop in a rearer as quickly and make as fine birds as those reared by a hen. A clumsy mother may crush or kill a chicken now and again, or a poor one may forsake her brood, but carelessness and inattention to little details may spell wholesale loss, or deterioration of a large brood in a rearer.

Have a spare lamp always ready in case one goes wrong. The hurricane lamp is the breeder's best

friend, especially in hurricane weather, which every one should expect in the early part of the year.

Remove the chicks to a cool brooder as soon as they can safely be moved. The more air and the more freedom they can get the better for them, and the more robust stock birds they are likely to make.

CHAPTER V

INSECT PESTS

The losses in the poultry yard, both among the young and the adult stock, through parasitic infection, are very great indeed. Cleanliness is a major element of success.

Without any attempt to give a scientific description of the very numerous insect pests that afflict poultry, it may be briefly stated that there are three distinct groups of insect and mite pests, viz.: (1) fleas, (2) biting lice, (3) mites.

The Flea affects the poultry house, with the laying nest and the sitting box, and they feed upon the blood of the fowl. They are only found in dirty and neglected places. If the old straw, hay, or other material of the nest were cleared out once a month they would seldom be found. It is the same with the sitting box. The material should be changed after each hatch of chicks. The flea lays her eggs (nits) in these places, and the warmth of the hen hatches them. The nits give rise to little white maggots, and a wriggling mass of them may be found at the bottom of a neglected nest. These larvæ take two or three weeks to mature, so that if a nest is clean to start with there is little chance of any being found at the finish of the hatch.

The most frequent cause of their presence is a broken egg. If this soils the nest material, and it is allowed to remain, fleas are sure to generate.

If a hen on the nest breaks an egg it should be at once removed. The remaining eggs should be washed in water of a temperature of 105°, and the whole of the hay or other material of the nest be removed, and fresh hay put in its place. A little of Jeyes' Fluid sprinkled in the bottom of the nest, or a few drops of creosote,

mingled with the surface of the soil before the hay is placed in position, will prevent a recurrence. And the same treatment should be followed if from any other cause fleas or their larvæ are found. The feathers of the hen's breast should also be cleansed. Thousands of valuable sittings of eggs are spoilt every year through neglect of these simple precautions. In a well-conducted poultry farm fleas find no home.

Lice are much more difficult to deal with and are very numerous in variety. One kind affects chickens and another adult fowls; one kind affects the head and another the tail; and others, different parts of the body.

The dust bath is Nature's remedy and the fowls' chief means of effecting a riddance. Lice subsist chiefly on the skin and feathers of the fowl, and cause intense irritation. Adult fowls ought to be periodically examined and dusted with pyrethrum powder, which is almost as effective, and very much cheaper, if mixed with an equal weight of flowers of sulphur. The male stock bird in particular should be frequently dusted.

The deaths from lice among young chicks are *very* numerous; and wherever a chick appears to be ailing and its wings drooping, and it goes about with its mournful "peep, peep," lice may be suspected.

One kind which affects the head and neck of the chick and commonly called *the tick*, is especially fatal, and pyrethrum powder does not seem to kill it. They cling very tightly to the skin of chickens, and are difficult to clear away. Pyrethrum powder *mixed with a little salad oil* and applied *lightly* with the finger, removes them, or a similar application of white precipitate ointment very sparingly used. Chicks should be periodically examined to ensure their entire freedom from their greatest pest. The bodies of the chicks, as of the hen, can be cleared from ordinary lice by the use of pyrethrum powder.

The Mites are another scourge. These are of two main kinds.

The Red Mite, which infests the poultry house and the nests. It is found, when present, usually under the ends of the perches upon which the fowl roost. They are very minute in size, and in colour vary from a pale grey to a blood red. The younger ones are pale,

but the adults are charged with the life blood of the fowl upon whom they feed at night. They live in the crevices of the house, or in any crack or unevenness of the perch. Poultry cannot thrive in an infested house, and thousands of hens are killed upon the sitting nest through their infestation. They multiply with alarming rapidity, and often swarm where least suspected.

The best cure I know of is a liberal application of *creosote* to the house, *both inside and out.*

Creosote is not valued by the poultry keeper as it ought to be. It is cheap, and can be obtained from most tar works at about 6*d.* a gallon, when bought in quantities. It is very useful for colouring and preserving houses instead of paint, and it is a sure cure after two or three applications to any house, no matter how badly it is infested. The ends of the perches should be soaked in creosote, and the perches periodically washed with it. Half water and half creosote makes a strong solution, and its effect is heightened if a piece of washing soda as big as an egg is added to each bucketful. The perches should be allowed to dry in the open air before being replaced; and if a house is so badly infested as to require all the crevices inside to be treated with it, the fowl should be removed and the house well aired and dried before they are replaced.

Feather Eating or Depluming Scabies is the other kind of mite. It lives at the bottom of the feather of the fowl, and is so irritating to the birds that they pluck the feathers out to get rid of the pest, and often thus learn a vice which is difficult to cure. Fowl may often be seen with the feathers eaten off close to the skin, and with necks and heads nearly bare. An application of *creosote ointment*, *i. e.* pure creosote (not the commercial product), about six or eight drops mixed with an ounce of lard and worked well together is sufficient; and this should be rubbed over the affected parts.

It is not a pleasant matter to write of these things, and to think that our feathered friends are not as dainty as they seem. But if we care for them we shall give them the means of ridding themselves of their pests by the ever-present dust bath, and cleanse their houses and nests, etc., for them, since we compel them to use these for our benefit.

CHAPTER VI

WEEDING OUT THE CHICKS

The best stock in the world and the most carefully-mated pens will only throw a limited proportion of really high-class stock fit for the show-pen. The exhibitor's aim is to separate, if not to clear out, all the second-rate birds as soon as he can, and to devote extra attention to the most promising part of his flock.

Separating the Sexes.—One of the first duties is to separate the sexes before the cockerels become troublesome. In the lighter breeds, such as Minorcas, Leghorns, Anconas, Campines, Hamburghs and other non-sitting breeds, this should take place when they leave the hen, or when they are removed to cool brooders. A Leghorn or a Campine will often crow at this age, and sometimes as early as six or seven weeks. The precocious cockerels fight among themselves, and worry the pullets, which cannot grow for molestation. Both sexes grow better when they are in separate runs.

The heavier breeds, such as Brahmas, Cochins, Wyandottes, Orpingtons, Rocks, Dorkings, Langshans, etc., *need* not be separated so early, as they live in peace together till three months old, or longer. But the presence of the female sex brings on the cockerels to early maturity and stunts their growth. They should be separated before they become quarrelsome.

Where distinct pens are kept for cockerel- and pullet-breeding, and space is limited, the breeder only wishes to keep a few of his pullet-breeding cockerels, as the supply always exceeds the demand, and many breeders kill off a half or more at a very tender age, even before they are ready for a chicken-pie. It is from his point of view waste of time and money to rear more than he

is likely to want or be able to sell, and, unless he is one of the fortunate ones with an established reputation, it pays better to kill and eat than to grow to adult age and sell for a few shillings, which barely covers the cost of the food they have consumed.

In some breeds careful observation can *distinguish the sex as soon as they are hatched*. The size and shape of the head, the colour of the legs, or the distinguishing markings of the head are a sufficient guide to the expert, *e.g.* Black Leghorns with yellow legs *and beaks* are nearly always cockerels. Barred Rocks very light in fluff colour and with a *large* patch of white on their heads are nearly always cockerels, while any that are *entirely black*, with dark legs and no white spot, are as certainly pullets. In the Mediterranean breeds the *comb* of the male chick is usually larger and paler in colour from the start.

It would be dangerous for the novice to act upon these hints, but they may serve as a guide to his observations, and if he marked a few chicks, by toe-punching or otherwise, and then watched for results to test his judgment, he would, after a time, rarely make mistakes.

If he either cared to kill a chick, or wait till one died, he could, on opening it, see the male organs, or note their absence, in two tiny specks, the size of canary seeds on either side of the spinal vertebræ.

In self-coloured breeds of the heavier races, such as Orpingtons or Wyandottes, it is very difficult to distinguish the sexes, even at from 8 to 12 weeks old. The combs of both sexes are then about the same size, and the wattles have not begun to develop—these latter often afford the first indication.

The growth of the tail feathers is another sign. The cockerels feather more slowly, and the tail feathers are not, as a rule, developed at such an early age.

The saddle-hackle is often the first real test, as the growth of these longer, narrower, and more pointed feathers is a sure indication of the male sex. It often happens that a cockerel has been placed among the pullets in error, and the first traces of the saddle-hackle feathers is the earliest definite indication of sex.

In the laced, pencilled, or barred breeds the signs of

sex are more readily determined—as well as the signs of the waster—sooner than in the self-coloured, though the *first* feathers are by no means a sure indication of what the final plumage will become, *e. g.* the Partridge Wyandotte looks more like a barred bird than a pencilled one until the adult feathers shoot out, at the age of 3 or 4 months, and the breast of a cock-bred cockerel will have rusty feathers instead of black, and the same is true of all birds of the black-red type. A Brown Leghorn cockerel that may develop into a champion looks a perfect mongrel at 8 or 10 weeks old, with a brown breast and a general appearance of rustiness. The breeder knows this, but the novice may easily err in judgment.

Mismarked cockerels of the lighter breeds are usually plump and good eating at 3 months old, and are worth more for killing at that age than at any other. After the spurs begin to shoot, and the head-points develop, they soon get scraggy and tough.

Fatal Faults

There are certain "serious defects" which may be observed at an early age, and mark out the chicken as a "weed" from the fancier's point of view. These the reader will find detailed at the end of the "standard of perfection" which is drawn up for each breed, *e. g.* "any bodily deformity," such as crooked toes or shanks, spinal curvature, deformed beaks, etc. In all four-toed breeds the possession of more than the required number; and in all clean-legged breeds, traces of feather on the shanks, which never moult naturally, and *vice versâ*, clean-legged specimens of feather-legged breeds are serious blemishes. Very faulty serrations of the comb in Leghorns, Minorcas and most of the Mediterranean breeds, or side-spikes in any of the single-combed breeds, are the indications of "weeds." A rose-comb in a single-comb breed, or single-comb in a rose-combed breed, is necessarily a fatal defect. Decidedly wrong colour of the leg or of the lobe are also fatal defects, though more caution is needed in rejecting these, and more details may be useful.

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Leg-colour changes with the development of the

bird, *e.g.* a *yellow-legged bird* has quite a dusky or bronze cast at 3 months old, and in some breeds, and some strains, the leg-colour does not clear until maturity, and, in the case of pullets, not until they are about to lay. If the *back* of the shank and under the foot is yellow there is hope for improvement in the scales which cover the front.

The white-legged varieties are often a pale yellow at the time of birth, and frequently retain the yellow cast until about 3 months old, when the colour changes to white, at the same time as the adult plumage begins to appear. A chick whose legs are of a bluish shade rarely improves.

Black or dark slate-coloured legs are rarely, if ever, black in chickenhood, and almost follow the same rule as the black plumage, in which the more white the better at the time of hatching. The top of the shank may be dark, but the lower portions have a yellowish or pale flesh-coloured tinge, and, as a general rule, those with the palest tint at birth have the best colour afterwards.

Singularly enough, some yellow-legged birds, *e.g.* White Leghorns, are almost white at first and deepen in colour to pale yellow afterwards.

The whole series of these changes is more or less of a mystery, and I am inclined to think that these marks of chickenhood have their tale to tell of the origin of the breed, just as "the embryonic changes in the fœtus of viviparous or oviparous animals, in the womb, or in the egg, pass roughly and rapidly through a series of forms which represent the succession of their ancestors in the past." Does the yellow cast of the White or Buff Orpington chickens' legs indicate their descent from the Buff Cochin? Or the pale tint in the White Leghorn its alliance with the White Minorca? These are only suggestions, which might be multiplied tenfold.

It is evident that chicks should not be rejected by the novice until the approach to maturity or its actual arrival.

The Lobe.—This adornment is of vital value in the show-pen. Its development is late in the growth of the chick. Nearly *all* breeds are hatched with red lobes

which are of a pale tint, those of the white-lobed breeds, the Mediterranean race, being a trifle larger and more prominent than the Asiatic or American breeds. As the chick grows the whiteness appears, but it is often tinged with red, and should not be rejected on this account. It is usually very small in area till the adult feathers have been fully grown. It develops with the growth of the comb, and often doubles itself in size in the few weeks before laying commences. The cockerels' lobes develop more rapidly than the pullets'. *Traces* of red in a white lobe, or of white in a red one, most frequently disappear. But when either blemish is very marked and covers a large proportion it rarely altogether passes away.

The Plumage.—There are great changes in plumage colour both at the time the first chick feathers appear and when this is cast at the age of three months, or later, for the adult plumage.

The white fluff is succeeded by black feathers in all the black breeds, as Orpingtons, Minorcas, Leghorns or Langshans, and the more white there is about the head and breast the more brilliant the final plumage is likely to be. The black of the Barred Rock changes into the black and white bars, and the curious Game coloration of the Campine does the same, though no one would think such a change was possible. When various breeds are crossed together it is singular how the colour of the young chick reverts to that of its black-red ancestors at a similar age. The colour of the body of a black-red chick is fawn with a broad brown stripe running down the back from beak to tail and narrow alternate bands of black and white on either side of it. Darwin calls attention to this fact as one of the indications of a common origin.

The Fluff.—It is too early to judge much till the fluff stage is past in most breeds. But a black spot upon a buff chick's head is a sure sign of black or mottled plumage later on, just as a big white blotch and light fluff is a sign of a too light Rock cockerel. Smutty or slate-coloured fluff in any buff breed at any age is a serious defect and is never overcome.

When a black chick is black all over at the time of hatching it rarely, if ever, finally attains to a brilliant

black plumage, though a black chick with brown fluff at the time of hatching often develops all right, though sometimes there are traces of brown in the flights, or of red feathers in the neck.

The Flight Feathers are one of the most important parts of a bird's plumage, and an important indication of its value as a breeder.

Chicken flight feathers are not much of an indication until they are cast for the first adult moult.

Black chicks commonly have several white flights, especially the outer feathers. They cast them at various ages, according to the vigour of the bird, the time of the year when it is hatched, or from other causes. Some new flight feathers are usually seen at three months old, and they are a most valuable indication of the chick's probable worth.

I have said white is succeeded by black, but when the second feathers come white, or partly white, in breeds whose plumage should be pure black, it is a serious defect. When the inner web only of the feather should be black, it is equally serious if this is smeared with white.

A more marked defect is when the secondary feathers show this defect, *i. e.* the outer feathers which appear on the surface when the wing is closed. Such birds are of little value for the show-pen, even when the other points are good, and a cockerel showing these defects is worthless as a breeder of show stock. Where the white is slight or occurs in transverse bars it is often caused by a stoppage in the growth of the feathers at some stage, but even then it is a sign of weakness. As I have remarked, in another part of this book which treats of the various breeds, this is not so serious a defect in a two-year-old bird, as there is often a lack of colour pigment at that age which would not reappear in the progeny, or at any rate not in its first year.

Chicken Feathers.—Novices should notice the difference in the shape of the adult flights from those of chickenhood. The latter are narrow, and pointed at the end, and are succeeded by broader feathers with rounded ends. It is these broader feathers which should be noticed in examining a half-grown chick. These pointed feathers are an indication of chickenhood but *not a sure test of age*. I have known late-hatched

chicks retain many chicken feathers till twelve months old, while other early-hatched chicks have cast them all at five months.

In buff breeds the first flight feathers are often *faded in colour and white at the tips*, and the bird appears a waster, but these feathers are commonly followed by others of a pure buff colour, and of a deeper shade. When the new feathers appear with much white in them, the bird is either a waster or second-rate, and the same is true when the inner portion of the flight or secondary feathers is black or much pencilled with black, or when the fluff is either pure white or smutty.

Such are some of the indications which should determine the breeder to weed out his stock, or at least to separate them into various groups.

Cull them severely, and pay special attention to the best. That is the advice an experienced and successful exhibitor would give. If such a one could pick out one-fourth of his chicks at three months, he would expect to cull these again later on, and the breeder who gets *one good bird in ten* is a fortunate one. It is this scarcity of high-class specimens which makes them so valuable. Of course the percentage of good stock varies with the different breeds and with the successive seasons.

I have had years when 50 per cent. of the stock of certain pens were fit to exhibit, and indeed have been shown and won, and other years when not 10 per cent. have been of the same relative merit. This is not only to be accounted for by the difference of the luck of one season, as compared with another, but the standard of perfection is progressive. It is not that your birds are not as good this year as last, but some other breeder or breeders have made a step further in advance than you have, and your best are not good enough. Hence the need of untiring effort, and of the study of the minutest details. To be as good as the rest of the field, and when possible to lead it, is the fancier's aim. Every spring-time the annual struggle is renewed, and just as Nature gives us a hundred blossoms for one ripe fruit, so in the struggle for pre-eminence the ninety-and-nine have to fall behind. Now and then there are individual birds which approach perfection and carry all before them for the year, and then years elapse before another

as good is produced. The standard of excellence is by no means uniform year after year, and many a timid owner, either indisposed to compete or afraid of the ordeal, keeps back the best bird of the year.

Where room is limited it pays best to kill early and to kill often, as there is more room to hatch and rear others and to bring up the best only. Ninety-nine novices out of one hundred are afraid of this. They see a prospective winner in every chick, and learn slowly to recognize values.

Where room is unstinted the division is still necessary, though the slaughter may be less. The pullets always have a value above killing-price for laying and for breeding stock. The rankest waste in the Fancy is to keep on worthless cockerels, till they are twelve months old or more, in the hope of a sale which is never realized, and then to have to make soup of them or give them away. Seeing that wild birds go about in pairs, whereas the average number we keep is not more than one cockerel for half-a-dozen pullets, it is obvious that "cockerels were made to kill and be eaten," and the more so that a merciful law now forbids us to enjoy the sport of seeing them kill each other.

Utility stock is often furnished from these mismarked chickens, and those who have room to rear them and the business capacity to sell them, may find it more profitable to keep the robust portion of them to mature age. These birds are only *rasters* from the fancier's point of view. They are as good as his best, and often better, for the breeder who only wishes for table-birds or eggs. The very fact that they are mismarked is often an indication of vigour, as it points to a reversion of a former cross, or is indeed the direct result of one when the right kind are few and the evident hybrids many. To kill or to keep depends on circumstances.

The final selection is more difficult. There are *no* perfect birds, and specimens which approach the ideal are few and far between. In addition to size and style, or type and carriage, there are head-points, such as comb and lobe and colour of the eye, to consider, to say nothing of the dress or plumage.

The eye colour is difficult to determine at an early age, as it changes in colour, like the eyes of infants, which change from blue to hazel or brown in their early

years. A good black-eyed chick is nearly black from the first, a liquid, smoky black. But a red-eyed chick's eye is first of a yellowish-green hue, which changes from yellow to orange, and finally to red. Needless to add many of them stop at an intermediate stage, hence the common failing of daw-coloured eyes in Leghorns and Buff and White Orpingtons, which should be red, and when found form one of their most attractive features. A light eye in a dark bird never deepens in shade after it is half-grown. On the other hand, a black eye commonly turns bay or red with advancing age. The question of dominance is treated in the chapter on Mendelism, but the whole question is a difficult one, and need not trouble the fancier in his weeding-out process till the final stage. A collection of data on the various changes in shade from the time of hatching until the final chicken moult, and any further changes in the second year, would, however, be of interest and value.

In colour of plumage and marking alone there are but few which approach perfection, and this is particularly the case with barred, pencilled, or laced breeds. A glance at the plates of feathers so beautifully drawn by my friend, the Rev. J. N. Williams, from actual feathers, taken from some of the most perfect specimens bred in 1908, will give an idea as to the fancier's aim. But it must not be expected that one bird in a hundred will show its entire plumage in so perfect a form. There may be individual feathers even on some of the "wasters" which are comparable with them, but the *tout ensemble* is a different matter.

How to estimate the values of the different parts is an art not to be described in a single brief chapter. It is the study of years, and needs the eye and skill of a born fancier to understand and to appreciate. Moreover, it is only partially true to state that "Like begets like." The converse is often nearer the truth, as the intelligent and appreciative reader of the various chapters describing the numerous breeds will understand. Many a specimen not fit to grace an exhibition pen is almost worth his weight in gold as a breeder. If the best always bred the best, money would win in a canter every time. The longest purse would buy the best and breed the best, and the lead once attained would always be kept.

That it is not so is the life of the Fancy, maintaining its interest, and giving an opening to every one who has sufficient patience and skill to take a place in the front rank.

I have attempted to indicate the qualities necessary for breeding, but the methods of achievement are as various as the many roads which lead to London, and I have only drawn a sort of map which points out one way which the wayfarer may take with some degree of safety and pleasure.

The last two months of the chicken's growth to maturity may sometimes be, to the fancier, the most disappointing of the whole period. The neck-hackles and wing-bars of his black birds may develop coloured feathers, or the wings of his buff may grow "mealy," or the black feathers may come in the tail. His white birds may put on too yellow a colour, and so rob him of his golden dreams, or the rust on his Brown Leghorns corrode his hopes. His chances even at the best are as fickle as the weather-chart in the spring. He may pick out a good "breeder" here and there, and if he has luck may find a Derby winner now and again. Among the best only one can be first, and the best horse may not win after all. But as it is "better to have loved and lost" than "never to have loved at all," so the true fancier goes merrily along, and if he fail now and again he keeps a brave heart and hopes for "better luck next time."

To turn again to the sorting-out process—that period of blighted or budding hopes—the fancier will find, roughly, three divisions.

(1) Cockerels and pullets to kill, and some of the latter, as of the former, do for simple utility purposes.

(2) Birds more or less approaching the standard, and of various values for breeding purposes.

(3) Those likely to make exhibition stock, some for minor, and a few for major shows. He will often find a fair proportion of the former, and as like as "Tweedle-dum and Tweedledee," none standing clear away from the rest; many fit for a place in the race, none certain to win. Happy is the fancier who knows a good one when he sees it, and happier still when he finds that his estimate has been a true one, and the reward of the trophy repays him for the season's toil!

CHAPTER VII

PREPARING POULTRY FOR EXHIBITION

In the previous chapter I have intimated that it is not always the best bird which wins. I now go a step further and say that the best bird is not always in a fit condition to be sent to an exhibition for competition. It may be the best in size, shape, perfection of plumage and all the other points which make an ideal specimen, but unless it is in perfect "condition," and unless the plumage is shown in a cleanly state, unsoiled by dirt and unfaded by sun and exposure to the weather, it has little, if any, chance of gaining the premier award, or even of being "noticed" at all.

When the breeder has selected his best birds, he has the further task before him of preparing them for exhibition, and if he has bought a bird in show condition, even if he has paid a stiff price for it, he has to keep it in show form, or a specimen worth pounds speedily becomes worth only as many shillings, and altogether worthless for the show-pen.

It is the art of doing this which places the professional exhibitor or the experienced amateur at so great an advantage over the novice, who fails to show his exhibits to the best advantage. The following hints may be of advantage to him, though there is no teacher like experience.

Preliminary Stages.—As the poet is said to be born and not made, so the ideal chick is the product of careful mating, and no care can convert a mongrel into a prize specimen. But the best chick ever born may be ruined by careless rearing.

A prime factor in the sum of success is health and vigour from the day of hatching to the day of exhibi-

tion. A chicken ailment allowed its course, even for a short period, may so blight and stunt the growth of body, or damage the colour and growth of the feather as to destroy all chance of success. "Condition" goes a long way to ensure a prize. Care is therefore needed from start to finish, and by "care" is not meant coddling, but the reverse. Where the chick has healthy conditions all along it is astonishing at times how little else is needed in some breeds to ensure success. Different breeds require different treatment, and there are few rules which apply to all breeds alike more than the general one of taking care of health, stamina, and growth.

The breeds with large combs, like Minorcas and Leghorns, are often spoilt at an early age by enforced growth through stimulating foods, or the cockerels' combs are ruined by remaining too long under a hen, or being allowed too long in a heated rearer. The combs are pressed over to one side instead of growing erect, or they are prematurely sprung, and although they may grow erect they frequently develop "thumb-marks," as they are called, *i. e.* hollow indentations on one side, as though the thumb had been pressed into it while in a plastic state. A little early care in removing such chicks—if from a hen, and the weather is cold, into a "brooder" not overheated; or if from a rearer into another of less heat—would save them. Over-crowding has the same result and from the same cause, overheat.

The attainment of size depends more on feeding, freedom of range, and the separation of the sexes than upon anything else, providing the chicks are hatched from large and healthy stock.

The removal from one pen to another also has a marked effect, just as a change of scene affects the health of the holiday-seeker. It keeps the frame developing and checks precocious maturity. When a pullet is about to redden up and develop her comb previous to laying, the change from one pen to another will check this development, and as she never looks so well as when she is about to begin her life's work of filling the egg-basket, it is better to have her in this condition at the time of exhibition, whenever this is possible.

To secure good comb and lobes is an important matter. "Head-points" very often count for more in the show-pen than they do in the scale of points, and they certainly form one of the most attractive features.

This is more important in the Mediterranean breeds than in those with smaller combs, though every breed looks best just as it arrives at maturity. In order to grow a good-sized comb the treatment is different for the two sexes. We have seen that *heat* develops a cockerel's comb, and often to such an extent as to spoil it. A medium-sized comb is all that is desirable in a cockerel, and it should be proportionate to the bird's size, and be perfectly erect and firm at the base. As heat forces the comb in chickenhood, so it does at later stages. A low, stuffy roosting-house, or a perch too near the roof often causes the comb to go over. In the same way a long stay in a show-tent on a broiling summer's day, or at shows in a hall such as the Dairy Show extending over several days, often causes a comb to lean over to one side. The same effect is caused by too much flesh meat or stimulating foods. In such cases a *comb-guard* should be used, though a bird with a well-made and moderate-sized comb rarely needs one. Such "guards" are advertised in all the poultry journals, and if the length of the comb from the beak to the back of the head where it is separated from the skull, and also the depth of it are given, one can be got to fit. Most breeders make their own from a piece of bent wire after they have got a pattern. Such a guard, by pressing against the side which leans over, keeps it erect. They are fixed easily and in a few minutes, and after the bird has grown accustomed to it he wears it without discomfort. It is sometimes necessary to tether the legs, by tying a piece of soft, stout string, or tape to the legs, just below the spurs, leaving the legs about four inches apart, so that he can walk but not raise the foot to scratch it off. This may be taken off when he is used to it. Due care in management and in breeding render this unnecessary.

Pullets' combs require the reverse treatment. Heat is needed to bring them into condition. Confinement in a show-pen erected in a fairly warm, cosy place, and feeding on a stimulating diet brings them out wonderfully, and a little warm milk and bread has a similar effect.

Many of the best Minorcas come from cottages where the owner has his show-pen for training built in a shed at the back of his kitchen chimney, and I have before now seen them in the living-room. In cold weather the ideal place is in a specially-built exhibition room, with its stove for heating as required.

The shape of the comb and its graceful fall over to one side is often assisted by gentle manipulation and a little vaseline. Friction causes growth and softness, and correct falling over, when this does not come naturally. Care should be taken that this is not overdone, or the bright freshness of colour leaves the bird, and it loses in condition more than it gains in correct size and texture. A daily run on the grass, where this is to be had, soon restores the freshness. Comb guards are also used to train the pullet's comb to fall over either side of the face.

The white ear-lobes develop at the same time as the comb, and here again a little gentle manipulation often proves of assistance both in the removal of creases and in extending the size. They should first be washed with a little soap and a *fine cloth* or a soft sponge, and freed from all dirt. Then a little cream applied, or a "lobe mixture," which consists of oxide of zinc and glycerine. A little of this put on and gently worked in with the thumb and finger improves its colour and increases its size. Before putting back in the show-pen the lobe mixture, or "emollient cream," as it is often called, should be dried off by dusting with a little powdered oxide of zinc; and before sending to a show it should all be washed off again with a little warmed water or milk, and dried, though it is safe enough to apply just a touch of the powder to dry it.

The whiteness is improved by keeping the bird in a fairly darkened room, or by hanging a cloth before the training-pen. This must again not be carried on too long or the pullet loses in condition. Rough treatment, or bruising by applying friction too briskly, often causes the lobe to blister, and so does leaving it in a wet condition.

Year-old birds often get the lobes rough and blistered by the weather, and sometimes stained with red.

Confinement in a show-pen, or in a cockerel-box, out of the sunlight often restores them.

Exposure to the weather often coarsens the lobes both

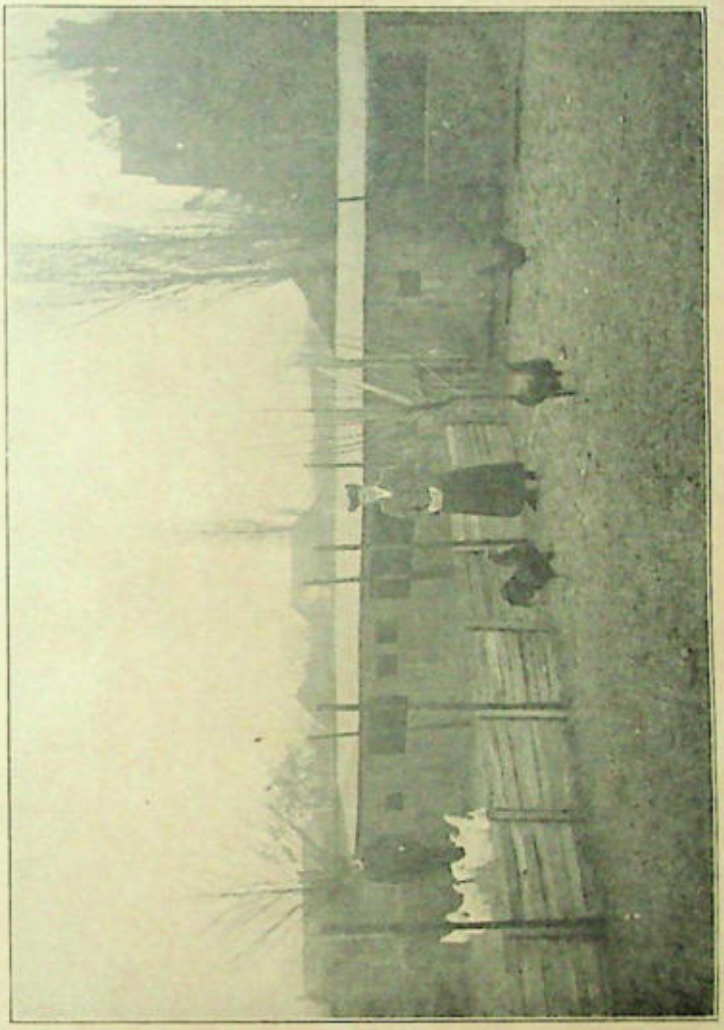


FIG. 13.—Range of Houses and Scratching Sheds with a north aspect for keeping birds in show condition

of young and old birds, and for some time before an exhibition they should be confined to shaded houses and runs. When a large scratching shed with a northern aspect is available it forms an ideal place. Such a house

is shown in the adjoining plate. Birds have here ample room for exercise, and plenty of light without sunshine during the hot part of the day; but they can be let out upon a grass run in the early morning and, when the sun is not too strong, in the afternoon, if the weather is fine.

Red lobes, on the other hand, often show streaks or patches of white. In some breeds, *e.g.* Wyandottes, a half of the lobe or so is often of a pale colour, and sometimes quite white. The Standards allow for this up to about one-third of the surface, but if more it is a serious defect, and of course the purer the red colour the better. It is a temptation to which some fanciers yield, in their desire to gain a prize by unfair means, to cut out the white portion or to skin it. Such practices cannot be too strongly condemned, and when discovered should be punished. It is not only unsportsmanlike but unjust to others. The excuse is sometimes made that it has been accidentally torn or pecked. It is true that a scar thus made leaves its mark, and that there is loss of colour in the damaged portion, but this is usually distinguishable from a deliberate cut or other attempt at faking.

When a bird is moulting, or out of condition, these marks or streaks of white often appear, and the remedy is obvious. All that can legitimately be done is to give a tonic. A little gentle friction often restores the colour for a short period. It is also a curious fact that where there is a latent tendency to whiteness, the bird often shows it for one moment, and then, like a maiden's blush, the colour comes back for a while. A pullet about to lay often turns pale. Momentary paleness passes quickly, and the touch of the judge's stick, as he turns the bird for inspection, removes it. Birds which have a tendency in this direction usually go white after they are a year old. When they are kept up for show purposes the tendency develops, and nothing has so good an effect as a run out in the open air.

Shady Runs and Sheds.—This leads to another matter of importance, viz. the necessity of shading from rain and bright and powerful sunshine. Some birds seem to suffer little from exposure to all weathers. A black hat does not turn brown in a day, but a lady's gaily-trimmed one may be ruined by a shower, or its colour absolutely

faded in an afternoon, and so it is with the gay plumage of our feathered friends. Even the sombre black loses its sheen by long exposure, while a delicate buff-coloured plumage may be ruined by an afternoon's shower followed by scorching heat.

Brilliant plumage is secured by freedom from exposure to the elements, and here again the man of means, the possessor of various appliances, the man who lays himself out to win, has a decided advantage, though he is often beaten by the humble fancier who uses his judgment and makes the best use of the means he has at hand.

The buff breeds and the white suffer perhaps more than any other from the effects of sun and rain. Very few of the winning buff pullets at our greater shows have had their freedom since the time their adult plumage began to show itself above the chicken feathers, say at four months old. They are kept in shaded houses and runs, and only let out in suitable weather. Nothing is more vexatious to a fancier than to find his best and most promising pullets spoilt by a few days' exposure to sun and rain. The back and saddle feathers suffer most. The wet seems to linger there, and if dried in the sun the tips of the feathers become bleached past redemption. A few days is enough to ruin the hopes of a year.

Buff cockerels stand the weather better. The feathers are harder, and only continued exposure has much effect, though it is apt to produce what is known as "brassiness."

Barred cockerels, as Plymouth Rocks, suffer in the same way; and though some strains stand exposure better than others, all are more or less affected by it. This "brassiness" is partly a matter of breeding (see chapter on "Plymouth Rocks"), but those bred in the best way, and most likely to stand the weather, are as jealously guarded by their owners as the rest.

White cockerels suffer in the same way from exposure. In their case the white plumage turns a yellow tinge, especially about the neck- and saddle-hackles and the back (the places where the *Gallus Bankiva* sported his red pigment in ancient days before he had any white descendants). In many strains this colour manifests

itself in spite of all the care bestowed upon them in the matter of shade. But even those which approach nearest to the pure albino are jealously shaded from sun and rain combined, though they may get their daily outing when weather permits.

The white pullets do not suffer to the same extent. But the breeder who has a few choice birds is well advised to shade his stock while the new feathers are growing. If in spite of protection they are still "sappy" a run in the sun, curiously enough, dries up the sap, and the birds improve in colour. All the same, the difference in purity of whiteness between a shaded and an unprotected bird is marked.

Other Breeds also suffer.—The delicate pencilling of the Brown Leghorn exhibition pullet, or that of the Partridge Wyandotte pullet, suffers if wet plumage is allowed to dry in the sun, and the effect is more marked if this occurs when the feathers are yet tender and the plumage is not quite matured. It is not open air and daylight, but the sun in the heat of summer, especially if it follows rain, which spells the mischief.

Where there are no scratching sheds facing north as shown in the photographs, either a cockerel-house about 7 by 3 feet and 4 feet high, which can be moved daily (see Fig. 4) answers the same purpose; or a canvas frame which keeps out the sun can be hung up as a shutter in houses or runs which face the south.

Even black breeds suffer a little, and the brilliance of sheen such as is seen on a Black Hamburgh or a Black Orpington undoubtedly is lessened by exposure.

Aids to Brilliant Sheen.—The bright gloss or sheen on the plumage of fowls depends largely upon the health and vigour of the bird, and is itself a sign of fitness or condition. A pullet never looks so fresh and bright as when she is about to commence to lay. It is Nature's bridal dress of attractiveness. The fancier has it in his power to produce or to augment this attractiveness, by the use of "pick-me-ups" in various forms. The quicker a bird gets through its moult and puts on its new season's attire, the more brilliant it is. Some birds, in vigorous health, need little or no assistance, but in most cases a little flowers of sulphur sprinkled over the soft food is a valuable aid, and the

same effect follows the use of a little well-boiled linseed, a teaspoonful or so to each bird, mixed with its morning meal. It liberally supplies the oil gland, from which the fowls dress and preen their feathers.

For dark-plumaged birds a little iron in the drinking-water is a valuable tonic; half-a-drachm to a gallon of water is ample. Or a little saccharated carbonate of iron mixed with the soft food, a piece as large as a pea to each bird, is said to have even a better effect on account of its being more readily assimilated by the system. If preferred it may be given in the form of pills containing five grains of the composition. Either of these are simple and inexpensive aids, and if the fancier does not care to take the trouble for himself, he can purchase them ready-made from any vendor of poultry medicines.

Whether the effect undoubtedly produced by iron, in giving brilliance to black or red feathers, is caused solely by its tonic properties, or whether it adds to the store of pigment is uncertain, though I am inclined to think it is due to both causes. Vigour and brilliance go together; but as the effect of doses of iron on white plumaged birds is to give a yellow tinge to the feathers, there is little doubt that it forms an addition to the store of pigment.

Iron is injurious to white plumage, as indicated above. A noted breeder of White Orpingtons attributed his non-success one season to the fact that his birds were supplied with water from a well impregnated with iron! I am doubtful whether small doses of sulphate of iron, such as half-a-drachm to two gallons of water, would have any appreciable effect in discoloration. The breeder who wishes to test the effect of iron can easily prove the matter by giving strong doses of it, *e.g.* the five-grain pill as recommended, to one or more of his birds which are not good enough to exhibit, and to treat such birds in every other way as he would those whose purity of colour he wishes to preserve.

The effect of iron on buff plumage is doubtful. It is said to produce patchiness. If it rendered the feathers containing particles of black ticking more conspicuous, as is most probable, it would not have a desirable effect. What it is also likely to do is to augment the colour of

the hackle feathers, wing-bow, and back, which is the natural receptacle of red pigment.[1]

Colour-feeding and Food Effects.—In spite of the well-known effect of cayenne and other foods on the plumage of canaries I am not a believer in the effects of colour-feeding on poultry. I have never yet met with any one who has been able to produce a good buff colour on his poultry by this means. To be of service it must deposit the colour *equally* on all parts of the plumage, and the bird must be of an *even colour* to start. No feeding could possibly make a patchy bird even, or even a "mealy" bird sound, and I believe that few breeders attempt it. The proper method is to *breed* the colour and then to preserve it.

There are certain foods which have an effect on colour. Maize is known to have the result of turning white plumage yellow, and is therefore a dangerous food for white birds, especially during the time they are acquiring their adult plumage, *i.e.* from four months old until the moult is completed. If persistently fed, it promotes the growth of yellow fat, which may be the cause of the yellow tinge.

Red wheat is said to have much the same effect, and it is certain that many of the most successful breeders of white-plumaged fowl feed chiefly on oats. The effect of feeding on maize, etc., is not so marked between the moults.

Care during Moult is of the utmost importance, not only in the case of growing stock, but for older birds when they are intended for the show-pen. The quicker an old bird moults the better. In order to induce it, nothing is more serviceable than to allow the broody kinds to sit, and even to rear a brood of chicks. At other times it should be remembered that fat birds moult slowly, and therefore to half-starve them and to confine them in warm and sheltered quarters starts the moult; and when they are well started, and the demand is great on the constitution, a more liberal supply of food should be given.

Hanging in moult, as a protracted moult is called,

[1] When a tonic is needed for *white* fowls, a little flesh-meat or bread or biscuit soaked in milk is a natural one. A quinine pill or a few drops of ovary tonic has a similar effect.

has a *very* bad effect, and is also a sign of a weakly constitution. The quill or sheath of the feather does not fall off, and this is especially the case with the tail feathers. Then is the time for a tonic. If the use of linseed and sulphur does not have the desired effect, a capsule of cod-liver oil with a few drops of colchicum wine has a good result. In bad cases it is advisable to remove the sheath with the hand, taking care not to damage the feather. The sheath bleaches or destroys the colour, and a badly-moulted bird is rarely fit for exhibition.

The effect of lice on the body is also detrimental, and all moulting birds should be kept free from insect pests (see Chap. V). They not only do harm to the new feathers but also weaken the bird's constitution. A little care more than repays the trouble, as many valuable birds are ruined by neglect at this time. They should also be liberally supplied with green food during this period, and nothing is better than a supply of cabbages, lettuce and dandelion leaves.

Leg-colour is best preserved by moisture, and a run out on damp grass is the best of all. Chalky soil is said to be injurious to yellow-legged birds, and sandy and clay soil good for them. A little olive oil gently rubbed in will help; while if the birds are at all inclined to "scaly leg" nothing is better than to wipe them with a paraffin rag.

Moulting the Scales.—It is often forgotten that birds moult the scales of the leg at or about the same time as their feathers. Where they do not fall away naturally, in time for the show, it is better to assist them. A little *gentle* pressure, or the insertion of the finger-nail under the edge will cause them to fall away. But great care is needed not to pull them off before they are ready to fall or the underlying one will be bruised and discoloured. The scales, like the feathers, fade in colour. A yellow leg is pale, and looks much brighter when the new scales appear. Black-legged birds are nearly always lighter—turning a slate colour after the moult—while a dusky yellow becomes bright.

Cleaning the scales requires great care. If the legs are dirty before sending to show, they should first be well washed with a hard brush and soap and hot water

Frequently in light-legged birds the scales want cleaning, like one's finger-nails. A quill of a feather, cut like a pen with a broad point, or a match, or even the penknife will take away the dirt. But it is better to leave it in than to wound the flesh underneath, and great care is needed to avoid this. After cleaning, another good brushing and washing removes the remainder. If birds are kept clean they rarely need anything beyond the surface cleansing. It should be well done both back and front, as nothing looks worse than half doing. After washing and thoroughly drying, a little oil or a trace of vaseline well rubbed on, and off again, brightens them, but white-legged birds are better without any oil, and should be rubbed dry.

Taming the Birds.—A bird is naturally wild and alarmed when first put into the confined space of an exhibition-pen, 24 inches square, unless it has been accustomed to being handled. On the other hand, almost *any* breed, even the wild Ancona, Leghorn or Campine, may be taught to feed from the hand of the attendant who, by gentle means, begins at an early age to take the trouble of handling them. It is never safe, in any breed, to take them right off the open run and send to a show. Some of the heavier and quieter breeds take kindly to the show-pen at once, but others rush or fly about when approached, or dart into a corner and try to hide or escape. It is, therefore, advisable *weeks* before the show to accustom the bird to a show-pen, if only for a short time each day, until it will come to meet you at your approach, and almost take food out of your hand and stand being touched without alarm. A bird that shows itself badly has great odds to fight against.

Washing Fowls.—White-plumaged fowls very often want washing before being exhibited. In a clean place, where the birds have been carefully treated, I have known even white birds such as Leghorns and Orpingtons, and the Light Brahma, exhibited successfully without washing. But as a rule they need it, and are the better for it if the operation is well performed. Other birds besides white birds are frequently washed, *e. g.* Barred Rocks, Black and Buff Orpingtons, and all the heavily feathered-legged breeds as Brahmas and Cochins.

In many of the breeds with heavy feathering and fluff the bird looks much increased in size, as the fluff stands out better after the washing. This washing is best done a couple of days before a show.

A practical lesson is better than any description, and the novice is fortunate who can see an experienced hand at work.

Three things are needed to do the work thoroughly. (1) To get the soap well in and *all* the dirt out. (2) To get the water well in and *all* the soap out. (3) To dry the bird efficiently.

The utensils needed are, one or more tubs or zinc vessels, oval in shape and capable of holding 10 or 12 inches of water; where they can be had it is better to have three vessels, one for hot water, heated from 105° to 110°, to wash the bird; another to hold warm water at about 80° for rinsing out all the lather; and a third for cold or only slightly tepid water for the final rinsing. Where water is handy and only a single bird is to be washed one vessel may suffice. A good soap is needed, either Spratt's white dog soap, or Sunlight soap, or better still Lux. It is better not to apply the soap direct to the plumage, but to make a good strong soapy solution of the consistency of jelly first and to have this at hand for use as required.

First wash the bird's legs, and, if very dirty, in a separate water. Then take the bird in both hands, with the thumbs on the wings and the fingers under the thighs, and immerse all but the head in the water. Move it about and get the water well into the plumage right down to the skin. Then apply the lather to one part at a time in a methodical way. The wing feathers should be well worked in the hand, taking care not to break them. The back, sides, and breast should be worked across as well as down, getting the hand well into the feathers and fluff. These will not readily break when soaked well in water. The under-parts and about the tail are the most likely to be neglected. Wash each part till no more dirt will come out. Do the head and neck last. A piece of soft flannel is as good as anything to assist the hand in taking off all surface dirt.

Should a bird faint during the earlier stages of the washing, a douse of cold water will bring it round. I

have washed scores and never had such a thing happen.

After every part has been well washed, souse the bird well in the water to remove all the soap, and with a sponge remove all the lather. Then place it in the second bath of clean warm water. For each operation *soft* water should be used. Remove in this bath *all* the lather, getting the water well into all the feathers and the fluff. Rinse the bird thoroughly, for it is as important to get the soap out as to get the dirt removed. If *any* soap remains in the feathers they will not web out properly but stick together, and a half-washed bird is worse than one not washed at all. This operation is not a long one if the water is ample, and the bird is well moved up and down in the water after the soap has been removed.

Then comes the final tub in cold water, or water only tepid. For white birds some writers recommend a *little* blue. But no amount of blue will make a sappy or tanned bird white. If any is used it should be a *little*, and care should be taken that the colour is not allowed to settle in the bath. The colour itself should be in a linen bag, and only just moved about to colour the water before the bird is put in. A washed and dried bird which shows traces of the blue is worse than if none at all had been put in.

Needless to add, this is of value only for white birds, and it should not be used for buff or coloured specimens, unless it be for Barred Rocks. I have heard breeders commend the use of a *little Condy's Fluid* for black birds as helpful for the sheen, but have not tried it, and should doubt its value.

After the bird has been well rinsed in the third water to remove all traces of soapiness, and to close the pores of the skin against cold, it should be taken out, and stood upon a table. It is generally docile enough now, and looks greatly diminished in size. All the water possible should be squeezed out of the bird by passing the hand down its feathers. It is most difficult to remove the last traces from the thighs and under the tail. A sponge will take up the greater portion, and then a towel or two will absorb the rest, care being taken now to rub the feathers in one direction from

head to tail. When finished, if the bird is held by both legs firmly in the right hand and the breast supported by the left, and then the left hand be quickly lowered, the bird will flap out and expand its wings and tail, and they will fall again naturally into position, as well as shake out any remaining water.

Then comes the Drying.—Fanciers who have many birds to wash usually have a drying-box for the purpose. They can be bought or made at home. One 4 feet 6 inches high, 3 feet wide, and 2 feet deep from back to front will easily hold two or three birds. In the front it opens like a cupboard. Two feet from the ground it is divided by two or three strips of wood, and covered with fine-mesh wire-netting, and a few inches above this is placed a perch running lengthwise, upon which the bird stands. On the floor is placed a lamp, and over it, attached to the division, is a radiator to deflect the heat, which rises into the upper chamber. The doors of this are made of framed canvas shutters and are closed, while the top is similarly covered. The advantage of this is that the heat is equally distributed over the whole compartment, and the moist air helps the feathers to fluff out better. The heat can be regulated as required.

The usual method of the smaller fancier is to place the bird in an unlined poultry hamper of ample dimensions and to place it near an open fire, but not near enough to scorch the bird, or dry it too fast. The disadvantage of this method is that the bird will face the fire and only one side gets well dried. Care should be taken to see that the hamper is clean and not dirty, and that clean straw is placed at the bottom. It is better to cover with a sheet, either the whole of the hamper, when the bird may be more easily turned round, or to leave open only the part nearest the heat.

Heavily-feathered birds require several hours to dry, and I prefer to do the washing in the early morning and attend to the drying during the day. If done at night the fire should be kept in and the hamper covered to keep away cold and draughts, as nothing is worse than to leave a bird all night in a cold room in a half-dried state. A few drops of camphor in a bolus of meal helps to keep away a cold, and the bird should

be fed sparingly on hard corn, as it is liable to contract diarrhœa after the ordeal, probably caused by the excitement of it and by a chill.

After it is dry it is best placed in a sheltered pen upon clean straw, and care taken that it does not get soiled before the show, or by being sent there in a hamper that is dusty or dirty. The difference between a well-washed and a half-washed bird is very marked, and its being well done goes a long way to ensure success.

Straw colour in white birds shows more after washing than before, and is objectionable from a show-point of view. Such phrases as "Straw colour is to be avoided" are common in the official standards of perfection. A slight sappiness, as it is termed, is common enough in young white birds whose feathers are still growing, or in old ones during the moult, and such birds need very careful washing, if indeed they should be subjected to such an ordeal. It is a singular fact that the sun has the power to take this "sappiness" or slight tan colour away, and a run out in the open often produces this effect. But the *straw colour* which is objectionable is that which is either inherent in the bird's constitution (as in White Leghorns and Wyandottes with their yellow shanks, or White Orpingtons, which are the descendants of the Buff Orpington), or that caused by the sun tanning the feathers. This remains and increases after the plumage is fully developed.

Can this be removed? and would it be a legitimate thing to do? The answer to the first question is, Yes. I have seen a bird shown by one exhibitor showing traces of the tan after the moult had been completed, and then bought at a low price on account of this colour, and a short time afterwards shown spotlessly white and awarded premier honours at a leading show. And I believe the "bleaching" had been done by a chemical process which left its traces on the webbing of the feather. I have seen other birds suspiciously white, an unnatural dry chalky whiteness, which looked as if similar means had been employed. The practice is said to be a common one with American fanciers. I think it a perfectly legitimate proceeding to prevent a bird from getting discoloured, but the method which bleaches

a bird that has the colour in its system is very questionable, and bordering on dishonesty, and is undoubtedly so if such a bird is sold as an albino, or as a pure white-bred bird. If ever bleaching should be declared "legal" and right, I should have no hesitation in declaring the method by which it is done so as to put all on an equal footing. Till then I neither practise it myself nor show others the way to do it. Birds can be bred and kept white, and that is the only fancier-like proceeding.

Washing buff-coloured birds requires great caution. I have known instances, and they are common, of fashionable and soft-coloured buffs being ruined and rendered harsh in shade by washing, and of specimens bought for £20 or more being reduced in value to £5 through a careless wash. This is the effect of the alkali in the soap, heightened by the use of very hard water. Where a bird is very light in shade but quite even in colour, a washing has been known to deepen its shade and to increase its value. A buff bird of the correct shade should not be washed, and there is no need to do so if it is carefully tended. If it must be washed through getting soiled great care should be taken not to use a coarse soap (a white curd soap is the best), to use only soft water, and to wash out *all* traces of the soap before drying. If a little vinegar is put in the last rinsing I believe this would neutralise the effect of the alkali, and make it possible to wash a buff bird without altering its shade. It is certainly worth a trial.

Final Preparation for Exhibition.—After a bird has got through its moult, and been trained so as not to flurry itself in a show-pen, and fed up to a decent condition, there yet remain the final touches to its toilet. The legs should be washed, rubbed dry, and polished either with or without a little oil, all traces of which should be removed before sending it away. The comb, face, wattles and lobes also should be washed. A little oil and vinegar mixed may be applied to all red parts after the washing and drying, and wiped away so as to leave no traces of its anointing. This freshens a bird up wonderfully. But it is better not done at all than to leave it sticky or moist, as it attracts dirt and makes it look worse than before washing. If the lobes are white they should be washed and dried, and gently

dusted with oxide of zinc and the powder afterwards lightly removed.

The brilliant gloss on the plumage of dark-coloured birds can be heightened by a final polish just before sending away, if a sponge moistened in water and squeezed out be lightly passed over the back and wings of the bird, and the dampness afterwards taken off by rubbing lightly with a silk handkerchief. When exhibitors are allowed to pen their own birds, these final touches shortly before judging make a material difference in the sprightliness of the exhibit, but as this gives an unfair advantage to the man who accompanies his birds to the show over the absent exhibitor who is unable to give this attention, the Poultry Club forbids exhibitors to pen their own birds at shows held under its auspices, in order that all may have an equal chance.

A slight feed of hard corn should be given it before sending away, and if the journey is long a condition pill may be administered.

See that the hamper is clean, with a light bedding of hay in the bottom, that the hamper is correctly addressed, and the route by which it is to travel marked on the label. See that these are well and firmly attached, and correctly placed where two or more birds are sent in a divided hamper, or you may find the birds wrongly penned. Take especial care that the divisions of the hamper are sound and complete so that birds cannot get at each other and fight or get pecked en route. Note that the label, on the reverse side, is correctly addressed for return journey, and that the exhibits are sent away in good time. Then having done all you can to deserve success you can await the results.

If successful, take your victory with modesty; if unsuccessful, learn to bear defeat calmly. Nobody is a greater nuisance in the exhibition world than the bad loser. Learn by all means the causes of your chagrin, but avoid colour-blindness when you see the splendours of the winner. The man who cannot see the merits of the birds that have beaten him, and who is unable to judge a bird fairly on its merits is no true fancier. Of course errors may have been made, for even the best judge is fallible. The condition of the bird at the moment of judging, the light in which it is staged, even

the juxtaposition of others, may be deciding causes. Then, too, he may have a different estimate of the value of points, or may be quick in detecting faults of which you yourself are oblivious. Get by all means, if you can, his point of view, without worrying and above all without bullying, and do not make yourself a general nuisance whether you win or lose. The best-planned and best-fought battle is not without its element of chance, nor would it be good for the Fancy if it were otherwise. Deserve success, and you will be sure to get your fair share of it.

CHAPTER VIII

THE COMMERCIAL SIDE OF POULTRY KEEPING

As I have pointed out in the brief introduction to this book, the heart of the matter lies in having a love for feathered life. Without it the business is a drudgery, which is ill-repaid by the often meagre income derived from it. Poultry keeping as a hobby is a delightful occupation, and to the vast multitudes who undertake it for this end is due the fact that it may sometimes be made a commercial success.

There is no reason why any one of average intelligence should not make his poultry repay him for the trouble bestowed, and it is probable that none of God's living creatures so amply and readily reward the owner for his care. But to make it the sole business of life, from which the maintenance of a man and his family may be derived, is quite another matter.

To look upon the calling as a sort of oasis in the desert—an Arcadia of life, where fruits grow without the planting and watering, is little short of a delusion. Many have made a shipwreck of their hopes in attempting it, and some have burnt the boat which might have carried them into more suitable harbours. It is an old wives' fable, which survives like many another superstition, that "poultry farming pure and simple" is a ready road to an affluent and easy life. By "pure and simple" is meant keeping a large number of poultry simply for the purpose of supplying the market with eggs and dead poultry. The answer to such a false notion is the simple statement that many have tried it, and none have found it to answer, or, if any have done so, they have kept the fact a profound secret. That the

cottager who keeps twenty or thirty head of poultry has made enough profit out of them to pay his rent is no answer to the question. He has no extra rent to pay for the tiny plot of ground they occupy, or, it may be for the lane in which they wander, and nothing to pay for labour, while the food bill is low because of his garden and the scraps from the house. The case is different with the poultry farmer. He has to rent land for so many poultry to be kept in health. The fitting up of his houses and runs, and the wear and tear of them, is a costly item. Unless he is favourably situated, the cost of taking his goods to the market is no trifle, and either means hiring a conveyance or the keeping of a horse, while his food bill is a very heavy one, since it has *all* to be purchased. I have known men, and there are many such to-day, who earn a labourer's wage by so doing. They can keep body and soul together by their efforts, and if they are adapted for the work, and are fortunate, a little more, but not much. Such poultry farming, when not on too large a scale, is an admirable adjunct either to a small independent income, or as a help to other forms of earning a livelihood, such as keeping a cow or two, market-gardening, or a sedentary occupation within doors.

The work is very delightful as an outdoor recreation, and is ample to keep an intelligent pensioner from ennui or idleness, and is a welcome supplement to other means, but when it is the sole means of existence it must be a great worry, and a sorry source of earning one's bread and cheese. I know that there are delusive books, fairy tales constructed on magnetic arithmetical lines, which narrate such easy problems as, "If 4 hens cost £1 a year to keep, and lay eggs, which at 1*d.* each bring in £2, or £1 profit, then 400 hens will bring in £100, and 4,000 hens £1,000, etc., etc. Other misleading descriptions are based on such simple statements as that a single hen will bring in 30*s.* a year! Multiply this by 200 and you have £300 a year—a cottage and a couple of acres being all you need to accomplish it, since every hen will lay in the winter 100 eggs, which sell at 2*s.* a dozen; and those she lays and hatches in the summer will find a ready sale as day-old chicks at a guinea a dozen, etc., etc. When a new breed is discovered with a

clockwork interior which needs only a yearly winding-up, and is guaranteed to keep time, then "success will be certain." Meanwhile we wait!

The road to fortune is simply told, but no allowance is made for the cost of labour, capital invested, methods of the disposal of stock (particularly of the old stock), the liability to disease, and the fluctuations of the market. If these schemes were practical on a colossal scale, millionaires would be as plentiful as blackberries in the autumn, to be found on every roadside; and the Chancellor of the Exchequer's burden be wonderfully lightened as he looked around for "hen roosts to rob" when constructing his Budget.

Briefly, it may be put down as a very good average result that if a poultry farmer on this system gets a return in profit of 5*s*. per head he is doing well. And if he has 400 birds to look after, and has to raise his yearly flock of chickens to replace the old ones, he will be fully occupied. Where one man does this twenty fail to do so; most who have tried it have to be content with less, and very many have failed to make both ends meet. But, it will be said, "*There are poultry farmers who earn a good livelihood* as the result of their efforts." And the answer is, "Yes, there are many who do so, but it is not by such methods." Their ways are equally "pure," but not equally "simple." These are men who have made a study of the business, and have not taken to it because they have failed at everything else. They have either served an apprenticeship to the business with those who have already been successful, or have served the longer apprenticeship of experience. One man in a hundred of such leaps into fame and prominence in a year or two, but he has usually been born with the proverbial "silver spoon in his mouth," and has means in reserve, and, in addition to this, has shown real aptitude for his calling. But the ninety and nine others who have succeeded have begun, after tuition, in a small way, and finding their love of the work not wane with their experience, have laboured steadily on, and so achieved success which increases year after year, and most of these have "other strings to their bow."

There is no other calling I know of which makes more strenuous demands upon the whole man, physical

and mental. He must not be afraid of work from early morn till late at night. In all weathers—hail, rain, or sunshine—his poultry must be attended to. If he has a keen eye for colour and for minute details his chances of success are enlarged. He must know how to plod on and persevere in spite of difficulties, for he is certain to meet with them, and often has to wait in patience for the turn of the tide. Success comes to him who not only strives, but who has also the patience to wait. The "haste to be rich" person falls into the snare. To achieve success a man needs to know how to buy and to sell, how to estimate values, and how to distinguish between things which differ. He should be a good correspondent, prompt, clear and obliging. If he has the best of knowledge, that of the nature of his fellows—the knowledge of mankind—he will find it a valuable asset, just as he would in any other calling in life.

In these days, too, he must know something of the art of advertising. It is no use having good things to sell unless he can induce people to buy. He must go with the times. It is pure folly to dress the shop window with last season's goods. For some breeds there is a demand. He must be ready to supply them. For others there is little or no demand, and he is the prosperous man who knows how to create one. This is not the work of a day. All may acquire the qualifications in some degree, but it is more of a gift than an acquirement.

The man who makes a real success at poultry farming is usually one who would succeed in any other business to which he gave the same thought and attention. But he has listened to the call of the country side and been attracted by its wooing. Sometimes it has been the call of necessity. An open-air life has been pronounced as indispensable for the preservation of health, and many a one has sought and found it in this way, and an enfeebled frame has been made robust, through walking in the ways of the simple life.

Some may say that the qualifications I have briefly sketched point to an ideal incapable of attainment, like the "ideal standard of perfection" sought for but

seldom found in the birds bred and exhibited. The answer is, that just as scores of birds which are far removed from the standard win the honours and prizes of the show-pen, so many persons achieve success with only a modicum of the qualifications named. But they must have something of all of them or they are doomed to failure, and the greater the measure of their capacity the greater are the chances of their success. It is no sphere for the incompetent and idle, and the bulk of the failures which occur in this, as in other calls of life, is due to the rash and inconsiderate rush into a business for which nature never intended them. It is not that they have followed a will-o'-the-wisp which has a morbid ending, an *ignis fatuus* leading to death, but that they have been allured by vain hopes of their own imagining—the hope of a life of rural ease and content, of reward without labour. The rapid road to fortune has not always been found of their own seeking, but pointed out to them by those who have sinister designs, whose aim is not to provide a fortune for another, but to rob him of the little he already possesses. There are traps for the unwary in this as in every other calling.

If it had not abundant charms and reasonable prospects of remuneration I should not have written this book, but I would point out to those who would enter its portals the inscription written thereon, "Let none enter here who would lead a lazy life, or who expects reward without labour."

If I have wandered from the path of prose I will return to it and say that the people who make a decent livelihood out of poultry farming are not those who keep hens simply to supply the table with fresh eggs and dead poultry, but those who breed pure-bred poultry of the more popular breeds and varieties, and sell the eggs for hatching purposes, and raise stock and sell them to others for breeding or for exhibition, or exhibit the birds in their own names.

These may roughly be divided into two classes—

(1) Those who breed chiefly for exhibition purposes, and by means of exhibiting and advertising their stock get enhanced prices for them, as well as high prices for the eggs they sell for hatching.

(2) Those to whom exhibiting is only a minor part, but who breed high-class stock, and sell a great number both for breeding and for laying to the very large number of patrons who like to see pure-bred stock about them. The love of the beautiful is happily on the increase, and when beauty and utility are combined there is much to be said in its favour.

Both of these classes sometimes add another feature to their business by selling newly hatched chickens. The demand is steadily increasing, and tens of thousands are sold every springtime to those who have not the means, or do not care to take the trouble, to hatch for themselves, as well as to those who like to obtain fresh blood for their yards in this way, and to rear their own stock birds.

There is a third class which makes a special branch of supplying *pedigree layers*, bred from stock, carefully selected and tested by means of trap-nests, and in other ways. These are also usually pure-bred stock, and the prices realized for eggs for hatching run from 5*s.* to 10*s.* 6*d.* a dozen and find a ready sale.

Sometimes all three departments are combined, for it should be remembered that, until a breed has been destroyed in its utility properties, by an undue straining after some purely arbitrary and "fancy" point, pure-bred stock are as good or better than any mongrels for supplying either eggs or table fowl. Indeed, one may go further and say, that it is entirely due to the fancier that we have breeds and varieties of fowls that will lay from 150 to 180 eggs or more in a year. The absolute mongreldom which still predominates in the average farmstead, and in the tiny yards of so many poultry keepers, would have been universal had it not been for the fancier and his carefully selected stock. When such keepers of cross-bred stock count the eggs at all, they often rejoice at an average output of 100 eggs a year, and many are content with 80 or 90, a record that is equalled by the fanciest of fancy fowls whose utility qualities are on the wane, and doubled by those which have been bred with an eye to utility as well as to fancy points.

The "fancier," therefore, has eggs to sell for the table as well as for breeding purposes. He only wants

eggs for hatching from January to May, and for the rest of the year has to part with his surplus of eggs for consumption, and he often has them in greater numbers than his purely utilitarian neighbour. He also has birds for the table, and that at a time when they fetch the highest prices. The mis-marked stock among his early chickens was hatched in the early part of the year while the farmer has been waiting for more genial weather, when his stock will begin to lay. When there is no demand for eggs and stock birds at more remunerative prices he is on the same level as the utility man, and seeks to dispose of his surplus in the same way.

A few notes on the way to dispose of these will apply to all classes alike.

Eggs for the Market.—This subject is dealt with at length in my smaller book on *Poultry Culture for Profit*, of which a notice will be found at the end of this volume.

Briefly, it behoves the man with many eggs to sell, to look out for the market where the highest prices are offered. There is an *unlimited demand* for eggs of the best quality, and the prices they fetch per dozen or per hundred vary very greatly in different parts of England. The best market is London, though it is nearly equalled by many provincial towns where the population is great; and also at popular seaside resorts. A weekly report on market prices is given in that most interesting weekly poultry journal, *Feathered Life*, to be obtained at all railway bookstalls and at most newspaper vendors. Further information and advice may be obtained as to the best markets from the Secretary of the National Poultry Organization Society, 12 Hanover Square, London.

Nearly every railway company carries eggs and poultry at half rates, and 120 eggs may be conveyed for 10*d.* from the most distant parts of England to London. The cost of transit varies from ½*d.* to 1*d.* per dozen, and is much more than repaid by the enhanced prices received.

Those in the neighbourhood of large towns may easily arrange for all their eggs to be taken by grocers or other tradesmen who sell them; and in other cases

private customers are only too glad to purchase. The regularity of the supply has a great deal to do with the success of the egg vendor.

Preserving Eggs

Many fanciers prefer to preserve the whole or the greater portion of their surplus eggs for use in the winter in their own homes. If these are put down in the springtime, when eggs are cheap and plentiful, they can better spare the whole of their late autumn and winter eggs, when they sell for 2*s.* a dozen and sometimes at a higher rate.

The best method of preserving is to use silicate of soda, better known as *water-glass*. A 3-lb. tin of this at a cost of 1*s.* will preserve 300 eggs or more. If the water-glass is of full strength, a 5 per cent. solution is strong enough. One *measure* of this and 19 of water is about the right strength. Water-glass is about half as heavy again as water, and equals 15 lb. to the gallon, so that 3 lb. of water-glass will make 3 gallons of the solution, which is enough to cover 300 eggs, or more. The water-glass should be put into an earthenware vessel, or a zinc bucket will do if the former is not available, and then several measures of very hot or boiling water be emptied over it so as to make a thin solution. The remaining part of the water should be boiled, and may either be added and stirred together while hot or after it has cooled.

When the liquid is quite cooled, half fill the vessel in which the eggs are to be kept, and place them in; or if there are enough fresh eggs to fill a vessel, place them in first and pour *the cool* mixture over them till they are covered. They should be quite clean when put in, and are better if not more than a day or two old, though they may be added when a week old.

The test of the strength of the water-glass is that if it is too strong the egg will float even when quite new laid. This would happen in a 10 per cent. solution, which would be too strong, as the eggs must sink and be covered. Even a solution of 15 parts of water to 1 of water-glass may be too strong, and the proportion

given is about correct (1 to 19) if the water-glass is of full strength.

Eggs may be added from time to time as they are collected, until the vessel is full. About an inch of water should cover the top layer, and the vessel is best covered over and kept in a cellar, or fairly cool place. Care should be taken that no tainted egg is placed in, as it will turn the solution musty and somewhat affect the others. I have put thousands of eggs down in this way, beginning in April or May, and they have been as fresh as new-laid ones after the following Christmas, and, indeed, over a full year. They should be washed when taken out for use, and if it is intended to boil one, it should be pricked at the thicker end, or it will crack with the expansion, since the water-glass stops up the pores of the shell, by which means the freshness is preserved. As the solution prevents any air from getting *into* the egg, so it prevents any from escaping when the egg is boiled. For general cooking purposes they are as good as the best. It would be fraudulent to sell them as new-laid eggs, but a great saving is effected in the home when this method is adopted. It is *safer* to put down unfertile eggs, *i. e.* eggs from a pen in which no male bird has been kept. But they are equally good when gathered from a breeding pen, if put down fresh, and before germination begins. Vessels which have a wire cage inside, to which a handle is attached, can be bought for preserving the eggs, and the eggs may more conveniently be lifted out when required for use.

A Lime-water Solution is sometimes employed. If 4 parts, by measure, of fresh and finely slaked lime is mixed with 20 parts of water and one part of salt, and the whole well stirred together a few days before using, and the clear liquid be then poured off, and the eggs placed in it, they will keep fresh if well covered with the solution. This is an old-fashioned method, and easy, but I have not found it so successful, except for shorter periods.

Many people stir the whole mixture together and put the eggs down *in* the lime. But it has a trick of going solid, and this makes it difficult to get out the eggs without breaking, and it is, furthermore, apt to impart a flavour of lime to them.

Many attempts have been made to preserve eggs for hatching purposes, but so far as my experience goes none have proved successful.

Sale of Eggs for Hatching

A glance at the columns of *Feathered World* in the early months of the year will show that thousands of breeders offer eggs for sale for hatching purposes. The prices of these run from 42*s.* and 21*s.* a dozen for eggs from pedigree stock of the highest merit, down to 10*s.* 6*d.* And lower than this from pure-bred stock—7*s.* 6*d.*, 5*s.* and even 3*s.* 6*d.* being samples of the prices asked. They are, naturally, dearer in the early months when eggs are less plentiful, and the breeder wants them for his own hatching purposes; and much reduced in April and May and afterwards, when he has got all he needs for his own use.

While it is true that the price demanded is not always the strict measure of their value, it must be self-evident that when the mated pens from which the eggs are produced are of great value—a pen of 5 birds often being worth from £10 to £100 or more—the eggs cannot be bought for a few shillings. The honest vendor places the purchaser on the same level as himself. There are many cases every year in which single specimens have been produced from eggs sold at 21*s.* a dozen, or thereabouts, which have taken first rank in the show pen, and have been sold for £10 or more. I have seen them sold for as high a price as £50.

The reader of the chapter on "Weeding Out the Stock" will have gathered that there is an *element of speculation* in this, both to the buyer and the seller. Sometimes the vendor parts with the best progeny of the year. I have myself been fortunate enough to get from a sitting of eggs as many as five winners, which have won the chief awards in their class, both at the Dairy, Palace and Club shows, while another year I have not got a single winner from 100 eggs. And as with buying so with selling, a dozen eggs sold have produced better stock than 100 hatched and reared at home. This is often forgotten by purchasers, and especially

by beginners, who are loud in their charges of fraud against the vendor for results which are entirely beyond his control. Many breeders have found selling eggs by no means satisfactory, and decide not to sell any sittings at all, but to hatch all they can get. Even when a breeder mates and keeps for his own use what he considers his best, he has been beaten by eggs from his second best pens. Many things tend to bring about these variable results. There is, besides the uncertainty of knowing which will breed the best, the differences brought about by feeding and rearing the stock, the suitability or otherwise of the ground upon which they are reared, and the attention devoted to their preparation for the show-pen.

All that the honest vendor can do is to give the purchaser a fair chance for the money he pays, and to sell him the thing he advertises. That some do not do this is likely, and it will remain so as long as human nature remains what it is. There is no calling in life in which it can be stated of all its members that they are strictly honourable. That honesty "is the best policy" has passed into a proverb, and it applies to the sale of eggs as of every other commodity.

The safest general rule to guide the purchaser is this: "If you want a good thing be prepared to pay a fair price for it." It is cheaper in the end.

Packing the Eggs is as important a part of the matter as the selecting of them. Keep for domestic use, or for your own experimenting, all mis-shapen eggs, or those which are much larger or smaller than the average, as well as all with rough or thin shells. Send eggs out quite fresh. None over a week old should be sent out for artificial incubation, though a few days longer will not matter if you know they are going to be placed under a hen. Enclose a direction in the package requesting the purchaser to allow the eggs to rest on their sides for twenty-four hours at least after their arrival. The delicate mechanism of the eggs gets disturbed by a long railway journey. If you agree to replace any clear, *i. e.* unfertile eggs, ask him to return them to you for inspection and to put his own initials on them before sending. The greater part of those returned will be found to be *not* clear, but to contain

dead chickens, or to be addled. His own initials may help you to convince him of the fact should you think it well to return him one or more of such with those you replace. People either will not go to the trouble of testing, or they cannot do it, or they do know how and pretend not to be able to distinguish. In cases of bad luck on the purchaser's part, treat him as generously as circumstances permit. It is the way to secure his further patronage.

Pack the Eggs carefully.—Many good boxes are provided for the purpose. If your eggs are valuable, do not get cheap boxes. Put 6*d.* extra on the price of the eggs to recoup yourself. It pays both of you better to do this. But any ordinary box will do if it is *roomy* enough and strong. First wrap every egg, after selecting and stamping it with your name, in a piece of paper. Then, if there is room, wrap it round in a wisp of soft hay, or in additional wrappings of paper not too tightly folded. A lining of hay on *all sides* completes the packing. Do not *nail* down the lid. If you prefer to fasten it, press down a tack with a lever. Place a label on the box, unless you buy boxes already prepared, with the words "Eggs—with care," in bold letters. Tie it up firmly, having seen *that the name and address of the purchaser*, the station to which it is to go, and the route by which it is to travel are clearly given.

A box of 12 eggs will go for 6*d.*, or less, to any part of England by rail. If you pay 50 per cent. more and mark the box *fragile* the railway company will pay for all breakages, for which the purchaser usually makes the claim. The buyer should open the box at the station to be sure of their safe arrival, and for verification. The railway company will make inquiries of the vendor as well as you, so that you should be accurate in stating the real value of them. I do not advise sending eggs by parcel post in England. A much lighter box suffices to send them by rail, which is both cheaper and more expeditious.

Eggs for Abroad may now be sent with safety by parcel post. And it is much cheaper to send in this way than by steamship packet companies. For the cost of this, vendors should consult the pages of the *Post Office Guide*, issued quarterly at 6*d.* The information

is given under the heading of "Foreign and Colonial Parcel Post." Colonies as far removed as Australia, New Zealand or South Africa can receive a parcel of 7 lb. for 2*s.* or 3*s.* (according to the route by which they travel), and one of 11 lb. for 4*s.*; Canada costs 6*d.* per lb., and Cape Colony 9*d.* per lb. The United States of America will not accept a parcel heavier than 4 lb. 6 oz., and this is not heavy enough to allow sufficient packing. There are certain papers to sign, etc., but particulars are given. It is better to pack the eggs in a light box with plenty of yielding packing, such as soft hay, and then to enclose this box within another. To the West Indies I have sent eggs of which 75 per cent. have hatched strong chickens, and to other distant places with almost equal results. It is necessary that eggs should be fresh, strongly fertilized, strong shelled, and well packed with plenty of room, to ensure success.

These hints many a fancier will find worth knowing. Find out particulars of the dates of transit, and send only on the appointed day, or the package may lie a week on hand waiting for the next boat. If you send eggs in greater bulk, pack with the same care, and consult, as to rates, etc., the steamship company by which you elect to send them.

After such a long journey, eggs should rest at least 48 hours, and be hatched only under *hens*. They may, of course, meet with a rough voyage, or rough handling on the way, and this may influence the result of the hatching, but careful packing goes a long way to withstand any buffeting. As eggs cannot well be returned for replacing clear ones it is well to be generous in the allowance if a proper price is paid.

Sale of Chickens

The columns of *The Feathered World* or *Poultry* will show the magnitude to which this particular branch has grown. It has doubtless affected the sale of eggs for hatching, since chickens travel much more safely than eggs, and there is much less luck in "counting your chickens" on arrival, than in doing so for the prospective chicks from the eggs. In the chapter on "Incubation"

the reader will have learnt that nature has provided the young chick with food enough at the moment of hatching to *sustain* its life for a week, and to *maintain* it in full vigour and safety for two or three days. As the longest railway journey in England can be accomplished within 24 hours, and, except from the extremest corners, in much less time, chickens can be safely sent from any one part to another. I have sent them to the end of Cornwall on the one hand, and to the extreme north of Scotland and Ireland on the other, with perfect safety, and with only a very small proportion of loss to France, Belgium and Germany.

Warmth and ventilation are all that is necessary to preserve life and health, and the natural heat of the chick's body is enough to sustain this, if they have a non-conductive material around them, and the space they occupy is limited. A box about 8 inches square and 4½ inches deep is sufficient for a dozen day-old chickens. A piece of stiff cardboard 4 inches in depth and sufficiently long to form into a *circle* should be covered with wadding, which should be opened out, and the smooth or shiny side placed near the chicks. This makes a warm cosy circle and prevents crushing. A little soft hay at the bottom for bedding completes the nest. A tiny hole either ¾ inch round, or an angular cut of the same depth, at either side of the top of the box affords all the ventilation needed.

A reasonable price for chicks is double that of the price asked for eggs, since it is out of the question to send either weakly or crippled chicks, and the breeder is fortunate who gets eight strong chicks out of a dozen eggs, and the average is less in the early part of the year. The expense of hatching and the trouble involved has also to be taken into consideration.

Notice of Dispatch should be given to the purchaser, and they should be sent by the quickest route, with definite directions on the label, as in the case of eggs.

Night is the best time to send for long journeys, as they sleep as cosily in the boxes as they would under a mother's wing, and arrive as fresh after a 12 or 18 hours' journey as they would if they had just been taken from the hen.

Delays are most frequent when the packages have to

be carted across a town from one junction to another, and officials are sometimes careless. A note to the parcels clerk or to the station-master often prevents delay, and serves as a reminder to the porters. They are often most considerate in placing the chicken boxes under cover where a change or a long wait are necessary.

Paste the label on the box. A specimen chicken label is given—

VALUABLE Live Chickens.

URGENT DELIVERY.

FROM
JOHN JONES,
High St.,
DENBIGH.

Breeder and Exhibitor of High-class
BLACK LEGHORNS,
WHITE LEGHORNS,
BROWN LEGHORNS,
BUFF LEGHORNS,
BLACK ORPINGTONS,
WHITE ORPINGTONS,
BUFF ORPINGTONS,
BARRED ROCKS,
BLACK MINORCAS,
PARTRIDGE WYANDOTTES.

To JOHN SMITH,
10 Market Place,
PRESTON.

To PRESTON *Station.*

Per L. & N.-W. *Railway.*

Date of Dispatch, March 1, 1909.

Per 7.30 P.M. *Train.*

Look out the trains and tell the buyer the time the chickens are due to arrive, otherwise they may be waiting at the station for many hours, especially when he resides outside the free-delivery radius. It is, perhaps, needless to say that live chickens cannot be sent by parcel post, as the postal authorities will not accept them.

The prices obtainable for chickens are regulated, like other commodities, by the demand for them, the popularity of the breed, and the season of the year. The breeder's standing in the poultry world also has a decided influence.

The two main factors which make for success are *to be*

known and to be trusted, and there the matter lies in a nutshell. It is the same in all branches of business—the man who is not daunted by the difficulties of his work, but perseveres and steadily gains the confidence of his customers is the one who succeeds.

The live chicken purveyor must have not incubators only, but rearers also, into which he can place those chickens he does not sell, to rear them for disposal at a later stage.

The Sale of Adult Stock Birds

Utility Stock.—The fancier who has mis-marked stock must in some way dispose of them, and where room is limited the sooner he does so the better for the correctly marked stock.

Cockerels of all kinds are saleable for food, but the readier sale is found for *white-legged* stock, and for those with white flesh even if the legs are coloured. The best are Dorkings, Game, Faverolles, Orpingtons, especially White or Buff, and to these must be added the new Cuckoo Colour and the Jubilee Orpington.

Black Orpingtons and Minorcas having white flesh follow on, and the Houdan and Langshan are equally good. Then come the larger yellow-legged and yellow-fleshed breeds, Plymouth Rocks, Wyandottes, Indian Game. Leghorns, Campines and other lighter breeds are of secondary value, but if they are sold at an early age, while they are still plump and tender, they find an appreciative market, though not equal to the other breeds mentioned.

There are sometimes good local markets to take what are not utilized for home consumption, but the average market town is not a good market on account of the competition of the local farmers. The average price of 2*s.* to 2*s.* 6*d.* does not pay for food and trouble.

For Good Early Chickens there is a brisk London demand. Prices in the Leadenhall and Central Markets are given weekly in *Feathered Life*, to which I have referred, and Smithfield Market is a first-rate place for the sale of live stock. In May and June I have got 8*d.* per pound live weight, averaging 8*s.* a couple for birds sent up in lots of a dozen or more.

Railway rates are reduced by half for lots of ½ cwt. or over at owner's risk, and it is at once obvious how much less trouble and how much more remunerative this is than sending them *dressed* to the local markets and getting 2*s.* or 2*s.* 6*d.*

Chickens fetch a higher price from April to the end of June than at other times. When the London season begins to wane and grouse-shooting has begun, prices fall heavily.

All through the year, at the slack times, a fair price is from 6*d.* to 7*d.* a pound *live weight* for birds in ordinary fair condition. Birds from 4 to 6 or 7 lb. weight sell best. The larger birds are slower sellers at such rates, unless offered at certain seasons and specially fattened. Many fanciers would be glad to dispose of their mis-marked stock wholesale in this manner.

Again, I commend the advice of the National Poultry Organization Society. There are knaves in the live poultry trade as well as in other trades, but there are lots of honest dealers who only charge 5 per cent. commission for sales, and send a remittance by return of post. The prices I name are not for dead poultry. The business of supplying fatted poultry, either to the market or to clubs and hotels, is not a branch of which I have much practical experience, and most fanciers do not trouble about it. Fattening fowls is an industry in itself, and the fatters *buy* their birds by the hundred, scouring the countryside to obtain them.

Sale of Stock Birds for Breeding Purposes is a more difficult matter. There is *always* a sale for table poultry, though there are times of depression and of glutted markets. But the sale of stock birds is sometimes a glut all the year round, except for those of first-class merit. Breeds rise and fall in popularity, and tastes alter just as fashions in dress. Hence the need for the beginner to have training and advice ere he invests. There are hardy perennials in the poultry world. Orpingtons, Wyandottes, Minorcas, Leghorns and Rocks are in fairly constant demand, though in all these some colours and varieties are far less popular than others. Hints on these have been given when dealing with the various breeds.

If a breeder has good birds of well-known strains,

advertises wisely, and exhibits his stock on suitable occasions, he can dispose of his stock birds. Pullets of the more popular breeds are always in demand, but the majority of the cockerels have to find their way to the oven or the pot, since not a quarter of the numbers hatched are ever needed for stock purposes. *Pure-bred healthy stock* is always in demand *at a price* which is much higher than killing price, but whether it sinks to 5*s.* or rises to £5 depends on the quality or on the particular demand at the time.

Farmers and small poultry keepers are beginning to realize that pure-bred cockerels are better than mongrels to run with their hens, and there is an ever-increasing number of persons ready to buy a small pen of birds, a cockerel and a few pullets, of a pure-bred variety, to supply the household with eggs.

Sale of Exhibition Poultry.—It would be a surprise to many outsiders, to whom the poultry fancy is only a name, to visit such a show as the Dairy or Birmingham, and to see the hundreds of birds claimed in the selling classes, where the catalogue price is limited to £2 each. And it would be a further cause of astonishment to find that many of these when put up to auction had realized from £3 to £10; and to learn also that of the birds entered in the "Open" classes sales were not infrequent at from £5 to £50 each or more.

It is sometimes alleged that only those who are well-known "men in the swim," as they are sometimes called, can realize high prices. This is not correct. It is the *bird* that sells and not the man, and many a novice has found himself famous by having a bird he has entered at a few pounds, realize by auction five or even ten times the amount at which he entered it.

There may be "rings" and "corners" in the Fancy, but in no other calling is the field more open for real merit. The "big men" do realize big prices for their best stock, because they know their value, but they are sometimes beaten, and, when they own it, these men are the purchasers of the victor, and the strife between them for the possession of it is the humble fancier's opportunity.

A bird sometimes has a fictitious value given to it

through the accident of its having been awarded a first prize, but the buyers who give the best prices are not often taken in. Many a time another bird in the same class, which has either gained a commended card only, or has even been passed unnoticed, fetches a much higher price. The trained expert knows how to estimate values, and he buys to maintain the reputation he has already gained.

There are two main classes of exhibitors. (1) Those who show for the honour and glory of it. The sporting instinct has a strong hold upon them. They love to compete, as most Britishers do, and they have a strong desire to win by all fair means. (2) Those who do it for gain alone. They may be equally honourable, but the temptation to step aside for gain from the path of rectitude is greater, and sometimes the trespass is made, though, so far as my experience of twenty years goes, the majority of fanciers are honourable men. There are black sheep in every flock, and the Fancy is not without them.

The gain which comes to the exhibitor is not from the prizes he wins, but from the enhanced value it gives not only to the winning bird, but to the rest of his stock. Hence the competition is keen, and even a commended card at a classical show is not without its value. *It is the best form of advertisement*, since the awards are published and read by tens of thousands who seldom scan the columns of advertisements.

The novice, therefore, must exhibit in order that the quality of his stock may be known, even though he may not take prizes enough to repay the expenses of showing. Thousands of fanciers and of the general public see his birds, and, if they are worth exhibiting, the advertisement repays him. It is also one of the best ways of comparing the merit of his stock with that of others, and it trains his eye as nothing else can. If there were no exhibitions there would be few high-priced stock, and the poultry fancy and the poultry industry alike would languish.

How to prepare for exhibition has already been described in the chapter devoted to it. Having decided to show, he should obtain a schedule from one of the shows advertised, and, if there are distinct classes for the breeds

he keeps, send the entrance fee to the secretary. The average entry fee is 2*s.* where the prizes are 10*s.*, 5*s.*, and 2*s.* 6*d.*; 2*s.* 6*d.* or 3*s.* where the prizes are 15*s.*, 7*s.* 6*d.* and 3*s.*; and 3*s.* or 3*s.* 6*d.* where the prizes are 20*s.*, 10*s.* and 5*s.* A few of the principal shows, where the prizes range from 30*s.* to £2, have larger entry fees. He will receive from the secretary a few days before the show an addressed label giving the *class* number and the number of the exhibition *pen* in which his exhibit will be staged. He should write on the back of the label his own name and address, and the station to which it is to be returned. The date of the show and the time when the exhibits should arrive are given in the schedule, and, unless he personally conveys them to the show, he should take care that they are sent off in time.

The expenses of transit to and from the show are considerable. The scale for journeys by passenger train is given below.

PARCELS WEIGHING	PARCELS FOR STATIONS IN ENGLAND, WALES, AND IRELAND BY PASSENGER TRAIN							
	NOT EXCEEDING 20 MILES		ABOVE 20 AND NOT EXCEEDING 50 MILES		ABOVE 50 AND NOT EXCEEDING 100 MILES		ABOVE 100 MILES	
lb.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
1	0	4	0	4	0	4	0	4
2	0	4	0	4	0	4	0	4
3	0	5	0	5	0	5	0	5
4	0	6	0	6	0	6	0	6
5	0	6	0	6	0	7	0	7
6	0	6	0	6	0	8	0	8
7	0	6	0	8	0	9	0	9
8	0	6	0	8	0	10	0	10
9	0	6	0	8	0	11	0	11
10	0	6	0	8	1	0	1	0
11	0	6	0	8	1	0	1	0
12	0	6	0	8	1	0	1	1
13	0	6	0	9	1	1	1	2
14	0	6	0	9	1	1	1	3
15	0	6	0	9	1	2	1	4
16	0	6	0	10	1	2	1	5
17	0	6	0	10	1	3	1	6
18	0	6	0	10	1	3	1	7
19	0	6	0	11	1	4	1	8
20	0	6	0	11	1	4	1	9
21	0	6	0	11	1	5	1	10
22	0	6	1	0	1	5	1	11
23	0	6	1	0	1	6	2	0
24	0	6	1	0	1	6	2	0
Above 24 lb. per lb.	0	0½	0	0½	0	0½	0	1

A hamper for a single bird weighs about 6 to 8 lb.,

and a double hamper about *half* as much again. The weight of a show bird varies from about 4 to 12 lb., with an average of 6 lb. It will be noticed at once, by adding together the various weights, that a considerable saving is effected by using *double hampers*, or, for lighter birds, hampers to hold 3 birds, where the total weight does not exceed 24 lb., *e.g.* a hamper and one bird weighing 12 lb. costs 6*d.*, and one with three birds weighing 24 lb. the same amount. Over 24 lb. the rates are constant. For birds for table use, or for eggs when sent to the market, the rates are only half the above, if sent at owner's risk.

Since there are only three prizes as a rule in a class, and an average entry contains about 10 birds to a class, and at the larger shows very many more, the reader will see that the average exhibitor does not get his expenses returned. If he won a third prize with every entry his expenses would be more than the prize money, and only those who get into the first rank get repaid. The return is mainly by way of advertisement.

Sending Live Stock abroad.—The love of first-class stock is not confined to the British Isles. It is as keen in the United States as with us, and the Fancy is taking a strong hold in our various Colonies in all parts of the world. Exports of stock, both for utility, prize-stock breeding, and exhibition is largely on the increase, and thousands of birds change hands yearly.

The cost of exporting, including freight, food, dock-dues, railway expenses and the fitting up of suitable coops, is considerable. For America, Canada, and South Africa the actual out-of-pocket expenses for a pen of four birds varies from 50*s.* to 60*s.*, and for single birds the rates are proportionately higher. For Australia and New Zealand they are a little more. It does not pay the importer, therefore, to buy second-rate stock, since the cost of sending out a low-priced bird is as great as for sending one worth £10 or more.

Where the vendor is not directed to send by a certain steamship company, and he is in doubt as to the best route, he should consult Messrs. Pitt and Scott, carriers, whose address will be found in the advertisement pages at the end of this book. They will supply suitable coops, where necessary. It may be stated that in most

cases the expenses from port to port have to be prepaid. It is the custom, either for the vendor to pay all charges and sell the birds delivered at the foreign port, or to sell the birds at a given figure and add the expenses to the cost. In all cases the amateur vendor should be careful to get prepayment, or he may find considerable difficulty in collecting his debt. The "confidence trick" is often tried on, and is sometimes successful. A few small prepaid orders are executed, and then a much larger order is given, with a promise of payment on receipt of goods which is not fulfilled and was never intended to be fulfilled.

He should also see that fair, honest value is given, if he wishes to increase this class of custom, which is worth cultivating. The vendor can afford to sell his best if he is paid a fair price, since the specimens he sends are not likely to compete with him again. If birds are robust and healthy at the time of export there is but little risk of death. They may be insured against accident for a small percentage, as very few die *en route*. They are specially catered for, and well fed on the voyage. There are tricksters at both ends, but the bulk of the transactions are of a fair and honourable character, and though complaints are sometimes made, they are but few when compared with the volume of business done.

The Profits of Poultry Farming.—Fanciers do not as a rule publish their earnings. But it is an "open secret" that there are just a few men whose yearly profits are not far short of £1,000. There are, perhaps, a score who make £500 or more; a greater number whose average incomes from it range from £300 upwards; and hundreds who earn from £150 to £300. There is nothing princely for the multitude, but there is a competence for many who combine "fancy" with utility. I have never heard of one person making £100 a year from poultry farming "pure and simple." If a man is not afraid of work and knows how to manage those who assist him, if he is of fair average intelligence and has learnt at least the elements of his business before he invests his capital, there is no reason why he should not get a fair return for his capital and labour. Those succeed best who begin in a modest way and build up their business by degrees. They should have a little reserve

fund upon which to live till the business brings in a sufficient income. To risk one's all upon an untried venture is only to court the failure such folly deserves.

Notes on Advertising

We live in an age of advertising, and, as I consider, in an age of over-advertisement, brought about by the keenness of competition. Moreover, advertising lends itself, nearly always, to exaggeration, and often to downright and unblushing falsehood. The American game of "bluff" has seized the English advertising world. It is impossible that everybody can have better goods and of better value than *everybody* else. The game is often overdone, and does not pay in the end. The alloy is too plainly seen beneath the gilded surface, and one is led to ask, "How can such an article be sold at such a price when the cost of advertising is taken into account?"

Still, one must advertise in order to be known, and, even when known, to keep up the acquaintance. As the gentle but constant dripping of water wears away the hardest rock, so does constant and consistent advertising find its way. Some of the most prosperous and best-known business firms in the world have found their business decline rapidly when they have cut short their outlay in advertising.

Much depends upon the amount of business done. A steady round of regular custom sometimes takes all that the fancier or general breeder can produce. The retention of regular custom is the heart of success, and if advertising makes one known it is being trusted that consolidates success. Every satisfied purchaser becomes a free advertising agent.

If one has good things to sell, the fact should be stated in honest terms. Personally I have advertised in the pages of *Feathered World* without a break for more than ten years, and as a consequence my name is known throughout the world of featherdom. I am not going to narrate personal experiences more than to give one single instance. When the Buff Orpington was beginning its triumphal march to fame, there were crowds of advertisers who offered for sale "birds, buff

throughout, from head to tail," and that at a time when such perfect specimens had not been produced. I had a hundred or more of the breed for sale, and got numerous inquiries for birds "without any black or white in their plumage," and the prices offered were ridiculously low, not a tenth of what such a specimen would be worth. To save needless correspondence I inserted a small advertisement stating that I had *no* birds pure buff throughout, and that such were non-existent. In a fortnight the whole were disposed of at satisfactory prices! The reason why is evident.

A List of Winnings is often a satisfactory advertisement, and takes well with the general public, though every experienced fancier knows that the best birds are most frequently bred from stock that has never seen an exhibition pen. In some breeds birds continue to win prizes long after their usefulness as breeders has vanished. Strain counts for much, and correct mating counts for more.

Advertise widely and with regularity.—The papers devoted to poultry matters are the recognized and best mediums. It may be wise to test them all, and when you have found the one that suits you best, stick to it year in and year out, even if you try the others occasionally.

Advertise Goods in Season.—It is little use advertising eggs when nobody wants to hatch them, or chickens when people's wants have been supplied, although if you have cheap chicks there are many people who do not make up their minds till midsummer.

To clear out Breeding-Pens for which you have no further use, the best time is as soon as your own wants are supplied, and while there is yet time for late comers to hatch.

For Old Birds, of no further use for breeding, the sooner they are gone the better, and in any case and at any price they are better disposed of before the annual moult begins. The Jewish festivals are good times for their disposal.

For Show Birds, the early season is the best, since good early chicks are scarce, but they are saleable all the year round, and a foreign order often takes them when shows are over at home. Their seasons happily do not coincide with our own.

The best mediums are the fanciers' papers, and for the disposal of high-class stock no papers are equal to *Feathered World* and *Poultry*. They circulate throughout the world. *Feathered Life* is the utility paper. It is most attractively got up, and is one of the beginner's best aids. There are other papers which find their way more exclusively among the farmer class. The manuals and treatises on poultry in general, or on particular breeds, find their way to a more limited circle of likely buyers, and local papers are not to be despised, since many people prefer "to marry over the mixen than over the moor." Local sales are most frequent late in the season. The rural mind works and acts slowly and at leisure.

What percentage should be spent in advertising. It is obvious that it does not pay to spend £1 in advertising and only get 19*s*. profit returned, while it is equally obvious that it does pay, if you only reap a guinea for every pound sown. Much depends both upon the quantity and the quality of your stock. It costs no more to advertise a hundred birds than one, and here the large breeder has the advantage. If you have really good stock to sell, which you don't need, you must advertise at any cost. Ask your buyers to state the price they are willing to give. This saves needless correspondence. Be prompt in reply and definite in your statements. Don't be afraid to ask a fair price, when you have learnt to estimate values. Customers fight shy of shoddy goods even if offered at shoddy prices.

A constant advertisement, that you have always birds for sale, and eggs in season, pays in the form of a breeder's card.

Remember that values change in accordance with the rigorous laws of supply and demand, and do not hold all your goods on a falling market. It may pay better to "kill and eat," but it certainly does not pay to keep stock to "eat their heads off" in the hope of a sale at prices which will never be realized.

Aids to Business Transactions

First, the Fancy papers, and the whole of them. A single hint often repays the year's outlay. The trend

of fashion, the way things are going, the discussions on matters of living interest, the answers in the query columns, offer valuable sources of help, and sometimes of a chance to help others. For example, points of some breed are being discussed and settled—you may assist in the matter, or be assisted in your own breeding.

The Poultry Manuals.—You can never know too much of the breeds you are interested in. One of the singular phenomena of the human mind is shown in the case of the fancier who will give £20 for a bird which he little understands, and yet will not give a shilling for a book which gives full information about it. And many buy who will not read. Books are not everything, but no intelligent business man can afford to despise them.

Three necessary books of reference—

(1) *Bradshaw's 6d. Railway Guide*, and local guides.—Bradshaw gives the names of all the railway stations and the connections between the various lines; and though it is a puzzle to most people, it is indispensable to the fancier who has to send to all parts of the kingdom. Local guides, and more especially alphabetical guides, are often useful, and particularly those of your nearest centres through which birds may have to pass and at which changes often take place. A list of the various steamship lines and the dates of sailing, with the head offices of the companies, is of great service when sending abroad.

(2) *A good Gazetteer.*—I have found invaluable aid from *Newnes' Gazetteer of the British Isles.* People often write for eggs, chicks or birds, and only give their address, without any mention of a railway station. "Newnes'" helps you to find it, as the name of every town and village is given, and the distance from a station, together with the different lines which run into it. It also helps you to decipher badly written or badly spelt addresses.

(3) *The Post Office Guide, 6d. quarterly*, answers much the same purpose, and in addition you can find out the number of deliveries of letters, and whether there is a Sunday delivery, and the time occupied, as well as the cost of sending letters or parcels to any part of the world, and the length of time the journey

occupies. The times and dates of sailings to foreign ports are also given.

These guides help to supply the omniscience for which many people seem to give you credit.

The Poultry Club Standards, published at 1*s.*, gives the "standards of perfection" for all recognized breeds. It is revised from time to time. A minute study of the particular standards in which one is interested, and comparison at exhibitions of poultry of the *actual* specimens with the *ideal* standards, is a great help.

The Specialist Clubs which are formed for the various breeds, or varieties of a breed, issue their own standards. In the case of the older breeds they are identical with the Poultry Club Standards; but the newer breeds often alter their standards as the breed progresses, and it is well to have these at hand, and a better thing still is for a young fancier to join the club. The secretary's address can be got from any poultry paper by making a query, and *Poultry* frequently publishes a full list. The usual fee is 5*s.* a year—some are less—and the proceeds are devoted to offering prizes for competition among its members, or by guaranteeing classes at shows.

The Poultry Club.—This is the premier poultry club in England. It exists for the purpose of encouraging the breeding and exhibiting of *all* recognized breeds of poultry, and herein it differs from the specialist clubs, which cater for their own particular breed, though the best of these clubs are affiliated to the Poultry Club, and work in harmony with it.

Other objects are "to advance and protect the interests of poultry breeders and exhibitors," and to suppress fraudulent and dishonourable practices. It has over 1,200 members, and is rapidly increasing, *e. g.* 492 members were elected in the year ending September 30, 1908. Among its members are the most worthy and best-known breeders and exhibitors in the poultry world. Any member reported and found guilty of fraudulent practices is expelled from its ranks, or is prohibited from showing at shows held under Poultry Club rules for a longer or shorter period, according to the gravity of the offence. It is therefore a sort of protection society, which it behoves every honourable fancier to join, and especially every beginner. There is

an Hon. Solicitor to the club, who gives advice in cases of difficulty, and an Hon. Secretary, Mr. G. T. Drake, Cobtree, Sandling, Maidstone, who will gladly give information about the club. Many counties have now a local committee to look after local interests, and to induce the promoters of shows held in the county to affiliate themselves to the Poultry Club. There are numerous and valuable trophies offered for competition by the club, as well as medals or other smaller prizes, which are highly esteemed by fanciers, and arouse considerable interest.

The Poultry Club Council meets monthly in London, and its officers have been elected by popular ballot. Each county having a local branch is represented by an elected delegate.

As the club gains in strength of numbers, so will its influence be more widely extended, and the purity of the Fancy be promoted. An interesting year book is published and sent out to every member. It contains a complete list of the names and addresses of all its members, and a report of the year's work. The annual subscription is 5*s*. Every well-disposed breeder of poultry should join it. He may need its help, and in any case he is aiding an honourable cause. Not until we live in an ideal world where judges, magistrates and police are unnecessary for the maintenance of peace and order, shall we be able to do without the Poultry Club.

CHAPTER IX

DISEASES OF POULTRY

Poultry have their ailments, and are liable to contract various diseases, like all other living animals. These may often be *prevented* by the use of ordinary sanitary precautions, among which the chief are: (1) a supply of pure unvitiated air, without direct draughts. (2) A constant supply of pure water, kept cool and sweet by always being placed in the shade, out of the direct rays of the sun; nothing being worse for poultry, and more especially young stock, than stagnant sun-warmed water. (3) A correct course of feeding, in regular and sufficient quantities, but not to excess. There is no more fertile cause of disease than food which has been allowed to turn sour, or to become contaminated with foul ground or the excreta of the birds. (4) A supply of sharp flint grit always present for the birds to take as they require it, but *not* mixed with the food. (See chapter on "Feeding.")

Disease may, as a rule, be *easily checked* if taken in its early stages, and the attendant should keep a watchful eye over the whole of the stock, and more especially at feeding-time. Any sign of listlessness, ruffled plumage, want of appetite, or general lack of "condition" should be noted, and if the symptoms are at all of a contagious character the bird should be removed to a show-pen or to some warm corner of a shed or outbuilding kept for the purpose of an isolation hospital. These pens should themselves be disinfected after use. A good scrubbing with a solution of permanganate of potash, or Izal, or Jeyes' fluid, is necessary. The floor, the wire front and sides, and all drinking-vessels must be thoroughly cleansed. The lack of these

precautions at shows, where many a diseased bird finds admission, is often the cause of an epidemic.

Remedies are provided by many poultry specialists, are always advertised in the leading poultry papers, and are usually obtainable by return of post. The query columns of the papers are also available to enable the novice who describes the ailments of his stock to get directions, when he is puzzled, as to the best treatment. And, above all, there is a veterinary surgeon who is prepared to examine stock, or to make a post-mortem for a small fee. In the case of a contagious disease, or of any fatal complaint which baffles the owner, no better course can be taken than promptly to despatch a victim, and to accompany it with the necessary fee, and any information as to feeding, symptoms observed, etc. Much loss and inconvenience may be saved by the prompt adoption of this suggestion.

Remedies at hand.—It is better, however, for the poultry-keeper to have remedies at hand, especially for the more common ailments. The owner of a large stock of poultry will find it not only a great saving of time, but of monetary loss as well. Many of the drugs used, cost, from the chemist, no more for a pound than for an ounce, or other small quantity needed for immediate use, and the owner should always have at hand a pair of *weights and scales*, the weights being from a quarter-ounce to one pound, and also a *fluid ounce measure glass* such as the chemist uses for measuring out his medicine, or the patient for taking it. When these are not available, it may be useful to remember that a half-crown piece weighs half-an-ounce, or three halfpennies the same, and if he has no means of weighing less, the half-ounce may be divided by weighing an equal quantity of it on either side of the scale. For *measures*, if the glass is not at hand, two tablespoonfuls weigh an ounce, and one of the most convenient and handy measures is an ordinary eight-ounce moulded medicine-bottle, which is usually divided by marks on the side of the bottle into half-ounce or one-ounce divisions, or into tablespoonfuls, which is the same thing. As most poultry medicines are best administered in a liquid state, it is safer that drugs which are bought in a powdered or crystal state should be weighed

and dissolved, *e.g.* it is better to weigh and dissolve an ounce of sulphate of copper, when you want to give a drachm of it to a gallon of water, than to weigh out each drachm separately. An ounce of the powder, or crystal, soon dissolves in an eight-ounce medicine-bottle, and an ounce of the medicine, *i.e.* two tablespoonfuls, contains a drachm of the copper.

Water is also a convenient measure of weight, as a gallon weighs ten pounds, and one-sixteenth of it, or half-a-pint, weighs ten ounces.

Common Remedies for Common Ailments.—Epsom salts, Glauber salts, sulphate of iron, sulphate of copper, permanganate of potash, Jeyes' fluid, Parrish's chemical food, flowers of sulphur, powdered chalk, powdered alum, perchloride of iron, pure creosote, tincture of aconite, tincture of iodine, glycerine, tincture of friar's balsam, vaseline, oil and hartshorn, or Elliman's embrocation. A box of Blaud's pills, which cost about fourpence a gross, are a capital tonic or pick-me-up if two are given night and morning; so also are Revivers, tonic pills, one or more of which are to be given, as directed, before and after an exhibition. Cod-liver oil, and a box of gelatine capsules, into which the oil or other medicine can be put as desired, and administered cleanly is of constant service.

Readers need not be alarmed at the list. The whole of the remedies can be bought for a few shillings, and most of them for a few pence. Porcelain pots to keep the drugs clean, and a label to denote the contents, are better than allowing them to lie in the packets in which they are bought. Liquids should be kept tightly corked or in stoppered bottles.

Colds.—As in the human race, so in poultry, the most common ailment is a bad cold, and if this is neglected it may turn to bronchitis in some weaker member of the flock, or into roup, which affects the whole pen.

Symptoms of cold are sneezing, a thin watery discharge from the nostrils.

The causes are various. A long continuance of cold wet weather; a bird being locked out at night; too many crowded into an ill-ventilated house, which gets too hot, and the fowls, after breathing the hot fœtid air all night coming out into a cold wet run.

Remedy.—If the cases are slight, a little sulphate of iron in the drinking-water. One ounce dissolved in a pint of water, and a couple of tablespoonfuls (*i. e.* one ounce of the fluid) added to each gallon of drinking-water will act as a tonic and remove it. For a bad case isolate the bird and add about ten drops of Fleming's tincture of aconite to a half-pint of its drinking-water, keeping it in a dry pen or show-basket. A couple of days should effect a cure.

Another remedy which I have found very effective, both as a cure for colds and as a preventive, is the use of pure sulphate of copper. One ounce of this should be dissolved in an eight-ounce medicine-bottle of water, and one ounce of this solution added to each gallon of drinking-water. When this remedy is tried, *soft* water should be used for the drinking-water wherever possible, as the lime in hard water causes a precipitate. The water also should be placed in stoneware or enamelled vessels. If placed in zinc or iron vessels a chemical action takes place which, though not dangerous, is not wholesome. The effect of this remedy is wonderful, and it is simplicity itself in its application. Although roupy cases are to be found all the year round, it is chiefly an autumnal scourge, and particularly affects the half-grown stock.

Roup.—Colds rapidly develop into roup if neglected. The discharge from the nostrils becomes thicker, and it is offensive in odour. Sometimes the face is badly swollen, or the eyes appear frothy, and at other times *one eye* is completely closed. The birds lose their appetites and mope about.

The cause is the same as in colds; but as influenza colds differ from a common cold in being contagious, so does roup differ. It is often *very* contagious, and sweeps through a whole yard.

Remedy.—If the cases are few they may be isolated, and the sulphate of copper remedy tried, as recommended for colds, using a tea-spoonful of the mixture to a half-pint of drinking-water. I have known cases in which the bird could not see to drink, in which case the water has had to be poured down the throat. In this event the face and eyes and mouth should be washed in the solution also. A few days' treatment

will often cure a severe case. If the bird cannot see to eat, it should be sparingly fed with boluses of soft food by hand. If a little lard or other grease is added to the bolus the cure is hastened. In the case of many birds being affected, isolation is useless, and the sulphate of copper remedy should be doubled in strength and given to the whole pen.

In mild cases a little Condy's fluid put in the water, or as much as would lie on a sixpence of permanganate of potash, added to two gallons of water, stops the contagion from spreading and remedies the discharge.

Another well-known remedy is to place in a jug or quart bottle—

4 ounces Glauber salts,
2 ounces Epsom salts,
½ ounce sulphate of iron,
10 drops of creosote (a pharmaceutical preparation).

Pour over this a quart of boiling water, add two tablespoonfuls to each gallon of drinking-water.

I prefer the sulphate of copper treatment until the roup has gone, and the other to follow as a general corrective to the system, and continued on alternate days for a week.

General Debility—Moulting.—The prescription above named of Glauber salts, etc., is a most useful remedy for occasional use when the birds appear a little out of sorts. It is a corrective for indigestion and corresponds to the use of Apollinaris, or Hunyadi waters, etc., which are such well-known correctives to overfed and ill-fed mankind.

It is also a valuable aid to an effective moult, which, though not a disease, but a natural process to provide a new winter's dress, is yet a very trying condition.

Douglas mixture is a long-tried and successful remedy similar in action to the above, but without its slight purgative effect. It is easily prepared, and is inexpensive. Take a quarter-pound of sulphate of iron crystals and a half-ounce of sulphuric acid. Place them in a large glazed earthenware vessel or jar, and pour over the contents one gallon of water. Stir up the contents with a stick several times during the day till

all is dissolved. Skim off any scum that rises and bottle the contents in a bottle or jar, and keep well corked. A small tablespoonful of this to each quart of drinking-water, or two ounces to each gallon can when watering a flock is about the correct dose. It acts as a general tonic, and is valuable when birds are seedy in hot weather or during moult. Though the moult cannot be called a disease, it is a great strain on a fowl's system, and the iron helps them. The acid keeps the iron in solution better. It should, however, be placed in an earthenware vessel for the fowls to drink, and not in iron or zinc vessels.

For the moult a great assistance is also given by adding, on fine mornings, a tablespoonful of flowers of sulphur to the soft food of about a dozen fowls. It is best sprinkled on and mixed with the dry meal before scalding with water. Fowls should have a good dry shelter during moult, and the sexes should be kept separate, as otherwise the new feathers may be badly broken or damaged.

Diphtheritic Roup.—This often follows an ordinary attack of roup. Cheesy matter forms in the mouth, and collects about the windpipe, and unless attended to causes suffocation.

Cure.—The cheesy matter should be taken off with a knife, and, if in the windpipe, the quill of a feather can be used to get it out. The surface will bleed slightly. A little powdered alum placed on the parts is as good a remedy as any, and the bird should be treated as for ordinary roup. Another good remedy is to paint the mouth and affected parts with a solution made by adding one drachm of perchloride of iron to two ounces of glycerine.

I have known very bad cases cured by either the use of a camel-hair brush moistened and touched lightly with the powdered sulphate of copper, or by the use of a strong solution of the same, say half-drachm, or as much of the powder as will lie piled up on a shilling, to half-a-pint of water.

In a bad case it is better to kill the fowl, unless a valuable bird meant for exhibition, and to bury the carcase, sprinkling it with quicklime, or to burn it. The disease is very contagious, and the hands should

be cleansed before handling another bird, and all the cheesy growth should be burnt in the fire.

Gapes.—Gapes is a disease of chickenhood, and mostly affects them between the ages of one and three months.

Symptoms.—As the name implies, its chief symptom is that of the chick opening its mouth wide as a person does when gaping, only repeating it at frequent intervals.

Cause.—Its prevalence is due to a thread-like parasitic worm, which affects the windpipe and causes the chick to gasp for breath and run backwards. The worms are frequently half-an-inch or more in length. The male and female are found in the windpipe *in copula*, and when full grown the bird expectorates them. The female worm is full of eggs. If a chick eats a worm, or picks it up with its food, or eats an earthworm that has swallowed one, it becomes infected. It is evident, therefore, that the disease is very contagious, and often breaks out on the same ground year after year. I have not had a case in my yards for seventeen years. It is most commonly found in damp, dirty, and neglected places.

Cure.—When discovered, the chickens must be removed to fresh quarters. When possible, the ground should be well limed and dug deeply and re-sown with grass.

A small feather stripped all but the tip, dipped in turpentine and water, or in eucalyptus oil, and thrust down the windpipe and twisted round, will often effect a cure.

The administration of a camphor pill has also been found effective.

Care should be taken that all the worms withdrawn or expectorated should be burnt, and also the bodies of any chicks that die.

Cramp.—Cramp is a common ailment of growing stock, and is chiefly due to dampness of the soil and continuous wet weather. The birds affected walk stiffly, and the toes are often contracted.

The remedy is removal to a dry pen, and nothing is better than a bed of peat-moss or of long straw. Bathing in very warm water and rubbing with Elliman's embrocation or turpentine assists the cure. When

there is a roomy and dry scratching shed attached to the poultry house, and a perch or two placed in a sunny quarter, upon which the birds may sit, there is little trouble with cramp. It is chiefly brought about by the birds having nothing but damp places to rest upon.

Leg-weakness, Rheumatism, Gout, Liver-limp.—This occurs even in dry quarters, and is due to the birds overgrowing their strength. It is most frequent in large breeds when about four to six months old, and undergoing their final chicken moult. The drain upon the system in providing new feathers is great, and the birds recline on their hocks. They squat about, and, if disturbed, walk a few yards and then go down again. If not attended to they frequently grow up in-kneed.

Remedy.—These want nourishing food. Green bone is of great assistance, about half-an-ounce should be given twice daily, and a little Parrish's chemical food, a teaspoonful to half-a-pint of water. If the birds are well fed and supplied with bone-forming material from the first, they are rarely affected. A little flowers of sulphur added to the soft food is of great assistance when they are feathering.

Leg-weakness and lameness may be due to other causes than the strain of the chicken moult. Birds are often affected with *rheumatism* and gout. When there is *heat* in the joints with signs of pain, it is likely to be rheumatism. Elliman's embrocation is a good thing. Dampness is the main cause of it. If in addition to the heat there is swelling of the joints, and it cannot be accounted for by damp quarters, it is probably *gout*. A calomel pill is a good remedy, followed by half-a-teaspoonful of Epsom salts in the drinking-water.

Older fowls sometimes go *lame* from other causes, and go limping about. If it affects the *right* leg only, and is accompanied by a drawn, shrunken face with a yellow cast about it, it probably is due to inflammation of the liver. Such fowls usually go into an emaciated condition, and, if it happens when the strain of moulting is upon them, rarely survive. In any case they are of no use for breeding purposes, and are better killed.

Crop-bound.—When a bird is noticed to have a full

crop in the morning before breakfast, and then to have little appetite for food, it will be found on examination to be crop-bound.

The cause is commonly found to be that it has been eating long and tough grass, which has twisted itself into a ball and cannot pass through the outlet of the stomach into the gizzard. Sometimes it is due to feeding younger chicks on coarse barley-meal or ground oats, or it may be due to some large piece of grit or cinder which the bird has swallowed.

The cure is to give the patient a good drink of warm water, and so distend the crop, which should then be worked about with the hand and the mass softened. If the bird is held with its head downwards, and the crop squeezed, the liquid will often run out, and the process can be repeated. Finish by giving more water which contains a teaspoonful of Epsom salts. Place the bird in a dry pen, and in a day or two it will probably be all right.

If this does not cure it, and the fowl is a valuable one, the crop may be opened with a sharp knife or lancet. The outer skin should first be cut and then drawn downwards, and an incision made into the crop itself, so that the two cuts are not superimposed when the crop is at rest. A small orifice will suffice to insert a finger and draw the offending substance away. It should then be washed out with milk-warm water.

The crop should then be stitched with white silk, or, better still, with prepared catgut, which has previously been prepared by soaking to make it soft. The best plan is to stitch the crop first, by "interrupted sutures," *i.e.* by several separate stitches, tying each one, and cutting off the ends close, before taking another stitch, of which two or three should suffice. Then stitch the outer skin in the same way. It is well to wash the wound with a dilute solution of carbolic acid, a few drops in half-a-pint of water, and to wash the lancet in the same both before and after using. The bird should have no water to drink for twenty-four hours, and be fed moderately on soft food for a few days, when the cure should be effected. If a common bird, only fit for table, should be the sufferer, it is worth trying the experiment in order to gain practice. But when one

is proficient it is better to kill and eat the patient, and reserve one's efforts for valuable stock.

Liver Disease.—This is one of the most dreaded ailments, and sweeps away thousands of poultry every year, and especially in the autumn on the approach of moulting. It is a regular occurrence in many farmyards for 50 per cent. of the adult stock to die in this way. It is a tuberculous disease, and is contagious.

Symptoms.—The birds mope about and become thin and emaciated in appearance; the comb becomes shrivelled and is often purplish in colour; the excreta is a light yellow; the birds often limp in their walk.

The cause is primarily due to improper feeding, and the want of green food and grit. The Asiatic varieties and their descendants are more liable to it than the more active breeds.

Its direct cause is a tuberculous bacillus, which attacks the liver and the intestines, and is passed out with the excreta.

If birds had a periodical dose of the Glauber salts, etc., mixture (indicated on p. 156), it would not be so frequent. On its approach this remedy should be given, only adding *four* ounces of Epsom salts instead of two to the mixture. The birds should be removed to fresh quarters, and the worst cases *killed and burnt*, not buried or thrown on the manure-heap, as this is the surest way to spread the disease. Where it has been very prevalent, the whole place should be disinfected with Jeyes' fluid, and if it is arable land it should be dug or ploughed, and a crop grown before the birds are replaced. Earth or cindered yards should have surface soil removed, and new material put in its place.

My own losses through this disease do not exceed 1 per cent. Prevention is so much better than cure.

Avian Tuberculosis.—This is a dreadful and deadly scourge, but not, so far as I am aware, very prevalent. It first came to my notice in March of last year (1908). A Buff Orpington cockerel, having been exchanged on the railway for another, was sent to a yard where all the birds were healthy. It was kept for a time in the hope that the right bird might be sent in its place, and, although at the time of its

arrival it did not seem to be well, nothing serious was anticipated.

When my attention was called to the bird it had lost its appetite, its plumage was ruffled, and its excreta had a greenish appearance. One morning it was found dead. I was called to look at it, and found its feathers behind all covered with a greenish slime, and on opening it for examination found the intestines swollen and the smaller ones knotted together and filled with tubereulous nodules, having much the appearance of boiled peas. Its body was burnt. In a few days other birds were found to be affected in the same way, and in the course of a week several died. The disease had evidently spread through the poultryman carrying the excreta, from the small cockerel pen in which it had been detained, to other parts of the yard; or it may have been conveyed from one pen to another by rats in their search after food. The matter grew serious, and a strict look-out for symptoms was observed.

Symptoms.—In every case the symptoms were the same. The birds affected lost their appetite even for dainty morsels. The plumage was ruffled, and the bird contracted the habit of standing on one leg with its head under its wing. Sometimes the bird appeared dazed and to have a glaze over the eyes. There was a more or less rapid loss of flesh, and the evacuations at first watery and of greenish-white changed into a deep slimy green, especially noticeable under the perch on which the bird had been roosting. A dead body was sent to Professor Woodroffe Hill for examination and a report by post. It was pronounced to be "avian tuberculosis," and to be contagious and incurable. All suspicious cases were to be isolated at once, and when confirmed to be killed and burnt.

Cause.—The disease is undoubtedly caused by the presence of a bacillus, or tuberculous germ, which takes up its abode in the intestines, and often proceeds to attack the liver and spleen, all of which were found to be infected and showed the tuberculous nodules, sometimes very small and at other times as large as a pea, or grown into a larger knotted mass. The excreta of an affected bird undoubtedly contains the germs of disease, which may be carried about in various ways. It

should, therefore, be burnt as well as the body. Some authorities simply call the disease "Acute Septicæmia," as they do not consider it due to a consumptive bacillus.

The cure can be effected only by the removal of all affected birds, the careful removal of all excreta, and a thorough disinfection. Directions were given for all healthy birds to be removed to fresh quarters, and a sharp look-out for any symptoms of coloured excreta, and for any sign of mopishness. The houses and perches and drinking vessels were disinfected with creosote, and *chloride of lime* was spread over the floors of the house and runs, which were afterwards dug over. In this way the disease was stamped out. I have given these full details in the hope that the owner of any yard visited may take due precaution in time. The symptoms are clear, and the cause evident on opening and dissecting a body. No time should be lost in consulting a specialist and acting on his advice, or the loss may be great and severe. A careful inspection of the droppings under the perch may often lead to an early detection of this and other ailments. In some of its symptoms it is like liver disease, but I take it to be quite distinct, as in many cases the appearance of the liver was quite normal both in colour and size, whereas the intestines in all cases were diseased. It would appear to be akin to the disease known as "consumption of the bowels." In liver disease the birds are often very fat, and no loss of flesh appears on the breast. In avian tuberculosis there is a rapid loss of fat and flesh, and if the bird lives many weeks after the attack it becomes a living skeleton. When once the disease is diagnosed, the bird affected should be killed at once and the body burnt, as even if it should recover it would be useless for stock.

Comb Disease—White Comb.—The most common form of this disease, which is another dreaded scourge and very difficult to eradicate when introduced, is white comb or favus.

Symptoms.—White spots appear on the comb or wattles, almost as though a speck of whitewash had fallen upon it. It is a fungus growth and spreads rapidly. It frequently extends down the neck and sometimes over the body if not checked.

Its cause is due to a parasitic fungus, a fine dust like a very diminutive thistledown. The comb of a fowl is its host. A yard may be entirely free from it one week, and then, after a pugilistic encounter, the combatants' combs will be found infected. The fungus would seem to attach itself to the perches, to the exits from the house, and to mingle even in the dust bath and to float in the air.

Cure.—An affected bird should be isolated, and the comb washed with a hard brush and warm water and soap, then dried and rubbed with ointment.

A pharmaceutical preparation, "unguentum sulphuris iodidi" (iodide of sulphur ointment), is a good remedy. It should be well rubbed in. Two days afterwards it should be examined, the comb, etc., again well washed, and the treatment repeated. If the merest trace of the fungus is left on the comb, etc., it will develop again. It is better to kill a bird than run the risk of infection.

Other Comb Affections.—*Comb-pecking.*—Every fancier knows the trouble and nuisance caused by the hens pecking the cock's comb, and making it bleed. It occurs more frequently with the large combs of the Mediterranean breeds. The cock seems rather to like it than otherwise, and stands still for the hens to do it. It not only spoils the appearance of the bird, but renders him useless for breeding purposes. If allowed to go on the cock sickens, the comb shrivels, and a sort of blood-poisoning seems to follow. In this case the only cure is to dub the bird. If taken in time there are various remedies. (1) Anoint the comb with a mixture of vaseline and bitter aloes, the bitter taste of which often acts as a deterrent. (2) Remove the hen or cut the beak to the quick. (3) Remove the cock and replace by a dubbed bird, and attend to his comb. Paint with friar's balsam, or use carbolized vaseline. If he is the only cock bird available it may be worth while to make a cap for the comb and tie it on until the wound is healed. It is most commonly done in frosty weather, or in the early and cold part of the breeding season, when the birds stand listlessly about. Scratching-shed exercise is a preventive, and a little flesh food, and underfeeding making the birds take more exercise. A sprinkling of

salt on the soft food has been found useful, or one ounce added to the hot water with which the food for 50 fowls is mixed. Many a breeding season has been ruined by this nuisance, and no care and watchfulness are too great to prevent it. Dubbing is the safest remedy, and most successful breeders adopt this course.

Wounds in the comb or wattles. The result of a battle often leaves torn comb and wattles, or it is sometimes caused by wire netting, etc. The wounds should be washed at once, and touched with friar's balsam, and stitched up. A surgeon's needle and some carbolized catgut are the best instruments. The wounds in the combs should be stitched on *either* side, and not through the comb, and where stitches are necessary, single stitches tied separately, *i. e.* "interrupted sutures," are the best. First apply friar's balsam, and then treat with carbolized vaseline.

Comb over.—When the comb is weak, or when it goes over during the moult, it is well to support the comb erect by means of a comb-guard. These are advertised in all poultry journals. The best are made of wire covered by a thin tube of india-rubber. When ordering state the size of the comb and the breed of the bird. Measure the comb from the beak to the back of the head or the under-side of the comb, and state the depth of the comb in the centre from the top of the spike to the bottom of the blade. The cost is about one shilling. After seeing a good pattern you may make your own of stout zinc wire and wrap it with worsted. The guard should be tied on in front of the beak under the loose part of the comb on the top of the beak, or it may be tied by a piece of fine wire, or tough string passed under the upper mandible. It may be necessary for the first day to tie the legs of the bird to prevent him from scratching it off. A stout soft cord tied on the leg, below the spur on both legs, allowing about six inches of cord between the legs, will allow the bird to walk but not to raise the foot to scratch. After the first day he will probably grow accustomed to it and the string may be removed.

Canker is another form of comb disease. It usually begins at the front of the comb near the nostrils.

This is a soft, raised, ugly sore, covered with a scab and filled with pus.

Powdered alum well rubbed in often effects a cure in a few days. The patient should have a dose of Epsom salts—a teaspoonful in its drinking-water.

Fowl Cholera (Enteritis) is a very fatal disease, and is quick in its action. The fowls appear well one day and are dead the next. I have known farms nearly depleted from this cause, but have myself never had a case except in little chickens.

Symptoms.—The fowls are exceedingly thirsty, the excreta is at first greenish, and then thin and white, and adheres to the feathers.

The cause is undoubtedly due to a cholera bacillus, which is evacuated, and is most contagious.

The remedy lies in isolation and removal of unaffected birds to fresh pens. "Liquor ferri perchloridi fort" or "steel drops" is a good antiseptic remedy, and in the case of young chicks often stops the infection. A teaspoonful to a quart of water is strong enough for adults, and half the quantity for chickens. There is no hope for a pen of birds unless they are transferred to fresh ground, and the affected birds killed, removed, and burnt. The excreta should be gathered and burnt also, and the earth covered with lime. Happily this disease is not common, though when it appears it often sweeps over a wide area.

Muco-enteritis.—Another kindred ailment affecting young chickens.

Symptoms.—Loss of appetite, listlessness, ruffled plumage, great thirst, staggering gait.

Cause.—The chief cause is impure drinking-water; and as it occurs most frequently in hot weather, I consider the chief cause is sun-warmed water. If the vessel is allowed to get covered with green slime there is something which sets up irritation in the intestines and rapidly produces death. It is *not contagious;* and I have known cases in which simply placing the water in the shade, seeing to its frequent change, together with the strictest cleanliness, has saved the remnant of the flock, although reared in the same place and under the same conditions.

Cure.—A little permanganate of potash in the

drinking-water (as much as would lie on a threepenny-bit to a gallon of water) is a great preventive. And in cases where it has been in regular use I have not known of any attack.

Bumble-foot is a swelling of the ball of the foot, which often produces lameness.

The cause.—It is most frequently caused by the fowl having perches too high and jumping or falling off upon a hard floor. This is aggravated if the floor is spread with ashes and cinders from the hearth, portions of which are often embedded in the skin.

Treatment.—Remove high perches. Bathe the foot in warm water. If there be much swelling, paint with tincture of iodine by means of a brush or feather, and repeat alternate days. If the swelling does not go down it may be necessary to lance it and take out the offending matter, which will often be found hard. It is necessary sometimes to poultice it when it is soft and sore, and then lance and bathe. Carbolized ointment should be applied afterwards, and the foot bound up with narrow bandages to keep out the dirt. It is oftener due to carelessness than anything else. If treated early it is easily cured.

Scaly Leg.—This is another disease chiefly due to wet and dirt, and is most common among feather-legged and slow-moving fowls. It is due to a minute parasite which breeds under the scales of a fowl's leg, and, if neglected, the scales are raised and present altogether a leprous appearance. At first it appears like a fine yellow dust upon the back of the shanks and at the edge of the scales. It is contagious. One of the commonest ways of spreading the disease is to allow a hen with scaly legs to brood and bring up chickens, as the chicks are sure to contract it. It is also probably spread largely from the perch on which an affected bird roosts.

The cure is effected easily if taken in time. The best remedy is to wash the bird's legs with warm water and soap, scrubbing off the offending substance, and then anointing with sulphur ointment. This should be washed off in a day or two, and the treatment repeated. Except in severe cases, two or three dressings will cure.

An easier but less successful cure is to apply petroleum

and rub it well in. Perhaps the most rapid cure is made by washing the legs with petroleum first and then while the leg is still moist to rub in the sulphur ointment.

Iodide of sulphur ointment is another excellent remedy, but is only safe to apply to black or dark-legged birds, as it may stain them between the scales.

If it is intended to exhibit a bird thus treated, care should be taken to wash the legs quite clean before sending to the show.

Feather-eating is more of a nasty habit than a disease, but it is ruinous to a fancier's yards, and nothing is more unsightly than to see half-a-dozen hens in a pen with the feathers stripped off the neck and breast.

Causes are many. It is most commonly found in confined runs where the birds have little to do, especially if there is no dust bath and scratching shed. It is sometimes caused by the irritation of insect pests. (See Chap. V, note on *Depluming Scabies*.)

It is sometimes found that one hen is the cause of all the mischief. The offender should be caught and the upper beak cut with a sharp knife till it is tender and signs of bleeding appear. This makes it tender, and while not preventing the bird from picking up its food, will not allow the beak to close upon a feather. *If* not cut too far, only the horny substance being removed, the beak will grow again.

It is most commonly done in the autumn, when the new feathers are coming. The hen relishes the soft portion of the quill. It is a craving for flesh food. If a little meat is given the habit often ceases, and the same result is noticeable if a supply of fresh green food is given, and a little salt added to the food. Over-fed fowls are most prone to it, especially where the food is too starchy. A little sulphur in the food is also a remedial measure, especially in the autumn.

Egg-eating.—Fowls often get into the habit of breaking the eggs in the nest. Every trace is eaten up, and often when birds are supposed not to be laying they are eating them. It is often begun through a hen laying a shell-less egg, or by one being broken in the nest. *Any* fowl will eat an egg if it is broken and thrown down for it to eat.

It is sometimes difficult to cure. The best remedy I know is to empty an egg by blowing out the contents, and then through the larger hole at one end of it, fill with egg and bread-crumbs and pour over or saturate it with spirits of ammonia. If the egg is placed in the nest the birds will rush for it, but a single peck is often enough. I have known inveterate egg-eaters thus cured.

If the hen addicted to the habit is not a valuable one it is better to remove her from the pen, or kill and eat her. If valuable, and the eggs are wanted for hatching, and the treatment already described does not cure her, cut the beak to the quick as directed for feather-eaters.

Egg-bound.—It is no uncommon occurrence for a hen or pullet to become egg-bound and unable to lay. A common cause is the hen having become too fat during a prolonged moult and the rest following it.

Symptoms.—Frequent visits to the nest and coming off again without laying. Swelling and inflammation round the vent, or more serious still the protrusion of the egg-passage. If the hen is not valuable it is better to kill and eat, as the ailment is very liable to recur after a cure.

Cure.—If desired to cure, take the bird and push the protrusion into its place with the finger, taking care that the hand is clean and the nail well pared, then with the finger try and find the egg. If the egg is soft break it and take away the skin. If hard it may sometimes be gently forced down. If not it should be broken and all traces of shell removed. The inflamed parts need an astringent to reduce the swelling. For this purpose a little alum and water poured into the vent or injected with a syringe is as good and simple as any.

The bird should be sparingly fed on simple food, and half-a-teaspoonful of bromide of potassium added to a pint of its drinking-water. This would help to retard the laying and so hasten the cure.

CHAPTER X

MENDELISM AND THE LAWS OF HEREDITY

"Close observers of the relation between successive generations of mankind, or of plants and animals, are at one in recording two distinct impressions—on the one hand, of persistent hereditary resemblance; on the other, of variability" (Professor J. A. Thompson).

I desire, in the following pages, to bring before my readers some of the mysterious laws of "Heredity" upon which light has been thrown by modern scientists, but more especially to direct their attention to the sources from which this knowledge may be gathered, so that they may wander themselves into these delightful and mysterious fields of suggestion and of information.

Professor J. A. Thompson, to whose recent work on "Heredity" I am much indebted, says: "What has been achieved in the past in regard to horses and cattle, pigeons and poultry . . . by experimental cleverness and infinite patience, may be surpassed in the future if breeders and cultivators can attain to a better understanding of the more or less obscure laws of inheritance on which all their results depend" (p. 3).

That much has been done within the memory of many living fanciers to add to the beauty of some of our ancient breeds of poultry, as well as in the introduction of many of the most popular varieties within the last twenty or thirty years, none will deny. And this improvement has not been confined to the external characteristics such as type, size, and plumage, but has affected the internal characteristics also, since it is probable that never before in the history of poultrydom have our egg-baskets been so well filled.

But as Mr. R. C. Punnett says, in his most concise and

useful little book on Mendelism: "Since the principles of heredity form the very basis of the breeder's operations, anything which throws new light on these hitherto obscure matters must largely influence an important industry. From the little that has been already found out, the breeder is enabled to proceed with some degree of certainty. Till now his methods have been almost entirely empirical and in a great measure wasteful. He has bred together those that seemed most likely to produce what he required. From their numerous offspring he has selected those few that seemed to come nearest to those he wanted. The rest, and these the great majority, must be rejected. Many be called, but few chosen. True, the end aimed at, fixation, is eventually attained. But its accomplishment entails much unnecessary waste by the way. Mendel's discovery must react strongly upon these methods. As soon as he recognizes the definiteness of his problems, as soon as he realizes the conception of *unit characters*, the breeder will reach his end more swiftly, with greater economy of time and material. Few individuals, comparatively, will suffice for his preliminary process of analysis, and when this has been done he may pass to greater numbers with a feeling of certainty as to the result. He will know with what he is dealing. The possession of a transmissible character, desirable or otherwise, is no longer a question merely of degree. Either the individual has or has it not. Either it is represented in the 'gametes' or it is not. Once its presence or absence has been determined by analysis the line can be definitely drawn. The breeder may proceed to build up synthetically, character by character, the plant or animal he requires. His chief limitations will be those imposed by Nature upon the variation of living forms. These he will learn by simple observation and experience, thereby saving time and labour in futile attempts to achieve the impossible. For he will have read the riddle of the Blue Andalusian fowl" (pp. 77–8).

I have given this long extract in the words of one of the foremost workers in the field, in order to show what may be expected by the patient and intelligent worker and observer. Patient endeavour, careful obser-

vation and correct records of results will still be necessary for success. But greater things can be aimed at, and in many cases more speedily gained and more certainly fixed. The new theories will be found not to displace but to direct the old, and the interest in achieving results, which has been one of the main compensations of the true fancier in the past, will be heightened and intensified in the future. Many a riddle of the poultry race will be solved, though new vistas will be opened, leading to still undiscovered lands, where many problems will arise for solution. The fancier will proceed step by step towards his goal, fixing one point at a time, and he will work not by the clumsy and haphazard method of mating a "pen" of a given number of fowls, and then selecting the best-looking of the progeny regardless of their parentage, but by noting the results of *individual* matings, through the use of "trap" nests, or by careful observation of each bird in the pen. He will be guided not so much by external characteristics as by the knowledge of the hereditary prepotency of each bird in his flock. And though this method will be toilsome and troublesome to begin with, he will be assured that each step taken is something gained. The poultry fancier will learn to value "pedigree" as he has never done before, and while he envies the accurate records of the stud-books available for dogs and cattle, he will speedily establish one for his own use among his birds. Nature will often appear capricious in her moods, but he will learn that she acts only in accordance with definite laws, and, moreover, that she holds out the key for him to unlock her secret chambers if he has but the patience to search and the intelligence to grasp it.

In the quotation given above from Mr Punnett's book on "Mendelism," he states: "Till now the (breeder's) method has been almost entirely empirical." And "Mendel's discovery must react strongly upon these methods." It is to Mendel's law that I now direct my readers' attention. Its discovery is of such importance that Mr. Bateson says: "The experiments which led to this advance of knowledge are worthy to rank with those that laid the foundation of the atomic theory of chemistry."

The prevailing idea of the law of heredity before this discovery was that Nature produced her various changes by the slow accumulation of minute differences. The present has been evolved from the past, by gradual and almost imperceptible changes. Readers of Darwin will be familiar with such sentences as these: "As natural selection acts solely by accumulating slight, successive, favourable variations it cannot produce great or sudden modifications, it can only act by short and slow steps." Hence the canon of "Natura non facit saltum" [Nature never takes a leap], which every fresh addition to our knowledge only confirms. Darwin collected a great mass of evidence in support of his statements, and since the publication of this theory in 1859, and the facts brought out in his *Variation of Animals and Plants under Domestication* in 1868, comparatively little has been done. The glamour of his name seems to have cast a spell over other investigators, who have been content to arrange and rearrange the same facts.

Variations which accumulate slowly are called by Mr. Bateson, in *Materials for the Study of Variation*, 1894, pp. 13–5, "Continuous variation," and those which appear suddenly, as by leaps and bounds, "Discontinuous." In his own words: "In proportion as the transition from term to term is minimal and imperceptible, we may speak of the series as being *Continuous*, while in proportion, as there appear in it lacunæ, filled by no transitional form, we may describe it as *Discontinuous*. The several possibilities may be stated somewhat as follows. The series may be wholly continuous; on the other hand, it may be sometimes continuous and sometimes discontinuous; we know, however, by common knowledge that it is never wholly discontinuous." And later (p. 16): "*Variation* has been supposed to be always continuous, and to proceed by minute steps, because changes of this kind are so common in variation. Hence it has been inferred that the mode of variation thus commonly observed is universal. That this inference is a wrong one the facts will show."

It is noteworthy that Mr. Bateson, who has done so

much to familiarize English readers with Mendel's discovery, as to the great part played by discontinuous variation in the evolutionary process of nature, should have been already at work for some years in the same direction. His work referred to above on "Variation" was published in 1894, while Mendel's discovery did not attract general attention till 1901, though it had been originally published in 1865, but had lain unnoticed for thirty-five years, possibly because of the greater attraction of Darwin's works, published in 1859 and 1868.

George Mendel was an Austrian monk, born in 1822. He entered a religious house at Brünn, 1843, and was ordained priest in 1847. Subsequently he studied the Natural Sciences in Vienna (1851–3), became interested in the problems of hybridization, and on his return to the cloister of Brünn commenced his classic experiment on the eating pea (*Pisum sativum*). The results appeared in the *Proceedings of the Natural History Society of Brunn*, under the title "Experiments in Plant Hybridization" (1865). He died of Bright's disease in 1884, at the age of 61. For a detailed biographical notice, readers are referred to a chapter in the end of Mr. Bateson's *Mendel's Principles of Heredity*.

Mendel's Law.—What, then, is Mendel's Law? It is chiefly concerned with the fertilization of cross-bred organisms.

"Mendel states that, like other investigators, he had been struck by the regularity with which offspring of certain hybrids reproduce the pure ancestral forms. But owing, as he supposes, to the complex nature of the cases studied, and to want of accurate statistics, the precise facts had never been ascertained. Accordingly he set himself to work out some cases from which every confusing element should as far as possible be excluded" (Page 7, *Report I to Evolution Committee*, 1902).

For this purpose he chose several varieties of a pea (*Pisum sativum*) as best suited to his purpose. In this plant the separate flowers are habitually *self-fertilizing*, and are protected from insect interference. There are

numerous varieties of the eating pea having distinct characters which breed true. In some varieties the seed is yellow, in others it is green. In some varieties the peas are smooth and round when ripe, in others wrinkled. Some peas, again, when grown under ordinary conditions attain to a height of 6 or 7 feet, whilst others are dwarfs which do not grow to more than 18 inches or 2 feet. Other varieties differed in the shape of the pod, or in the colour of the unripe pod, or in the position of the flower.

He thus chose pairs of varieties for crossing in such a way that the members of each pair differed from each other in respect of one definite character. Between these various pairs of varieties crosses were then made, the female parent being emasculated. Thus pollen from a pea of the round-seeded variety was transferred to the stigma of a pea of the angular-seeded variety, the stamens of the artificially pollenated flower being removed before they were ripe. The same was done in all the varieties named. In the experiment referred to above the result was seen as soon as the cross-fertilized seed was ripe. It was found that *all* the seed was round, none angular or wrinkled. With the other experiments it was necessary to plant the ripe seeds and grow the plants to maturity. On such examination it was found that in the case of each pair of characters *only one was manifested* in the cross-bred individual, to the total, or almost total, exclusion of the opposite character.

The character which thus prevails Mendel calls *Dominant* (D); the character which is suppressed being *Recessive* (R).

Reciprocal crosses gave identical results, *i.e.* the result was the same whether the pollen was taken from an angular pea or from a rounded one, or whether taken from the flower of a tall plant or a dwarf. Briefly, then, D × R or R × D gave offspring which, in appearance, were all practically D.

The next generation is obtained by allowing the cross-bred plants to fertilize themselves. The result of such self-fertilization is, according to Mendel, that the next generation instead of being uniform like their

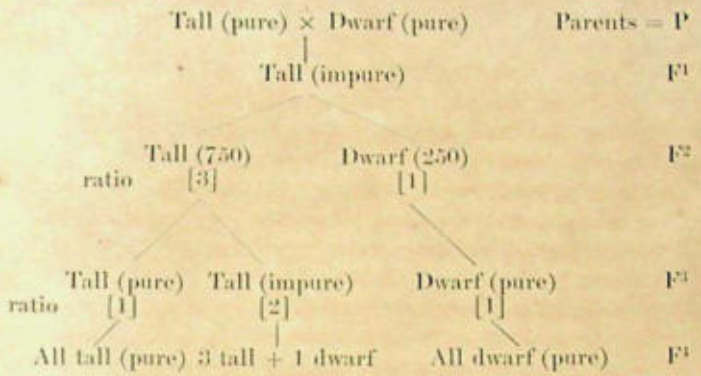
cross-bred parents break up into the two original forms. This takes place in such a way that there are, *on the average*, **three dominants to one recessive.**

Take as an example the cross between the tall and the dwarf pea. It is of no consequence which is used as the male or pollen-producing plant, and which the female, the result is the same. When the cross-bred seeds were sown *all* the plants grew tall; there were no dwarfs and no intermediates. When the seeds from these tall plants were sown in the following year, it was found that both tall and dwarf plants were produced in the ratio of 3 : 1. There were no intermediates. In one series of experiments Mendel obtained 1064 plants, of which 787 were tall and 277 dwarfs, *i. e.* the tall plants were about three times as numerous as the dwarf in the second generation. The tall plants were dominant (D), and the dwarfs recessive (R). [For convenience of reference the parent plants are called P, the hybrids or first-cross F^1 (= 1st filial generation), and the succeeding generations F^2, F^3, and so on.]

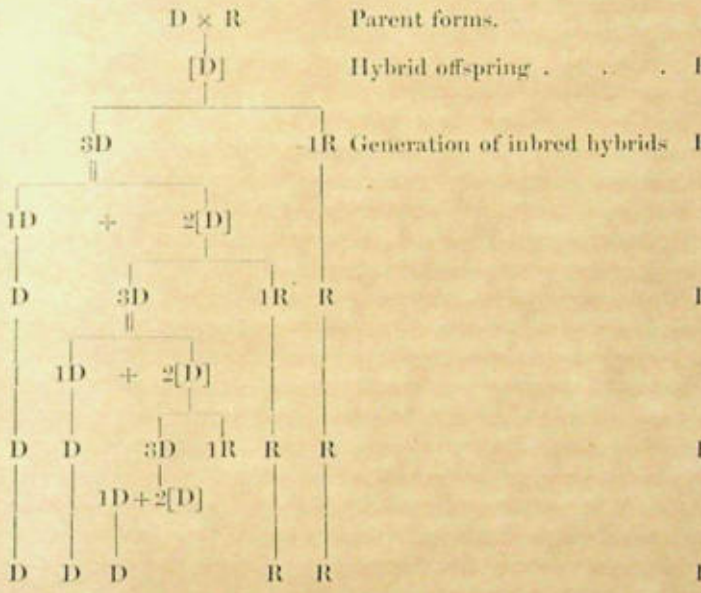
In the following year the seed of this F^2 generation were sown. From the seed of the dwarf *only* dwarf plants came. The recessives bred true to type, and, what is more, continued to breed true through any number of generations. The recessives are, therefore, not only apparently but *actually pure*, showing no taint of the cross so far as the contrasted pair of characters is concerned, *i. e.* the recessive was all R, and no sign of D.

The tall plants, however, though all *apparently* pure D, were not all pure. Briefly, one-third of them produced seed which again gave rise to tall plants only, but two-thirds of them formed seed from which sprang both talls and dwarfs in the proportion of 3 : 1.

The tall plants of the F^2 generation were, therefore, of two kinds, those which carried *only* the tall character, and those which carried both the tall and the dwarf. By breeding subsequent generations Mendel found that the pure dominants and the pure recessives always bred true like their original parents (P), while the impure dominants bred dominants and recessives in the constant of 3 : 1.



If we denote the pure dominant by D, and the impure dominant (which cannot usually be distinguished in appearance from the pure) by [D], and the recessive by R, we may construct the following scheme of inheritance—



It will be noted that the 3D in the F^2 generation = 1D pure and 2[D] impure. The 3D's resembling the dominant parent are all apparently alike, but their

subsequent history shows that they may be divided into a set which breed true dominant type, and another set which behave like the first generation of hybrids, F^1; that is, they go on splitting up into dominant-like forms and pure recessives.

Mendel himself verified this principle of dominance for several characters of *pisum*, finding not only

Tallness dominant over Dwarfness, but
Round seeds dominant over Wrinkled seeds,
Coloured seed coats dominant over White seed coats,
Yellow seed colour dominant over Green seed colour,
Purple flowers dominant over White flowers.

Within the last few years the validity of the principle has been extended to numerous differentiating characters, both structural and physiological, in animals as well as plants. To take but a few instances—

In *mice* the coloured coat is dominant over the white;

In *poultry* the rose-comb, as in Hamburgh, Wyandotte, etc., is dominant over the single-comb, as in Minorca, Leghorn;

In *cattle*, polled cattle are dominant over horned cattle.

So far we have considered only the phenomenon enunciated by Mendel, and borne out by further experiments, of the dominance of one of a pair of characteristics over the other. Mendel interprets his facts as follows: They point to the conclusion that in the cross-bred each of its pollen grains (or sperm-cells), and each of the egg-cells, is either pure dominant or pure recessive, *and that on the average there are equal numbers of each kind for each sex.*

The Inheritance is usually carried by the Germ-cells.—"What was for so long quite hidden from inquiring minds, or but dimly discerned by the few, is now one of the most marvellous of biological commonplaces—that the individual life of the great majority of plants and animals begins in the union of two minute elements—the sperm-cell (the male) and the egg-cell (the female).

"These microscopic individualities unite to form a new individuality, a potential offspring, which will by and by develop into a creature, like to and yet different from its parent. If we mean by inheritance

to include all the living creature is or has to start with in virtue of its genetic relation to its parents and ancestors then it is plain that the physical basis of inheritance is in the fertilized ovum" (Prof. Thompson, p. 26).

Such cells, both male and female, are called *gametes*,[1] and the cell formed by the fusion of a male with a female gamete is called a *zygote*.[2] When two gametes both bearing the same character meet together in the zygote (*e. g.* both bearing the tall character in the pea), such a zygote is known as a *homozygote*. When the gametes are dissimilar (*e. g.* one bearing the character of tallness and the other of dwarfness) such a zygote is called a *heterozygote*. The heterozygote often bears the form of the pure dominant, from which it can only be distinguished by the test of breeding.

That the heterozygote also carries the recessive character is proved, as we have seen, by the fact that when such heterozygotes are inbred together one-fourth of the offspring are recessive. It is only in this way that we can distinguish between the pure tall pea and the tall which bears the dwarf characters; or, in poultry, between the pure rose-comb and the rose-comb which carries also the single-comb.

When, *e. g.*, a pair of rose-combed Wyandottes or Hamburghs throw a proportion of single-combed offspring, one or both of the pair are heterozygote. Similarly, if one of the pairs is a rose-combed fowl and the other a single-comb, if all the offspring are rose-combed the rose-comb is pure or homozygote; if any are single, it is heterozygote, since, if pure, the rose-comb would dominate, and all the progeny be rose-combed.

Homozygote bred with Heterozygote.—It has already been shown that when hybrids of the F^1 generation are bred together the proportionate result is 1D + 2DR + 1R, where D = dominance, R = recessive, and DR heterozygotes bearing both unit characters.

The breeder, however, frequently wishes, not to

[1] *Gamete*, for Greek γαμέω, to marry. Cf. the word "Polygamy."

[2] *Zygote*, for Greek ζυγόν, a yoke; anything which joins two bodies together.

continue breeding together the heterozygotes DR, but to mate these back to one of the pure-bred parents, which are homozygotes. Where the characters are truly Mendelian he can easily calculate beforehand the result of such mating. Thus, if he mate the cross-bred DR with the dominant D the result will be equal numbers of DD and DR, or if he mate DR with R the result will be equal numbers of RR and DR. In one case the result is that, on an average, half the progeny are pure-bred, *i. e.* homozygotes, for the recessive or the dominant character; and when either the recessives or the dominants are inbred they will breed true. Experiments like these prove that what is known as the *theory of gametic segregation* is true.

Monohybridism and Dihybridism.—So far we have only considered crosses in which the mated pairs differed only in a single pair of characters. Such crosses are known as cases of *Monohybridism*. Where the original parents differ in *two* pairs of characters the case is termed one of *Dihybridism*.

Take the case of a cross between the rose-combed Black Hamburgh and the single-combed White Leghorn. In this case the rose-comb is dominant over the single-comb and the white plumage is dominant over the black.

Let the rose-comb be represented by R, dominant.
Let the single-comb be represented by *s*, recessive.
Let the white plumage be represented by W, dominant.
Let the black plumage be represented by *b*, recessive.

Then $Rs \times Rs = RR + 2Rs + ss$,
and $Wb \times Wb = WW + 2Wb + bb$,

i. e. when two hybrids are mated together the resulting progeny (on the average) is *one* like the dominant parent, *one* like the recessive and *two* with the qualities of both the dominant and the recessive, *i. e.* in mating a white fowl with a black fowl (in cases where the white is dominant), the result will be one pure white (W), which will continue to breed white; one pure black (*b*), which will continue to breed black; and two white fowls, which carry black as a dominant or recessive quality. These two are hybrids, which will breed the same as their parents.

What is true of white plumage applies to the rose-comb.

Dihybridism.—In the cross between the Black rose-combed Hamburgh and the White single-combed Leghorn we have a case of dihybridism. The average result of such mating will be shown by the algebraic formula

$$(RR + 2Rs + ss) \times (WW + 2Wb + bb)$$

In working out this simple formula we may place the symbols multiplied, in any order, thus WR, which expresses the dominance of white plumage and rose-comb, is equally correct if put down as RW. If I wish to express the white plumage I put the W first, and the result is—

WWRR	W*b*RR	W*b*R*s*	*bb*RR
WWR*s*	W*b*RR	W*b*R*s*	*bb*R*s*
WWR*s*	W*bss*	W*b*R*s*	*bb*R*s*
WW*ss*	W*bss*	W*b*R*s*	*bbss*

This shows that out of every 16 of the progeny there will be on the average 12 chickens with white plumage and 4 with black, *i. e.* 3 white to 1 black. It also shows that of the 12 whites 4 will be pure, since each gamete is pure (WW), and 8, though white because white is dominant, will carry black as a recessive (W*b*). By the same table of symbols I find there are 12 rose-combs, as R is present in 12 cases, but only 4 pure, where (RR) occurs, and 8 impure (R*s*), and that there are 4 pure single-combs (*ss*).

If I tabulate for rose-combs it appears more simple as—

RRWW	R*s*WW	R*s*W*b*	*ss*WW
RRW*b*	R*s*WW	R*s*W*b*	*ss*W*b*
RRW*b*	R*sbb*	R*s*W*b*	*ss*W*b*
RR*bb*	R*sbb*	R*s*W*b*	*ssbb*

The tables show me that I get 3 rose-combs to 1 single-comb, 3 whites to 1 black, and that taking both pairs of characters together there will be out of every 16 chickens 9 rose-combed whites, 3 rose-combed blacks; 3 single-combed whites, and 1 single-combed black.

A glance at the table will show me the proportion of chickens which will breed true, viz. those which are homozygous for *both* pairs of characters, *e. g.* RRWW will breed pure rose-combed whites, and RR*bb* will breed pure rose-combed blacks, *ss*WW will breed pure

single-combed whites, and *ssbb* will breed pure single-combed blacks.

If the 9 rose-combed whites are taken to breed together, on the average only 1 will breed true, designated above RRWW, 2 will throw a proportion of single-combed whites (R*s*WW), 2 will throw also rose-combed blacks (RRW*b*), while the other 4 will throw both single-combed whites and single-combed blacks (R*s*W*b*), as well as rose-combs of both colours.

The awkward part for the breeder is that he is not able, with present knowledge, to tell which will breed true, from outward appearance, but has to test his breeders in these cases by actual experiments, except in the cases above mentioned, for he knows, *e. g.*, that the single-combed black will breed true.

These results may be tabulated as below, showing both the outward appearance and the breeding qualities of each chicken, taking the first of the above lists in order—

NO.	SYMBOL	OUTWARD APPEARANCE		BREEDING QUALITIES
		COLOUR	COMB	
1	*WWRR	White	Rose	Will breed white rose-combs with no taint of cross. A new variety
2	W&RR	White	Rose	Will breed { pure white rose-comb
3	W&RR			" " { pure black rose-comb
				" " { impure white, heterozygotes like parents
4	*WW*ss*	White	Single	Will breed white single-combs only, with no taint of cross
5	W&R*s*	White	Rose	These organisms having both pairs of characteristics are dihybrids like the parent stock, and will breed as represented in this table
6	W&R*s*			
7	W&R*s*			
8	W&R*s*			
9	WWR*s*	White	Rose	These will breed white rose-combs and white single-combs in the proportion of 1 rose-comb white pure, 1 single-comb white pure, and 2 rose-comb white heterozygotes like their parents (WR*s*)
10	WWR*s*			
11	W*ss*	White	Single	These will breed white single-combs and black single-combs, viz. 1 single-comb white pure + 1 single-comb black pure + 2 single-comb impure whites, represented by formula $sW + 2sWb + sb$
12	W*ss*			
13	*bb*R*s*	Black	Rose	These black rose-combs will breed in the proportion of 1 black rose-comb pure + 1 black single-comb pure and 2 impure single rose-comb blacks = $bR + 2bRs + bs$
14	*bb*R*s*			
15	**bb*RR	Black	Rose	Pure black rose-comb with no taint of cross
16	**bbss*	Black	Single	Pure black single-comb with no taint of cross. A new variety

* Those marked * are pure for both characters.

The example of the Black rose-combed Hamburgh with the single-combed White Leghorn has been worked out in such detail to show the nature of Mendel's discovery of the law of **Gametic Segregation.**

It appears to me one of the most marvellous of the discoveries of science that by means of this law the breeder should be able to predict beforehand the result of mating his stock. He may take a pair of these cross-bred fowls, both white plumage and rose-combs, and knowing their pedigree, *i. e.* their gametic heritage, can tell the number of rose-combs and single-combs of white plumage or black plumage which he will get. The gain to the breeder is enormous. Although the parents were heterozygous (*i. e.* in common parlance mongrels), he gets four birds out of the sixteen, one-fourth of the group, which will breed true, viz. the rose-combed white (WWRR), the single-combed white (WW*ss*), the rose-combed black (*bb*RR), and the single-combed black (*bbss*), and that of these four two of them, the (WWRR) and the (*bbss*), are *new forms*, new varieties, proof of the theory of Discontinuous Variation. These are marked with an * in the tabulated list.

Mendel's Theory summarized.—"Mendel discovered an important set of facts, and he also suggested a theoretical interpretation—the theory of gametic segregation. As Mr. Bateson says: 'The essential part of the discovery is the evidence that the germ-cells or gametes produced by cross-bred organisms may in respect of given characters be of the pure paternal type, and consequently incapable of transmitting the opposite character; that when such pure similar gametes of opposite sexes are united in fertilization, the individuals so formed and their posterity are free from all taint of the cross; that there may be, in short, perfect or almost perfect discontinuity between these germs in respect of one of each pair of opposite characters'" (Professor Thompson, *Heredity*, p. 347).

"The essential feature of Mendel's discovery is the segregation in the gametes of the factors corresponding to the dominant and the recessive characters" (R. C. Punnett, *Mendelism*, p. 30).

"The breeding pen is to us what the test tube is to

single-combed whites, and *ssbb* will breed pure single-combed blacks.

If the 9 rose-combed whites are taken to breed together, on the average only 1 will breed true, designated above RRWW, 2 will throw a proportion of single-combed whites (R*s*WW), 2 will throw also rose-combed blacks (RRW*b*), while the other 4 will throw both single-combed whites and single-combed blacks (R*s*W*b*), as well as rose-combs of both colours.

The awkward part for the breeder is that he is not able, with present knowledge, to tell which will breed true, from outward appearance, but has to test his breeders in these cases by actual experiments, except in the cases above mentioned, for he knows, *e. g.*, that the single-combed black will breed true.

These results may be tabulated as below, showing both the outward appearance and the breeding qualities of each chicken, taking the first of the above lists in order—

NO.	SYMBOL	OUTWARD APPEARANCE		BREEDING QUALITIES
		COLOUR	COMB	
1	*WWRR	White	Rose	Will breed white rose-combs with no taint of cross. A new variety
2	W*s*RR	White	Rose	Will breed ¼ pure white rose-comb
3	W*s*RR			,, ,, ¼ pure black rose-comb
				,, ,, ½ impure white, heterozygotes like parents
4	*WW*ss*	White	Single	Will breed white single-combs only, with no taint of cross
5	W*s*R*s*	White	Rose	These organisms having both pairs of characteristics are dihybrids like the parent stock, and will breed as represented in this table
6	W*s*R*s*			
7	W*s*R*s*			
8	W*s*R*s*			
9	WWR*s*	White	Rose	These will breed white rose-combs and white single-combs in the proportion of 1 rose-comb white pure, 1 single-comb white pure, and 2 rose-comb white heterozygotes like their parents (WR*s*)
10	WWR*s*			
11	W*s*s	White	Single	These will breed white single-combs and black single-combs, viz. 1 single-comb white pure + 1 single-comb black pure + 2 single-comb impure whites, represented by formula $sW + 2sWb + sb$
12	W*s*s			
13	*bb*R*s*	Black	Rose	These black rose-combs will breed in the proportion of 1 black rose-comb pure + 1 black single-comb pure and 2 impure single rose-comb blacks = $bR + 2bRs + bs$
14	*bb*R*s*			
15	*bbRR	Black	Rose	Pure black rose-comb with no taint of cross
16	**bbss*	Black	Single	Pure black single-comb with no taint of cross. A new variety

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"The essential feature of Mendel's discovery is the segregation in the gametes of the factors corresponding to the dominant and the recessive characters" (R. C. Punnett, *Mendelism*, p. 30).

"The breeding pen is to us what the test tube is to

the chemist, an instrument whereby we examine the nature of our organisms and determine their genetic properties" (Bateson).

This principle of gametic segregation and the modes of its action in the breeding pen I have endeavoured to point out in the tabulated list.

Each group of symbols represents a number of characteristics, sometimes containing both units of pairs of characteristics, *e.g.* W*b*R*s* represents that the fowl in question has the gametes for white plumage and black plumage, for rose-comb and single-comb, and possesses them *in equal numbers*.

In the sperm-cell or egg-cell which it imparts it may give off a gamete representing white plumage (W) or a gamete representing black plumage (*b*), but not both at the same time, *i. e.* not a gamete representing half white and half black. The gametes are distinct units. They are segregated, *i. e.* divided, separated, one from the other. What is true of colour applies in the same way to the comb, and also to other Mendelian characteristics, if present. As an illustration, it may be said that they lie side by side like the numerous sections or "quarters" in an orange, each contained in its own envelope, while the cell-like fruit within the segment may represent as many distinct units of pairs of characters, one unit of many pairs, but not the two distinct characteristics of any pair.

How this segregation of the gametes, which represent the dominant and recessive characters, takes place in the organism is at present unknown, though it is not improbable that the further studies and researches of embryologists may discover it.

What is important is the fact, proved by abundant experiment, that these two "potential unit characters" do segregate, and that the adult organism cannot have both. "Intermediate forms or blends do not occur in Mendelian phenomena."

In describing the ratio of their transmission by hybrid organisms, the expression "*on the average*" has to be used. There is no proof that they are given off alternately, though it is assumed that they are present in equal numbers. It is not to be taken as proved that the group of sixteen inheritances I have given will be

present in the exact order in each sixteen of the offspring, though if the number be multiplied by ten it would be found that they would be very near the numbers given.

Chance Fertilization.—It is much the same as in a game of chance. If there were ten sets of the table of sixteen placed in a lucky bag we should not expect the one (WWRR) and the one (*bbss*) to be drawn with each sixteen, although we know that there would be ten of each drawn by the time the one hundred and sixty tickets had been drawn.

This is the common experience of breeders. It sometimes happens that the best birds of the year's breeding come all at once, at some period of the season, while at other times they are fairly evenly distributed all through.

It is like the game of "whist." Each player knows that there are four aces in the pack, and that four out of fifty-two cards are of this nature and are dealt every time. The average is absolute, but the individual chance of getting one ace each hand is uncertain. It is the "glorious uncertainty" which constitutes the game, as a fisherman once remarked to me. If every breeder could *exactly* tabulate his results, then breeding would become purely mechanical and the zest would be gone.

Nowhere is this uncertainty more apparent than in buying or selling a sitting of eggs. A breeder may hatch five hundred chickens himself, and yet be beaten (if honest) by the chicks hatched out of a solitary sitting sold to a purchaser. The man who breeds most has the greatest chance, other things being equal. It would be well if purchasers realized this.

The leading experimenters on Mendelian lines (Messrs. Bateson and Punnett) have expressed this in their statement: "Up to the present time the attempt to discover an order in the occurrence of the gametes, bearing either of a pair of allelomorphs, has led to negative results." And again, "As to the factors which determine the retention or exclusion of any character in the case of any germ-cell, no suggestion has yet been made. It is not impossible that this may be influenced by some factor easily disturbed by environmental circumstances, so far at least as the egg-cell is concerned" (*Report II to the Evolution Committee*, p. 129).

One such "environmental circumstance" I have referred to in the chapter on breeding Buff Orpingtons, viz. the vigour of the parent at the moment.

Dominants and Recessives.—I have written somewhat at length in order that the poultry breeder may see the importance of the law of "*gametic segregation.*" The numerous experiments which have been made amply prove the existence of such a law, and that it is at work both in the vegetable and animal kingdoms, including man. Many of these experiments are recorded at length in *Reports I, II and III to the Evolution Committee*, to which I refer those who are interested.

This law is independent of the expression of dominance or recessiveness. The authors referred to above express it thus: "We are led to the conclusion that if an individual be heterozygous, there is no direct relation between the somatic character it presents and the gametic output" (*Report II to the Evolution Committee*, p. 115). In other words, it is not the outward bodily appearance of the fowl which determines its breeding value, but the knowledge of how it has been bred.

There is need, therefore, of the greatest caution, especially when we are dealing with extracted types, *i.e.* with heterozygous or cross-bred fowls.

The laws which govern dominance are by no means perfectly understood.

"*Dominance* appears to be of two kinds, complete and incomplete. Complete dominants are practically indistinguishable from the pure dominants; incomplete dominants are variable, showing the influence of the recessive character in different degrees, the intensity of the downward character being correspondingly diminished. In some character matings the dominance is apparently always complete, in some it is always incomplete, and in others it is sometimes complete, but more often incomplete. On the whole, the incomplete dominants appear to be about twice as numerous as the complete dominants. The pure recessive is always quite distinct from both kinds of dominants."

The above remarks are part of the summing up of the result of a series of first-crosses (F^1) between pure breeds of unlike characters in which a large number of

chickens were hatched, the total number of chicks being 1283.

The following list gives a comprehensive notion of the various kinds of complete and incomplete dominance.

TOTAL RESULTS OF FIRST-CROSSES (F^1). MATINGS OF UNLIKE CHARACTERS (D × R) (D = DOMINANT, R = RECESSIVE)

REFERENCE	CHARACTER	D	R	NUMBER HATCHED		COMPLETE D	INCOMPLETE D
				D	R		
1	Comb	Leaf	Single	110	0	9	101
2	,,	Rose	,,	164	0	164	0
3	,,	,,	Leaf	6	0	0	6
4	"Down," or chick plumage	White	Black	143	19	23	120
5	,,	,,	Buff	53	7	2	51
6	,,	Black	,,	113	0	0	113
7	Feet	5 toes	4 toes	113	3	25	88
8	Shanks	Feathered	Clear	173	0	0	173
9	,,	White	Yellow	165	0	165	0
10	,,	Blue	,,	107	0	107	0
11	Crest	Crested	Clear	105	0	0	105
12	Eggs	Brown	White	31	0	0	31
13	Broodiness	Sitting	Non-sitting	31	0	31	0
			Total . .	1254 + 29		466	788
			Per cent. .	97·7 + 2·3		36·3	61·4

It is apparent at a glance that complete dominance is here confined to a few of the above characters; *e.g.* No. 2, rose-comb is completely dominant over single-comb; No. 9, white shanks dominant over yellow; No. 10, blue over yellow shanks; and No. 13, broodiness completely dominant over non-sitting.

But even these "complete" dominants need qualifying; *e.g.* it is by no means clear that the rose-combs in No. 2 are of the same quality as the parent rose. All that is meant is, that there are no single-combs. So far as my experience goes most of the rose-combs are smaller than the parent rose-comb, and I hope that closer investigation may enable the breeder to distinguish between the pure D and the DR.

Then, again, take No. 13. All that is meant is, that when a sitting and a non-sitting race is crossed, the pullets which are reared all show some tendency to broodiness. It does not mean that they are as persistent in this habit as the pure-bred sitting varieties.

Incomplete Dominants.—By this expression is meant, as a rule, that no pure recessives appear, as *e.g.* No. 1. In the cross between the leaf-combed Houdan and the single-combed White Leghorn the leaf-comb is dominant because no pure single-comb appears on the progeny, but it is incomplete dominance because, out of 110 chickens hatched only 9 have perfect leaf-combs, and the rest were "split leafs" having a single lobe in front split into two or more concave lobes behind. In No. 8, which represents crosses between a feather-legged Cochin and various clean-legged breeds, the Cochin is dominant so far as shank-feathering is concerned, because all the progeny is feather-legged, but it is incomplete because the feathering is only about half as heavy or abundant as in the Cochin; and the results in No. 11 are similar, the crested Houdan left its crest in diminished size on the heads of all the chicks which resulted from its mating with a non-crested White Leghorn. In other cases, where colour of plumage is concerned, *e.g.* No. 6, the black plumage prevailed over the buff, but the black is incompletely dominant and shows traces of the buff plumage. On this question of dominance of colour more will be said in the chapter on "Colour." In No. 4, which represents a cross between a White Leghorn and a Black Hamburgh, and a cross between the White Leghorn and the Houdan, whose plumage is almost black but speckled with white, it will be seen that the white colour is dominant, since 143 chicks were white in the colour of the "down"; but the dominance was incomplete, since of the 143 only 23 were pure white, and in 120 the white prevailed, but was ticked with black. This particular cross is interesting on account of the extended classification of results given in the previous lengthy table (see p. 182).

The experiments were extended by breeding the heterozygotes together. When the DR was mated with DR, *i.e.* the whites which were ticked with black were bred together, it was found that they segregated according to Mendelian laws, in the ratio of 3 D : 1 R. One experiment yielded 171 whites and 55 blacks. Those who are interested in these most illuminating details should refer to *Report II to the Evolution*

Committee, in which all the various crosses referred to in the last table are given in detail. The evidence is ample to show that the law of segregation is at work, though the dominance and recessiveness are not always complete.

Incomplete Recessives.—Before giving a detailed list of the dominant characteristics in poultry it may be observed that the recessives, which form, roughly, one-fourth of the whole generation (F^2), *i. e.* the progeny of the mating together of the first-crosses, seem of a more fixed character than the dominants. As Mendel found, in his experiments with peas, that the recessive dwarfs always bred true in whatever generation they appeared, so it is also true, though in a less marked degree, with poultry. When a rose-combed fowl is crossed with a single-combed one, we know that if both breeds are pure all the progeny come with rose-combs, and that when these are bred together we get 3 rose- and 1 single-comb. The rose-combs are dominant, but it is difficult to distinguish the pure D from the DR. But there is no such difficulty with the recessive single-combs. These, as a rule, will breed true for the single-comb characteristic. But for some at present unexplained reason it is not universally true.

An experiment which came under my own observation will show what I mean. In 1898 I bred a number of the then fairly popular rose-combed Buff Orpington. Both parents had rose-combs, but I got, as most breeders did, a fair proportion of single-combed chickens. These were the recessives, bred because one of the parents was a DR and not a pure dominant. I did not breed these single-combed recessives together, but mated two single-combed pullets bred in this way to a pure single-combed Buff Orpington cock. Here I had a pure single-comb and a recessive single-comb, which should have bred pure single-combs, but to my astonishment I got at least a third of apparently pure rose-combs, and some of the single-combed chicks had side-spikes, as if a trace of the rose-combed blood showed itself in the hinder part of the single-comb.

These rose-combed chicks continued to be bred from
e single-combed progeny for two generations. This
ows the dominance of the rose-comb, but it also

shows that the dominance may lie dormant in a recessive character, and when fresh blood is introduced may take the opportunity of a new combination to reassert itself.

The recessive character may therefore be incomplete as well as the dominant; but, so far as I have observed, the occurrence is so rare that the exceptions may be taken as proving the rule.

Experiments to prove the validity, or otherwise, of Mendel's laws are being carefully and extensively made, both in this country and in America. One of the most interesting of these series of experiments is published by the Carnegie Institution of Washington, U.S.A., and written by Mr. C. B. Davenport, director of the Station for Experimental Evolution at Cold Spring Harbour, New York, and is entitled *Inheritance in Poultry*. In it is told the result of breeding from 29 pens of fowls of various and distinct breeds mated together. The large number of 1500 chickens were hatched, of which 500 were reared to adult age, and their characteristics noted and tabulated. The work is rendered additionally interesting by being illustrated with 54 photographs of poultry, which include both the pure races used for crossing and the heterozygous offspring also.

The writer, while expressing a very high opinion of Mendel's discoveries, sounds a less confident note than some writers at home, *e. g.* "While admitting thus the reality of unit characters," [*i. e.* the law of gametic segregation] "the further study of the evidence of hybridization in poultry has led me away from the conception that they are rigid and immutable as atoms are, which may be combined and recombined in various ways and always come out of the process in their pristine purity. This is by no means the case. Very frequently, if not always, the character which has once been crossed has been affected by its opposite with which it was mated, and whose place it has taken in the hybrid. It may be extracted therefrom to use in a new combination, but it will be found to be altered. This we have seen to be true for every characteristic sufficiently studied, for the comb . . . crest . . . vulture hock, foot-feathering and foot-colour, ear-lobe, and

both general and special plumage colour. Everywhere unit characters are changed by hybridizing."

This last sentence is too confident and general to be true. There are many instances both of pure dominant and of pure recessive *unit* characteristics bred for several generations where the unit characters have segregated, and have continued to breed true to the parental types. It is true that many unit characters are changed in the first generation, as is demonstrated in the last tabulated list, where the incomplete dominant and recessive characters are referred to, but even in these cases there is sharp segregation in the second generations, *e.g.* the split-leaf comb of the Houdan breeds pure single and pure leaf-combs when the split-leafs are mated together. Where the distinct characters are true units such as comb formation or lobe colour, or eye cere, or shank-colour, they segregate, though it is also true that in some instances one of the pair of contrasted unit characters may be dormant or latent, and reappear on further crossing, or on the introduction of new blood, or the introduction of another strain. Why this should be so remains yet to be demonstrated, but all careful breeders of pure-bred fowls are aware of it to their cost, *e.g.* the red eye is a common failing, from a fancier's point of view, in the Black Minorca. By careful selection, a strain of Minorcas with dark or black eyes may be bred which breed true and throw a very large percentage of dark-eyed chicks. But when, for any reason, the breeder has to purchase a fresh stock-bird, though he may exercise care in selecting a dark eye in the new purchase, the probability is that in the resulting progeny he will obtain a very much larger percentage of chicks with the red iris. The red, though dominated by the black, has remained latent, but it becomes patent or manifest in the effects of the cross.

The same result is seen in the mating of yellow-legged stock, *e.g.* Black Leghorns. By careful selection a strain may be bred with yellow legs and sound black plumage, but on the introduction of fresh blood from another strain, even if the purchase has yellow legs, the number of black-legged chicks will be largely increased, or if this character be maintained the number of chicks with white in the plumage will be multiplied.

Some of these mysteries may be explained, but others remain to be solved.

Mr. Davenport himself admits "the reality of unit characters," and on page 80 says: "That there are unit characters in poultry cannot be doubted." In speaking of a cross between the Houdan and the Leghorn he says: "How convincingly do the second hybrids reproduce the single-comb in some individuals, and the V-comb in others," or, "How instructive is it to see perfectly plain-feathered offspring arise from a Frizzled pair"—the "Frizzled pair" referred to being hybrids, one of whose parents had been a Frizzled fowl. (In Frizzles the feathers have the shaft curved so that the outer surface becomes concave.) And, in anticipating what future research may reveal, he says, "Truly we may hope, as in chemistry, to make various kinds of molecules by proper admixture of our atoms—the characteristics."

One more singular and instructive instance which shows the truth of the "segregation of the gametes" and of a latent characteristic becoming "patent" came under my observation.

A farmer who had some Black Plymouth Rock pullets wished to cross them to produce good layers. I sold him a Black Leghorn cockerel to mate with them. The pullets were large fowls weighing 7 to 8 lb. each, and their parents had been pure-bred Barred Plymouth Rocks, whose plumage is cuckoo colour, being alternate bars of black and white. The ear-lobes of the pullets were red in colour and the legs a dusky yellow. The Leghorn cockerel had yellow legs and black plumage with white ear-lobes. A looker-on would have expected the colour of the progeny to be pure black, and, as a matter of fact, most of them were black chickens with yellow legs. But one-fourth of them were cuckoo-coloured like the sire of the pullets, and the singular thing about it was that these cuckoos were all cockerels. Part of the cockerels were black, and *all* the pullets. How had this come about? Simply because the gametes given off by the pullets were, for colour characteristics, partly white and partly black. Where the black gametes of the pullets met the black of the cockerel, *all* the progeny were black, and where the

white gametes of the pullets met the black gametes of the cock, the progeny were alternately black or cuckoo-coloured. It is well known that the ancient male ancestor of the Barred Rock was the Dominique—a cuckoo-coloured cockerel, and his colour had been transmitted, carried in a distinct form, segregated in the gametes of his descendants, the black pullets, although they had inherited the colour of their female ancestor, the Black Java, and not that of their sire.

The progeny, in other respects, showed various forms of inheritance. *The combs*, both of the black pullets and of the Leghorn cockerel are single, but the Leghorn has a larger comb. The size in the progeny was intermediate, a blended inheritance. *The ear-lobes* were either red or red streaked with more or less of white. In ear-lobes, red is dominant over white, though the dominance is incomplete. (When these hybrids were bred together in the next generations some of the ear-lobes were pure white like the Leghorn, some were red like the Black Rock pullets, and some were a mixture of red and white.)

In the general form of the body, which would appear to be not a unit character but a complex one, there seemed to be a blending of the two. The size was midway between Rock and Leghorn. *The character of the plumage* was not as long and flowing as the Leghorn, nor as short and loose as that of the Rock, but in the next generation the plumage was more abundant, and the sickle feathers like those of the Leghorn. *Long tail plumage* would appear to be dominant. (Quite as a minor note may I add that the result for egg-production was quite satisfactory, and I know nothing better for hardiness and fecundity combined.)

The egg colour was tinted, not pure white, but a blend. The brown shell of the Rock was predominant over the Leghorn.

Most of the pullets showed a tendency to broodiness like the Rock, but it was not so intense in its character, and they were not so reliable as brooders.

It is possible from close observation of a single experimental cross to learn which characters are dominant and which are recessive, and whether the dominance is complete or incomplete, and also some of the methods of

inheritance, whether exclusive, alternative, particulate or blended. If fanciers would carefully note the results they obtain, and record them and publish them for the guidance of others, many points which are at present confusing would become clear.

The following list of dominant and recessive characters are gathered from various sources, chiefly the *Reports to the Evolution Committee* and from Mr. Davenport. They are given, not as decisive and clearly ascertained laws, but as the result of experiments likely to be useful for future guidance.

List of Dominant and Recessive Characters in Poultry

The characters printed in *italics* are the old or normal forms, and those not so marked the younger or later originated forms as indicated by Davenport.

NO.	CHARACTER	DOMINANT	RECESSIVE	NOTES
1	Comb	Rose	*Single*	As Wyandotte or Hamburgh, over any single-combed breed
2	,,	Leaf	*Single*	Cf. Houdan-Leghorn
3	,,	Rose	Leaf	
4	Nostril	*Narrow, low nostril*	High nostril	Shown in crosses with Polish, or Houdan, and fowl like Minorca or Game with normally-shaped heads
5	Cerebral hernia	*No hernia*	Hernia	
6	Crest	Crested	*Smooth head*	All first-crosses with Houdan or Polish show traces of crest
7	Muff	Muffling	*No muff*	Crosses with Houdan or Faverolles show diminished muffs and beards in the progeny, which segregate in F2
8	Beard	Bearded	*No beard*	
9	Ear-lobe	*Red*	White	White is a new character, and red is difficult to breed out
10	Eye	Black iris	*Red iris*	The red eye is the ancient character of the *Gallus Bankiva*, and though recessive to black yet is a stubborn recessive, and though latent constantly reasserts itself. Pearl is frequently dominant over red
11	,,	*Red iris*	Pearl iris	
12	,,	Dark brown	*Red iris*	
13	Beak	White	Horn	
14	,,	*Black*	*Yellow*	Both ancient colours. Sometimes one is dominant and sometimes the other. Black the most dominant character, then yellow
15	,,	*Yellow*	Horn	
16	Skin colour	Black	*White*	White and yellow skin are both ancient. Cf. Silkie with black skin is dominant, Davenport, p. 57
17	,, ,,	*White*	*Yellow*	*E.g.* Dorking over Indian Game, or Cochin
18	Shanks	Feathered	*Clean*	Cf. Cochin-Leghorn. Cochin feathering has been bred out in the Orpington, but still reappears, and the Dorking white has conquered the Cochin yellow
19	,,	White	*Yellow*	

NO.	CHARACTER	DOMINANT	RECESSIVE	NOTES
20	,,	Black	*Yellow*	Black usually dominant, as breeders of Wyandottes and Leghorns know. But yellow sometimes dominates and has covered the Minorca cross in Black Leghorns
21	,,	*Yellow*	*Willow*	Both ancient. Willow too often reasserts itself
22	,,	Blue	*Yellow*	Rose-comb Leghorn breeders with Hamburgh cross will find this a crux, also Blue Leghorn if contaminated with Andalusian blood
23	Hock	*Plain*	Vulture	In crosses with Asiatic (vulture-hocked) and Mediterranean breeds (Plain), the plain dominates and disappears much more rapidly than shank feathering
23A	Plumage	White	*Black*	All coloured plumage is more or less recessive to white, which is a new character, but black sometimes dominates and sometimes mingles to form "blue" (see Chapter on Colour)
24	,,	White	*Pigmented*	
25	,,	*Black*	*Red*	But frequently albinism results (see Chapter on Colour). Black is imperfectly dominant over red
26	Wing-coverts	*Red*	Other colours	Red wing-coverts are an ancient heritage from the Jungle fowl, and Red constantly reasserts itself, *e.g.* Brown Leghorn, Buff Orpington
27	Shaftiness	*Shaftiness*	No shaft	A fault in Brown Leghorns, Buff Orpingtons, etc., hard to eradicate
28	Hackle	Solid black	*Laced*	*E. g.* Silver Laced Wyandottes crossed with Black Rocks lose the laced hackle, and many laced birds throw black hackles. Black is imperfectly dominant
29	Penciling	*Pencilled feathers*	Plain	Said to be "a fundamental form of coloration in the genus *Gallus*." "A concentric repetition on the feather of alternating bands of the lacing and ground-colour," *e.g.* Partridge Wyandottes. Said by Davenport to be dominant, but is certainly incomplete, and can be easily dominated by black
30	Tail	*Black*	Other colours	Black pigment persists in the tail (*e.g.* Cochin and Orpington), much more than in any other part of the plumage. It is an ancient heritage of the race
31	,,	*Tailed*	Rumpless	The Rumpless are modern and eccentric
	,,	Tail unlimited	*Normal tail*	*E. g.* The Yokohamas are dominant over normal tails
32	Colour of egg-shell	Brown	White	When the Mediterranean breeds (white-shelled eggs) are crossed with Asiatic (brown), the brown dominates, and the eggs are tinted. And the tinted egg is one sign among others of a cross, *cf.* Leghorn and Minorca eggs often tinted
33	Broodiness	*Sitting*	Non-sitting	Incomplete dominance until the "sitting" blood preponderates, *e.g.* a "sitting" Minorca or Leghorn is not reliable in its broodiness

In the foregoing list one of each pair of characters stated to be ancient, and the other of more recent

origin, *e.g.* the single-comb is the characteristic of the *Gallus Bankiva*, the ancestor of domestic poultry, and is, therefore, ancient. The rose-, pea-, leaf- or walnut-combs are stated to be of later origin. But any of the modern forms of comb are dominant over the single-comb.

The crested fowl (No. 6) is dominant over the older form, which is the normal plain head.

One would naturally have thought that the old characters, being of more ancient descent, would have always been prepotent and dominant. But the list shows that the dominance is about equally divided between the older and the newer forms.

In Mendel's law it is less important for the breeder to remember the expression of dominance and recessiveness than the law of the segregation of the gametes, which is so manifest in the F^2 generation when the first-crosses are mated together, so that $DR \times DR$ becomes $1D + 2DR + 1R$, which can only be explained by the law of segregation. This shows, as has been already pointed out, that the dominance in the first generation of hybrids is affected by the recessive character, and that even afterwards, in further generations, the recessive character may remain latent, and only waits for a favourable opportunity to express itself.

Davenport gives an interesting instance of the crossing between the Polish fowls, which have a large hernia or protuberance of the brain on the top of the head, when mated with Minorcas having a normally plain head. The hybrids showed no hernia, but most of them showed a frontal prominence. When the hybrids were inbred the hernia occurred in 23·5 per cent. of the cases, a close approximation to Mendel's estimate of 25 per cent.

Those who wish to see how the law applies to the breeding of mice, rats, rabbits and dogs, upon which numerous experiments have been made, should refer to Professor Thompson's book on Heredity.

Do Mendelian Laws apply to Man?—A law which is so general in its application to the vegetable and animal kingdoms cannot well have left mankind out of its reckoning. But the evidence is not yet very extensive, and there has been comparatively little time

for investigation. Bateson gives some curious instances in his *Materials for the Study of Variation*, of cases of polydactylism, and references are often made by writers to the crossing of different races, and to the marriages of Eurasians, but so far statistics do not seem sufficient to draw conclusions. Many readers will remember, however, the publicity given through the *Daily Mail* last year to the suggestion of the human eye being subject to this law. A collector of data announced that the brown eye was dominant over the blue, and in the frequent cases where one of a married couple had brown eyes and the other blue, the brown eyes would be found to be three times as numerous as the blue in the offspring. I have come across several cases of large families in which this has proved to be exactly correct. But if this law was of universal application it is evident that by this time brown eyes would largely predominate in the population, unless it were proved also that either the blue-eyed had a more numerous progeny, or that a larger portion of the brown-eyed died without leaving offspring. The fact is of sufficient interest to excite observation, and however it may be accounted for, I think it will be found to hold good that brown eyes are dominant over blue where brown and blue intermarry, and also that it will be rarely, if ever, found that where both father and mother have blue eyes a child with brown eyes is born to them, and that the same holds good with brown eyes. I have never yet found a child with blue eyes *one* of whose parents had not blue eyes. If this should be proved to be a law it would often be interesting evidence in a court of law!

Whether the iris colour in human eyes is subject to Mendelian laws is uncertain and difficult to ascertain, since close intermarriages are non-existent, and even the marriage of close relations are fortunately rare. Moreover, eyes cannot be classed as brown or blue only, since there are all sorts of intermediate shades between the two, as black-brown, dark-red, hazel, grey, green, etc. It is also a curious fact that many eyes change olour. A very large proportion of brown-eyed persons ad blue eyes as infants. The dominance of the brown s of gradual growth, and of various degrees of intensity,

but its presence may be observed from the earliest age. It is an intensely interesting study, and, though much yet remains to be explained there seems to be little doubt that laws as discovered by Mendel are at work in man, that the laws of gametic segregation are in operation, that the various forces of inheritance, alternate, particulate, blended or exclusive, are to be seen in familiar faces every day, and that the laws of dominance and its accompanying recessiveness hold their sway.

Common Modes of Inheritance.—It is a common belief among poultry fanciers that external form, colour, etc., depend upon the male bird, and that temperament, visceral organs, and size depend upon the hen. This is only partially true. It is true that the hen has a *greater* influence than the cock over size, but if an under-sized male bird is used the greater number of the cockerels will be under-sized also; while as regards colour, it depends upon the varieties crossed, and for head-points such as comb and lobe we have already seen that it depends upon the dominant character, and is independent of sex, *e.g.* if a single-comb and rose-comb are mated, if both parents are pure, all the progeny will be rose-combed no matter which is the single-combed specimen. It is probably true that either sex affects the chickens of the corresponding sex more than that of the opposite, and that a good cock will breed good cockerels and a good hen good pullets. But the exceptions are numerous in poultry as in the human race, where it is common for a father of short or medium stature to have tall sons or *vice versâ*.

There are different forms of inheritance. The prevalent view is that "crossed characters usually blend," which was the view of Darwin. This view is not borne out by recent experiments. Davenport says: "In general, typical blending of characters is rare." Excepting characters, like general form of body, which are doubtless not units but complex, I have, indeed, seen no single case of a typical blend." "Human skin colour is the striking case."

There are, however, other cases. As in the human race, the colour of the hair may be an almost precise

average between that of the blonde mother and that of the black-haired father, so in some cases with poultry, especially in the buff-plumaged varieties, the resulting average may be a blend of the two (see section on Mating Buff Orpingtons). Egg-shell colour is another good example of blended inheritance. Professor Thompson instances as a case of blending the face of a child: "In repose the boy's face may be seen marked paternal; it is moved with emotion and he is his mother's image," but this may also be classed as a case of *particulate* inheritance, in which the form of features is the father's and the smile that of the mother's. Instances are very common and known to all observers where the characteristics which are peculiar to both parents are inherited in the same offspring, *e. g.* a child may have eyes like his father and a mouth like his mother, or hair colour of one parent, and face or form like the other. The same thing is common in poultry, and is indeed the common cause of new varieties, where the type or bodily conformation is taken from one side, and the colour or head-points from another.

"Exclusive" or "Alternative" Inheritance.—"When in the expression of the bi-parental inheritance there is as regards a given character an absolute prepotency on one side or the other, or, conversely, an apparent reduction of the maternal peculiarities to zero, the inheritance is called exclusive" (Professor Thompson, p. 112). Other terms used to express the same results are "*unilateral*," *prepotent* or *preponderant*. "This mode of inheritance is oftenest seen in regard to particular characters, but it is sometimes consistently illustrated in so many parts of the organism that observers say of the whole offspring that it favours its sire, or that it takes after its mother." This latter is most common in well-established strains of pure-bred stock when mated together. When different varieties are crossed the term "alternative inheritance" is used to imply the same thing. *Exclusive* inheritance implies the inheritance of one parent to the apparent exclusion of the other. *Alternate* inheritance, that sometimes one parent and sometimes the other predominates. They are our old friends the dominants and the recessives in another guise, of which a list comprising comb form,

nostril form, crest, muff, ear-lobe, tail, etc., have been tabulated for the breeder's reference (see p. 194).

Particulate Inheritance.—The term is used to describe instances where *both* of the contrasted unit characters neither blend nor alternate, but are both inherited in the same offspring, as it were side by side, or are separately expressed in different parts of the same organ or system. Examples are, *e.g.*, in the colour of the iris. Examples may be rare, but I have met and known persons with one eye like the father and another like the mother—"odd eyes" they may be, but they are not without their fascination. Such examples are not of infrequent occurrence in poultry. I remember a striking case at the Dairy Show when a breeder was remarking on the rarity of a red eye among the White Orpingtons (a much-coveted feature). The owner of the winning specimen said, "Come with me and look at the winner—he has red eyes." On an inspection being made, it was found that one eye was red and the other pearl colour.

Another familiar instance is a piebald foal—the progeny of a dark-coloured sire and a light-coloured mare, or *vice versâ*. Or a man may inherit the black hair of his mother and the red beard of his auburn father. But the particulate inheritance of most interest to breeders is that which affects the plumage colour of certain breeds, the most remarkable of which are the barred or cuckoo-coloured fowl, in which the black coloration of one parent and the white of another are laid upon the plumage in alternate bars of black and white, while the bluish sheen comes from a commingling of the two. It is conceivable that all blended inheritance is only a form of particulate inheritance in which the patches are invisibly small.

Another instance of more absorbing interest at the present time is that in which the black and white parentage results in the blue, which Davenport calls "a fine mosaic of white and black." Both of these peculiarities are mentioned more fully in the chapter on "Colour." Davenport thinks "it is yet too early to interpret the cases of particulate inheritance," but enough is known to be of interest to the breeder, if not to interpret the whole mystery.

Summary of Modes of Inheritance.—When parents of different varieties are crossed the progeny may be: (1) a combination of both parental and maternal characteristics, either (α) an intimate *blend*, (β) a blend with a preponderance of either parent (γ) a particulate inheritance. (2) It may be exclusively paternal or maternal. (3) In Mendelian inheritance the progeny may follow either parental type, so far as the unit characters which are contrasted is concerned, of which illustrations are given in the list. (4) It may be a reversion to an ancestral type unlike either parent; *e. g.* in pigeons the throwing back to the Rock Dove, or in poultry to the *Gallus Bankiva*. (5) It may be something apparently new.

The Causes of Dominance are at present but little understood. Professor Thompson gives a useful hint which may explain many a doubtful case when he writes: "When there is a marked difference in the pedigree, the vigour, the age—in short in the constitution—of the two parents, the same mode of inheritance may be illustrated in a succession of offspring. Thus an inbred sire, paired with a commonplace mate, may be prepotent birth after birth, or a young mother mated with a worn-out male may have it all her own way in regard to inheritance, as well as in much else." And again, "With a virile middle-aged father and a much younger mother the older children may be markedly paternal in the expression of their inheritance, the younger children as markedly of the maternal type. The Benjamin is the mother's very image and after the father's own heart" (Thompson, p. 116).

Such facts point to the conclusion that the expression of inheritance follows the parent *whose gametes are the riper* at the time of fertilisation. This may be proved to be the solution of the fact that Dominants and Recessives do not always closely adhere to Mendel's law of averages. In making experiments care should be taken that both parents are fully mature, and where there is any marked difference in the vitality of either sex it should be taken into account in recording the results.

But ripeness or otherwise of the gametes does not interfere with some dominant characters, *e. g.* all

the combs would be rose even if the sire were a young rose-combed bird. But it may affect the vitality of the stock, and the males may die while the females survive.

Will Fanciers observe and record Results?—We are at present only learning the alphabet of the language of interpretation, or enabled to speak in monosyllables, even though in the description of it long words are used. It lies with practical and intelligent breeders to unravel the riddle. To do so needs the sacrifice of time and consequently money. Many of those who have given us our first insight are not themselves practical breeders or fanciers in the true sense. And many of their results, though obtained with infinite patience and hard work, are not of much practical guidance, *e. g.* in deciding upon colour of plumage the results have largely been taken from the colour of the "down" of newly-hatched chicks, which, as every breeder knows, changes as the chick grows. Other tabulated lists of comb formation have been taken before the chick has even been hatched from the partly-developed embryo. At this stage nothing can be known of such defects as side-spikes, or of the kind of serration, or of the ultimate size of the comb, which can only be estimated when the bird has arrived at adult age. A rose-comb may be distinguished from a single-comb after fourteen days of incubation. But even at a month old it cannot be said what sort of a rose-comb it will be. Some in each case have been reared to adult age, and have been bred from, but even then they have not been described from a fancier's point of view, *e. g.* a "barred" bird may answer this description, while to the fancier it may be the veriest mongrel, and be nothing more than a blotch of black and white. If more money and more time and more convenience were at the disposal of investigators, more helpful results could be achieved.

I have said that most fanciers cannot or will not afford the time and expense for such experiments, but many who have ample space could give valuable help if they would *extend* their breeding season and try experimental matings after their own breeding season is over. And much valuable help could be given by those who are trying to bring out new varieties, whose numbers

now threaten to be legion, if they would disclose their methods, with accurate statistics. Some *cannot* do this with sufficient explicitness, and others will not from fear of rivalry, and those who have done so, as, *e. g.*, the late Mr. W. Cook, have done so in too haphazard a manner to be of much service.

On the other hand, many of the ablest men in the Fancy have recorded their methods, *e. g.* Mr. Lewis Wright's book is half filled with them, but this has been, for the most part, in old-established breeds.

A valuable example is also set by Mr. Lister Kay, as recorded by Mr. Harrison Weir in Vol. II of *Our Poultry*, in which he describes the making of the Buff Leghorn, and many generous contributions by true fanciers are frequently sent to the poultry press. May this liberality be extended as a benefit to fanciers and a help to science!

On reading the various phases of dominance and recessiveness as applied to poultry, many keen fanciers will be disappointed, as they will find no great help given them towards achieving the minute and exact details at which they aim.

They will assert, and that with some truth, that Mendel's laws only work at large and crude results, such as dominance of rose- over single-combs, or of white plumage over black, whereas they wish to know how to increase the size of the rose-comb, or to increase its "workings," or to alter its symmetry, *e. g.* to breed the long, tapering, horizontal leader in the Hamburgh, or the compact, symmetrical, closely-fitting comb of the Wyandotte. In the single-comb, again, they are interested to find the laws which would assist to produce the firm base, the freedom from hollowness, or thumb-markings; the depth of the spike in proportion to the base, the shape of the spikes and their number.

Again, in the cross between the rose and the single, they would like to know how many of the so-called single-combs in the F^2 generation have side-sprigs at the back, and to know the relation of these abnormal excrescences to the rose-comb, and so on in endless continuity.

The answer is that so far Mendel's laws are, experimentally, only in their infancy, and that as the

exponents of those laws become themselves more interested in the Fancy and more conversant with fanciers' aims, they will learn to observe many points which are at present of little interest to them, or are obscure; and, further, that fanciers themselves as they know Mendel's laws better, and indeed as they become aware that they are working in "realms of law," and are not merely having a hand at a game of chance, will begin to find that their "results" follow on definite lines or are the result of law.

The number of points the fancier would like to "know all about" are simply endless. Many of these are indicated in the chapters on the various breeds. At present he is a great believer in "strain" or "blood." He knows that certain "points" which he desires to reproduce are "fixed" in the birds from some fanciers' yards, while they are changeful or evanescent in other breeders' yards. Birds with these points fixed he calls "prepotent" for those points. He would like to know the relationship between Dominance, which is a Mendelian character, and Prepotency, which, more frequently than not, does not act according to Mendel's law. He knows that the prepotency of a strain which has been the laborious product of years of careful selection, vanishes as completely as the recessive character dominated over by another character. Mendelism should teach him that a "swamped" character is not dead, but only slumbers to revive in the next generation.

I may be an optimist, but I am convinced that many "points" which are at present confused will become clear, and that the truth already attained will act as a "lamp to our feet" in future progress. In the succeeding chapter on "Colour," many, even of the minuter points, may be illumined. In any case the instructed fancier is not asked to discard any of the *known* results which he has achieved by endless experiment and by minute observation. He will hold to them and work by them, but whereas before his rules have been arbitrary, and he does them because others have done them, or because he believes in them, he will at least get an occasional flash of light which will show him *why* some results are obtained, and to discard others, as labour in vain.

Acquired Characteristics.—I have said nothing so far upon the vexed question as to whether acquired characteristics or traits are heritable. For the most part it seems to me that they are not. But first, let the terms be defined: "All traits or characters of every living being are separable in theory, if not always in practice, into two distinct categories. Either they are *inborn* or they are *acquired*. Inborn traits are those which take origin in the germ-plasm. . . . Acquired characters, on the other hand, do not take origin in the germ-plasm; they are modifications of inborn characters caused by the play of forces from the environment on those characters after (as a rule) they have developed from the germ-cell. Thus a man's hand is inborn. But if it be modified by use, disuse, accident, or the play of other forces from the environment, the modification is an acquired character" (G. Archdale Reid, *Principles of Heredity*, p. 5).

Inborn characters take origin in the germ. They are the results of the play of the gametes. They are ancestral in their origin.

"Acquired characters take origin (as a rule) in the cell-descendants of the germ-cell; that is, they are somatogenetic in origin. They express the modification of the hereditary characters of the race which are caused *in the individual* by the play of forces from the environment." It is admitted on all hands that new *inborn* characters are transmissible—new characters which take origin in the germ-plasm.

All new inborn characters are called variations, and we have already seen that they are transmissible.

If the acquired characters of a body contribute germinal elements to the plasm they may be inherited, and it seems to me that this is the case in respect of acquired *size* of body. It is well known that when a breed or a variety has been increased in size through extra attention and good feeding, the average tendency of the offspring is to revert to the normal size, and this is certainly the case where the attention, etc., is not continued; but, on the other hand, some of the progeny are of increased size, and when selected for this purpose the body character has been changed and may contribute its changed condition to the germ-plasm. In

other cases it seems not to be so transmitted, *e. g.* a Minorca's lobe or comb may be increased in size by heat or friction, and often is increased for exhibition purposes, but it does not appear to transmit this acquired character to its offspring, the germ-plasm being unchanged. If, on the other hand, a Minorca is *born* with a lobe or comb which develops naturally into an increased size it is transmissible. The most extreme cases I have heard of are (1) recorded in a recent number of *Feathered Life* of a breeder who cut off a faulty side-spike from a cockerel in order to breed a perfect comb, and succeeded after repeated efforts. It seems incredible, and I would as soon believe that if he had cut the comb off altogether he would have bred cocks without a comb! (2) The other case is that of a breeder who asserts that by cutting off shank-feathering he produced clean-legged stock. Such statements need verification. May such results be put down to the influence of the imagination? Compare the experiments of Jacob, Genesis xxx. 37–42. Such instances have been noted by fanciers, cf. Lewis Wright, p. 200.

Do Mendel's Laws apply to Pure-bred Races?—So far Mendel's laws have only been applied to the crossing of different varieties. They have dealt with hybrids, and not with pure breeds of the same variety when mated together. It is well known, and has been fully pointed out in the account given in this volume, as in many of its predecessors, that most of our present new varieties, as well as some, if not all, of the older breeds have been crossed, and Mendel's laws enable us to understand them better, and to explain how the so-called "improvements" have been made. Whether the laws of dominance and recessiveness apply largely or not to pure inbred fowls is not yet determined or recorded by actual experimental records. But it is undoubtedly true that the law of gametic segregation is true for pure races as well as for cross-breeds, and has indeed been the cause of their appearance and existence. Will a knowledge of Mendelism enable breeders to maintain and to extend the excellence already attained? If so it would be of greater importance than the knowledge of the way to create new varieties.

The answer is that it does so now in a moderate

degree, and may help much more as knowledge advances. The more we know of the whole of the life-history of the breeds we are interested in, the more easily shall we recognize the constantly-recurring atavistic signs of their previous history, and be able to determine whether such signs should make us decide to cast them on one side as wasters, or to combat such tendencies by corrective matings. Thus, if in breeding Buff Orpingtons I found a chicken with five toes, I should cast it on one side. It may be bred out as it has been bred out from its ancestor the Dorking, but it would be waste of time to go over the ground already trod, like fighting a battle already won, and the same would apply to ancestral Cochin feathering. Similarly, if a Minorca chick came with feathered shanks I should know that Langshan blood was manifesting itself. If the feathering was very slight and the bird had inherited the stout black legs and the dense black eyes of its remote ancestor I should trust to retain the valuable features and to breed out the feathers. If, on the other hand, as the result of mating a black cockerel with White Wyandotte pullets I found, as is frequently the case, that some of the progeny were a dense black and others black and white, laced like a Silver Wyandotte, I should retain the black pullets to breed Black Wyandottes, but should discard the laced specimens. I should know that the laced birds were atavistic, a return to the Silver Laced Wyandotte ancestor of the White Wyandotte, but the lacing would be imperfect in its character and not at all equal to the carefully-bred specimens. I should also understand the reason that, in this case, black was dominant over white instead of the reverse way, because the white was not really a pure white, but had an underlying, though dormant, black character derived from the black of the Silver Laced progenitor, although, be it noted, the very presence of this black would keep the white plumage pure, a bluish-white with no trace of cream.

If I mated these two divergent and distinctly-marked chicks, the black and the silver laced, I know by Mendel's law that I should get white chicks and black ones, though some would be laced (DR) because of the segregation in the second generation.

Does this Law of Segregation apply in Cases of distinctly Pure-bred Races being interbred?—There are certain characters in all pure breeds which a fancier desires to eliminate, and others which he desires to perpetuate and extend.

Take two typical examples: the desire of all Minorca fanciers is to grow a large almond-shaped lobe of good texture as one of the chief ornaments of the breed. It most frequently happens, however, that when two good lobed specimens are mated together the resulting progeny are not large, but distinctly medium in size, and this is much more markedly the case where two strains are crossed. In such cases is there not a return to their medium-lobed progenitors? And would not the mating together of medium-lobed progeny, which are related, throw the larger lobe in a proportion of the next generation? It is manifest that the small lobe is dominant over the large; but would not the breeder get at least the 1R if he got again the 3D? Experience proves this to be the case, and explains how it is that the breeder, who is always changing his stock birds, or getting in, as he calls it, "fresh blood," rarely breeds typical large-lobed specimens, while the one who inbreeds gets them more readily. Of course it is known that many of the large lobes are simply "acquired characters," made by the outward application of heat and friction, and such do not transmit themselves to their offspring; but the application of Mendel's law may render such processes less necessary, as well as explain the cause of constant failure. It would seem as if distinct strains of the same variety act like the mating of distinct varieties.

The other case for brief mention is that of the Brown Leghorn. A soft even colour on the wings of the pullets with freedom from rust, *i.e.* reddish, foxy-coloured patches, is greatly desired. Red is inherent in the race and dominant over brown or the softer shades of grey. When fresh blood, even of the purest tint, is introduced, the "rust" at once becomes more markedly present. Instead of "fresh blood" being introduced to remove the defect, would not patient and careful inbreeding, as in Mendel's mating of hybrids, reassert soft colour?

Many of these cases want testing in the light of Mendel's law, the full effect of which is not perceived till the mating together of the progeny of mixed strains has been tested, as in the case of the hybrids. Further instances might be given, if space permitted, but enough has been said to arouse the interest and observation of the intelligent fancier, to whom further hints will be given in the chapter on "Colour" which follows.

In an interesting chapter on "Bi-parental Reproduction," Mr. G. Archdale Reid, who looks with a sceptical eye on Mendel's theories, sums up the matter thus:—

"To sum up, the unions of very dissimilar individuals (*e.g.* those belonging to separate genera) are usually sterile; the unions of less dissimilar individuals (*e.g.* those belonging to separate varieties) usually result in exclusive inheritance, or reversion to the ancestral type; the unions of still less dissimilar individuals (*e.g.* those within the same variety) usually result in blended inheritance, *when there is generally regression toward the common parental type*—that is, regression towards mediocrity" (Reid, chap. vi, p. 75 note).

This latter sentence bears out the experience of all breeders, and accounts for the fact that really typical specimens are so rare. But may not the light of the new laws remove this condition? In speaking of Mendel's law, and the occurrence of what Mr. Reid calls "sports," he says, "It is possible, then, that this tendency to 'exclusive inheritance' [*i.e.* the alternate inheritance which occurs in the F^2 generation] is a product of natural selection, a real phase of evolution. Herein, perhaps, we have the explanation of the fact that varietal characters tend to segregate in the descendants of cross-breeds. In view, however, of the rarity of great and useful variations, even this explanation appears far-fetched. That very dissimilar parents tend to have offspring in whom the inheritance is exclusive is, therefore, probably no more than an accidental result of conditions in the germ-plasm which are unknown to us."

A few years hence it may be that the theories which have been indicated in the foregoing pages will make the breeders' achievements look far from "far-fetched,"

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Many of these cases want testing in the light of Mendel's law, the full effect of which is not perceived till the mating together of the progeny of mixed strains has been tested, as in the case of the hybrids. Further instances might be given, if space permitted, but enough has been said to arouse the interest and observation of the intelligent fancier, to whom further hints will be given in the chapter on "Colour" which follows.

In an interesting chapter on "Bi-parental Reproduction," Mr. G. Archdale Reid, who looks with a sceptical eye on Mendel's theories, sums up the matter thus:—

"To sum up, the unions of very dissimilar individuals (*e.g.* those belonging to separate genera) are usually sterile; the unions of less dissimilar individuals (*e.g.* those belonging to separate varieties) usually result in exclusive inheritance, or reversion to the ancestral type; the unions of still less dissimilar individuals (*e.g.* those within the same variety) usually result in blended inheritance, *when there is generally regression toward the common parental type*—that is, regression towards mediocrity" (Reid, chap. vi, p. 75 note).

This latter sentence bears out the experience of all breeders, and accounts for the fact that really typical specimens are so rare. But may not the light of the new laws remove this condition? In speaking of Mendel's law, and the occurrence of what Mr. Reid calls "sports," he says, "It is possible, then, that this tendency to 'exclusive inheritance' [*i.e.* the alternate inheritance which occurs in the F^2 generation] is a product of natural selection, a real phase of evolution. Herein, perhaps, we have the explanation of the fact that varietal characters tend to segregate in the descendants of cross-breeds. In view, however, of the rarity of great and useful variations, even this explanation appears far-fetched. That very dissimilar parents tend to have offspring in whom the inheritance is exclusive is, therefore, probably no more than an accidental result of conditions in the germ-plasm which are unknown to us."

A few years hence it may be that the theories which have been indicated in the foregoing pages will make the breeders' achievements look far from "far-fetched,"

and place the so-called "accidental results" firmly and indisputably within the realm of law.

Summary of Conclusions.—(1) In the study of the Laws of Heredity poultry play a useful part, as they lend themselves easily to experiment.

(2) They exhibit numerous unit characteristics which do not blend on hybridization, but are inherited in exclusive or alternate methods.

(3) That though exclusive inheritance is the rule, some cases show particulate inheritance.

(4) Some characters are patent, *i.e.* new characters, additions to previous heritage; others are latent, hidden, and are a reversion to a previous type—a loss of characteristics.

(5) Patent characteristics are usually dominant over latent ones.

(6) Old and new features are almost equally dominant.

(7) Dominance and recessiveness are very rarely complete—the dominant character carries the recessive character latent, and *vice versâ*.

(8) Dominance is usually independent of the races crossed.

(9) The law of gametic segregation is of more importance than the expression of dominance.

(10) Mendel's laws are of value in explaining the constant reversions to ancient types, a common occurrence in poultry breeding.

(11) They may be of great value in bringing established breeds to perfection.

(12) These laws apply to human heritage.

List of Authors for Reference.—(1) *Mendelism.* R. C. Punnett. 1907. 2*s.* 6*d.* A concise and useful first book.

(2) *Heredity.* Prof. J. Arthur Thompson. 1908. 9*s.* The most useful book on the whole subject of Heredity. Well illustrated. Contains an exhaustive list of writers on Heredity.

(3) *Inheritance in Poultry.* C. B. Davenport. 1906. A fine list of experiments especially valuable from its photographs of hybrids.

(4) *Recent Progress in the Study of Variation, Here-*

dity, and Evolution. Illustrated. R. H. Lock. 1906. J. Murray. 7*s.* 6*d.*

(5) *The Principles of Heredity.* G. Archdale Reid. 1905. 12*s.*

(6) *Reports to the Evolution Committee of the Royal Society.* Report I, 1902, 10*s.*; Report II, 1905, 7*s.* 6*d.*; Report III, 1906, 2*s.* 6*d.*; Report IV, 1908, 2*s.* 6*d.* An exhaustive series of experiments by Mrs. Saunders, and Messrs. Bateson, Punnett and Hurst with plants and animals.

(7) *Materials for the Study of Variation.* W. Bateson. 1894. 12*s.*

(8) Darwin. *Origin of Species.* 1859. New paper edition, 1*s.*

(9) Darwin. *Variation of Animals and Plants under Domestication.* 2 vols. 1868.

(10) *Scientific Breeding and Feeding.* Alexander Comyns. 9*d.* Second edition, 1907.

11. *Mendel's Principles of Heredity.* Professor Bateson. 12*s.* Cambridge University Press.

NOTE.—The published works on Heredity are legion. The above-named are the most useful for poultry-breeders interested.

PS.—Since this chapter was written and the type set, Professor Bateson's long-looked-for book on Mendelism has been published. I have not had time to read it carefully, or perhaps some of the statements made might have been modified. There are no less than five chapters on "Heredity of Colour," in which various references are made to poultry.

The following extracts will show the fancier that the book is of absorbing interest to him. "We foresee not merely advances in the art of breeding animals and plants, but a control over the destiny of our own species. . . . To prevent disappointment, however, it must at once be admitted that for fanciers Mendelism can do but little. 'Fancying' provides the chief interest in life for thousands of persons in this country. It is an occupation with which the scientific naturalist should have more sympathy than he has commonly evinced. If the scientific world had kept in touch with the operations of the 'fancy' much nonsense which has passed into scientific orthodoxy would never have been written.

The study of Mendelian phenomena will do something to bring about a fruitful exchange of experience."

These words re-echo the sentiments I have expressed in some of the latter paragraphs of the chapter on Mendelism. In a more hopeful strain Professor Bateson proceeds—

"But for the Fancy our work can as yet do two things only. First, in the study of the workings of the Mendelian system it will provide a most fascinating pursuit, which, if followed with assiduous care, may at any moment lead to some considerable advance in scientific knowledge. Secondly, the principles already ascertained *will be found of practical assistance in the formation of new breeds*, and may save many mistakes and waste of time. But applied to the business of breeding winners *in established breeds* they cannot materially help, for almost always the points which tell are too fine to be dealt with in our analysis."—Preface, page vii.

The italics are my own. I had already ventured, in the latter paragraphs to indicate my hopefulness that the Mendelian principles may be of help to the breeder of the "established breeds" (pp. 206–8). In the chapter on "Colour" further hints in this direction will be found. In Chapter I, page 7, he gives a new definition of "purity." "Purity depends on the meeting of two gametes bearing similar factors, and when two similarly constituted gametes do thus meet in fertilization the product of their union is pure. The belief, so long prevalent, that purity of type depends essentially on continued selection is thus shown to have no physiological foundation." "Similarly it is evident that an individual may be pure in respect of one character, and cross-bred or impure in respect of others."

In Chapter XVI, p. 291, dealing with "the practical application of Mendelian principles," Professor Bateson writes, "No one acquainted with Mendelian method will doubt that by its use practical breeders of animals and plants may benefit. In so far as they are concerned with the fixation of desirable varieties, or with the creation of new types by recombination of pre-existing characters, their operations may now be greatly accelerated."

In the past the scientific breeders have practised what is known as "line breeding." When two birds unrelated to each other have been mated together the progeny are said to have half the blood of the cock and half of the hen. If a pullet so bred is mated to her sire the progeny is said to have three quarters of his blood, etc., etc. Professor Bateson points out the inexactitude of these statements; "we at length understand the physiological meaning of" pure-bred and cross-bred. We know that these ideas must be applied to the *several characters* of the animal or the plant rather than to the individual as a whole. For the individual to be altogether pure-bred it must be homozygous in all respects. In current parlance, dogs, for example, derived from a cross a few generations back have been spoken of as $\frac{1}{8}$ Bulldog or $\frac{1}{32}$ Pointer, and so forth. Such expressions are quite uncritical, for they neglect the fact that the characters may be transmitted separately, and that an animal may have only $\frac{1}{32}$ of the "blood" of some of his progenitors, and yet be pure in one or more of his traits.

As to the means of establishing a pure strain of poultry he refers to the methods to be adopted—

"The breeder must take his birds . . . and test them for purity individually, usually by breeding each first with a recessive, and then having found a pure individual of each sex, he can by breeding these two together create material for building up a pure strain.

"Mendelian discovery abolishes the old delusion that time and continued selection are needed in order to make a variety breed true . . ."—Chapter XVI, pages 297, 298.

It will be seen that Mendelian methods need watchfulness and care. They minimize labour for the thoughtful, but they do not abolish it. They both stimulate and reward intelligent observation, but they do not give us "a rule of thumb" method, a cheap and easy road to success. The bulk of the book has more reference to botanical experiments than to poultry, but there is sufficient information to make it worth the study of every breeder of "fancy" poultry.

CHAPTER XI

COLOUR

THE subject of plumage colour cannot fail to be of interest to the amateur fancier, nor, indeed, to all who are interested in our feathered friends, since beauty in the colour of plumage appeals to every artistic mind. To the fancier whose ambition it is to exhibit and win prizes with the birds he has reared it has an additional value, since "colour" goes a long way in most breeds towards winning the desired trophy. Out of the 100 points given to the ideally perfect bird, colour often counts for a third or more, while in most cases it counts for 20 points, and in the "coloured" varieties it is more frequently than not *the* deciding point. It is also of value in deciding purity of race, while its brilliance is an indication of health or condition.

In many of the older schedules, giving the classification of prizes, etc., there is an instruction to the judges to award the prizes for "beauty of plumage, purity of race and condition," rather than for mere size, etc. And the grouping of these three points together is an indication of the value of colour.

The question naturally arises, "Are the many and varied hues which are to be found in our breeds of exhibition poultry the result of mere chance or of law?" There is only one answer to an intelligent mind. They are the result of laws of colour, some of which we are beginning to understand, though others are either veiled in the mists of a distant age, long sped by, or are so intricate as to make us uncertain of their working.

It is probable that some colours have arisen by

"chance" fertilization, by the intermingling of various strains, or through different varieties being crossed or hybridized by accident, which the fancier has seized upon and afterwards used to perpetuate a new variety. And I am certain that in some cases it has been brought about through the intelligent observation of poultry breeders who have discovered in some farmyard, where "crossing" is the rule and not the exception, some specimen of a new colour, or assortment of colours, which has struck their fancy. On inquiry they have found that the new "beauty" has been the result of certain matings or crosses, and this has given them a new line to work upon. Many of these varieties have been evolved by breeders with no knowledge of any laws, but simply as the result of observation and experiment. Many have tried, and a few have succeeded, but it is certain that progress would have been more rapid, and the results achieved more fixed and true, had the knowledge of the laws by which colours are governed been more widely known and more generally understood.

The breeder who understands these laws will not only be able to preserve the colours he already possesses in the different varieties he fancies, but will be able to produce other combinations, or combinations already known in other breeds, but not in the one he possesses.

I am not an advocate of the endless multiplication of varieties, whether of colour or head-gear, nor for the manufacture of new breeds *ad nauseam*, but there is undoubted room for the perfecting in colour of breeds we already possess, which perfecting would be an immense acquisition, and it may be that new varieties are yet to see the light, which will add zest to the Fancy and delight to the owners of them.

It is not every new variety or breed which is destined to survive the test of popularity. To succeed it must have a sound economic basis as well as present a pleasant picture. For the Fancy is—

> "Vain as the leaf upon the stream,
> And fickle as a changeful dream,
> Fantastic as a woman's mood."

The number of the slain is manifold, and how many of the current "rages" will stand the test of time? Some

of the *old* breeds are dead, others are dying, slain by the Fancy! How many of the infant prodigies will survive?

The Source of Colour.—The question naturally arises, "How did the various colours originate? Are they descended from a common ancestor, or from a variety of sources?" Such questions carry us far back into the distant past. It will be found stated in the chapter on the Buff Orpington that all our buff varieties had their direct origin from the Buff Cochin, or, at any rate, that this breed has played the chief part. But is the Cochin a distinct race, or has it the same ancestor as the other breeds of poultry? Nothing could well be more distinct from the heavily-feathered, rotund Cochin than the tight-feathered, upright, modern Game. Are both from the same distant ancestor? Such a question cannot be answered in the single syllable "Yes" or "No." But the weight of scientific research points to an affirmative answer. Those who wish to see the discussion on this point are referred to Darwin's *The Variation of Animals . . . Under Domestication*, or for a brief but sufficient summary to the second edition of Tegetmeier's *The Poultry Book*.

It is now generally admitted that the common ancestor of all our various breeds is the Red Jungle Fowl, or *Gallus Bankiva*. The colour of the male bird is thus described: Comb, face, wattle and neck, carmine; the comb, single and serrated; eye, orange iris; lobes, rusty red, or in some cases "a light greenish blue"; beak, horn colour; legs, blackish-lead colour, sometimes "willow"; neck and hackle feathers, bright orange, or yellowish orange, paler where it flows over the back; back, rich deep red; saddle, orange red, tipped with gold; tail, black with a green gloss; breast and all the lower parts, black; wing-bow, red; wing-bar, greenish black; wing-bay, red; primary wing feathers, black; secondaries, black, with an edging of chestnut colour.

The adult hen is thus briefly described by W. R. Ogilvie-Grant in Vol. II of *Lloyd's Natural History*: "Adult Female. Top of the head, rust-red shading into orange on the neck, and pale yellow on the

mantle (*i. e.* the shoulders), each feather with a black stripe down the middle; rest of upper parts, reddish-brown, finely mottled (? pencilled) with black; secondary quills, mottled with pale reddish-brown towards the edges of the outer webs; fore-neck, chestnut; rest of under-parts, pale light red, browner on the belly and flanks."

Mr. Tegetmeier says of the hen: "All the upper parts are full burnt-umber brown, the feathers vermiculated and centred sepia, with pale tawny shafts; the side tail feathers are plain sepia, as are the inner webs of all the remiges (*i. e.* quill feathers); all the under-parts vinous reddish-brown, the shafts pale."

Every fancier who is at all familiar with the Black-red Game fowl will note how closely the coloration follows that above described. It is followed even more closely by the colour of the present-day Brown Leghorn. Every one will see how closely the description of the Jungle hen's body colour, "reddish-brown, finely pencilled with black," tallies with the plumage of the ordinary Brown Leghorn hen; while Mr. Tegetmeier's description, "burnt-umber brown . . . with pale tawny shafts," will show how ancient is the common failing thus described, to be seen on hens in every fancier's yards, and known as "shaftiness."

In *shape* the Jungle fowl is more like the smaller type of the Old English black-red Game. The length from beak to end of sickles of the Jungle cock is given as from 23 to 25 inches, and his weight as between 2 and 3 lbs. A small, undubbed Old English Game cock, with a low tail carriage, would be hardly distinguishable from his ancient Indian ancestor. The Jungle fowl is midway between the Old English Game Bantam and the ordinary size.

Besides the *Gallus Bankiva*, which Darwin and others think to be the ancestor of all our domestic varieties, there are three other species known as *Gallus Stanleyii*, *Gallus Sonneratii*, and *Gallus Furcatus*. The first of these is the nearest to the *Gallus Bankiva*, and those who wish to see an interesting account of a series of experiments made with it, and the attempts to hybridize with domestic fowls, should read the essay by Mr. J. L. Thomas, of Ceylon, given in the report of the Second

National Poultry Conference, held at Reading in 1907. First crosses were made, but no chicks of the F^2 generation were reared.

The *G. Stanleyii* is larger than the *Gallus Bankiva*, and the cock has a spangled hackle and a black breast mottled with chestnut; while the secondary feathers of the hen's wing are barred with buff, and the breast is white fringed with black. Its chief characteristic is the peculiarity of the cock's crow, which is said to resemble the words "George Joyce." And this peculiar feature is held to be one of the marks for believing it not to be the progenitor of our poultry.

The *G. Sonneratii* is illustrated in *Lloyd's Natural History*, Vol. II. The cock has a black hackle fringed with grey, with a yellow spot at the end; while the breast feathers are black edged with grey, and the *shafts* of the feathers white. His legs are yellow. The breast of the hen is white, fringed and marked with black.

The *G. Furcatus* has only a single wattle. Its neck-hackle is purplish-blue and the saddle-hackle laced with gold, the under parts and tail black. The hen is nearly black, but the hackle sandy-brown, the back irregularly barred with buff, while the breast is buff, laced with black.

There appears to be little evidence whether these ancient varieties are inter-related or not. But it requires a far less stretch of the imagination to believe that these are but varieties from a common source, than it does to believe that all our diverse varieties, which include such distinct forms as the Silkie and the Yokohama, the Game fowl and the Cochin, have descended from one of them to the exclusion of the others. I must leave this for the ornithologists to decide.

The Jungle Fowl Colours.—However that may be, we have in the Jungle fowl all the colours found in our modern breeds, viz. Red, Black, Buff, Blue, and White, and therein the various forms of lacing, barring and spangling. The new varieties we produce are but a reproduction of the old, though more perfect it may be in tone or hue, and more symmetrically arranged as to pattern. Even the most modern of our colours, such as is seen in the Duckwing Leghorn, have been known for many generations in the

Yokohama fowl of Japan. All colours are seen to-day in the Game fowl, the oldest of our domesticated races, and we are only doing to-day, by artificial selection, what nature has done by the processes of evolution, or natural selection, in the silent and unrecorded work of the past.

The *Gallus Bankiva*, or Red Jungle fowl of India, is the generally-accepted ancestor of all our domesticated varieties of poultry. In this breed we find *Red* in all its various shades from chestnut, carmine, rusty-brown, to orange-red, and if we extend it to golden shade we include the *Buff*, which may be of any shade from orange to lemon. Then there is *Black*, which, with its varied lustres, may be glossy green, the most fashionable shade of to-day, or blue-black, or purple-black, or the deep lustreless coal-black, or, as is so common, the commingling of all these shades, as seen in various specimens of, *e. g.*, the Black Orpington. In the *Gallus Bankiva* there would appear to be no trace of white plumage, which is an absence of colour rather than a colour itself. But if aged specimens of this breed could be found, some survivors in the struggle for existence which is eternally being waged, I think white would be found in parts of the plumage, for the "natural" species can be no more exempt from the universal law that colour loses its intensity with age than our own domesticated specimens. Moreover, it is well known that all black breeds, and birds in which the prevailing plumage is black, throw occasional white sports, or albinos. This may be due to a temporary loss of pigment, or to the clashing of colours, as we shall see later on. Adding thus *White* to our list, the *Blue* is easily made, since it is only a mixture of Black and White, formed by what is termed "particulate" inheritance, which in this case closely resembles a "blend," though it is said to be of a "minute mosaic character."

It is, therefore, possible to breed all the colours we have, with all their combinations of patterns, from the colours which are found on the *Gallus Bankiva*, which are so faithfully reproduced in our own Black-red Game or in the more modern Brown Leghorn.

The Colours found in Poultry are therefore Red,

Buff, Black, White, and Blue, and specimens of all these colours, with the exception of Red, may be found *alone* on single birds. The breeds and varieties of buff, black, white, or blue are numerous.

The Red colour is never found alone, but always in combination with black, white or other shades. There are black-reds, brown-reds, piles, but no red. In those breeds which are called Red, such as the Red Dorking, there are *Black* feathers in the wings and tail, and the same is true of a recent American variety, the "Rhode Island Red." The nearest approach I have seen to an entirely Red fowl is in a very deep-coloured Buff Orpington cock. Such are to be found without any true black feathers either in wing or tail, but the black is then intermingled with the red and forms bronzed feathers. Moreover, the breasts of such birds are usually a lighter shade of buff.

Black feathers, then, nearly always accompany red, and when the colour is red (and not buff only) the black feathers are found, as in the *Gallus Bankiva*, in the tail, breast and under-parts.

The reader may perhaps remark that we have the true red in the Pile Game and the Pile Leghorn, and no black but white plumage only. On careful observation it will be found that in these two breeds white has taken the place of black, and the tail, breast, under-parts, and those parts of the wings near the shoulder and in the wing-bar which are black in the *Gallus Bankiva*, and in its descendant the Black-red Game, are here not black, but white.

It is now generally known that the Pile can be bred from matings of a black-red fowl with a white one. Here, then, we get a second rule. That when white is opposed to black the white prevails or is dominant while the red remains affected in a less degree. That this rule is not without many and singular exceptions we shall see later. The rule may be qualified by saying that when the white is pure, and is inherited from a succession of white ancestors, it dominates or annihilates the black, when the black also is pure in the same sense. The white effect is followed right through the bird's plumage and not only in the exterior feathers. The flights of the "Pile" are white, and in the second-

aries only the outer edge is bay-colour and the inner webbing white. But it is to be noticed also that the neck hackle, which should be "bright orange," is often very pale, and that frequently a pale white centre has taken the place of the black striping in the black-red, which gives the hackle a washed-out appearance instead of a solid colour. The white had abolished the black and modified the red. I may here mention another effect which concerns black *versus* white more than black and red, but it is better to do so here because found on the same bird, viz. that the white is often an *incomplete dominant*, and traces of black are commonly to be found in the true tail feathers, where black is most persistent, and also in the flight feathers, and other parts of the plumage. A perfectly coloured Pile is very beautiful, but rarely seen, because the black persists in showing traces of its birthright, and the red is softened and sometimes ticked with white, which, though it cannot kill the colour, often injures its purity. To maintain the brilliance of the red pigment it is often necessary to give a fresh infusion of colour from the black-red stock, as breeders know to their cost.

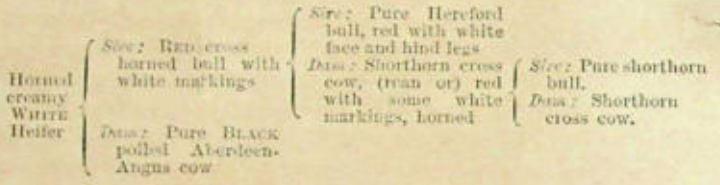
Red *versus* **Black**.—We have seen that when red and black appear on the same bird each has its separate domain to occupy, as in the *Gallus Bankiva*. The red seizes the hackles, shoulders and back wing-bay; the black seizes the rest. But there are varieties in which the red has disappeared and its place has been taken by white, while the black retains its old position. Such cases are, *e.g.*, the Silver Duckwing[1] and the Silver Laced and Silver Pencilled Wyandottes. Here the neck-hackle and saddle-hackles are white, but the black striping is retained; the wing-bay is also white and the shoulders and back. How has this been brought about? What has destroyed the red in its various hues but retained the black? The answer is "Black itself."

Where hereditary red and hereditary black are brought into conflict the black pigment destroys the red, and white or albinism remains. It would seem to be comparatively easy in breeding fowls, as in spending cash, to convert the gold into silver, though it would prove to be intensely more difficult to convert the silver into

[1] See Frontispiece, and cf. Brown, Pile and Duckwing.

gold. In almost all cases where there are "gold" varieties the silver is found also, and, as a rule, the silver is more perfectly marked.

This antagonism between black and red is easily proved. In any farmyard where black and buff, or black and reddish plumaged fowl run together, white or creamy-white specimens are to be found. Where the red is most intense there it will be most completely demolished. Where its shade is paler, and black and fawn or light buff are brought into conflict, the white sometimes assumes the shade of French-grey, called blue by lovers of that fashionable hue. This conflict of the reds and the blacks is a singular and interesting study, and is true in its application to beasts and cattle and even mankind. A curious but instructive study of stock-breeding is given in Prof. Thompson's book on Heredity (p. 379), in which a white heifer is shown to be the direct descendant of a red bull and a black cow—



It would be an interesting inquiry to note how constantly this colour law applies to the breeding of horses and cattle.

Prof. Thompson also notes that in shorthorned cattle, while reds and roans are popular colours, red and white and white are not popular. Yet when roan and roan are mated season after season the white crops up in part and produces roan and white or entirely white time after time. Is this due to a loss of red colour pigment, or brought about by latent black pigment?

An interesting paragraph on a lecture by Prof. Karl Pearson appeared in the *Daily Mail* dated January 27, 1909, under the heading "Red-haired Parents. Scientists and the Freaks of Albinism." Details are not fully given, but the following extracts are suggestive: "The presence of black hair and blue eyes, or red hair . . . for parents . . . may result in the birth o

albinotic offspring with white hair and pink eyes. In the case of albinos of the white races 10 per cent. of the parents had dark hair and blue eyes. . . . Equally striking was the proportion of red-haired parents of albinotic stock." He also goes on to say that "The danger resulting from the marriage of cousins was very great." "I don't say that albinism will appear in sound stock owing to the marriage of cousins, but we can never be sure that albinism is not latent where there is black hair and blue eyes, red hair or extreme blondism, and in such cases the danger is enhanced by consanguinity."

I mention this latter clause because I have reason to believe that the mating of consanguineous stock, *e.g.* in Black Minorcas, has been the cause of the origin of the Albinous or White Minorca.

I need hardly say that albinos are not a desideratum in the human race. The unfortunate possessors of the quality never seem happy, nor the parents either. White poultry are, however, on another footing, and nothing can appear more dainty or beautiful. In the chapter on Orpingtons I have indicated my impression of the origin of the white variety, and I have little doubt that, consciously or unconsciously, the white and white-laced breeds have been due to the operation of this law.

The Persistency of Red Pigment.—Before leaving the question of black and red, it may be well to point out the curious *persistence* of red on those parts of the plumage where red is found in the *Gallus Bankiva*.

We have seen that white may abolish black, though at times it acts as a somewhat incomplete dominant. But white has much less effect on red. It may soften and tone it down, and may perchance introduce gold for orange, or buff for red.

The *red persists*, however, not only over white, but even *on the entirely black plumaged fowls*. Breeders are well aware of the constant recurrence of red feathers in the hackles of black fowls, especially the neck-hackles, and of their occasional appearance on the wing-bow. Cockerels bred from such sires will inherit the red feathers for generations, *e.g.*, in Minorcas, Hamburghs and Orpingtons. It is a singular fact, however, that

such cockerels breed pullets with the most brilliant and glossy greenish-black plumage. Where the black pigment is sufficiently dense and abundant it does not destroy it, but gives the black an additional lustre.

The Application of the Law to the Pure Black-red Type.—In the pullets of the black-red type the red is not a desirable colour in its ruddiest hues. Yet the red persists with an astonishing vigour, and it is a rare thing to find, *e.g.*, a Brown Leghorn hen without red feathers distributed over the wings, especially the wing-bow and wing-bay. The "body colour" which is desired by fanciers of the variety is "a rich brown, very closely and evenly pencilled with black; the feathers free from light shafts." By "body colour" is meant the colour of the whole of the body except the neck-hackle and breast. It is comparatively easy to get this colour on the back, but very difficult to keep the wings free from a rusty red or foxy colour. In these red feathers the fine black pencilling is almost entirely absent. When the black pencilling is very fine and close it indicates an abundance of black pigment, and this mitigates the red and softens its hue to the more sober-coloured and softer brown. It is desirable, therefore, in order to eradicate this "rust," to select densely pencilled hens, and also to see that the flight and secondary feathers are sound in the black, and that the under-colour is of a dark slaty hue.

Also in choosing a male for pullet-breeding he should be selected for soundness of colour, especially in black, and altogether of a darker and less brilliant shade than one selected to breed show cockerels.

No sooner, however, is the rust bred out of the wings, than the breeder is faced with another difficulty. The black has destroyed the rustiness, but it has also destroyed the colour of the shaft of the feather, making it a pale yellow, or sometimes nearly white, so that it is rare to meet a sound-coloured hen whose "feathers are free from light shafts." In Mr. Tegetmeier's description of the *Gallus Bankiva* hen, he describes her as having "light shafts." A trait which has manifested itself for countless generations is not easily bred out, and is certain to manifest itself occasionally for many generations yet to come, if not for ever.

If the standard were adopted for the darker male, both sexes might be bred from one breeding pen. As it stands at present, while "brightness" of colour is the vogue, with rich hackles almost devoid of black striping, two pens must be used, and for breeding brilliant-coloured cocks the rusty-winged hens are the right kind, having the pencilling not fine, but as coarse as possible, with a diminution of black pigment.

These facts are interesting comments on the eternal conflict between the red and the black pigments.

The same principle applies to all breeds of the black-red type, *i. e.* to all breeds in which the breast, tail and under-parts are black, and the hackles, back and wings are red. It is further noticeable in some of these breeds, *e. g.* the Partridge Wyandotte, that the harshness of colour diminishes with age, and this explains why it so often happens that a Partridge Wyandotte hen is of a more perfect colour in her second and succeeding years than as a pullet.

How did the Black Fowl originate?—This would be interesting to know. There is no entire black fowl among the Jungle fowl group, though, as we have seen, black is one of its strongest constituents. There are instances of what are known as "melanic sports" among birds, and cases are by no means rare to-day of fowls coming with entire black hackles, whose ancestors had gold or orange-coloured hackles with a black stripe, *e. g.* the laced and the pencilled Wyandottes. Mr. Davenport suggests that "It is probable that wholly black varieties have arisen as a result of excessive production of the black pigment, melanin." The black fowls which have played such an important part with us are the Black Langshan, Black Minorca and the Java fowls, all of comparatively recent introduction to us, though for how many generations they have been known in their native habitats is unknown. One of the most recent introductions, the Black Sumatra Game, seems to be the nearest ally of the ancient *Gallus Bankiva*, and may have a coeval history. However the black fowl arose, it is with us, and plays a most important part in the determination of all colour factors.

The Buff Colour.—The varieties of fowls entirely buff are also comparatively modern, and, as already

such cockerels breed pullets with the most brilliant and glossy greenish-black plumage. Where the black pigment is sufficiently dense and abundant it does not destroy it, but gives the black an additional lustre.

The Application of the Law to the Pure Black-red Type.—In the pullets of the black-red type the red is not a desirable colour in its ruddiest hues. Yet the red persists with an astonishing vigour, and it is a rare thing to find, *e.g.*, a Brown Leghorn hen without red feathers distributed over the wings, especially the wing-bow and wing-bay. The "body colour" which is desired by fanciers of the variety is "a rich brown, very closely and evenly pencilled with black: the feathers free from light shafts." By "body colour" is meant the colour of the whole of the body except the neck-hackle and breast. It is comparatively easy to get this colour on the back, but very difficult to keep the wings free from a rusty red or foxy colour. In these red feathers the fine black pencilling is almost entirely absent. When the black pencilling is very fine and close it indicates an abundance of black pigment, and this mitigates the red and softens its hue to the more sober-coloured and softer brown. It is desirable, therefore, in order to eradicate this "rust," to select densely pencilled hens, and also to see that the flight and secondary feathers are sound in the black, and that the under-colour is of a dark slaty hue.

Also in choosing a male for pullet-breeding he should be selected for soundness of colour, especially in black, and altogether of a darker and less brilliant shade than one selected to breed show cockerels.

No sooner, however, is the rust bred out of the wings, than the breeder is faced with another difficulty. The black has destroyed the rustiness, but it has also destroyed the colour of the shaft of the feather, making it a pale yellow, or sometimes nearly white, so that it is rare to meet a sound-coloured hen whose "feathers are free from light shafts." In Mr. Tegetmeier's description of the *Gallus Bankiva* hen, he describes her as having "light shafts." A trait which has manifested itself for countless generations is not easily bred out, and is certain to manifest itself occasionally for many generations yet to come, if not for ever.

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The Buff Colour.—The varieties of fowls entirely buff are also comparatively modern, and, as already

stated, we owe most of its prevalence to the once famous Buff Cochin. But where did the Cochin get its buff plumage and its yellow legs and feet? Is it the offspring of the Sonnerat Jungle fowl, which had yellow legs, and yellow spots on its hackle? or in its long descent has the red colour been softened by conflict with black or white? Traces of the varied hues of buff, from cinnamon to lemon or pale gold, are found on the Jungle fowl. Mr. H. Hesford, in his interesting chapter on colour in his popular book on Leghorns of all varieties, calls buff "a curious modification of red," and points out that, while white colour quickly destroys black, it only modifies or weakens the red when brought into conflict with it, and produces buff in time. One thing is certain, that buff is not so persistent as red, and white destroys it in much quicker time than it destroys red. One of the great difficulties of breeding a pure and even-coloured buff fowl lies in the fact that it is a colour difficult to maintain free from the admixture of either white or black feathers. When the hue at all approaches cinnamon or red, black feathers or black tickings appear in the wings or the tail, and red patches of darker colour appear on the wing-bow. When the shade is medium or pale, white feathers are frequent.

Value of Sound Under-colour.—The secret of the preservation of the buff lies in noting the value of the undercolour. The term is applied to that part of the feather which is underneath the surface. The fluffy portion should be buff also down to the skin, including the shaft of the feather. When this is so the buff pigment is shown to be more plentiful. Many buff fowls are only buff on the surface, and white underneath, or nearly so. Buff colour may be intensified by infusing buff of a darker shade, but this must be done gradually, or patchiness will be the result, and the red pigment will take possession of the wings, and when it becomes at all red, black will be found to accompany it on its ancient quarters, viz. the flights and the tail. Soundness of under-colour is therefore the safeguard of the buff, and for breeding purposes defective under-colour should be guarded against.

In the chapter on Buff Orpingtons more details are given, which show that buff is far from being a per-

sistent colour. It not only fades quickly from exposure to sun and rain, but the pigment also diminishes in quantity with the age of its possessor.

Buff *versus* **Black.**—In conflict with black, buff acts much the same as red, and the result of a union between a buff fowl and a black one is a *creamy* white, in some cases. It would appear that the antagonism is not so keen as between red and black, which produces pure white.

Another singular proof of this lesser antagonism lies in the curious fact that *buff and black sometimes produce blue*. I once crossed two Buff Rock hens with a Black Leghorn cock. Some of the progeny were creamy white, some were black, and some had nearly blue bodies with buff hackles. The nearest approach to a soft, even-coloured blue duck I ever saw was from a fawn-coloured Indian Runner duck and a Cayuga drake, the colour of which was a rich black with a green sheen. The only part of the blue duck not perfect was the throat and neck, which was white, like that of the Indian Runner duck. Both in colour and type the bird was a facsimile of the Blue Orpington duck. In these cases buff and black act like black and white in the instances where *neither* dominate, but the inheritance is particulate.

Black *versus* **Buff in the Black Leghorn.**—One of the most interesting and intricate examples of the action of black and buff is found in the breeding of Black Leghorns. Here the aim of the breeder is to breed a bird with a dense black plumage, but with a yellow leg and beak in either sex.

As a general rule, the distinct parts of a bird are inherited separately and independent of each other, and leg colour is independent of plumage colour or skin colour, *e.g.* a Black-red Game may have legs black, willow, yellow, or white. The natural colour of the legs of a black fowl is either black or dark slate, or willow or bronze. But when an attempt to introduce yellow legs is made, the parts become correlated, and the yellow leg attacks the black plumage and destroys its intensity and produces white, more especially in those parts which are the black pigment's special domain, the flights and the tail.

For some reason so far unexplained, the yellow leg is easy to breed in the cockerel, and when the yellow is intense the plumage is light in under-colour, and white appears in the flights and tail. The black pigment appears to be lacking in the male, and the yellow pigment strong, and that in the longest feathers, more especially the two long sickle feathers. The black pigment appears to be exhausted before the feathers have reached their full growth, and the result is white at the base of the feather in nearly all cases, and frequently along its entire length, except at the tip.

On the other hand, the black pigment is strongest in the hen, and the yellow pigment deficient, so that the female has naturally dense black plumage, with dense black under-colour, but with legs either black or bronze colour, with faint trace of yellow showing in the shank, and yellow between the toes and on the bottoms of the feet.

The breeder's aim is to transfer the yellow pigment of the male bird to the hen, so that she may have yellow legs and beak, and to impart through the hen the black pigment to the cock, so that he may be sound in his black plumage.

This feat has been many times accomplished in the case of the female. Every year, now, pullets are shown with dense and brilliant black plumage, and with good yellow legs. In the case of the cock it has rarely, if ever, been done to perfection. Sound black plumage has been seen on all parts except at the roots of the sickle feathers, and very many specimens are exhibited with absolutely sound black plumage *including* the sickle feathers, when the latter have not been *fully* developed. But in the majority of cases, if not in all, where the cockerel has good yellow legs, the fatal white appears when the sickle feathers arrive at maturity.

There have been cases where the entire black plumage, fully developed, has been seen, but, in such cases, the leg colour has been deficient in yellow pigment, which is manifested either in the legs being of a willow cast or a bronzed shade, or with good yellow legs spotted with black.

In the cases nearest approaching the perfect ideal it is to be feared that an alien cross has been resorted to.



SPECIMENS OF IMPERFECTLY-MARKED FEATHERS.

The Black Minorca has plumage of the desired hue, and is remarkable for the soundness of the black feathers in the tail. When this cross is introduced the black plumage is easily obtained, but with a general loss of leg colour. In some cases, however, the yellow pigment in the Leghorn's legs has been dominant over the black pigment in the Minorca's legs, and the result has been the nearest approach to the ideal. When such specimens are either bred together or introduced into the pure Leghorn, the recessive black manifests itself, and many of the progeny have black or dusky legs. Moreover, the type of the Leghorn is altered. It becomes more angular, like the Minorca, has broader and squarer shoulders, and the back is elongated and the thighs more prominent, and there is a general lack of sprightliness and alertness in carriage.

To breed Exhibition Cocks the male is selected with the best coloured legs and beak obtainable, and, of course, with good head points, such as correct form of lobe and comb, and with colour as sound as can be obtained after the leg colour, etc., has been found. The hens to mate with him are selected for soundness of under-colour as their chief point; leg colour, while as good as can be found, being a secondary consideration. The size of the hen should be large also, and the comb suitable, *i. e.* well serrated, and with a good thick base.

To breed Exhibition Hens.—The cockerel should be chosen with good yellow legs, orange colour, if possible, and with as good plumage colour as is found compatible with this. There is sure to be some white in the tail, and white in under-colour of plumage—the yellow pigment has destroyed the black—but this is of little consequence. And if the hens he is mated to have good black plumage it matters very little. Indeed, I have known good pullets bred from a cock white as snow in under-colour, and with a tail showing much white both in the sickles and tail coverts.

The point to be chiefly considered is the proportion of the various pigments. If the cock is fairly sound in colour and has good yellow legs, the density of the hen's plumage is of less consequence if the legs are yellow.

The comb of the cock for pullet-breeding should be

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as large as possible and rather thin at the base. He is better dubbed before the breeding season commences. The pullets also should have large, well-serrated combs, and the lobes of both sexes should be as well shaped and plentiful in substance as can be obtained. If these points in colour are borne in mind, and the pullets chosen with due care, it is possible to breed exhibition specimens of *both* sexes from the same pen. But there will always be a conflict between the yellow (or buff) of the legs and the black of the plumage. Another simple way of breeding both sexes from the same pen is to have a cock-breeding cock and a pullet-breeding cock to the same pen, and allow the birds to run in the breeding pen on alternate days—the cock-breeder to be chosen for soundness of plumage, and the pullet-breeder for abundance of yellow pigment, as indicated by good legs and beak, with light under-colour. This is much cheaper than buying two breeding pens.

This seems to be an exception to the general rule, in poultry, of unit characteristics. There does not seem to be a sharp separation between the cells which provide colour for the plumage and the cells which supply the leg-colour, but as we have seen a fusion between the two, and the two functions are correlated. Davenport (p. 80) remarks, "The forms of feathers and their colour patterns are numerous. These forms are sharply marked off from one another for the most part; moreover, when two characteristics are crossed the result is rarely a blend. This was a great surprise to me, as I had anticipated that blends would be the rule; and, overwhelmed by the facts, I embraced at once the theory of immutable characteristics."

Here, however, there are not "immutable characteristics." The black leg and the yellow leg do not act as "dominants and recessives" and fight their conflict alone. But plumage and leg colour are correlated.

Other Instances of Correlation.—While the yellow of the White Leghorn's leg is said by Davenport to be dominant over the Black Minorca (p. 87), it is noted that the yellow leg of the Dark Brahma is recessive to the Minorca and that the progeny of this cross has black legs. Here, again, is a case of a breed with yellow legs and dark plumage, for the Dark Brahma

has a plentiful supply of black, hence the legs are often dusky bronze, and when a further addition of black pigment is infused from the Minorca, the legs become altogether black. Another instance is that of the Ancona. This breed ten years ago was a mottled bird, with more white than black in its plumage. It then had yellow legs. But when the new type was decided upon, and a black plumage, faintly mottled with a white tip, was adopted as an ideal, the legs also became altered in character, and the yellow leg was mottled all over with black spots. This was also adopted as the ideal. When the black pigment was increased in the plumage it found its way to the legs also.

Still another example of the conflict yellow *versus* black is going on in breeding the Black Wyandotte. As the breed is of very varied origin, all colours of Wyandottes having been used in its manufacture (not to speak of Black Orpingtons, Black Rocks, Minorcas, Hamburghs, Leghorns, Indian Game, and cross-bred fowls innumerable), breeders are turning their attention first to colour of plumage, to get it a dense black, and then to type. After these are fixed, the yellow legs will be striven for, and then the conflict will begin. As the Wyandotte has less wealth of feather than the Leghorn it may be easier to get a sound tail, but excess of colour on either side will give either dusky legs or white plumage, and birds at all approaching the ideal combination of colour will always be scarce, and when found the combined qualities will be volatile and not fixed or assured.

Another instance of the correlation of leg and plumage colour is seen in the White Leghorn. When the yellow pigment is strong, as observable in rich yellow or orange-coloured legs, this pigment diffuses itself over the body, and the feathers show a yellow tinge, especially in the hackle feathers and the saddle. And when specimens are found in which the plumage has become *pure* white, with no trace of sappiness, a bluish white, then the leg-colour is no longer orange coloured but pale lemon. Some have attributed this paleness to a cross with the white-legged White Minorca, but I think the correlation I have indicated is sufficient to account for it. The cases of rich leg-colour and *pure*

white are rare. What is gained in one point is lost in another.

Colour of Beak and Plumage.—It should be noted that while leg-colour and plumage-colour are thus in many instances correlated, the colour of beak and plumage do not follow so closely the same law. There are a hundred yellow-legged Black Leghorns to one with yellow legs *and* a yellow beak. This is more particularly true of the pullet. In pullet-breeding Black Leghorn cocks they are more common, but not in sound-coloured birds of either sex. The Standard allows, and that wisely, "*Beak:* yellow or horn," the latter being the natural colour, though in most sound-coloured specimens the "horn" colour contains more black than yellow, and in many specimens it is nearly, if not quite, black.

White *versus* **Black.**—We have already noticed, both in this chapter and in the previous notes on Mendel's laws, that, when these two colours are brought into direct conflict, white is usually dominant and the heterozygous progeny are either white or white speckled with black. And further, that when the progeny of the F^2 generation are mated together, they follow out Mendel's law of segregation, and the resulting average is 25 per cent. black, 50 per cent. impure white, and 25 per cent. white.

But this dominance of white over black is by no means universal. Sometimes black is dominant. It depends on the breeds which are crossed, or upon the purity of the specimens which are crossed.

Where the white is a pure albino it prevails. The White Leghorn, which is the purest type, is dominant over the black plumage of the Minorca or the Hamburgh. Darwin found the white plumage of the Silkie *recessive* to the Black Minorca. Davenport says, "It is hardly conceivable that the white of the Silkie is different from that of the Leghorn; so it must be concluded that white inherited as a solid colour is sometimes dominant and sometimes recessive, depending on the race in which it inheres" (p. 87).

But he had forgotten to take into account the "black *skin*" of the Silkie, although he shows from experiment that this black skin dominates over the colourless skin

of the Frizzle and the Jungle fowl. This black skin is an indication of the presence of an abundance of black pigment in the Silkie. This is also shown by the leg-colour, which is of a leaden blue shade, a mixture of black and white. The white of the Silkie is not sufficiently pure to dominate the black or other colours with which it is crossed, the correlation of the colours of skin, legs and plumage rendering the whole recessive. This also goes to account for the existence of a Black variety of the Silkie, black being more natural to its skin and leg-colour than the white. Two such whites may easily breed a black.

Another white breed which is not dominant over black is the White Wyandotte. Although the plumage is apparently of the purest, and nearly, if not quite, that of a pure albino, still it carries black strongly in a dormant state. When the White Wyandotte is crossed with a black breed, *e.g.* the Black Java or the Black Minorca, the result is a rose-combed fowl with black plumage, and from the former cross some of the purest and best of the present-day Black Wyandottes have been bred.

How is this accounted for, since the white plumage seems so pure? A cross, *e.g.* White Wyandotte and Black Leghorn, will show the cause. The great majority of the chicks will be black (especially if the Leghorns have sound black plumage), but some will be laced in plumage, white feathers with a black band following the contour of the feather, like the Silver Laced Wyandotte.

The White Wyandotte is a sport from the Silver Laced, and still carries the black pigment strongly in reserve. It breeds true when mated to its own variety, but when the chance is offered the dormant black reappears. I have no doubt that other crosses would show similar results. Where either white or black is dominant they follow out the usual law of segregation, according to Mendel's law, and this accounts for the significant but tale-telling fact that the chicks from many Black Wyandotte eggs, although the parents were black, hatch white, and often the purest white. It is an indication of White Wyandotte in the ancestry.

There are other instances in which the inheritance is

not alternate (or exclusive), as in the above cases, but "particulate"; which is a fine "mosaic" inheritance approaching a blend. When the inheritance of black and white takes this form we have what the Fancy terms a "blue," which may vary in shade from a pale French-grey to a dark slate, and it often takes a strong imagination to find any blue in it. It is totally distinct from the blue on the wings of the wild mallard, or on those of a Rouen drake, or from the iridescence of the Duckwing Leghorn's wing-bar. The most typical blue, and the oldest variety of the name, is the "Blue Andalusian," which has a particulate inheritance of black and white, as will be shown presently.

Buff, Black and White in Conflict.—Perhaps the most interesting of all cases in showing the effect of crossing Black and White or Buff and White is shown in the history of the manufacture of the Buff Laced and the Blue Laced Wyandottes.

These two beautiful and interesting varieties are bred from mating together the Gold Laced and the White Wyandotte.

The Gold Laced Wyandotte has a body-colour of a rich golden bay, each feather of the breast being laced with well defined jet black lacing, while the neck- and saddle-hackle are of the same colour, with a distinct black stripe down the centre; the tail is black.

The White Wyandotte, being a sport from the Silver Laced variety, though a pure white colour, carries black as a recessive character.

When these breeds are mated together, the white colour tones down the rich bay and produces a buff colour. It destroys the black stripe in the hackles, and leaves a rich golden fringe with a pale centre, while in some cases the black lacing is destroyed and becomes white; and the tail white also. This makes the Buff Laced Wyandotte, and no prettier fowl has ever been seen when the buff colour is solid. The hackles look like burnished gold. The birds are of true Wyandotte type, with rose-combs, and the legs yellow, and face free from feathers. This latter point is not always true where attempts have been made to improve the buff colour by adding a Buff Cochin cross.

The most instructive feature of this cross is, however,

that, from the *same* mating, specimens of the Violette or Blue Laced Wyandotte are produced.

In these cases, while the white has sobered down the rich bay ground-colour, it has not destroyed the black lacing by turning it into white, but leaves a blue lacing of the Andalusian colour. Really good specimens of this variety are rarely seen, and the colour is not distinct enough to catch the eye. The black tail should also be turned into blue. The general effect of these two varieties shows the truth of the rules of colour already indicated, that white tones down the red and makes it buff, and also when in conflict with black is often dominant over it. On the other hand, the inheritance is sometimes "particulate," and produces the fine mosaic of blue. It is also at times "recessive" to black, when it is itself impure, and unfortunately for the breeders of the "Buff Laced" variety the tail often shows black feathers instead of white; and sometimes throws odd black-laced feathers instead of the buff feather laced with white. Only by continued selection can these two varieties be bred true to colour, and although good specimens of both colours are shown together at our great International Show, they do not seem to have caught the public fancy.

Before giving a description of the "Blues," it may be well to notice other forms of black and white, such as we see in the alternative bars of black and white on the plumage of the Barred Rock. This is another instance of particulate inheritance where the black and the white are disposed in alternative layers instead of the mosaic pattern. But even in the Barred Rock the colours are not black and white, though some specimens nearly approach this, but the dark bars are a "dark blue," and the lighter ground-colour, a bluish-grey.

How this peculiar conformation of colour arose is not definitely known. The Cuckoo Dorking and the Cuckoo Old English Game are ancient, and the Barred Rock has been known since about 1870. It is generally understood that this breed arose from a cross between the Dominique cock and the Black Java hen.

The *Dominique* is one of the oldest of the American breeds, a bird of a light cuckoo-coloured plumage, having broad alternate bands of light grey and those of

a darker slate, and with brilliant yellow legs and a neat rose-comb. When birds of a darker bluish shade were mated together for breeding, the progeny often came with black sickles and tail coverts.

The *Black Java* is a large black-plumaged fowl with black legs, having a yellow tinge and a yellow foot underneath, and with a single-comb and a brown eye. The average weight of the hen is from 7 to 8 lb.

In whatever way these two dissimilar breeds were made they are most persistent in preserving their various traits now that they are commingled in the Barred Rock.

Every breeder of Barred Rocks is familiar with the fact that the tendency is to breed a large percentage of light Dominique-coloured cockerels, and dark Java-coloured pullets, and if a careful estimate was taken in the yards of large breeders I believe the average results would closely adhere to Mendel's law, when hybrids are crossed, viz. 1D + 2DR + 1R, where D represents the Dominique, R the Black Java, and DR the evenly-barred progeny. It may be that where careful *inbreeding* has been carried on for a number of years the evenly-plumaged birds may show a greater percentage than 50, but I am sure that where they are mated from different strains, although care may be taken to select all the stock of the desired medium shade, the progeny will follow Mendel's law of averages. This is a singular fact when we remember that the Barred Rock has been bred for over thirty years in England, and yet the "Black" blood has not been expelled. Just as we shall see in the case of the Andalusian, where the black gamete meets the black, the progeny is black, and where the white meets the white, speckled white is the colour of the progeny, and where white meets black, blue is the result; so in the Barred Rock black × black = black pullets, white × white = light cuckoo-coloured cockerels, and black × white = medium-coloured birds of either sex; and as with Andalusians so here, where the light-coloured cock is mated with the *black* hen there is an increase in the number of black females, while the cockerels take a darker hue, and there are often first-class specimens of both sexes. The chief difference is that whereas it does not matter so much in Andalusians

which sex is the dark or the light—the colour being equal in both sexes, or nearly so—in Barred Rocks, the barring appears to be a male characteristic and the black that of the hens. In the various experiments which are recorded in testing the Mendelian laws this peculiarity has been observed on many occasions.

And the correlation between leg and plumage colour is again observable in this breed. Where the legs are a brilliant yellow the plumage assumes what is known as a "brassy" hue upon exposure, and when the plumage has more resisting power to the sun's rays it will be found that (1) the legs are dusky in shade, or spotted with black, and (2) the black bars persist right down to the skin. An excess of black pigment, as shown in these forms, keeps the yellow pigment more confined to the legs. In such cases there will also be found pure black feathers interspersed with the barred ones, showing again an excess of black in the plumage of the best and soundest specimens. The opposite effect, viz. white feathers in the tail, is seen in the more distinctly barred ones, where the legs are a good colour, and this defect has led to the too common practice of the tail feathers being plucked out to hide a manifest defect. This conflict will always go on between the yellow and the black, unless the pigments are evenly balanced, and the only remedy is to see that the black pigment is continued in the darker bars down to the root of the feather, even though it be at the loss of a little leg-colour. The birds which keep their colour the best, and are free from brassiness, even when exposed to the weather, will be found to possess this valuable breeding property, and hence it is noticeable that even the lighter-coloured specimens which remain pure in top-colour are densely barred underneath. The best breeding birds are not the gay-plumaged black and *white*, but those in which the black has stolen its way into the ground-colour and made it "bluish-grey."

Davenport's Experiments.—We have seen in the case of the Barred Rock that the ancestors were not pure black and pure white but black × black and white, viz. cuckoo. This also corresponds to the case of the Blue Andalusian, where the parents are black × mottled white.

In Davenport's experiments the same fact is observable in the cases where he notes the appearance of barred chickens. In Experiment VII, p. 39 (White Leghorn bantam cock × Black Pekin hens) he notes that of twenty-six hybrid chicks, eleven were white, or white ticked with black, seven were black, or with white ticks, and *eight were barred*, black and white. He notes that this confirms a suspicion that the White Leghorn was not pure, but had also black germ-cells. The barred condition was unexpected, and he thinks "is probably recessive in the White Leghorn." If, however, in breeding the White Leghorn cockerel a black parent had been introduced it would be sufficient to account for it without supposing that a "barred" ancestor had been used, which would not be probable.

In Experiment IX, the Tosa fowl (or Black-red Yokohama) × White Cochin bantam were the breeds used. The experiment was tried to test the different characters of the tail plumage. It is interesting to note a side result bearing on the colour question. Of seven offspring in the first hybrid generation "three cocks and three hens developed their adult plumage. The males were all of the male Tosa fowl coloration, except that *every feather was repeatedly barred with white*. The females were all of the Tosa fowl coloration . . . but the saddle feathers and secondaries were *obscurely barred* black-and-buff." The most interesting part of this experiment is that capital photographs are shown, of the breeds mated together, and of the hybrid chickens, and also of the separate feathers in the plumage. In the second hybrid generation, F^2, the truth of Mendel's law of segregation is demonstrated, and a photo of a pure White Cochin bantam is shown, though all the parents in the F^1 or first hybrid generation were Tosa coloured. There were also barred specimens, which shows the persistency of the barred plumage when once introduced.

This persistence may be demonstrated by mating, *e.g.* a Black Leghorn cockerel and a Black Rock, which has been bred from barred birds. Some of the progeny will be well-barred specimens, much like a good Cuckoo Leghorn, but the barred specimens will be males.

As the Tosa fowl resembles the *Gallus Bankiva* in coloration, it may well be supposed that the first barred birds were bred from a Jungle cock, mated with an early melanic sport, and that from these were bred the original "Cuckoo Game." It is curious to note also the appearance of "barred black-and-buff" in the females of the experiment. The coloration of the Gold Pencilled Hamburgh or Campine would be a novelty if ever introduced into our larger breeds.

Another experiment, XII, pp. 61–3, is interesting—the cross being a Black-breasted-red Game Rumpless bantam cockerel × White Leghorn bantam hen, made to test the inheritance of rumplessness, and not to account for plumage-colour. Of twenty-four hybrids of the first generation, F^1, twelve were white or prevailingly so, the other twelve were either black and white barred (and these were all males) or black with more or less reddish feathers. The White Leghorn pullet was from the cock mentioned in Experiment VII, and so had inherited black as a recessive quality. The white had not proved completely dominant over the red, but left traces of red, sobered down to buff in the twelve white birds, and some black and red in the cockerels. In foot-colour half were yellow and half willow, and, as the White Leghorn was not pure, this shows that yellow is dominant over willow. These experiments go to show that barring is the result of a cross between black and a white which carries black also as a recessive character, and I should not be surprised to find that a cross between a black and white, and the selection of the impure whites from this cross mated again to a black, would produce a proportion of barred chickens, as also of blue, which are closely related to the barred in their colour inheritance. This may have been the source of origin of the *Barred Minorcas* at the International Show of 1908, when some excellent specimens were exhibited by Mr. P. Schmitz, of Germany. They were so full of Minorca character that they appeared to be pure bred, and I should not be surprised to find that they were of pure Minorca origin, without any admixture of Barred Rock blood. If so, they will prove to be a new variety of great interest, though whether they will become popular remains to be seen. They would

be certain to throw a large percentage of black chickens, and some white or nearly white, while the character of the barring would be uncertain, until careful selection had fixed its quality. One point in their favour is that the legs were mottled black and white also, as this colour would agree with the plumage colour and preserve its purity, not being so likely to produce brassiness, or the yellow tinge on the plumage so difficult to exclude from the Rock. It is just possible that the Barred Orpington may have been produced in the same way by crosses between the White and the Black, though, in this case, the white leg would be difficult to preserve. In the chapter on Orpingtons I have shown that the Barred Rock and the Buff Orpington, when mated, produce barred pullets hardly distinguishable from the Barred Orpington. In this instance "buff" colour seems to act in the same way as impure white. It certainly acts in this way in producing blue colour which is allied to the cuckoo.

Farmyard Notes.—It is a noteworthy fact that while "blue" chickens (of a sort) can be found in almost every farmyard where black, buff and white fowls run together in an indiscriminate manner, and are certain to be found where pure-bred cockerels of a white colour one year and of black the next are allowed to run among the black, yet barred fowls are much less seldom found, and distinctly barred ones rarely indeed. Birds of a smoky, blurred, cuckoo colour are to be found, but lacing is more common than barring. Barring is to be found where the Barred Rock has been introduced for crossing purposes, and where this cross has been used blue birds are also found of varied hues, although rarely approaching a level colour.

The "Blues."—These notes naturally introduce us to the prevailing craze for blue-coloured fowl. Considering that blue-coloured plumage has been so common for many years in farmyard stock, and that this colour is to be noted on at least a *part* of the plumage of birds to be seen every day along the road-sides, it is surprising that the Blue Andalusian has been for so long the only breed of any marked popularity to lay claim to the title of "blue." It is true that we have had the Blue Langshan, and some

very prettily coloured and typical specimens have been exhibited, but the variety has never largely caught the public fancy, and that for two reasons: (1) purchasers of eggs have found that there were so many bad-coloured blacks and dirty-looking whites among the progeny, and that (2) those which came "blue" were of all shades, very few with a clear and pleasing ground-colour, and that the lacing was blurred and indistinct. Even the Blue Andalusian has failed to gain public esteem in any very marked degree for the same reason, though, on account of the great beauty of good specimens, and the undoubted excellence of the breed as layers of large white eggs, they have been more commonly kept than the Langshan.

A new wave of popularity has now set in for blue-coloured plumage, in spite of the somewhat disappointing career of the breeds before named, and the neglected farmyards are being scoured to find the single-combed blues for the manufacture of Blue Leghorns, or Blue Orpingtons, just as the rose-combed blue fowls are being seized upon to make Blue Wyandottes. A recent cross-bred laying hen called the Rose-combed Blue is also being largely utilized, and, naturally enough, the "old blue," the Andalusian, is being used to form a chief ingredient in making any of the new and coming "blues."

Black × White = Blue.—If the theory of the effect of black and white had been more generally known it is probable that the ransacking of the farmyard would have been spared, and that breeders would have taken the surer way of mating together the black and the white, or the black and the buff, of the varieties already in existence to produce the blue. In this way they would have kept the new variety pure in type and race, without the introduction of alien blood, of a type often altogether at variance with the breed to which they desire to add a new colour. In the mating of different types segregation of character is rare. The result often approaches a blend, and it always seems to leave the alien mark behind, so that the cross is at once patent, *e.g.* the mark of the Indian Game has been indelibly stamped upon many strains of Black Wyandottes; and in other strains the narrowness and long

back of the Java (or Black Rock) hen, or the sprightly gait and tail of the Black Leghorn are manifest. *Play with colour as you like and imitate the rainbow in its varied hues, but "stick to type."* This should be the fancier's aim. It is the dominating feature of the breed, and should be maintained as far as possible in its integrity, otherwise our numerous varieties become a variegated farmyard jumble, and the characteristic form of the breed is lost.

The Case of the Andalusian Fowl is the most familiar to breeders of the known results of crossing a black and a white fowl. For more than half-a-century this "blue" fowl has been bred. From the first until to-day the "blues," when mated, have thrown a large percentage of both black chickens and white ones. Persistently, for the most part, these so-called mismarked chicks have been either killed at an early age, or sold as wasters, and the blues only kept for the breeding pen. After fifty years of selection the blues continue to throw the black and white progeny, and probably in the same proportion.

The laws of Mendel have now shown us how to account for this. It has long been known that the blue is the product of a black and a white. Mendelism has shown that the germ-cells or "gametes" of the black and the white are segregated, and that either the one or the other may be given off from either parent. When a black gamete meets another black gamete in the opposite sex the result is a black zygote which develops into a black chicken. When white meets white the progeny is white, and when black meets white the progeny is blue. These black chickens, if mated together, produce all blacks; the whites, white chicks; and the blues go on in the same way as their parents.

As shown in the chapter on Mendel's laws B + W × B + W = 1B + 2BW + 1W. So long as blues are bred together this will always be the "average" result, viz. 25 per cent. of blacks, 25 per cent. of whites, and 50 per cent. of blues. In certain yards, and in some seasons, these results may not be quite equally apportioned, since the gametes are not given off in strict numerical order.

The correctness of the theory is borne out by mating together the three colours in other ways, *e.g.* a black

mated with a blue, B × BW = 1B + 1BW = 1 Black and 1 Blue; and a white mated with a blue = 1 White + 1 Blue. The only way to breed *all blues* is by mating together the blacks and the whites.

It should be noted that the "white" fowl mentioned above is not a *pure* white, but a white plumage splashed with black, *i.e.* a white which carries black as a recessive character. It is only "whites" of this character which produce blue or black when mated with black. Such whites are the White Wyandotte and the Silkie. When a pure white is mated with black it dominates, but when the white has been made an impure dominant it will produce "blues."

The diagram below is given to illustrate the Men-

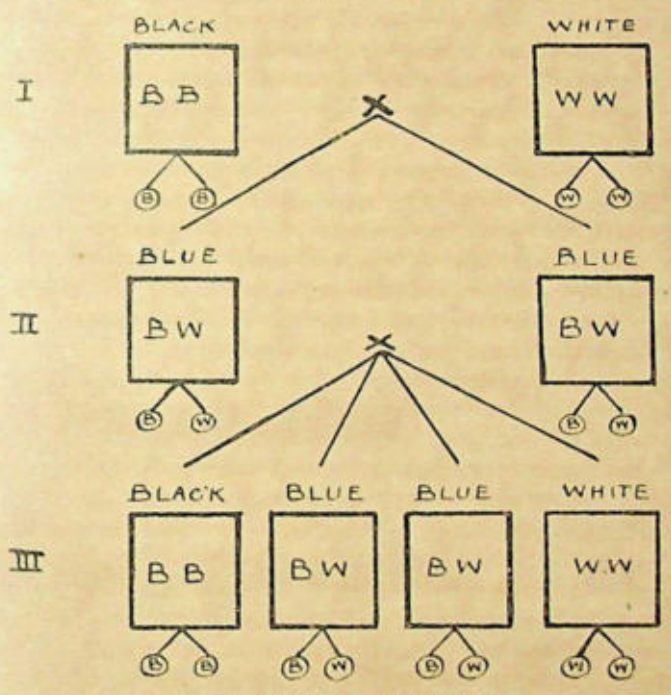


FIG. 14.—SUMMARY OF MATING.

(I) Black × white = blue only.
(II) Blue × blue = 1 black + 2 blue + 1 white.
(III) Black × black = black only.
White × white = white only.
Black × blue = 1 black (B × B), 1 blue (B × W).
White × blue = 1 white (W × W), 1 blue (B × W).

delian properties of the Andalusian fowl. The squares represent the individual birds, and the small circles their gametes or germ-cells, where B = black and W = the splashed white.

As I have not bred the Blue Andalusian fowl to any large extent I have not observed the way in which the character of the blue coloration is affected by mating the blue with the black or the white. Judging, however, by the analogy of other cases, I should expect that the black from the black mating would intensify the blue colour and add to the lacing, and that the mating with the white would diminish the blue colour and take from the lacing. The beauty of the Andalusian is the silver-blue ground-colour, with its distinct black lacing. This lacing has been intensified in recent years, and though this *may* have been done by selecting the fittest specimens it is more probable that it has been brought about by the infusion of "black" blood, and that from the Black Minorca, to which it has become more assimilated in head-points and carriage.

Whenever there is an infusion of more black than is necessary to form the blue, the black has a tendency to deposit itself on the fringe of the feather, where it produces lacing, though it sometimes disperses itself over the ground-colour and makes it smoky or indistinct.

The same effect is noticeable in buff-plumaged fowl, where an excess of colour produces a laced buff with a dark fringe; or where the buff is deficient it shows itself in a white fringe.

The Andalusian fowl was, in its early days, a much paler-coloured fowl and almost devoid of lacing, being more of a pale-coloured drab fowl, which is the tint now being sought after in the modern Blue Leghorn and Blue Wyandotte.

Self-coloured Blues.—Whether the pure blue, of whatever tone, from light French-grey to dark slate, will ever become fixed over the entire plumage without showing any indication of lacing is a problem for the future to solve. It may be desirable to achieve this colour in the new varieties in order to distinguish them from the Andalusian, and so indicate purity of race, but it is well known that when the blue colour is present in a marked degree there is always a tendency to lacing.

If this freedom from lacing is desired it is possible that pullets may be produced of an even soft colour, but unless a darker colour is allowed in the cocks, especially in the hackles and the back, the tendency will be to increase the washiness in the progeny with light under-colour and white tails. A medium shade of blue is half-way to white, and a pale blue more than half-way.

When the Blue Langshan was introduced into England they were lighter in colour than they are to-day. Mr. Jukes, the Hon. Secretary of the Blue Langshan Club and one of its chief promoters, kindly writes to say: "The Blue Langshan, as I first had it from America, was clear blue, exactly the colour that the Blue Leghorn Club wishes to fix for that breed, but I noticed that the best coloured specimens always showed indication of lacing, which was accompanied in the cocks with dark tops, and I determined to breed for this, because they stand the weather so much better, the clear 'blues' within a very few weeks of their moult looking such disreputable objects."

The Blue Langshan, like the Andalusian, throws the percentage given of blacks and splashed whites, and it is probable that this will always be the case, since the blue is an heterozygous fowl, bred from the black and the impure white.

An Attempt to breed "All Blues" is being made by the introduction of "blue blood" from a fowl in which the blue is said to have become a fixed quantity, viz. the *Blue Madras Game*.

This breed is mentioned by Mr. Lewis Wright in his chapter on Indian Game, of which he considers it to be a variety. The birds are large and partake of the Indian Game character, but with the Blue Andalusian colour, and with slate-coloured legs. They have the peculiar feature among blues of throwing *no white* chickens, though about 20 per cent. are said to come black. The slate-coloured leg will make them unsuitable for breeding either Leghorns or Wyandottes, while the lacing will also be an objection. In this breed, which is little known in England, and seldom or never shown, it is stated that *all* the pullets come blue, and that the black chicks are always cockerels. And here it may be noted that in the Andalusian the blacks are

much more commonly found among the cockerels, and among the pullets the splashed white.

The rising fashion for blue-coloured fowls may be the means of the reintroduction of this ancient blue, which would seem to have more claim to the title than any of its modern imitators.

How long it will take to fix the colour of the newcomers remains to be seen. If lacing is debarred there may be fewer blacks in the progeny, but how many washed-out, dirty-looking whites there will be future records must tell, but they are certain to be numerous, and many an otherwise gallant-looking cock will show the white feather!

The Blue "Bredas" are a breed of fowl little known in England, though still bred in Belgium and France. Its chief peculiarity is that in both sexes the comb is absent, there being only a slight depression over the nostrils. The bird has a small crest. The colours bred are black, blue, and cuckoo. In *Report IV to the Evolution Committee*, p. 34, Messrs. Bateson and Punnett give an account of recent experiments. From a pair of blacks they bred all blacks. From a pair of blues they got 27 chickens, of which 8 were black, 14 blue, and 5 splashed whites. It will be seen, therefore, that these blues behave in the same fashion as the Andalusians. And in a further cross of a black Breda cock and a white splashed Andalusian hen, blue chicks were hatched.

It is worthy of note that there is a "cuckoo" variety of this breed, as we have seen that cuckoo and blue are related. And although the "cuckoo" coloration is of less frequent occurrence than the blue, it is more fixed and persistent when obtained, and whenever "blues" are bred there is always a chance of a cuckoo putting in an appearance. The blue throws out black and splashed white chicks; and the barred, black and pale cuckoo chicks; but so far as I know no white chicks or any devoid of barring.

The Silver Campine is an instance of the persistence of barring. It is purely a black and white breed, though the black bears a brilliant beetle-green sheen in the best specimens. So far as I know, there are no black chicks thrown from this breed, nor any white. The

black and the white would appear to be a fixed heterozygous quality, and not to segregate into black and white as other barred breeds do. By means of persistent selection the character of the barring may be altered, and the dark barrings may be broadened, as it has been in recent years, so that it is now four times as broad as the white ground-colour. And in these darker birds the barring is stealing its way into the saddle-hackles also, which fashion, and probably ancient history also, formerly decreed should be pure silver. Whether the silver neck-hackle will remain, now that darker plumage is being bred, remains to be seen.

I quote the Campine as showing what time has done in past ages in fixing pure barring, and yet how it lends itself to the process of alteration by artificial selection. When the Barred Rock boasts of as ancient a pedigree, perhaps it may breed as true to colour, and the same good fortune may overtake the modern blue, as it already appears to have become fixed in the pullets of the Blue Madras Game.

Modern Blues.—Wherever there exists already in any breed the varieties of Black, White, and Buff, the Blues may be created by judicious crossing, without the introduction of alien blood, since either black and white, or more quickly black and buff, will produce a blue. There should, therefore, be no great difficulty, after a few seasons' experiments, in breeding Blue Wyandottes, Blue Leghorns, or Blue Orpingtons, or even Blue Hamburghs or Blue Cochins. Much will depend upon the fate of the early entrants into the arena. That they will be hardy and prolific there is little doubt. But their staying power will depend upon—

(1) Their breeding true to type,
(2) Their throwing a large percentage of chickens true to colour,
(3) The capacity of the colour to stand exposure to the weather,
(4) And, above all, on that most fickle of all elements—popular favour.

As in the case of the "buff" craze popular opinion plumped in favour of the Buff Orpington, and left the

Buff Rock and the Buff Leghorn and the Buff Wyandotte either out of the race or only the fancy of the few, so will it be with the Blue. Which will be the favourite? Though fanciers' "spirits" may be ardent, we may get too much of the "blues," and some of the "barred" varieties will find the "barriers" too high to leap to favour.

Meanwhile, an intensely fresh interest will have been added to many a humble fancier's yard, as he attempts to paint his birds, in Nature's way, with the colour or colours he desires. The most I can do for him is to give him some simple directions as to the way in which to prepare his "palette" and to mix his pigments. I cannot bestow the painter's eye or the artist's skill. Many a worthless "daub" is sure to be produced, and many a picture rejected by the judges at the academy. But it may be that something worth looking at will be forthcoming, to the delight of the critics and for the due reward of its owner. One thing he must not forget. The drawings must be true to life. Let him study "form" and "type," and then the picture will live and the colour will come in due time.

Above all he must learn to "hasten slowly." A premature rush for fame is sure to fail, as it deserves to do. Before a new breed or new variety can be admitted to the Poultry Club Standards it must have its new characteristics established. The impetuous fancier may call it what he likes, and show it where he can, just as any would-be artist can have his private "view," but it cannot be admitted to the "art gallery" till it has passed the ordeal of the academicians' inspection, viz. the Poultry Club Council, assisted, when need requires, by the committees of the specialist clubs concerned. The following report was adopted by the Poultry Club in February 1909, and with its inclusion I may well close the chapter—

Suggested Rules for Regulating the Inclusion of New Breeds and Varieties in the Poultry Club Standard of Perfection.

To the Council of the Poultry Club,

Gentlemen,—As the sub-committee appointed to consider the question of rules to govern the inclusion

of new breeds and varieties in the Poultry Club Standard of Perfection, we beg to submit the following suggestions—

1. Before any breed or variety is eligible for inclusion in the Poultry Club Standard of Perfection it must comply with the following requirements: At least 50 per cent. of its progeny must be true to type and colour, *i. e.* they must possess the general characteristics of the breed. Specimens of the breed or variety must have been exhibited at such shows as the Crystal Palace or Dairy, and both the male and female specimens of at least two generations must be forwarded to the Council at the time the breed or variety shall come up for admission to the Standard, in order that the members of the Council may inspect the specimens to determine whether or not they present thoroughbred characteristics. In the case of a new breed the fowls must possess distinct characteristics, and in the case of a new variety they must conform to the character of the breed of which they are a variety.

2. The request for admission must be accompanied by a brief description of the breed or variety, together with particulars of its origin and breeding, set out in a sworn statement of the breeder; and this statement must contain a declaration of the percentage of specimens breeding true to type and colour. A suggested standard for the breed or variety must also be presented, and this shall be read at the meeting at which it is proposed to admit the breed or variety.

3. If upon an examination of the sworn statement and an inspection of the fowls, the Council is satisfied that the breed or variety has reached a pure-bred condition, a majority vote, of at least two-thirds of the members present, shall admit the breed or variety to the Standard.

HARRY WALLIS,
WILLIAM H. COOK,
WILLIAM W. BROOMHEAD,
FREDERICK J. BROOMHEAD (Hon. Sec.),
New Breeds Sub-Committee.

CHAPTER XII

ASIATIC BREEDS OF POULTRY

BRAHMAS—COCHINS—LANGSHANS—MALAYS—ASEELS—YOKOHAMAS

Asia is the original home of poultry, and I have given the Asiatic breeds the pride of place. All our domestic breeds of poultry are said to have been originally derived from the Red Jungle fowl, the range of which is the jungles of North-Eastern and parts of Central India, extending south through the Malay Peninsula to Sumatra, and east through Siam to Cochin China.

It is stated by Mr. W. R. Ogilvie-Grant, in vol. ii of *Lloyd's Natural History*, to which readers may be referred for a full description of the various breeds of Jungle fowl, that "Domestic fowls allowed to escape and run wild in surroundings similar to their original habitat soon revert to the wild type and become indistinguishable from typical examples of the Indian Red Jungle fowl."

Attempts have been made to breed the Jungle fowl with our domestic breeds, and an interesting account is given of this in the official report of the second National Poultry Conference at Reading in 1907, but so far little success has crowned the effort, as either the different breeds would not mate or the progeny were weakly and died as chicks.

All fanciers who are interested in the origin and development of our numerous breeds and varieties should have a copy framed of a wonderful plate of the "Jungle Fowl and its Descendants," drawn and painted by Mr. Ludlow. This was presented as a supplement to a recent number of the *Feathered World*, and may be obtained from Mrs. Comyns-Lewer, the editress. It is



DARK BRAHMAS.

a marvel of artistic skill, and a standing lesson of what wonderful results have been obtained by the fancier's art. It should, however, be stated that the question is still an open one. No wild breed of poultry has been found which resembles the Brahma or the Cochin, and they may have had distinct ancestors.

THE BRAHMA

Sub-varieties: Light Brahma, Dark Brahma.

The Brahma race of poultry may fitly be termed the monarchs of the poultry world. A glance at the coloured plate of a pair of typical Dark Brahmas will illustrate the immense size, lordly bearing, and magnificent plumage of the male bird, and the exquisite pencilling and lovely contour of the hen. A fully-developed adult cock will weigh 12 lb., and sometimes a pound or two more, and a hen 10 lb. or more. They are meant to be a large breed, and size should carry great weight in more senses than one, though it sometimes happens that perfection in markings has a predominance in determining their position in the prize list. There are other breeds which weigh as many pounds, *e.g.* I have had Orpington cocks weigh 14 lb., and hens 10 to 12 lb., but there is no breed which has the same majestic and lordly appearance, or which carries its size with such grace and dignity.

They were originally called Brahma-Pootra, and until quite recently were scheduled by this name in the principal show lists. The name would seem to indicate the Asiatic origin of the breed, being taken from the Indian river of that name. They were introduced into this country from America, a notable consignment being sent, in December 1852, by a Mr. G. P. Burnham as a gift to her late Gracious Majesty Queen Victoria. The sender stated that they had been brought over from Shanghai in China to America. A long and acrimonious controversy ensued as to their origin, of which a full account may be read, by those who are interested, in the various editions of Mr. Lewis Wright's *Book of Poultry*, and in *The Poultry Book* of Mr. Tegetmeier, published in 1875. The striking feature, however, in the history of this famous breed is the very great

alteration made by the breeder's art in the colour and contour of the birds. Looking at illustrations of the show specimens of this breed in the volumes above mentioned as late as 1875–1880, and comparing them with those in Mr. Lewis Wright's book twenty-five years later, will show one of the most marvellous transformations known in the history of poultry culture.

When first imported, and indeed for twenty-five years later, they were in appearance more like the original Black Langshan in type, with long shanks and thighs, and very sparsely feathered, more like the Croad Langshan of to-day than any other breed. Those who contend that both Cochins and Brahmas originated from the same common origin have this in their favour, that both breeds looked very much alike in type. And it is a singular coincidence that the Brahma was introduced into America at the same time that the Cochin arrived in England, about the year 1847. And even the Brahma *pea*-comb, which is so distinct from the small but erect and *single* comb of the Cochin, was by no means in the early days a fixed character, as both "pea" and "single" combs were bred from the same mated pens of birds.

With reference to the colours of the Light and Dark Brahmas, so recent a writer and noted a breeder of Brahmas as Mr. Norris-Elye says: "That originally the Darks and the Lights sprang from a common source is certain; in the earlier days the peculiarities of colour were not so distinct, and it was quite possible to breed gradually lighter or darker birds so as to get either Lights or Darks from a common stock in a season or two. Careful breeding for one or the other has greatly altered this state of things, and no one would now try to breed Darks from Lights, or Lights from Darks."

These are now as far apart as the poles. And it should encourage the breeder who now strives to attain a given ideal in some new variety to see what has been done by patience and the fancier's skill with two varieties now so distinct in coloration as the Light and the Dark Brahma.

The important question remains, however, whether the breeder in his striving after perfection in marking has not seriously interfered with the utility proper

of the breed. Few people now who want either first-class table-fowls or first-rate layers would choose the Brahma fowl.

Mr. Lewis Wright, one of the most ardent advocates of the breed, writes: "While it is perfectly true that the 'standard' of judging at any show must always be, and can only be, a 'fancy' standard, and that fanciers alone preserve breeds in their entirety, the fact remains good, on the other hand, that *fancy alone* never keeps a breed popular. There must be a utility basis also for this; and if ever the utility basis is seriously deteriorated or bred actually away from, winners may still sell at high prices, but general demand is gone. . . . It will also be observed that all the new 'breeds' which have been lately introduced, and achieved such popularity, have based their claims upon being 'utility' breeds, either as layers or table-fowls. From this point of view the relative popularity of Brahmas at a time when the breed was and could be described without hesitation as one of the most generally useful in existence, and since it has been bred away from a type that could be broadly and generally so described, is very instructive" (*The Book of Poultry*, p. 278, ed. 1902).

The Brahma is still a more popular and more useful breed than the Cochin, and the deterioration above mentioned is mainly to be attributed to the alteration in the *type* of the Brahma, probably by the introduction of Cochin blood, and by preference being given to birds more Cochiny in type than the true Brahma. The latter should be a tighter-feathered bird than the modern Cochin bird, and with less of it, with a fine neat head, with comb and wattles very small, and the carriage more erect. The good and useful elements are still *in* the breed, and when crossed with other breeds of greater agility and more fecundity produce first-class layers with hardy constitutions. The finest layers I have ever seen were pullets from a cross between a Hamburgh cock and Brahma hens. No two breeds could be more diverse in character, which may account for the vigour and hardiness of the progeny. The pullets laid as many as forty eggs in as many days, while many Brahma hens would not lay more than this number in a year. The cross with a Black Minorca

also produces excellent results, both as layers and table-fowls; while the cross with a Dorking cock produces table-fowls of the highest quality obtainable, both for size and quality—this particular cross often carrying away the premier honours for cross-bred table-fowls at the great Dairy Show at Islington.

GENERAL CHARACTERISTICS OF BRAHMA COCK

Head and Neck.—Head small, neat, rather short and fine in its lines, with prominent eyebrows and large prominent eyes. *Comb:* Triple or pea, erect, neat, and firmly set. *Face:* As smooth and free from feathers or hairs as possible. *Ear-lobe:* Long and pendulent, as compared with wattles, which should be small and well rounded, and not fall lower than the ear-lobe. *Neck:* Long and well arched, covered with ample flowing hackles reaching well down over the shoulders, free from twisted feathers. The difference in the long neck of the Brahma and the short neck of the Cochin should be one of its most marked characteristics.

Body.—Very full, broad, and square, with great depth, carried well forward. *Back:* Broad, short, well curved, with abundant saddle-hackle well covering the wing-ends. *Tail:* The tail at its best is what is called by Mr. Norris-Elye "a black-cock tail." The effect is that the two or four upper sickle feathers turn apart from one another. It is very beautiful when seen in perfection, and rarely met with in a bird which is not full of Brahma character. The true tail feathers are of medium length only, and the true coverts broad, abundant, and well curved. It is admirably depicted in the coloured illustration.

Legs and Feet.—The legs should be large and powerful and moderately long, not short and squat like the Cochin, but giving the bird an alert appearance. The fluff should be soft and abundant, giving a rounded appearance to the thighs; and the hocks should be amply covered with soft rounded feathers, though in the most heavily-feathered birds these are often quill-feathered, and make what is termed a "vulture hock." Good foot and leg feather, without vulture hock, should have the preference, and the shanks shoul

be well feathered just below the hock, where it commonly fails, and gives the bird a ragged, badly-dressed appearance.

General Shape and Carriage.—When viewed in profile, as in illustration, very deeply and squarely built; when viewed from front or rear, broad and compact. Carriage lofty, bold, and active.

Plumage.—Profuse, but harder and closer than that of the Cochin.

GENERAL CHARACTERISTICS OF BRAHMA HEN

Head and Neck.—In all its parts, as in the cock, the comb and wattles being very small. *Neck:* Rather short, otherwise as described in the cock.

Body.—Breast and back as in the cock. The *cushion* to rise about half-way between hackle and tail, and to continue to rise till it reaches the tail coverts. *Wings:* Well tucked up under the cushion feathers.

Tail.—Of medium length and nearly erect, the true tail feathers expanding fan-like and not bunched together. *Tail coverts:* Abundant and nearly covering the tail.

Legs and Feet.—Legs short in proportion to the size of the bird, strong and set wide apart. Otherwise as in the cock.

General Shape and Carriage.—When viewed in profile, very deeply and squarely built, the body carried very near to the ground. Broad and compact when viewed in front. Carriage sedate but fairly active, not coarse. The plumage, as in the cock, should be abundant but not Cochiny.

COLOUR OF DARK BRAHMAS

In both Sexes.—*Beak:* Black or horn colour. *Eye:* Orange-red. Pearl or grey eyes are said to show weakness of constitution. *Comb, face, ear-lobes and wattles:* Bright red.

In the Cock.—*Head:* Silvery white. *The neck- and saddle-hackles* silvery white, not yellow or sappy. Each feather densely striped with brilliant black in the centre of each feather, the stripe not running to the *end* of the feather, but having a silver edging. *The breast,*

also produces excellent results, both as layers and table-fowls; while the cross with a Dorking cock produces table-fowls of the highest quality obtainable, both for size and quality—this particular cross often carrying away the premier honours for cross-bred table-fowls at the great Dairy Show at Islington.

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GENERAL CHARACTERISTICS OF BRAHMA HEN

Head and Neck.—In all its parts, as in the cock, the comb and wattles being very small. *Neck:* Rather short, otherwise as described in the cock.

Body.—Breast and back as in the cock. The *cushion* to rise about half-way between hackle and tail, and to continue to rise till it reaches the tail coverts. *Wings:* Well tucked up under the cushion feathers.

Tail.—Of medium length and nearly erect, the true tail feathers expanding fan-like and not bunched together. *Tail coverts:* Abundant and nearly covering the tail.

Legs and Feet.—Legs short in proportion to the size of the bird, strong and set wide apart. Otherwise as in the cock.

General Shape and Carriage.—When viewed in profile, very deeply and squarely built, the body carried very near to the ground. Broad and compact when viewed in front. Carriage sedate but fairly active, not coarse. The plumage, as in the cock, should be abundant but not Cochiny.

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In both Sexes.—*Beak:* Black or horn colour. *Eye:* Orange-red. Pearl or grey eyes are said to show weakness of constitution. *Comb, face, ear-lobes and wattles:* Bright red.

In the Cock.—*Head:* Silvery white. *The neck- and saddle-hackles* silvery white, not yellow or sappy. Each feather densely striped with brilliant black in the centre of each feather, the stripe not running to the *end* of the feather, but having a silver edging. *The breast,*

under-part of the body, thighs and fluff an intense glossy black. In some good specimens the breast is slightly but regularly splashed with white, for which *seven* points are deducted. *Back and Shoulder Coverts:* Silvery white, as also the *wing-bow*, while the *wing-bar* is glossy black. *Secondaries:* Black and white, the outer web of the feather forming the wing-bay being white, and the rest black. *Tail and Tail Coverts:* Black, or black laced with white. *Legs:* Orange-yellow. *Leg feather:* Black preferred, though an admixture of white is permissible.

In the Hen.—The marvellous colour of the hen may be described in few words without detailing the separate parts. The whole of the body colour, with the exception of the head and neck-hackles, is a pure silver-grey colour, with black or nearly black markings or pencillings, as nearly uniform as possible over the body, breast, back, wings, fluff, and leg feather, as shown in the illustration, with black tail or black edged with grey. White feathers on the legs are a decided fault in a hen. The neck-hackles *striped* with black, as in the illustration, are now not so commonly seen, the *striping* having given way to pencilling. The latter and more irregular marking is not so bold or striking, but is preferred by most breeders, as such marking is more likely to produce the beautifully *pencilled* feathers in the body of the fowl. It is, unfortunately, against the popularity of the Dark Brahma that in order to produce show specimens of the modern type in both sexes two breeding pens must be formed, one for breeding exhibition cockerels and the other pullets. The pullets to be mated to an exhibition cock must be cock-bred, and they have not the appearance of show pullets. The pencilling on the feathers is not so cleanly outlined, and the whole appearance more blurred or mossy. On the other hand, the hackle will be more distinctly *striped*, as in the show cock, and not pencilled.

The pullet-breeding cock is not a show bird. The breast is laced and not black, and so are the fluff and the leg and foot feathers, and the pencilling, which is the beauty of the hen, will also be faintly marked on the pencilling over the shoulder and wing. A nar-

black fringe on the neck-hackle is also said to be an advantage instead of a pure silver one. Such a cockerel should be mated with pullets as clear and distinct in the lacing of each feather as possible. The show standard says that the ground-colour of the pullets may be *any* shade of clear grey, and many pullets are now shown with the ground-colour nearly white instead of the dark-grey at one time so fashionable. Mr. Lewis Wright attributes the necessity for two breeding pens to this fancy for the lighter ground-colour; and says that "The real incompatibles are the extremely light ground-colour in pullets combined with the solid black under-parts, and especially black fluff in the cockerels," and intimates that if the darker grey ground-colour had been adopted in the hens, exhibition specimens of both sexes may have been bred from the same pen. There is no doubt that the light ground-colour is the more striking, and fanciers seem determined at present to maintain it, though it means extra care and trouble in breeding, and most certainly a loss of popularity, and probably also a loss of usefulness in the breed.

Value of points in Dark Brahmas.—The points of excellence are so evenly distributed over the whole bird that little value can be attributed to any special feature. There are twenty distinct "points" named in the 100 marks assigned. The greatest defect is impure colour in the white of the cock, for which 10 points are deducted, and 8 for want of size and 8 for bad style or carriage. In the hen the chief feature is naturally the evenness of the ground-colour and want of uniformity in the pencilling. For faults of colour 33 points in all are deducted, and 8 each for want of size or bad style.

Serious defects for which birds should be passed: Comb other than pea; badly-twisted hackle; total absence of leg feather; deformity of any kind; twisted wing feathers; white legs; great want of size in adults; total want of condition.

In Cock: Much red or yellow in plumage.

In Hen: Utter want of pencilling; patches of brown or red in plumage.

Mating Dark Brahmas

As already indicated, it is necessary to have two distinct pens for breeding cockerels and pullets.

The chief thing to observe is that for cockerels both of the sexes must be cock-bred. The male should be as typical a bird as can be found. The hens should be large in size, as size is chiefly obtained from them. A cock-bred hen has next to no pencilling, but she should possess a well-striped neck-hackle.

For breeding pullets the male must be pullet-bred, and if the breast, thighs and fluff are laced or edged with white so much the better. If the hackles are deficient in striping, being pencilled instead (like the feather *5b* on the plate of Partridge Wyandotte Feathers, p. 403), he will be more likely to breed show pullets. The pullets to mate with him should be as near the Standard as can be got.

Colour of Light Brahmas

In both Sexes.—*Beak:* Black, or yellow and black. *Eye:* Orange-red, pearl or grey, the former preferred. *Comb, face, ear-lobes and wattles:* Bright red.

In the Cock.—*Head:* Silvery white. *Neck-hackle:* Silvery white sharply striped with intense black, the black striping to run as far up the shaft toward the skin as possible, and to be more dense at the lower part of the hackle, the edge of the feather to be clear white. Although in the scale of points the scanty hackle only deducts 4 points and the want of striping 5, the actual values are much more, as a poor hackled bird would have very little chance of a prize in good company.

Body-colour.—The whole of the body-colour should be of the purest blue white, not a creamy white. An impure colour of white is penalized more than any other point, viz. 10 points. The saddle-hackles should also be pure white, though if slightly striped with black it is only slightly penalized if the neck-hackle and striping is very dense. *The tail* is black, or black edged with white, which is the more ornamental, and the tail coverts are the same. The leg feather is white, or black and white mixed. Black in the hock feathers is a defect.

Colour in the Hen is similar in all respects to the cock, and should be of the purest white, except the neck-hackles, which are white with a dense black stripe. The black should have a green sheen, not a blue one, and the broader the stripe the better, so long as the edging is pure white. Cloudy, pale, or streaky hackles in the hen are very grave faults, and so are black splashes about the body. *The tail* is black or black laced with white, and a little black is permissible in the foot feathering.

Value of points in Light Brahmas is distributed very much as in the Darks. The chief thing is to secure purity in the colour, and to secure a well-striped hackle. The white should be free from black blotches either on the back or in the fluff or the hocks. The under-colour may be white or a slaty grey. The next thing is size, correct shape (avoiding Cochiny saddles) or carriage.

The serious defects for which birds should be passed are the same as those assigned to the Darks, except that a buff colour in any part of the plumage is a defect in Lights, just as patches of red or brown are defects in the Darks.

The Light Brahmas are better layers than the Dark, and are more popular. No fowl has a more beautiful and striking appearance. Both sexes for exhibition purposes can be bred from the same pen, which is strongly in their favour. The eggs are large, and I have found them of a good rich brown colour and rather elongated in shape than round. They are very tame, and can easily be kept within bounds with a three-foot fence. The hens make good gentle mothers, and although they are a broody race they are not excessively so, as I have known many pullets go through a whole season without showing a desire to sit. They lay fairly well in the winter when not allowed to get too fat. One of the great drawbacks I found in the breed was the great difficulty in getting fertile eggs early in the season. Year after year I could get no chicks till the end of March, and as they are rather slow in maturing there is a difficulty in getting them ready for early shows. I have written more fully about Brahmas because I have a fondness for them, and because I

consider they stand at the head of the poultry world for beauty. They are, moreover, the ancestors of some of the more modern breeds, such as the Silver Pencilled Wyandotte from the "Dark," and the beautiful Columbian Wyandotte from the "Light." In these more modern offspring the old utility qualities have been revived in full force. Though not largely bred it is not likely they will die out if only on account of their intrinsic beauty.

Mating Light Brahmas

Many breeders are careful to keep to one strain for cocks, and another for pullets, although both can be bred from the same pen. The chief point to aim at, apart from size and shape, is the densely-striped hackle. If the cock is deficient in this respect his mates should be strong in the black striping, and if dark in under-colour so much the better. There is a general tendency to loss of colour, and if either side is lacking the other should counterbalance it.

COCHINS

Sub-varieties: Buff or Cinnamon, Partridge, White, Black, Cuckoo.

There are some writers on poultry who award to the Cochin family the pride of place which I have given to their sisters, the Brahmas, because the latter are not only as ornamental but more useful.

There is, however, something to be said for the Cochin as a fancier's fowl. Whereas the Brahma is chiefly a study in black and white, the Cochin is of very varied hues, and has more numerous varieties. It also has the premier claim in point of time of its introduction, as it was introduced into England in 1847, while the Brahma followed five years later. There are but few living now who can remember the *furore* caused by the introduction of this giant breed sixty years ago, when they realized fabulous prices. They at once sprang into popularity, and were seiz upon by fanciers, who had been created fanciers their advent, and the conglomerate colours of bro

white, buff, and grey soon began to assume more definite hues, the lighter-coloured specimens forming the White and the Buff, and the darker the Partridge, while, singularly enough, it is said that the early Blacks were formed by a cross between the Buff and the White! But as black varieties of other breeds are now constantly bred on the union of a black fowl and a white one, and the Buffs of that day had a lot of black feathers a black pigment in them, this result is not improbable. The Buffs claimed from the first the chief place, and to-day they still maintain it, though closely ruby the Partridge colour in the race for popularity.

There is, moreover, one debt which the multitude of fanciers of to-day owe to the Cochin fowl. It was this breed which originated the "fancy," which until they arrived was a very small thing. They started the "fancy," and it has never since looked back. And not only the breed not only to maintain it. For in addition to rendering other breeds assistance to the Brahma, it has been the source of many varieties of Wyandottes, Orpingtons, and even the tiny Buff Leghorn, and in fact all other Buff breeds, besides various breeds known and fostered in America, though little known in England, such as the Rhode Island Red, etc. The Cochin is pre-eminently a "fancy" fowl, and as such stands nearly at the bottom of the list so far as its own utility qualities are concerned. Superabundance of feather and fluff always mitigate against first-rate table qualities or egg-producing propensities. And yet its ancient utility features, which were undoubted, and which were in early Victorian days so exaggerated that they were said to lay several eggs a day, are still inherent in the race, since it is beyond question that such breeds as the Buff Orpington, Buff Rock, and Buff Leghorn are at the very top of the list as egg-producers. They inherited these qualities, together with the buff plumage, from the Cochin, though they wisely left behind the rounded masses of fluff. There is no doubt that the Cochin could again be bred to be an excellent layer by a process of selection, but it would not be the magnificently feathered

creature we know to-day, and it would not be worth the while, since so many of its descendants have it already, and it would only be by degenerating into the mongrel appearance of the Lincolnshire Buff. Those who wish to see the Cochin in its glory should visit the home of its introduction more than half-a-century ago —the great show at Bingley Hall, Birmingham. All the varieties, both of old and young birds, are there catered for, and there are usually on view one hundred and fifty or more of the best in the world, and they form a magnificent spectacle.

The Buff Cochin

We come now to a necessarily brief description of the several varieties of which the Buff holds the pride of place. The chief point of excellence looked for is uniformity of colour all over the body, from head to tail, though the hackle feathers, owing to their different texture and shape, show a brighter and more solid colour. What are known as tri-coloured birds, with the breast a paler shade than the body, and the wing-bow darker than either, are not now so commonly seen in the show-pen, as they are considered objectionable, both for exhibition and breeding purposes.

The colour of the cock throughout should be a rich golden buff, free from any bricky or red-coloured tinge, as well as from any suspicion of *mealiness*. This latter fault, which is most commonly found on the wing, is an interruption of the solid evenness of colour, as though the buff colour had been sprinkled or pencilled with lighter patches, or as if lightly dusted with flour. It is the most objectionable feature in *all Buff breeds*, and very difficult to breed out. It is most commonly met with on the wing-bow of a hen, and though such birds *may* breed a good cockerel, they rarely, if ever, breed a sound-coloured pullet. As to its cause there is an amount of uncertainty, but I have found it most common in other Buff breeds when there has been a marked difference in the shade of the wing of the cock and that of the hen to which he is mated, *e. g.* if the cock's wing-bow has an approach to redness in tone and the hen's is pale there will be many mealy offspring.



BUFF COCHIN HEN.

Property of Councillor G. Proctor.

Winner of 1st and Cup, Royal Show

The colour should not only be sound, and even in shade on the top, but should be sound underneath or buff to the skin, *not* a golden top and white under. The shaft of the feather should be of the same colour as the fluff, and not, as often happens, buff at the tip and white at the root. When the shaft of the feather is lighter than the web the streaky appearance is called *shaftiness*, and is often seen on the breast feathers of an otherwise good specimen. The flight and tail feathers should also be free from white or black markings. In all Buff breeds there is often a loss of colour after the first year, and a little white is not so objectionable in an old bird as in a young one.

The colour of the hen should be of an even soft shade throughout. The wings, flights, and foot feather should be free from black. In mating, the general rule is to select as far as possible the hens or pullets with the breast of the same shade of colour as the cock's. Exhibition birds of both sexes can be bred from the same mated pen.

General Characteristics of the Buff Cochin Cock

The cock of whatever variety should be a large bird with a wide, massive body, with short, stout legs, standing wide apart, and with an abundance of fluff and leg feather down to the middle toe, and with a very small tail rising slightly from the saddle and free from sickle feathers. The tail coverts should be soft and abundant, curving over and nearly covering the tail. The comb should be single, small, and erect, evenly serrated and following the line of the neck. The neck short and full in hackle. The breast full and rounded in appearance, and the back short and broad. The general shape and carriage is that of a deep, broad, massive bird rounded in appearance, with the head carried rather more forward than erect. The wattles long and fine in texture.

General Characteristics of the Buff Cochin Hen

As in the cock, the hen's head should be neat, with an orange eye. The wattles small and neatly rounded, with well-developed ear-lobes. The body broad, deep,

and full of rounded masses of feather, with the short back, first rising into an abundant cushion and then falling toward the tail and a mass of fluff in the forepart of it, resembling a ball. The hocks should be well covered with soft curling feathers and an abundance of soft fluff standing out like a ball on either side. The legs and feet, as in the cock, heavily feathered down to the middle toe. The carriage of the body is forward and drooping. The general appearance of both sexes is gentle, docile, intelligent, but indolent. Both on account of their great size and abundance of foot feathering, together with their stooping attitude, they are ungainly and slow in their movements. The lowest possible fence keeps them within bounds. As perches are not usually provided for them to roost upon, their bedding of chaff or peat-moss should be kept scrupulously clean and dry, and specimens that are intended for show should be kept in a shady run and not allowed out in the bright sunshine after they begin to get their adult feathers. Even a few days of exposure will spoil the solid appearance of the colour of the feathers if the birds are allowed out in the rain and the wet feathers dry again in the sun. The tips of the feathers on the back and the cushion get bleached and give a mottled appearance. The pullet suffers more in this respect than the cockerel. Either sun or rain has a bad effect on buff birds, but the combination of the two is fatal. Early morning and from sunset in the evening are the best times for outdoor exercise.

The Partridge Cochin

The Partridge Cochin stands next in order of popularity, and is the most gorgeous in colour of all the varieties, and its beautiful and varied tints are less liable to be damaged by the sun and rain. In size, shape, and general character the description given of the Buff Cochin applies to all the varieties.

The hen resembles in marking, though not in colour, the Dark Brahma hen. In the latter the ground-colour is grey, while the Partridge is a light-brown. It is generally believed that the beautiful pencilling on each feather, which is the beauty of the Brahma, has been

borrowed from it. The colour of both sexes is admirably reproduced in the Partridge Wyandottes, which are descended from them, and readers are referred to the very beautiful reproductions in colour of Mr. Hubert Wright's birds (see Wyandottes). There is no more beautifully-feathered creature in the poultry world than an exquisitely pencilled Partridge Cochin hen, nor one with a more gorgeous mass of plumage than the male.

Colour of Exhibition Partridge Cochin Cock

The head of the cock should be a darkish orange-red. The hackles near the head of the same shade, but getting lighter in colour as they get lower toward the back. These should have a dense, broad stripe of black (so well depicted in the coloured plates of the Brahma cock or the Partridge Wyandotte). The back and shoulders, a dark rich red. The shoulder coverts and wing-bow also a dark rich red. The wing-bow a rich metallic black, showing green or purple reflections. The secondary feathers forming the wing-bay, a rich "bay" colour on the outer web, and black on inner web and end of feather. The saddle-hackles should be of the same colour and shade as the neck-hackles, and have a metallic stripe. The rest of the body-colour, including breast, thigh, fluff, and leg feather, a glossy black. Any white in the tail or rusty feathers on the breast and thigh is objectionable. Legs a dusky yellow.

Colour of Exhibition Partridge Cochin Hen

The hen is of a more sombre colour. The ground-colour is of a light brown, and should be of the same shade all over the bird. Every feather should be pencilled all over with a darker shade, and uniform over the whole body, the pencilling to follow the outline of the feather. A light shaft to the feather is a fault. The beauty of these markings is well shown in the plate of Partridge Wyandotte Feathers, p. 403. The colour of the body should be brown, not yellow, or of a red or foxy tinge, and the pencilling should run right up to the top of the throat in a perfect specimen. Nearly all laced and pencilled pullets fail this respect, and many otherwise good specimens lose

also in distinctness of pencilling on the back and saddle. The hackle feathers are of a lighter golden shade than the body, and a well-pencilled pullet has not a distinct stripe in the hackle, but a broken or pencilled one.

Mating Partridge Cochins

It is unfortunate for the popularity of the breed that two breeding pens are required, one for exhibition cockerels and the other for the pullets.

To mate with an exhibition cock the pullets must be cockerel-bred. These will be found to have little pencilling on the feathers, and if of a darker shade than the show bird so much the better. They are usually larger than the exhibition pullets. The red colour of the cockerels needs more red pigment in the hen to maintain brilliance in the offspring.

To mate with an exhibition hen the cockerel must be pullet-bred. The hackle will have less stripe in it, and the feathers, which are dense black in the exhibition cock, will be pencilled or edged with brown. In fact, the more pencilling all over the better, as this character is to be transmitted to the hen. It is, therefore, of great importance to mark the chickens from each pen. For although the appearance of the adult birds generally shows how they have been bred, it sometimes happens that a cockerel from a pullet pen looks like an exhibition specimen, and *vice versâ*, a cock-bred pullet shows distinct pencilling. When cock-bred and pullet-bred birds are mated together the result is confusion of colour in the offspring of both sexes.

The White Cochin

The White Cochin does not call for a lengthy description. It is a very beautiful bird when kept in the country in suitable surroundings, with a well-kept lawn or an old pasture field in which to run. The coral redness of comb and wattles adds a touch of colour which is a pleasant contrast to the white plumage. As in the other varieties, colour is the great thing. I have seen many well-washed Cochins a mass of unimpeachable purity of snowy whiteness. The great thing to l

avoided is a yellow tinge or sappiness in colour. They are not largely bred, probably on account of the great difficulty in keeping them clean, and also because of the great care required in shading them to keep them from tanning. A red eye sets off the beauty of the bird, though they are frequently orange or pearl in colour. They are not as large as the Buff, and Mr. Lewis Wright suggests a cross with a Light Brahma to increase their size, choosing one with as little black as possible in its plumage and under-colour. It is now well known by Mendel's law that some single-combs would be bred in the second generation, and probably a few in the first cross, on account of previous intercourse between these two breeds. It is probably due to this interchange of blood that so many Brahmas of to-day have the Cochin style and gait.

Both sexes can be bred from the same breeding-pen for exhibition. Great care should be taken to see that the male bird especially is pure in colour—a cock that has moulted pure in colour being a valuable stock bird. The legs of the White Cochin are a bright yellow, not dusky yellow as in the Partridge and the Black. In old birds these often go pale in shade. In America there are White Brahmas, though they are seldom seen here. These are doubtless bred through an admixture of White Cochin blood.

A prevailing fault in the White Cochin is the loss of tail character, the sickle feathers and tail coverts growing too long; and they are also apt to show traces of white in ear-lobes, a failing in most red-lobed birds with white plumage.

The Black Cochin

This variety is now being bred more widely than in former years, and has now attained the size, shape, and abundance of feather so noted in other varieties. It is needless to note that there is less difficulty in maintaining purity of colour than in the lighter feathered varieties. The eye of a Black Cochin may be either red or black. The plumage should be a rich raven black throughout, free from feathers of any other colour, and as far as possible black to the skin. To

and his supporters, and the final upshot has been the formation of two strong Clubs, one for the Modern Langshan and the other for the pure Croad, or as it is now called, the Croad Langshan—which latter Club has a membership of seventy or eighty.

Whether connected in any way or totally distinct in its origin from the Cochin, there is no doubt of its purity in breeding true to type, or of its essential usefulness as at once a good table-fowl, and the producer of perhaps the richest-coloured egg we know, which it lays in great abundance. It forms also one of the most useful birds for crossing with other varieties, as it adds increased stamina to the progeny. It is well known as the chief ingredient, in its original form, of the popular Black Orpington, and when crossed either way with the Black Minorca it forms one of the hardiest and most prolific of first-crosses.

The Modern Langshan

This is a very large and deep-bodied bird, wide at the shoulders, with a full and deep breast, having a *long* breast-bone almost like a turkey's, curving well up in front, giving a rounded outline to the breast when viewed in profile, and well covered with meat. The back is broad, rather long, and horizontal, the saddle furnished with a flowing hackle, though not too long. The wings are carried close to the body and the wing coverts are brilliant in hue. The whole body-colour should be a brilliant beetle-green, free from purple patches and markings, and the skin fine in texture, white and transparent. The plumage close and smooth, with *little fluff*. The head should be neat and free from coarseness, with a rather small, evenly-serrated, erect comb, free from side-sprigs. The eye should be dark-hazel or black, the darker the better. The tail should be full and flowing, spread out at the base and carried fairly high.

The thighs of medium length, wide apart and tight-feathered; the shanks rather long, and *fine* in bone, with a neat, even fringe of feathers extending down to the *outer* toe, not, as in the Cochin, to the middle toe. The toes, four in number, long and well spread out.



BLUE LANGSHAN COCKEREL.
Property of Mr. W. A. Jukes.
Winner, 1st, Special International, etc.

The general shape should be that of a tall, graceful, alert bird, strong on the leg. A cockerel should weigh from 8 to 10 lb.

Allowing for the difference in sex, the hen is almost a facsimile of the cock, though she does not appear so long on the leg. The weight of a pullet should be not less than 6 lb., and a hen 8 lb.

The legs of both sexes are a dark grey, with black scales in front, and showing a pink tinge between the toes and on the side of the shanks.

Serious defects for which a bird should be passed in the show-pen: Yellow skin or yellow at base of the beak, thus avoiding a Cochin appearance, or a yellow or Cochiny eye. Permanent white in ear-lobe is also a serious defect, or clean shanks, or white or coloured feathers in plumage.

Other faults to be avoided are too profuse or too scanty leg feather, crooked breasts, twisted toes, and any general coarseness. All these faults mitigate either against the neat and smart appearance of the bird, or detract from its stamina and render it less useful as a table-bird.

Mating Black Langshans

Both sexes can be bred for exhibition from the same pen. Colour of plumage, eye and head points are most important in the cock, and size and shape in the hen.

White and Blue Langshans

Judging from their infrequent appearance at shows, these do not appear to be largely bred or very popular. The White is very like the Black in all respects except the colour of plumage, which should be pure white. A good specimen is an exceedingly handsome and striking bird.

The Blue Langshan seems less popular than the White. The body-colour should be a clear slaty blue, each feather distinctly laced with dark slate, the same colour as the back of the bird, which together with neck- and saddle-hackles and the tail should be a deeper shade of slate with a purple sheen. As in all blue varieties, there must be bred a large proportion of birds nearly black, or white, and of those which come a slate colour

so many mealy coloured or indistinctly marked birds, that they are not likely to be a popular variety, though they may be as vigorous, hardy and useful as their Black progenitors.

The Blue hen is more beautiful than the cock on account of the uniformity of her colour and the rich dark lacing, *i. e.* when a good specimen can be raised.

Mating Blue Langshans

Both sexes, again, can be bred from one pen. If the cock is on the dark side, the hens should be paler, or *vice versâ*, clearness of ground-colour being the great desideratum.

A good, strong, erect specimen of a Langshan is a very handsome bird, but nothing looks more ungainly than a raw in-kneed cockerel confined in an exhibition pen, which is usually much too small for his comfort. A cockerel, having less bulk of body, looks taller than a cock, and when growing is often troubled with leg-weakness. On the whole it seems to me that, while they should be bred comparatively tall and fine in bone, these features are often in excess, and then add nothing either to the dignity or usefulness of the race.

The Croad Langshan

This variety claims to be pure, and to be bred true to the original type imported by Major Croad. The club for its maintenance was only started as late as 1904, but is already strong in members. The variety is very much like the Modern Black Langshan. The weight of typical specimens is about the same, but the Croad looks larger, as it is more loosely feathered, though not like the Cochin. It is shorter on thigh and shank, and these look shorter than they are on account of the thighs being more heavily feathered and the shanks not so neat. The only striking difference is in the shape of the back, which is much shorter and more curved in appearance, and the tail is carried at a higher angle and more fully furnished.

The four sections of the Standard of Excellence of the Croad Club which materially differ from that of the Modern are the following—

(1) "*Size.*—In fowls of such remarkable merit for table purposes size, consistent with type, must be a great consideration, and an adult bird should weigh not less than 9 lb.

(2) "*Carriage and shape.*—Sufficiently long on the leg to give a graceful carriage to the body; head carried well back with full-flowing hackle, good wide shoulders, and very long meat breast; general bearing that of an extremely active and intelligent bird.

(3) "*Back.*—Medium length, broad, flat at the shoulders, and the saddle rising rather abruptly to tail, the saddle being rather *abundantly* furnished with rich hackles.

(4) "*Legs and toes.*—Thighs *rather short and well covered with rather soft feathers;* shanks medium length, small-boned, standing well apart, bluish-black showing pink between the scales, which are nearly black and feathered down the outer sides, not too heavily nor scantily." [Any approach to vulture hock is considered a disqualification.] "Toes long, straight, slender . . . the outer toe well feathered; the web and bottom of feet pinkish white—the deeper the pink the better; toe-nails white."

Disqualifications.—Yellow legs, yellow at base of beak or around eye, permanent white in ear-lobes, slate or blue legs in young birds, white feathers in adult fowls, coloured feathers, decided blue or purple sheen or barring, and wry-tail.

Serious defect.—White tips to feathers.

Defects.—Temporary white in ear-lobes, blue or purple tinge, lop-comb, side-sprigs, and white in shank and toe feathers.

Every effort should be made to keep the two strains distinct, so that it should not be possible for a longish-legged Croad to win in a Modern class, or for a shorter-legged Modern to win in a Croad class. As both are alike in colour and sheen, and both are large birds with fine bone, the distinguishing features in the Croad are softer and more plentiful feather, and shorter legs, with a greater curve in the back.

There is no doubt that it is a very useful bird, being an excellent layer and a good table-fowl.

THE MALAY

This is another Eastern fowl, being a native of the Malay Peninsula. When there were fewer modern breeds, half-a-century ago, the Malay was a more popular fowl than it is to-day, or is ever likely to be again. They have been known in this country for more than a century, though when they were first imported is doubtful. Like the Indian Game, Cornwall seems to be their chief home. Though they are good table-fowl on account of their large size and abundant juicy breast-meat (a cock under 10 lb. is considered small), they are said to be very poor layers. There are several colours or varieties, as the Black-red, Red, Pile and White. The Black-reds are most frequently met with.

Colour in the Black-red Cock.—Head, back, wing-bow and wing-bay: rich dark red. Wing-bar, breast, under-parts and tail: glossy black. Shanks: yellow. Eyes: pearl, yellow or daw.

Colour in the Hen.—Any shade of cinnamon, free from tickings, with dark purplish hackle, or partridge-marked.

They are the tallest of our many breeds, and stand very erect, a good cockerel measuring 36 to 38 inches. Their beauty, like that of the bull-dog, may be said to consist in their ugliness. They have broad skulls with deep-set eyes, and beetle or overhanging eyebrows giving them a fierce, cruel expression, and their looks do not belie them. The comb is peculiar to the breed, and resembles a half walnut-shell. The distinguishing feature about them is what is known as "the three curves." The neck is long, strong, and curved, forming an angle with the back, which droops, and is also convex in its outline, and the tail droops further still, forming another angle with the back. The plumage throughout is short, firm, and strong, and the flesh extremely hard to the touch. They are a race of fighting giants, and are said to be difficult to rear in numbers on account of their pugnacity.

A few fanciers stick to them with great tenacity, but they are never likely to be a popular breed, in spite of their antiquity and undoubted purity of race.

The White Malay is a very handsome fowl.

THE ASEEL

The Aseels are the true Game birds of the East. They are a somewhat diminutive race, but very wiry and strong. The head is short and small, though broad between the eyes and jaw, and very thick at the base, and the beak strong and slightly curved. Ear-lobes small, and there is a singular *absence* of wattles. The body is short and compact, with great hardness of feather. The back is broad and quite straight, not like the Malay, which in many other points it resembles. The tail is slightly drooping, with narrow, hard feathers. The legs are thick, rather short, strong, and muscular. The general shape and carriage is straight and upright, angular throughout. An average weight for a cock is 4 lb., and there is no other bird of its size to compare with it for fighting qualities. They are of all colours —red, black, grey, white, and spangled. Colour is of little importance. They are essentially a fancier's fowl and of little commercial importance.

YOKOHAMAS

This singular breed demands only a few words. They are a recent importation from Japan, and are often called Japanese Longtails, or Phœnix fowl. The singular feature about them is the excessive length of their sickle feathers, specimens of which have been preserved in Japan as long as 17 feet. The first year the sickle feathers grow about 2 feet long, and in older fowls commonly grow to 6 feet. They carry this long tail in a very graceful way, and I have seen a very gay display of them running about in the garden of a farmer, who had bought them because of their odd beauty. They are occasionally exhibited now in England, and always attract attention. They are good layers of a small egg, but are never likely to be largely kept, except by the lover of curiosities. They are of various colours, which breed as distinct as the many varieties of Game or Leghorn. The Duckwing variety is the one most commonly seen.

CHAPTER XIII

BRITISH BREEDS OF POULTRY

DORKINGS—GAME FOWL—HAMBURGHS—ORPINGTONS

DORKINGS

Sub-varieties: Dark, or Coloured, Silver-grey, White, Cuckoo Red

Among British breeds of poultry the Dorking takes first place. It is of aristocratic pedigree, and one of the oldest of our domestic races of poultry, and was probably introduced into this country at the time of the Roman conquest of Britain.

The breed is undoubtedly mentioned by Columella (an early Roman writer on agriculture who died about A.D. 47), who, in describing his favourite fowl, says of the hen, "Let them be of a reddish or dark plumage, and with black wings. . . . Let the breeding hens therefore be of a choice colour, a robust body, square built, full breasted, with large heads, with upright and bright-red combs . . . those are believed to be the best with *five toes*," etc. He goes on to say, "Let the white ones be avoided, for they are both tender and less vivacious, and also are not found to be prolific."

It would appear, then, that Columella knew of two at least of our present varieties of the Dorking, the Coloured Dorking, or it may be the scarce variety known as the "Red," and also the White, while his description tallies very closely with the present-day Dorking in being "square built," and "deep breasted," with large head and five toes.

The description of Pliny, a Roman writer also of the first century, agrees with this. He states in Book X, Chapter 77, "Superiority of breed in hens is denoted by



DARK DORKINGS. WHITE DORKINGS. SILVER-GREY DORKINGS.

an upright comb, sometimes double, black wings, ruddy visage, and *an odd* number of toes." A third variety is probably alluded to here, viz. the Rose-combed Dark Dorking, another ancient variety almost obsolete, at least as far as the show-pen is concerned.

It is evident that the Romans knew a good thing, and it redounds to our credit that, having found it we have kept it, through all the vicissitudes of our national history. It was then, and is now, the prince of table fowls, and as long as John Bull is fond of good fare it is not likely to die.

When the Romans came our forefathers kept fowl, not for eating, but for "sport," and it is probable that cock-fighting was one of our earliest pastimes, and it is not dead yet. It would seem, therefore, that love of fighting and good fare were among our earliest characteristics, and they are likely to remain so.

A comparison of the coloured illustrations of the present-day Dorking with those of even half a century ago, as seen in the works of Doyle and Tegetmeier, will show the marvellous improvement in size and shape, as well as colour, which has taken place, though it is probable that the Dorking has always been the chief of table birds, and in its earlier days was not to be despised as a layer. They were my earliest pets as a child, half a century ago, when I loved their gentle ways and counted the eggs they laid. They were then much longer in shank, and less bulky in build. They are a fairly hardy fowl, and thrive anywhere if they have a dry run. That they stand a cold climate is proved by the fact that some of the best of them are still bred in our northern counties. But they succumb to neglect sooner than most breeds, and dirty, wet runs ruin them in a short time, and from being the heaviest and most meaty of their race they speedily go "light" in weight from "consumption" or liver disease, and there is little doubt that they still thrive best in the south, or on a sandy or light soil.

The general characteristic of the Dorkings should be their great size and weight, the deep, square body, with a long and prominent breast-bone, white skin, short white legs, and white feet, which should be long and

well spread out, and with their chief characteristic, the five toes, the fifth being distinctly apart from the fourth, and, after leaving the shank at a right angle, is turned upwards. Great stress is laid upon the feet, both in colour and shape. The bone should be finely rounded and hard in quality, not soft and spongy, as otherwise the bird soon develops lameness. The head is large, and wattles are large and pendulous, the comb large, circular in arch, evenly serrated in the single comb variety, viz. Dark, Silver, or Red. The rose-comb is found on the White, Cuckoo, and also in the Dark Dorking. It should be square in front, moderate in size, the top covered with fine nodules, and the peak at the back inclined slightly upwards. The eye should be full and large, with a bright-red or yellow iris in all the varieties.

The general characteristics of the hen are somewhat similar to those of the cock, allowing for difference of sex. The single comb in the hen is fairly large, and should fall gracefully over to one side of the face. The body is long, deep, and massive, the back level, broad across the cushion, and tightly feathered. The tail is well developed with broad feathers, and carried closely, not fan shape. The carriage is staid and matronly.

Size.—A cockerel should be 10 lb. and a cock 12 to 14 lb., and the hens 2 or 3 lb. lighter.

The Fifth Toe, though, as will have been noted, a characteristic for nearly 2000 years, is an abnormal feature, and though perpetuated by man's art through all the centuries, Nature still makes an effort at "reversion to type," and four-toed specimens are still produced, even in the best and purest strains, where no four-toed specimen is ever allowed in the breeding pen. Hence it is that the five toes are not entirely dominant over any four-toed variety with which it is crossed, almost equal numbers of either kind being produced. One would naturally have expected the prepotency to have been greater after so long an inheritance. It would, I think, be quite possible to establish a four-toed Dorking variety which would be equal in all other respects to their five-toed progenitors, without interfering otherwise with the characteristics of the breed. It would appear from Columella's description that some

had four toes in his time, and the persistence of specimens with four toes is very remarkable. It is at least probable, however, that the tendency has been increased by crossing the breed with other breeds in order to increase its size and stamina. It is not at all wonderful, however, that the fifth toe should be difficult to eliminate when the Dorking is crossed with any four-toed variety. Breeders of the Buff Orpington in its early days will remember how persistently this trace of the Dorking blood reappeared from time to time. It has now disappeared, however, while the white leg remains (see Buff Orpington, p. 338).

The Colour of Dorkings

Colour is not so important a feature as size and shape, though it carries weight in judging.

Coloured or Dark Dorkings

In both Sexes.—*Comb, face, and wattles:* Red. White ear-lobes are objectionable. *Eye:* Orange or bright red in both sexes, the latter preferred. *Beak:* Dark horn. *Shanks and feet:* Pure white.

In the Cock.—*Hackle:* White or straw colour, striped with black. *Saddle hackle:* Similar. *Back:* Various shades of black and white, sometimes mixed with maroon. *Wing-bow:* White, sometimes mixed with black or grey. *Wing bar:* Greenish-black. *Breast and under-parts:* Jet black. *Tail:* Black.

In the Hen.—*Hackle:* Pale straw, striped with black, usually of a much darker shade than the cock. *Breast:* A salmon-red colour, each feather tipped a very dark grey. Rest of body a rich dark brown, the shaft of each feather being a dull white, except on the wings, where the centre of the feather is a brownish-grey with a black lacing. The *Wing* should be free from a red tinge. The *Tail and tail coverts* black or greyish-brown. Altogether the hen is a sober-coloured dame.

Silver-Grey Dorkings

In both Sexes.—*Beak:* White or horn. *Eye:* Orange or red. *Comb:* Red. *Legs and feet:* White.

In the Cock.—*Hackle, back, saddle, and shoulder coverts:* Pure silvery white. *Breast and under-parts and wing-bar:* Lustrous black. *Tail:* Coal black, free from white. In old cocks the breast is sometimes grizzled with white as well as the thighs, an illustration of the common loss of colour as age advances. The *secondaries* are white on the outer web and black on the inner.

In the Hen.—*Hackle:* Silvery white, the lower part striped with black. *Breast:* Robin or salmon-red. *Body and wings:* Clear silvery grey, finely pencilled over with darker grey. A red or brown tinge very objectionable. *Tail:* Darker grey, inside feathers black. The Silvers are not usually as large as the Darks, but to my mind are the most beautiful of all the varieties.

The White Dorking,

as the name implies, should be pure white from head to tail, and are very beautiful to look upon when kept in a pure atmosphere. Their rose-comb gives them a neater appearance. This variety is still smaller than the Silver and is more elegant in shape. It is accounted the best layer of the breed and is less liable to broodiness.

The Cuckoo Dorking

The colour in both sexes is much like that of the Barred-Rock. The whole body from head to tail should be a light bluish-grey ground-colour, barred with bands of a darker grey-blue colour, one colour gradually fading into the other. They are seldom seen in the show-pen, and are not largely bred. They are said to be very hardy. It is probable they arose from a cross between the Dark Dorking and the White. It is too difficult to breed true to be a popular fowl.

The Red Dorking

is another little-known variety, though it is probably one of the oldest. It is a dark or chestnut brown colour, with a black breast and tail, and the hen spangled and more like the colour of a Redcap fowl.

It is very highly spoken of by the late Mr. Harrison Weir, who esteemed its beauty and utility so greatly that he chooses this breed for his beautiful coloured frontispiece in his great work, *Our Poultry*. When it finds its way into the exhibition world it will assuredly become popular.

Mating Dorkings

There is no necessity for double mating in any of the colours. A chief point in the Dorking fowl is the colour and quality of the leg, and the shape and formation of the fifth toe.

Dark Dorkings

If the cock is too dark in colour his progeny may have a tendency to smuttiness in the legs and feet, a first trace of which is sometimes seen in coloured toe-nails.

The cock selected should have a sound black breast, and the hens be selected for size and shape.

Silver-Grey Dorkings

The cock should have a sound black breast, and the hens show no sign of ruddiness. If the hen is too light in shade, or not sound in colour, the breasts of the cockerels in the progeny will be grizzled-breasted or splashed with white, and their beauty be destroyed.

White Dorkings

The chief point is purity of colour, and the cock should be beyond reproach in this respect. Sappiness is considered to be a sign of an unsound constitution.

Value of Points in Dorkings

		Deduct up to
Defects:	Coarse head or comb	8
	Fifth toe not perfect	15
	Colour	18
	Soft or spongy feet	8
Want of condition		10
,, ,, size		21
,, ,, symmetry		20
A perfect bird to count		100

GAME FOWL

The word "game" (A.-S. "gamen," play) has two meanings in common use; viz. sport of any kind, and pluck or courage. When in this year of grace we think of sport, our minds turn to the recent Olympic Games and to the Marathon race. And, singularly enough, it is at Marathon we have our first glimpse of cock-fighting. It is recorded that, on September 28, 490 B.C., when Themistocles was leading his small army of Grecians numbering 11,000 against the Persians, who numbered 110,000, he espied on the way two cocks fighting, and caused his army to stop and behold them; and thus addressed his men: "Behold, these do not fight for their household gods, for the monuments of their ancestors, nor for glory . . . but only because the one will not give way to the other." This so encouraged the Grecians that they fought and won; upon which cock-fighting was, by a particular law, ordained to be annually practised by the Athenians. For how many centuries before this date the Persians had known it, history does not tell us, but it would seem to be one of the oldest and most widely practised of all sports. The game was known to and practised by the Romans when they invaded Great Britain, but whether they taught it to the Ancient Britons, or found it already in vogue here is not known. Certain it is that many a battle royal was fought on English soil during the Roman invasion. Those who wish to follow up the history of this ancient sport cannot do better than consult the gossipy pages of the late Mr. Harrison Weir, who wrote in charming style in vol. i. of *Our Poultry*, p. 141. "The Old English Game cock has held its own against all comers. Bright and beautiful he stands to-day, as he stood with eager, bold dilated eye, full of defiant gaze—a monarch bird, clad in lustrous feathery garments of the brightest sheen—when, unflinching and undaunted, he faced his foe, while old Roman warriors made the ring in which he fought on English soil. Though they beheld with wonderment his high prowess and daring deeds, not even then was he more cherished, more cared for, than now, when on the grassy mead he leads forth his hens

to meet the rising sun, and with voice clear, loud and shrill, proclaims "'Tis day.'"

The cock-fighting which seems to have been practised by our forefathers at the dawn of our national history has, beyond doubt, continued to our own day, though it has in recent times been forbidden by law in this country. Many a quiet "main" is still fought in many an English county, and not a few over the borders in Wales; while hundreds of fighting Game are bred for export to America, South Africa, etc., and still fetch very high prices when it is known that the strain is pure, and the true characteristics of the breed preserved.

I suppose the witnessing of cock-fighting by its votaries had a vicious and demoralizing effect on them, and like bull-fighting and bear-baiting is better done away with; but there was doubtless a lot of sentimental humbug written about its abolition. This has been well satirized by the Rev. E. S. Dixon, a Norfolk rector, who wrote in his book of *Domestic Poultry*, in 1848—

"As to cock-fighting, I believe it to have been made the theme of much ignorant cant. Hawking is a noble and honourable pastime, cock-fighting is low and disgraceful . . . People who are proud of Waterloo, who dine off hunted hare, and breakfast on shrimps that have been boiled alive, allude to it with horror. Cocks, however, must die. Would a cock that had been fought, be worse eating than a hare that had been hunted? And as to the mode of death,—ask a cock which he would choose, to be hung up by the heels, and have the cook run a knife up his throat, taking care that he bleed long and die slowly in order that his flesh may be so much the nicer and whiter,—or, to be set face to face with his adversary, and fight for his life! if he win to be petted and praised; if he fall to have his existence cut short by one sharp merciful thrust instead of the lingering faintness of a culinary departure?"

Cæsar, in his Commentaries, states that the Britons "kept fowls for pleasure and diversion" but not for table purposes, and it is probable that cock-fighting is the diversion named. W. Hone, in his *Everyday Book*, published in 1826, says, "The earliest notice of

cock-fighting in England is by Fitz-Stephens, who died in 1191. He mentions this as one of the amusements of the Londoners, together with the game of football. "Yearly at Shrovetide the boys of every school bring fighting cocks to their masters, and all the forenoon is spent at school to see these cocks fight together."

Cock-fighting was prohibited in England under Edward III and Henry VIII and even later: yet Henry himself indulged his cruel nature by instituting cock-fights, and even James I took great delight in them, and, writes Hone, "within our own time, games have been fought, and attendance solicited by public advertisement at the Royal cockpit, Whitehall, which Henry VIII built."

Though the sport was a public one when Hone wrote in 1826, it was soon to be put down by law. An Act was passed in 1833 (3 & 4 William IV, cap. 19) to make it an illegal act "to bait any bull, bear, or badger . . . or *to fight cocks* within five miles of Temple bar." And in 1835, in spite of the strenuous opposition of the nobility, who pleaded for it as a poor man's sport and feared lest their own sports of hunting and shooting should be interfered with, the bill was extended to the whole country. Bull-baiting, etc., was soon put down, as it could only be practised as a public spectacle, but cock-fighting, taking place under cover and in private premises, was stopped with difficulty. "A main of cocks was fought almost publicly in London twenty years after cock-fighting had been declared illegal" (Spencer Walpole's *History of England*, vol. iii). In 1846 its withdrawal was satirized by Mr. Dixon. It is no longer in England a public form of amusement, and from being the sport of kings and nobles, has become that of lawbreakers, who still indulge in the ancient game when and where they can evade the law.

One of the most remarkable things about these old fighting Game fowls, from a fancier's point of view, is the wonderful stamina of the birds after so many generations of close inbreeding, since it is well known that the old "cockers" were very jealous about maintaining the purity of their respective strains, and seldom introduced new blood even from affiliated stock. Birds

were seldom fought till they were two years old, and a cock that was not as strong as steel, and in the fittest condition, full of pluck and courageous to the last, was worthless. And yet this wonderful vitality was maintained generation after generation, and the secrets of the methods of mating, rearing and feeding jealously guarded and handed down from father to son. This is a wonderful contrast to the incessant and almost insane cry for fresh blood *every* year in order to keep up the vigour of the modern breeds. There is, of course, this difference that, whereas those who cry out for fresh blood to-day do so in order to get more eggs or more meat, the Game men had one idea only in view, viz. the preservation of pluck and fighting skill, and in order to do this they had to select the birds with the soundest constitution, and of mature age; yet instances are known of strains that admitted no cross of alien blood for forty years.

If the fighting men had taught us nothing else than this they have not lived in vain, viz. that fresh blood is *not* a necessity in maintaining vigour, so long as the healthiness of the stock is duly considered.

In these old fighting Game not only were the various strains of the same colour kept distinct, *e. g.* the Cheshire Piles, and the Staffordshire Piles, and the Streaky-breasted Red Piles, etc., but strains of celebrated breeders took their names from some of the most noble families in the land.

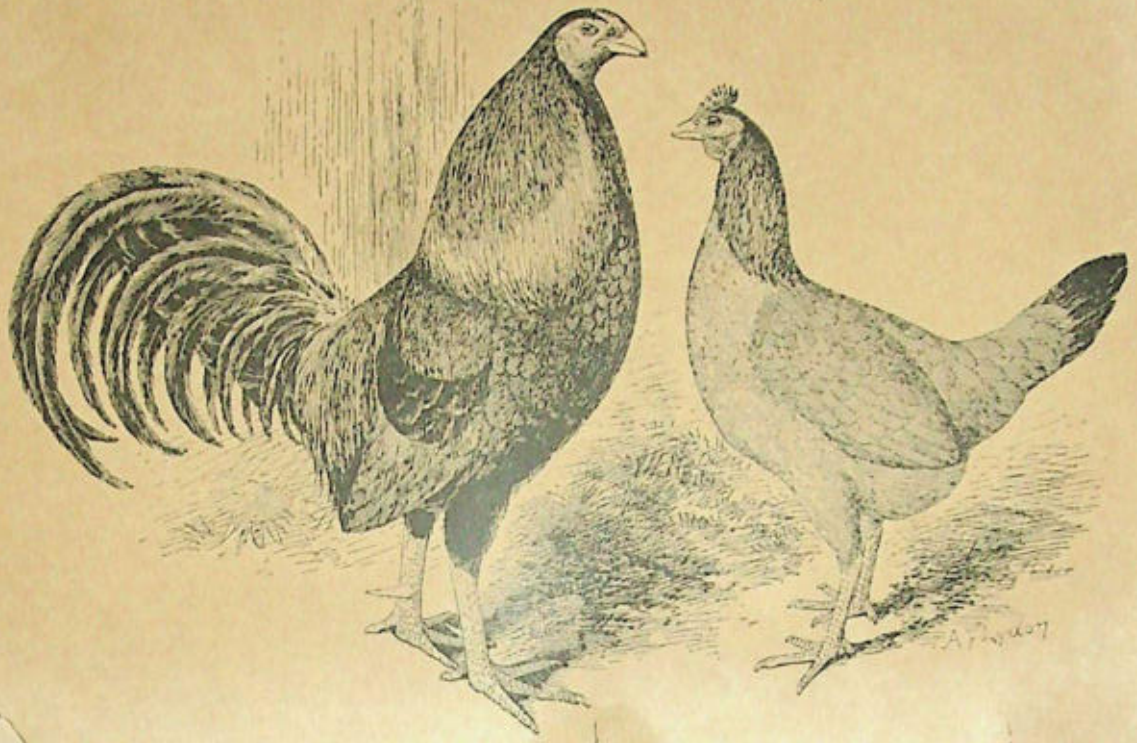
And, if there were many strains of the same colour, the number of colours also was multitudinous, of which only a few have survived among their more modern descendants in the Old English, and Modern Game. The colour was not so much thought of as the other points, and the Old Game lack that precision of marking and brilliance of colour so much esteemed by Modern Game men. Like a good horse, a good fighting-cock could not be a bad colour. In addition to the self colours of black and white, there were, as to-day, the Black-reds, Brown-reds, Piles, Birchen, Duckwings and Spangles; but these branched off into *all* colours, *e. g.* instead of the Gold and Silver Duckwing, which now alone are seen in the modern breeds, there were added brown, streaky, and marble-breasted Duckwings, blue, red, and yellow

Duns and Piles, and so on; while, in addition, the Furness Game, the Pole-cats, and Hennies (*i. e.* a variety in which the cock was without the neck-hackles and saddle-hackles and sickles which usually distinguish the male sex—in fact, was hen-feathered), besides varieties with "muffs" and tassels in all varieties. The Muffs are distinguished by a bunch of feathers growing under the throat, and the Tassels by a tuft of feathers at the back of the head, underneath the comb.

Many of these varieties are almost extinct, or only known to a few of the descendants of the old cockers; *e. g.* I have heard of Cheshire men searching in vain for a genuine specimen of the Old Cheshire Pile. The Furness Game is described as "a bird of singular and handsome appearance. The neck, body and tail are of a beautiful shining black, very rich and lustrous, with a saddle of light buff. The hen is perfectly black with a slight touch of gold in the hackle." Besides this there is the black-breasted, copper-winged Furness. The Pole-cat was similar, except the wings were straw-coloured, and the breast sometimes streaked.

The multiplicity of colours helped to distinguish the various strains, though to any but the initiated the numberless shades must have been a source of confusion.

It was not colour, however, but shape and style and condition that were most regarded. The fighting Game were comparatively small birds, weighing 4 to 5 lb., and being very tight-feathered, looked smaller than they were. They were smart, tight, quick in movement, with a proud erect gait, the neck long and the hackle short and hard—the jaws and throat lean and red, with a powerful and curved bill. The legs were of moderate length, clean and round in bone, and the feet well spread out, the hinder toe touching the ground so as to allow a firm backward tread. The thighs were very tight-feathered, and indeed the whole body appeared as though encased in a tight-fitting coat of mail, with strong muscular wings. The body was wedge or pear shaped like that of the Moderns, with the weight well in front, and the body cut fairly short behind. As the cocks were bred to fight, their offensive weapon, the *heel* or spur, was a great consideration, since even



OLD ENGLISH GAME.

with health and vigour they were useless unless they could strike well and clean. When a cock, at two years old, then in his prime, firm and muscular, in well-trained condition, stepped forth into the arena to do battle for the honour of a long line of champion ancestors, he was a majestic sight, a fit emblem of a nation whose motto is "either to conquer or to die."

The Old English Game

Varieties: Black-breasted Red; Brown-red; Duckwing; Blue-red; Pile; Spangles; White; Black; Henny.

The Old English Game are the direct descendants of the old fighting Game, and, though not largely bred for the cock-pit, retain many of the characteristics of their progenitors. They are a little larger, and weigh about a pound heavier, the cocks average 5 lb. to 6 lb., and the hens 4 lb. to 5 lb. Opinions differ as to whether they are an improvement on the old race. They are more uniform in colour and marking, though this is still a minor feature even in the show-pen, and only 8 points out of 100 are assigned for it. They are a much more feathery bird, and it must be confessed not so tight and hard in feather as the old style. This defect is very noticeable in some varieties, and particularly in the Spangles and Black-reds. The Brown-reds and the Black seem to retain better the hardness of feathering.

They are very beautiful in appearance, and for magnificence of colour and style a Black-breasted Red cock takes a lot of beating. He is the most typical specimen of the English fighting race. Strong, alert, bright, compact, with strong firm-set limbs, and the weight in the right place, with firm light head and quick bright eye, he looks what he is, game to the core, a picture of gay, fearless audacity.

It is probable that many of the ancient race, less in size and more sober in clothing, could run him round the ring and out of it, but he has not been bred for of fighting, but for show, and pluck and endurance is no longer the one quality sought after.

GENERAL CHARACTERISTICS OF THE COCK

Head and Neck.—*Head:* Medium length and tapering. *Beak:* Strong and curved. *Neck:* Long and very strong. *Comb:* Small, single and evenly serrated. In the cock the comb and wattles are usually dubbed before exhibiting; though the hen retains hers, which should be small and neat. *Neck-hackle:* Wiry long feathers covering the shoulders. *The eye:* Bright and prominent, and of the *same* colour; odd eyes are not infrequently met with.

Body.—Broad chest, tapering towards the tail; straight breast-bone essential, as indicative of robustness. *Back:* Short, broad across the shoulders and flat-shaped like a smoothing-iron, though this feature is more marked in Modern Game. *Belly:* Small and compact. *Wings:* Long and powerful, protecting the thighs. *Tail:* Sickle feathers long, broad, hard and abundant.

Legs and Feet.—*Thighs:* short, muscular and thick, wide apart. *Shanks:* Fine, round; flat shins objectionable. *Toes:* Clear, even, hard and long, well spread out, and the hind toe standing well out and flat on the ground. *Spurs:* Strong, and low-set on the leg.

The General Shape.—Bold and smart, and the movements alert, graceful and springy.

The Plumage.—Glossy, fine, and hard. The flesh firm, but corky and light. The wings strongly contracting. When handled there is a springiness, with the weight well forward. Game men use the word "clever" to describe its general alertness, as though ready for any emergency.

THE HEN

The general characteristics are much the same as for the cock. The tail is inclined to be fan-shaped and is carried well up, though not erect or squirrel.

Colour of Leg and Eye in both Sexes.—The general colour of the eye is red, though it is *dark* red in the Brown-red Game, and a daw eye is allowable in white-legged birds. The legs may be any sound self colour, though yellow is by some counted objectionable.

The Colour of Old English Game need not

detailed, as this is given more particularly in the Modern Game, and, as before stated, it is not of great importance. The colours mostly in vogue may be gathered from any show schedule, where Game are largely catered for; *e.g.* from the Birmingham Show schedule for December 1908, where Game fowl figure very prominently, there are distinct classes for :—

Black-red cockerels, and for Partridge hens, and Wheaten hens; Brown-red or Birchen cocks, and the same for hens; Blue-red or Yellow-dun cocks, and ditto hens; Spangle cocks and hens; Duckwing cocks and hens, and the rest are classed together as cocks or hens of any other colour.

Sub-varieties of O.E. Game

The Black-breasted Red, as the name implies, is of two colours, black and red. The breast, under-parts, thighs and tail are black, as also the wing bar and butt, the former being of a lustrous blue sheen. The neck-hackles are pure bright orange red, the shoulders and back being of a deeper red.

The Partridge Hen is a partridge-brown colour, with a golden neck-hackle streaked with black, the tail, black, shaded with brown, and the breast, salmon-coloured.

The Wheaten Hen has a golden red hackle, the rest of the body being of a wheaten shade, lighter on the breast, and a black tail with a shading of brown.

The Brown-red Cock has an orange-red hackle streaked with black, the back and shoulders dark red. The breast may be either robin-coloured, or brown, shaded with black. The eyes and legs are dark.

The hen to match them is of a rich mossy brown all over. The eye in the pullets should be dark, though usually a lighter shade in hens. The O.E. Game Brown-reds are not of the beautifully defined colours of their modern representatives.

The Silver Duckwings are in colour the same as the Moderns, very like the colour of the Silver Dorking. *The Yellow or Gold Duckwing* is similar except that the hackles, wing coverts and back are yellow instead of silvery white.

The Blue-reds and Yellow-duns are like the Black-reds, the light long

except that the breast is a slaty-blue or dun colour, instead of black.

The Piles are like the Modern except that the colour is of a brighter shade, and the breast may be streaked with colour instead of being pure white.

The Spangles are perhaps the most popular variety at the present time. The colour may be either black, red, blue, or buff, spangled with white, the red spangle being most commonly met with. The spangling should be as evenly distributed as possible over the whole body. The tail has black and white feathers in abundance.

The White Game should be white throughout in plumage. Eyes: Red or pearl. Legs: White or Yellow.

The Black is glossy black in plumage. Beak: dark. Eyes: Red or dark. Face: Red or dark. Legs: sound Self-colour.

The Henny Game, though not so commonly met with, deserves mention on account of the unique feathering of the cock. The more like a hen in feathering the better, with absence of sheen on the hackle and tail feathers. This is probably one of the oldest and purest of Game varieties, and less crossed than any, since it is manifest that a cross with another variety of Game would destroy its henny appearance. It is somewhat smaller than other varieties, and, on this account, is said to have a disadvantage in the fighting contests, though it is as game as any of them, in spite of its feminine aspect, and has often proved victorious in a long-fought main. In a recent copy of *Grit and Steel*, published at Gaffney, S.C., U.S.A., which gives detailed accounts of mains fought in the cock-pit the Hennies won the majority of the battles and the favourite colours were black and pile. The Henny Game is bred in all colours, and there are sub-varieties enough of it alone to form a decent show, but the blacks are most commonly met with. It is said to be the best layer of the lot, which is not saying much after all, for the utility qualities of the Game fowl lie in the direction of the table rather than in that of egg production.

In this respect, however, Game Fowl stand supreme

for the quality of the meat and the absence of offal flesh. And no breed can surpass them for crossing purposes, when it is desired to add to the quality of the flesh. It even surpasses the much-vaunted Indian Game for this purpose, as the flesh and skin are white, and of better quality, though not so great in bulk.

There is but little trouble, beyond the taming of them, in preparing these birds for exhibition, and they never look so well as when taken direct from their grass runs, and a sponge of cold water applied to head and legs to cleanse them. They are hardy birds, and many of the best of them, in the north of England, roost in the orchards without covering or shelter. They are doughty warriors, and it is to be hoped that although their ancient service in the cock-pit has been abandoned, their hardiness and pluck may be preserved. If ever they cease to be a fancier's fowl in the truest sense, and only come to be valued for the meat they carry on their breasts, softer feeding and care to increase their size will diminish their vigour, and an ancient race will be in danger of extinction.

Value of Points in Old English Game

		Deduct up to
Defects:	Head and neck and eye	20
	Back, breast and body	20
	Wings	6
	Legs and feet	21
	Carriage	10
	Plumage and colour	15
	Handling	8
		100

Serious defects, for which a bird should be passed: Duck feet, flat shins, bad carriage, rotten plumage, wry-tail, or any bodily deformity.

Modern Game

It will have been gathered from the previous pages that the true representatives of the old fighting Game are now known as Old English Game, and their com-

paratively recent revival in popularity is a welcome sign of the times.

The Modern Game has departed so very far from the original type, that this recent revival is a protest against it. From being a small, alert, smart bird of 4 or 5 lb., the Modern has been evolved into a very tall, lanky bird of nearly twice the weight, and, from a bird of full and flowing feather, with magnificent sickle feather and tail, has descended to an elongated bird on stilts, with the neck of a crane, and only an apology for a tail. It is alleged also, on good authority, that this straining after "reachiness" has not been the result of the selection of the tallest and highest feathered birds, or due to the inheritance of acquired characteristics, but to a direct cross with the Malay, the Asiatic giant.

However this may be, the Modern Game has been improved almost to the point of extinction, and is now in comparatively few hands, and even in the show-pen is exhibited in ever-diminishing numbers.

Its redeeming feature is its exquisite beauty of colour, and this has been bred for to a very large extent. The general public, as well as their owners, have a great admiration for this point, and they are also attracted by their unique style and shape. A really good specimen commands still a very high figure. The almost numberless varieties of the Old English Game have not been reproduced in the Modern Game.

The recognized colours are the Black-red, Brown-red, Birchen, Gold and Silver Duckwing, and Pile, and these various colours are seen in greater perfection in the Modern Game, than in any other breed of fowls.

General Characteristics of Cock.—The *head*, long and rather narrow across the eyes; the *beak*, long, strong and slightly curved; the *eye*, bright, bold and fearless; the whole appearance being called "snaky." The *shoulders* are broad and prominent and carried well up; the *body* short, and the *back* quite flat and tapering toward the tail, the latter being short and fine, the *feathers* closely whipped together, and carried only slightly above the level of the body. The sickles are *fine* and well pointed (not broad and abundant as in the Old English Game). The *thighs* are strong and muscular, and but sparsely

feathered, and the shanks long and nicely rounded, and fine at the hock joint. The *toes* long and straight, the hind toe pointing straight backwards, and flat on the ground.

The *general shape* is upstanding and active, the bird when erect being almost perpendicular from beak to shank. *Size and Weight*—7 lb. to 9 lb.

General Characteristics of Hen.—These are similar to those of the cock, allowing for difference of sex. The *comb*, *face*, and *wattles* are small and fine (in the cock these are cut off before exhibition). The *tail* is short and fine, and carried only slightly above the level of the body. The *plumage* is short, hard, and bright. *Size and Weight*—5 lb. to 7 lb.

Value of Points in Modern Game

	Deduct up to
Defects: Head 5, Neck 5 . . .	10
Eye	10
Tail	10
Legs and feet	10
Colour	20
Want of style	30
„ „ condition and feather .	10
	100

Serious defects for which a bird should be passed: Eyes other than standard, crooked breast, twisted toes or duck feet, flat shins, wry-tail, or any deformity.

The Colour of Black-red Game

In both Sexes.—*Beak:* Dark green horn. *Eye:* Bright red. *Legs:* Willow-green.

In the Cock.—*Head and Hackle:* Bright orange-red, not striped. *Back and Saddle:* Rich crimson. *Wing-bow:* Orange. The rest of the plumage brilliant greenish black, except outer edge of secondaries, which is a rich bay.

In the Hen:—*Head:* Gold. *Hackle:* Gold with narrow black stripes. *Breast:* Reddish with a salmon tinge, and running to ashy colour on the thighs. The rest of the body, a light brownish colour with very fine small

markings resembling those of a partridge, and a slight golden tinge pervading the whole (sometimes called "gold dust"), free from any sign of ruddiness. *Tail*: Black except the outer feathers, which match the body-colour.

The Wheaten Hen is also used for breeding Black-red cocks, also for Piles and Duckwings. These differ from the Black-reds in having a body-colour of pale cinnamon or wheaten, while the breast is a pale fawn and the thighs a cream colour.

The Brown-red Game is almost entirely a black plumaged bird, with a face nearly black and a jet black eye. His distinguishing features are that the head is a rich lemon colour, and the hackle the same but striped with black, while the black feathers of the breast have a fine edging of lemon-coloured lacing. The wing-bow, back, and saddle are also lemon-coloured. He is a study in brilliant black and pale gold.

The hen is similar in head, neck-hackle and breast; the rest of the body, a rich beetle-green black.

The Birchen Game is similar to the Brown-red in all respects, only substituting silver for gold or lemon colour in the hackles and other coloured parts.

The Pile Game is a study in various shades of red and white. The eye is a bright red, the head and neck-hackle a bright solid orange-red, the saddle-hackles bright orange, the back and saddle and the wing-bow rich maroon. A chief difficulty is to get the neck hackles and the wing-bow solid in colour, and the wing-bow of pure white, clear and distinctly cut. The rest of the body should be pure white, and free from splashes of colour.

In the Hen.—The neck-hackles should be white, tinged with gold. The breast should be a salmon or light chestnut shade, and the whole of the rest of the body pure white, free from any tickings or shadings of red.

The Duckwing Game is divided into Gold or Yellow, and Silver, the difference being that in the "Gold" those parts which are described as white or silver in the Silver Duckwing are pale yellow or cream colour in the gold.

In the Silver Duckwing the eye should be ruby red.

The head silvery white, also the hackle and back and saddle. The wing-bar should be a *steel blue*, like that of a Rouen Duck (hence its title). The rest of the body is a bluish black, except the wing-bay, which shows pure white when the wing is closed, caused by the outer edge of the secondary feathers being edged with white.

In the Hen.—The head is silvery white, and also the hackles, but these are narrowly striped with black. The breast and thighs a pale salmon, fading to an ashen grey on the thighs. The rest of the body is a delicate light French grey, with very faint black pencillings (one of the most delicate and attractive colours to be found on any fowl). The tail is black, except that the outer feathers should match the body-colour.

The Gold Duckwing Hen is almost exactly similar, except that the grey is of a deeper shade, and the breast a shade deeper at times in colour.

HAMBURGHS

Sub-varieties: Gold Spangled, Silver Spangled, Gold Pencilled, Silver Pencilled, Black, Buff, etc.

There is no more beautiful domestic fowl than the Hamburgh. Its general appearance is one of great sprightliness and activity. It is rather small in size, the Black and Spangled varieties weighing about five pounds in adult cocks, and the Pencilled a pound less. The birds have rose-combs, terminating in a long, tapering horizontal spike behind, white ear-lobes, dark, slate-coloured legs, and very full sweeping tails. Their brilliance and beauty in plumage is not excelled by any other breed. They are, moreover, the most prolific layers known, though the average general size of the egg is small, especially in the Pencilled varieties.

Under the name Hamburgh are two quite distinct races of fowls—the Spangled and Black being of ancient English origin, bred for many generations, chiefly in Lancashire and Yorkshire, under various names, while the Pencilled are of foreign origin, having been imported from Holland under the name of Dutch Everlasting Layers. It is suggested that the name Hamburgh has been given to these (and later on to the whole of the

sub-varieties) because they reached this country *via* Hamburg.

Aldrovandus, a professor of philosophy at Bologna, and a writer on natural history who published a history of birds in three folio volumes in 1599, is thought to refer to the fowl we know as the Pencilled Hamburgh under the name of the Turkish Fowl. He writes, as translated by the Rev. S. Dixon, "The Cock whose likeness we now give is called the Turkish Cock. His whole body was in a manner inclined to white . . . the tail consisted of feathers that were partly green, partly black. His whole body was exquisitely adorned with lines that were sometimes golden and sometimes silver, and it is wonderful what a beautiful effect this produced. His legs and feet were tinged with blue. The Hen, which in like manner is called Turkish, was all white, sprinkled over with black spots."

Mr. Dixon says that the woodcuts which accompany the description make it clear that the birds are Hamburghs.

This quotation may serve to remind us of the long pedigree of the Pencilled Hamburghs, while their sisters, the Campines, have a more ancient pedigree still. For how many generations the Spangled Hamburgh has been bred in Lancashire, Yorkshire, and other northern counties, there is no record.

The Hamburgh family has had a great number of names, as the following tabulated list will show—

HAMBURGHS

Spangled		Pencilled	
Gold	Silver	Gold	Silver
Gold Spangled	Silver Spangled	Golden Hamburgh	Chittaprats
,, Pheasant	,, Pheasant	Bolton Bays	Bolton Greys
,, Mooneys	,, Mooneys		Pencilled Dutch
Copper Moss	,, Moss		Silver Hamburgh
Redcaps			Creole

The name "Pheasant" was given to the Yorkshire strain, and the "Mooneys" were the Lancashire strain. These strains were markedly distinct both in size and feathering, and each had achieved great beauty long before the days of poultry shows, as we know them, were initiated. The fancier spirit of these two counties led

the way generations ago, and they still head the list for keenness and excellence in breeding.

To meet the necessities of the modern show-pen, and the fancy of the judges, these distinct strains have now been commingled, and one of the consequences has been that it is now necessary to have distinct breeding pens for cockerels and pullets, much to the detriment of the breed from a popular standpoint. Those who wish to follow the various stages by which this result was brought about should consult Mr. Lewis Wright's book, and also read *Hamburghs up to Date*, by Mr. C. Holt. To make the matter at all clear would take up more space than the limits of this summary will allow.

Before describing the various points of the separate varieties of this most elegant and beautiful plumaged fowl, it may be well to describe, briefly, their good and bad features. In addition to their loveliness as an ideal fancier's fowl, they have undoubted utility points in being small eaters and most prolific layers, while if killed at a tender age they are not to be despised as plump little table-fowls.

But they are birds which love a free range, as they are great foragers. They readily fly over the highest fences. When kept in confinement I have known them leap a ten-foot fence, and have seen other fences as high as this wired or netted over the top to keep them in bounds. They would never do to keep with other varieties in the same yards. Where kept alone, and where they have a free range, they are an ideal fowl for those who like beauty and utility combined, for though the eggs are somewhat small, especially from some strains, they are very numerous.

This is not the only reason why the breed has not a very large following. There are two other chief hindrances: one is the necessity for double mating, and the other is that the Standards as at present arranged necessitate, if they do not connive at, a great amount of trimming and faking before the birds are fit for the show-pen.

One of the Hamburgh's chief adornments is its beautiful rose-comb, so fully described in the Club's Standard which I am permitted to print at the end of this chapter. To produce a comb of the character

described: "On top very full of work . . . not leafy at sides; finely-pointed spike or leader free from knobs, set at same angle as the rest of the comb with no downward tendency," etc., has led to a great amount of comb-trimming. Mr. Lewis Wright says: "There is an amount of trimming in Hamburghs as yet unknown in any other breed. Such combs as are now required *cannot* be shown honestly save in some rare case out of scores, and the vast majority are cut and carved into shape. . . ."

This has grown to such a pitch that the cleverest carver and not the most painstaking breeder would seem to be the winner. So long as this practice is winked at by the breeders, so long will carelessness in breeding good combs continue. It cannot be doubted that if every attempt at this practice was strictly condemned and penalized, breeders would pay more attention to breeding perfect combs, and even if the precise perfection scheduled in the Standard was not attained at once, it would soon be approached, and credit would be given where credit was due, viz. to the skilful and patient breeder, and not to the most expert trimmer. As the case stands, there are men in the Fancy well known as clever comb-makers, just as, in the old cock-pit days, men were renowned as clever "heelers," *i.e.* experts in fixing the artificial spur.

The wondrous beauty of the spangled plumage has been the next temptation. Fashion decrees almost impossible combinations, viz. that the spangle should be as *large* as possible, and yet should not overlap. When the spangle is very large it buries its higher edge underneath the spangle that falls upon it from the overlapping feather, and the result is more or less of a black mass with little of the gold or silver ground-colour showing. This has led to trimming out the intervening feathers. Mr. Lewis Wright again remarks, "Up to the present, we have never heard of any judge penalizing 'thinning,' in other words, wholesale plucking of spangled feathers."

Whether there has been any alteration in this respect since Mr. Wright's criticism in 1902, I am not able to say. I am pleased, however, to quote Rule 5 for 1908 of the Hamburgh Club—

"That faking, as detrimental to the well-being of the breed, be discouraged as much as possible, and judges be instructed to disqualify all such when detected."

While the above rule acknowledges the present practice of "faking," it is somewhat weak kneed. Judges should be instructed to look out for all faked specimens, of whatever degree, and discourage it *altogether*, and not as "much as possible," which may mean *as much as is convenient*, or *only when clumsily done*.

It will be at once evident that this particular fancy would gain in popularity if it should be ordained either (1) that large spangles should be allowed to overlap in those parts of a bird's plumage where it is natural for them to do so; or (2) that a smaller spangle should be bred for, as in America, so that they should show distinctly without the necessity for plucking. The distinctness of spangling does add greatly to the beauty of a show bird, and is more beautiful than a huge spangle overlapped.

It ought in justice to be said that Hamburghs are *not* the only breed treated to trimming in this way, as rumour has it that many of the laced breeds, as the Wyandotte, or barred birds as the Rock, are similarly "plucked." Where this nefarious practice is only indulged in to a minor degree it is difficult of detection; and as long as unscrupulous keenness passes the bounds of fairness it is likely to go on.

Another cause for regret in the Hamburgh fancy is the extreme vogue for fineness of pencilling in the other varieties. In the extreme rage of fashion for fineness and greatness in number of the pencilled bars all else has been sacrificed, and the breed is in danger of becoming bantamized. In addition to this, the pure gold or silver hackle, as the case may be, is becoming inundated with ticks, and what is gained in one way is being lost in another.

The stamina of the breed is also being affected, and they are said to be very liable to roup and kindred affections. This fine and beautiful pencilling applies of course only to the pullet-breeding strains, as the cockerels are bred from an altogether different strain. And it is remarkable that the cockerel-breeding pullets

are much more vigorous. They lay a larger egg and are in all ways more robust and profitable.

The same rule holds good in many other breeds. The cock-breeders are the more robust, and are the biggest-bodied and best-laying fowls. This I know from experience is notably the case in the Brown Leghorn and in the Partridge Wyandotte. They afford a lamentable example of the truth that in many cases the fancier, in his zeal to obtain arbitrary "points," spoils the breed. A little more give and take, instead of straining after some one definite point to the neglect or detriment of the rest, would save many a beautiful variety from decay and ultimate extinction.

I make these remarks under the heading of Hamburghs, because the breed affords the most glaring instances of fancy running to madness, though many other breeds are not exempt from the same tendency. As I am permitted to print the Club's Standard of Excellence there is need for little more than a brief general description of each of the varieties.

General Characteristics of Hamburghs

The Cock is a small sprightly bird. The largest are the Blacks and the Spangles, and the Pencilled somewhat smaller. The *head* is rather small and neat, and is carried erect. The *beak* short and the *eye* full and bright. The *breast* is prominent and round, and carries a good deal of meat for the size of the bird. The *whole appearance* is alert and graceful. The *thighs* are slender and short, and the *shanks* small boned and of medium length. The *wings* large but neatly tucked up. The two most distinguishing features are the *comb* and the *luxurious plumage*. The comb should be square in the front, not indented, and tapering toward the back, ending with a long spike, pointing in a straight line with the surface of the comb. The top level and covered with fine points, or as designated in the Standard, "full of work." The *tail* is of great length, most profuse in *sickles* and *secondaries*, which are as broad as possible, and nicely curved. The *carriage* is rather high, being somewhat over 45° than under.

The Hen is similar to the cock but neater and smaller in *head-points*, *lobes*, etc. The *body* is round in

shape, not flat-sided, and the *tail* a good length, carried at an angle of about 45°.

Gold Spangled Hamburghs

The Cock.—The entire *body-colour* is a rich golden bay, covered with markings of rich beetle-green, except the *tail*, which is black with a soft transparent green lustre. The *neck-hackle* is striped, and so are the *back-* and the *saddle-hackles*. The *wing-bow* is a dark bay with dagger-shaped spots. The *wing-bars* are two in number, being rows of large green spangles bold and clear, and the *secondaries* add another row of large green spangles which are called steppings. The *breast*, *under-part* and *thighs* are spangled all over with green spangles, smaller near the throat and larger near the thighs, but the spangles should be divided by the visible golden bay of the ground-colour. The *lobes* of the Spangled varieties are not so pure in colour or fine in texture as the Laced, the cause being the cross of the Yorkshire pheasant, which had red lobes, with Lancashire Mooneys noted for the extra beauty of their markings.

The Hen.—The marking of the hen is very similar to that of the cock. The *tail*, which is large, is not black but covered with very large spangles, which at the end leaves only a narrow margin of ground-colour.

Silver Spangled Hamburghs

The Silvers are duplicates of the Golds, except that the ground-colour should be a silvery white instead of a golden bay. The *tail of the cock* is white with large spangles of beetle-green at the end of each feather. The *hen's lobes* are the weakest in quality of any of the varieties, owing in this instance to red-lobed blood of the Lancashire Mooneys, which had coarse red lobes.

Amateur breeders of these varieties should not attempt chance matings, but put themselves into the hands of some well-known and trusted breeder for a correctly-mated pen.

Silver Pencilled Hamburghs

In both Sexes the *beak* is horn colour, the *eye* red, the *ear-lobes* white and kid-like in texture, rather smaller than in Spangles or Blacks, and the *legs* leaden blue.

The Cock is almost a pure white bird with the exception of the *tail*, which is a lustrous black, and the *sickles* and *tail coverts*, which are black with a narrow edging of white. The visible part of the *wing-feather* is white, but that part of the feather which is overlapped is coarsely pencilled with black.

The Hen, which is bred in an entirely different way, is a study in black and white, each feather of the body and tail being distinctly and evenly pencilled straight across with parallel bars of a rich green. The *neck-hackle* should be pure silver, but this is rarely seen, as it is more frequently ticked. The *weak parts* in the pencilling are the throat and adjoining parts, and the end of the wings.

Gold Pencilled Hamburghs

These are similar to the silvers except in colour. **The Cock** is a rich reddish bay. An indistinct bar of black on the wing is admissible, and the lacing of the sickle feathers is a trifle broader.

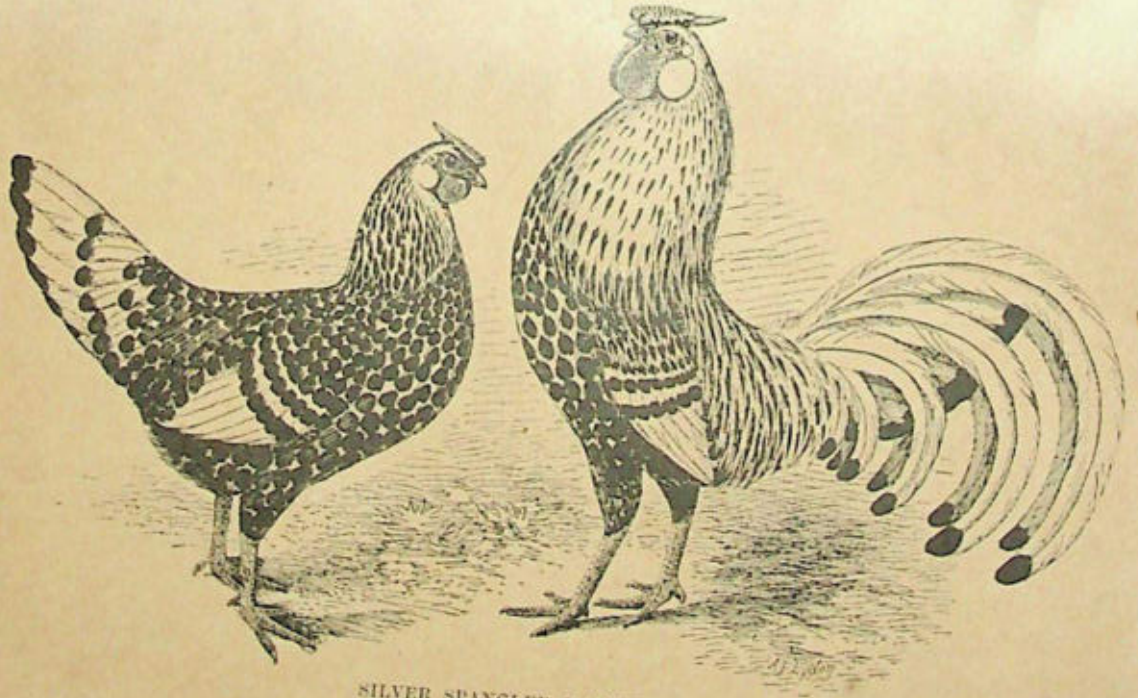
The Hen is a very delightful little bird, and when the richly-pencilled body is set off with a bright golden hackle cannot be surpassed for beauty. It is a pity they are so tiny and apparently delicate. It is entirely a fancier's fowl.

The Black Hamburgh

These are larger and more useful birds than any of the other varieties, and with larger and more beautiful lobes. They are an old Lancashire breed, long ago known as Black Pheasants.

It is generally understood that in order to increase their size they have had Spanish blood infused, or that of the Black Minorca. This cross is evidenced by the coarser head frequently seen in the variety, as well as by the fact that when they are crossed with the Black Minorca, or any other single-combed breed, the rose-comb is no longer dominant as is the case with a pure-bred rose-combed cross. Their chief beauty lies in the exquisite green lustre on the feathers, which is not seen in such perfection on any other fowl. It should be free from any purple or bronze tinge.

They are very liable to go white in face, which is a



SILVER SPANGLED HAMBURGHS.

fatal objection. The *lobes* are large and round and of a beautiful texture. In the cock they are sometimes as large as a florin. But the texture and substance of the lobe is of more importance than mere size.

Black Hamburghs are noted for the abundance of eggs they produce, which are white in colour and of a fair average size.

Buff Hamburghs

Though this variety has been admitted into the Poultry Club Standard, it is not to be found in the Hamburgh Club Standards, and as a matter of fact is very rarely met with. The *colour* should be uniform throughout, though it may be of any shade from lemon to a rich buff.

Mating Hamburghs

In mating Hamburghs it should be remembered that double-mating is practised in all the varieties, and that both pedigree and "strain" have to be considered. This is practised even in the Black, self-coloured Hamburgh, though both sexes can be bred from the same pen.

Gold and Silver Spangled Hamburghs

To breed Cockerels.—The cock in either colour should be a typical exhibition bird, and be pure in colour. The hens to mate with them should be large in body and with good head-points. Remembering the general law as to loss of colour, they should be heavily spangled, and of a cock-breeding strain. If of the same "blood" so much the better, and when found to breed well, no fresh blood should be introduced.

To breed Pullets.—The hens are the first consideration, and should be typical exhibition birds, and the cock should be heavily spangled and of a pullet-bred strain.

Gold and Silver Pencilled Hamburghs

These are more decidedly double-mated than the Spangles.

For cock-breeding, an exhibition cock should be mated with cock-bred pullets which are very coarse in pencilling and not at all fit for the show-pen. If of the right

strain, and related, the chief points to consider are size, so as to maintain this in the progeny, and good head-points.

To breed Pullets.—The hens should be typical specimens, and the cocks related, pullet-bred birds, showing pencilling on the wings and breast, and having tails black, or nearly so, not at all, in body, like the immaculate show birds.

It would, however, be an unsafe proceeding for the novice to attempt to mate his birds by appearances only, and he should place himself in the hands of a reliable breeder for the mating of his stock.

Mating Black Hamburghs

These can be bred from the same pen like all self-coloured birds, regard being had to the quality of colour. A few red feathers in the hackles of the cock, while disqualifying him for the show-pen, would add lustre to the pullets bred from him, and make him a suitable sire to mate with pullets deficient in brilliance. A cock with extra large lobes is more suitable for pullet-breeding, as they are generally deficient in that point. Care should also be taken not to mate together birds which have the same defects in comb, lobe, face, or colour.

HAMBURGH CLUB STANDARDS OF EXCELLENCE

General Characteristics

Cock.—*Comb:* Smooth, glossy, coral coloured, not pimpled nor rough in skin, square in front, and well filled in at this part, not having a wedge-shaped hollow; on top very full of work, not hollow in centre, nor leafy at sides, all narrowing out into a long, smooth, finely-pointed spike or leader free from knobs, set at the same angle as the rest of the comb, with no downward tendency, but keeping parallel with the line of the beak and eye. The whole comb must be set firmly and squarely on the head, with no inclination to either side, and proportionate to the size of the bird. *Face:* Bright coral red, smooth in texture, free from coarse skin, stubby hairs, or white touches. *Ears:* Of great substance, pure white, not rough, corded, folded, blistered, nor hanging thin and loose from the face, nor yet blue, or edged or streaked with red. They must be round, thick, and a glossy smooth white, varying in size according to (1) sex, (2) variet *Legs:* In Spangled and Pencilled, leaden blue; in Blacks, bla *Carriage:* Graceful. *Plumage:* Most profuse, long, and bro *Colour:* For Silvers, a pure silvery white ground right dowr

the skin for every feather, no smuttiness or pepperiness, or running of markings, or brown or sulphur tinge anywhere. For Golden Spangled a rich bright bay, or mahogany ground all over except the tail, which is black (laced with bay in the hen). For Golden Pencilled a bright golden chestnut, rich and even, black parts in both Spangled and Pencilled to show a green metallic lustre, as also on Blacks, free from all rustiness, purple, or mazarine shading or bars, and coloured feathers.

Hen. *Comb:* Possessing same properties as those of cocks, but smaller. *Lobes:* Same as in cocks, only smaller. (In Spangled hens, though very desirable, quality of lobe has not yet acquired the perfection seen in other varieties.) *Shape:* Fully round, and in nowise flat-sided or narrow. *Size:* Larger in Blacks or Spangled than in Pencilled. *Colour:* In Silvers, pure white as in cocks. In Golden Spangled hens a bright mahogany ground, in Pencilled a golden chestnut, very even all over, and a little more golden than in cocks, not too dark, so as to destroy contrast with rich deep green-black pencilling, nor too pale, so as to look faded. In Blacks, the green to be of the most lustrous quality, almost a sheeny grass-green, with no purple or mazarine bars. *Legs:* Same as in cocks. *Feather:* Profuse in hackle and tail, and latter well clothed with side feathers, long, broad, and rich in lustre.

Silver Spangled Cocks

The Spangles are to approach each other as nearly as possible, but not overlap so as to show a dense black patch. In shape, they are, on the full broad feathers of the breast, to be as nearly a circle as possible, as also on all sickle-shaped feathers of the tail, and free from white lacing. On the back they become a thinner pear-shaped blot, with an intenser black diamond-shaped marking in the centre. On the square tail the tips of each white feather assume more of the crescent shape, whilst hackle and saddle are boldly ticked down the centre of each feather with black. The bars and steppings of wings form a very special feature. The former should be bold, clean and sharp, and nicely arched across the wing, whilst the latter should be quite circular in spangling, not thinner on one side of the spangle than the other, and the larger the better.

Silver Spangled Hens

Lobe, as yet, coarser than in any other variety; spangles, large and round, and free from any white lacing; bars and steppings of wings very bold, solid and round, as in cocks; tips of tail crescent shaped, on an absolutely white ground; size, the larger the better.

Gold Spangled Cocks

Neck-hackle nicely striped with black down centre of every feather, but not to show a black collar around bottom of the neck; breast, boldly spangled, free from any grey lacing, anywhere flecked with white; wing-bars and steppings bold and clear; back nicely striped with black down centre of each feather; *tail black, profusely feathered.*

Gold Spangled Hens

Hackle nicely striped with black down centre of each feather, showing a nice gold lacing on every feather; breast boldly spangled, not overlapping nor showing a grey lacing or any white flecking; back and wings as in Silvers; tail swarmers a lustrous green black, showing a sharp gold lacing round each feather; straight square tail feathers, black, except the two top ones, which are slightly but sharply edged with gold.

Pencilled Cocks

Size, as large as possible; comb and lobe very smart, rather smaller and smarter than in Spangled or Blacks; feather very profuse, but is not so large in tail as the other varieties; sickles, about 18 inches; top hanger, 12 to 13 inches, the whole to be as broad, and hangers as numerous as possible, a lustrous beetle-green, free from mazarine or light bars, and the edging to be of the sharpest and fairly narrow on both top and under-side of every feather, about one-eighth of an inch broad in Golds at the most, the finer and sharper cut the better; in Silvers rather finer than in Golds; grey in sickles a serious defect.

Pencilled Hens

Hackles, clear of all marking *if possible*; pencilling to read well in lines all round the bird from throat to tip of tail, not coarse or lustreless. Each feather is to have the same width of ground-colour visible as there is of pencil, and as many alternate pencils and grounds as possible, the more numerous on each feather and the finer the quality the better. The pencils are to be clean and sharply cut, straight across the feather, not in blotches (as in cockerel-breeding pullets) nor peppery through admixture with the ground-colour, nor anywhere mossy. The bay of the wing (a weak point) is to be as free from mossiness and as sharply pencilled as possible.

Black Cocks

The size, feather and lobe the most ample of all varieties; lobes, large, smooth, round, thick, without folds, creases, cording, splashes, red edges, or blisters, and kid-like in texture, no white running from it into the face at all, nor anywhere apparent on face, which must be uniformly the brightest coral red; colour of feathers, brightest green sheen, though in this matter seldom approaching that to be seen in the hens.

Black Hens

Size, largest; shape, roundest and fullest; colour, brightest beetle, almost grass-green; lobes, immaculately white, but not so large as in the cocks, which latter will run to the size of a florin or larger.

Note.—White faces to be passed in any variety; squirrel-ta[il] or wry-tail a serious drawback. If the bird has the power [to] rest its tail on either side at will, bringing the tail over from [one] side to the other, it should not be accounted wry-tailed.



SILVER PENCILLED HAMBURGHS.

and although the comb is the largest of the rose-combs, they throw single-combed chicks occasionally when strains are crossed, which fact bears out the indictment of Game blood.

The spangling of the Redcap should be crescentic and not round like the Hamburgh. There is little spangling seen on the cock, since his breast and under-parts are black. The spangles on the wing form wing-bar. The neck- and saddle-hackles and back are red striped with black, and the tail and sickles are black.

The hen is marked more like the Hamburgh, except that the spangles are smaller and more half-moon shaped, and the tail is black. The body-colour is a rich nut-brown and the black is more blue than green. They are among the best layers known, and it is a pity they are not more widely bred and known.

ORPINGTONS

Sub-varieties: Black, Buff, White, Jubilee, Spangled, Cuckoo, Blue, etc.

The Orpington, in one or other of its colours, is the most popular fowl in the world. There is probably no village in England without its pen of Orpingtons, and there is hardly any quarter of the globe where they are not to be found in a thriving condition.

The reason of this widespread popularity is their strong basis of utility. They serve the dual purpose of providing large birds for the table with flesh of first-rate quality, and they are good layers of large brown eggs. They are a docile breed, easily kept within bounds, and the hens make gentle mothers. The chickens are hardy, and are easily reared. They are not yet old enough as a breed to have been entirely spoilt by the arbitrary selection of fancy points, though the Black Orpington, the oldest of the family, is dangerously near it. It would be a great pity should this, the newest of the breeds, share the fate of many of the fancy breeds which have gone already!

Orpingtons are usually classed among the *B.* breeds because they were manufactured in

England, in the village of Orpington, near Chislehurst, in Kent, whence they got their name. The originator, the late Mr. W. Cook, was quite justified in thus naming the breed in the several varieties, and did but follow the general rule of poultry nomenclature, *e.g.* the Campine comes from the district of La Campine in Belgium, and the Leghorn, Minorca, Sumatra Game and other breeds from the parts whose names they bear. But though the name Orpington is strictly local the breed is truly cosmopolitan.

Mr. Cook himself tells us, in describing the way in which he manufactured the Black Orpington, that with the wastrels from the good breeds he formed the Black Orpington, using birds that represented the poultry of the three Continents, viz. Minorcas from Europe, Langshans from Asia, and Plymouth Rocks from America.

At the introduction of most of these varieties a storm of opposition was raised. They were called mongrels, and, to be candid, they looked it, so varied was the appearance of any single hatch. The blending of the several breeds was not complete, and traces of sometimes one and sometimes of another were most prominent. In other words, they did not breed true. Like did not produce like until the innate predominance of first one and then another feature prevailed, or was fixed by the arbitrary law of the fancier. But they sprung into popularity because of (1) the novelty of their appearance, and (2) their undoubted utility and hardiness; and they still maintain their popularity because the fancier has seized upon them and fixed their "points."

The Black Orpington

This was the first of the varieties to make its appearance, and was introduced by Mr. Cook in 1886. As already stated they were made by the inter-crossing of several other breeds with the definite purpose of producing a fowl which should be black in colour to enable it to withstand the smoke and dirt of suburban districts, which should be a good layer of brown eggs, and be a useful table-bird of good size, and with a white [illegible] skin. The nearest approach to this was the La[illegible]an,

but it was considered to be too long on the leg, and its feathered legs were thought to be objectionable.

Mr. Cook says that he first mated a large Minorca cock with some Black Plymouth pullets, and afterwards mated the progeny with a short-legged Langshan cock devoid of feathered shanks. The Minorca is well known as the layer of the largest white egg of any known breed, but its comb is too large to stand wintry weather, and its lobes are white. Even to this day traces of the white are to be found in the ear-lobe of the Orpington. The Black Rock is a large, hardy fowl, and a good winter layer, but its skin is yellow, and the English taste prefers white flesh. The Langshan had a big body and good flesh, was hardy, and the layer of the richest coloured brown egg of any breed, but the feathered shank had to be disposed of. Traces of this are very often seen to-day, after the lapse of over thirty years, so persistent is this feature.

On the whole, the Langshan blood has proved the most predominant, and for a long time the breed looked exactly like a short, clean-legged Langshan. From it the brilliant green sheen has been derived, the medium-sized comb, and the dark eye. But breeders are still troubled with the large comb in the pullets, derived from the Minorca, and with the blue sheen instead of the green from the same source, and also the pale ear-lobe, while the red eye or the daw-coloured greenish-yellow eye of the Rock occasionally crops up.

The eggs of the Black Orpington are of various shades and shapes and sizes, as might be expected from its mixed ancestry. Some strains lay almost as large an egg as the Minorca, and the average is a good, saleable size, weighing about seven to a pound, while the tint of the shell varies from a rich cream to the dark nut-brown of the Langshan. In this breed, as in many others, it is noticeable that the largest birds do not lay the biggest egg, and it is a certainty that they do not lay as many of them.

The exhibition strains of the Black Orpington are not good layers, and the complaint is well-nigh universal that it is most difficult to get eggs from December to the end of February, when eggs for hatching exhibition stock are most to be desired, and, moreover, that what

few eggs are produced do not hatch well. The causes of this are, mainly, threefold. One is that the birds mature slowly, and very readily lay on fat unless most carefully fed and managed. Another reason is the exhibition craze for extreme size. Although the Standard fixes the weight of the cockerel at 9 lb. when fully matured, a bird of that size would have but little chance in the show-pen, and unless he attains to nearer 12 lb. the report is, "Nice and shapely, but fails in size," or "There is not enough of him." A very large cockerel is never as good a stock-getter as a smaller bird, and if, in addition to his size, he has been much exhibited, there is little hope of fertile eggs until genial weather arrives. The third and most powerful reason, because it is the origin of the other two, is that present-day exhibition fowls have a very large and too prepotent admixture of Black Cochin blood, which is most noticeable in the superabundance of their fluff. Any observant visitor to a large exhibition in an evening, when the birds are resting in their pens, will stop at the Black Orpington classes and think he is looking at the Black Cochins, or *vice versâ*. And when they stand up, although in Cochin classes he observes the abundant foot and shank feathering, and in the Orpington the clean, black legs, he cannot but notice the Cochiny cushion in the Orpington hens, and abundant fluff on the thighs of both sexes. And yet the first word in the Standard under the heading of plumage is "Close," and then is added, "black throughout with a 'green' sheen or lustre upon it, free from coloured feathers."

The Black Orpington to-day is anything but "close" feathered, and this departure from the still published Standard of Perfection has done more than anything else to diminish its usefulness and popularity. Beyond all question it is not the first-class layer it was for the first ten years of its career, and though it has gained in apparent bulk its usefulness has declined. There are still good and useful strains in existence, and it is noteworthy that in the Australian laying competitions which extend over a period of twelve months, the Black Orpington has more than once headed the list, with an average of about 250 eggs to its credit; and from the photographs I have seen of the winning pens they not

only seem to have kept the true Orpington type, but also to be of a respectable medium size.

However, so long as the Fancy overrides or pushes to extremes the standard for judging, so long must breeders strive to fulfil the requirements of the judge, since, from a pecuniary point of view, one bird that can win is worth a score of those which cannot. A stricter adherence to the Standard would prove of great value to the breed, and reinstate it in public favour. The Standard rules open with the sensible statement: "As it is the intention of the Club to fully develop and maintain good laying and table properties, in judging this variety attention should be strongly directed to points indicating these qualities."

The Standard for the Cock is as follows, only that I have put in italics the parts needing more careful attention. *Plumage: Close*, black throughout, with a "green" sheen upon it, free from coloured feathers. *Head: Small, neat*, fairly full over the eyes, *carried erect. Comb:* Medium size, erect, evenly serrated, free from side-sprigs. *Face, ear-lobes* and *wattles*: Red. *Shape:* Cobby and *compact. Breast:* Broad, deep, and full, carried well forward, long straight breast-bone. *Back:* Short, with broad shoulders. *Saddle:* Rising *slightly. Tail:* Medium size, flowing and inclined backward. *Hackles:* Full, both neck and hackle. *Legs and feet:* Black, strong, short; four claws on each foot with white toe-nails; soles of feet *white;* free from slightest feather or fluff. *Skin:* White, thin, and fine in texture. *Flesh:* White and firm. *Carriage: Erect and graceful. Weight: Between* 9 *and* 10 *lb. when fully matured.*

Standard for the Hen.—Same as cock, except in the following: *Tail:* Medium size, inclined backward and upward. *Cushion: Small*, but sufficient to give the back a short and graceful curved appearance. *Weight:* About 7 or 8 lb. when fully matured.

Defects.—The slightest feather or fluff on legs or feet; yellow skin; yellow in legs or feet; long legs.

In the **points for judging**, most stress is rightly placed on shape (15 points), then follows plumage and condition (10), breast 10, carriage 10, size 10. The head, including face, beak, comb and eye account for

25—the remaining 20 being equally divided for tail, cushion, legs, and fineness of skin. In *practice*, however, it will be found that size counts nearer 30 than 10, and whereas only 5 points are allotted to the eye much more is assigned to it. It is most frequently the critical and decisive point which decides the first place in a strong competition, *e. g.* a Rock-coloured eye, *i. e.* a yellow or "bay" colour, would throw out the best specimen, and even a dark bay would stand little chance. To win, an Orpington must have an eye as nearly black as possible, especially in young birds. Dark eyes often turn "bay" in the second year.

Hints on Mating Black Orpingtons

From the foregoing notes on the standard of perfection and the points for judging, it will be noted that the three main features in exhibition Black Orpingtons are size, shape or type, and colour, and these must be kept in mind when mating to breed show birds.

If the breeder has a long purse he may purchase stock of both sexes as near perfection as possible; and if their good qualities have been inbred, and they are not the chance offspring of mediocre, loosely-bred stock, he may breed first-class cockerels and pullets from the same pen, and may have a very large proportion of good birds fit to show. But such birds still fetch a high price—£50 being an ordinary figure for a single specimen—and even then it is not difficult to note faults in some particular point. The art of mating consists in counteracting the faults on the one side by a corresponding perfection or correction in that particular point on the other, *e. g.* if the hens or pullets you have in your breeding pen should have faulty or sprung-combs (*i. e.* large and overgrown) but are good in other respects, the cock to be mated with them should have a good-shaped comb, but decidedly on the small side. If mated with a cock having a medium-sized comb, such as is desired for the show-pen, most of the pullets and many of the cockerels would have combs too large. If mated as indicated, some of the pullets would still come with ungainly combs and some of the cockerels with mean-looking small combs, but a very fair proportion would have correct head-gear in both sexes.

The effects of this cross-mating to produce perfection in any given point depend very largely on the way in which the birds have been bred, *i. e.* on the prepotency of the point in question. It is easier to perpetuate a fault than to correct it, and there are some failings which should not be played with but ruthlessly exterminated.

If, for example, a cock has an ugly side-sprig or a very faulty serration, it is likely to reappear through many successive generations. Even if the hens are free from this fault, and some of the progeny are also free, it is certain to reappear in the very next generation. A side-sprig is wonderfully prepotent, like a rose-comb, and is very difficult to breed out. It should therefore be studiously avoided, and more especially in a male bird, and for the same reason any attempt to deceive by trimming the comb and cutting off the offending excrescence, at any stage of its growth, should be severely dealt with. A faulty serration, though still a blemish, is of minor importance. I remember a wonderful cockerel some twelve years ago which did a great deal of winning. He had a double serration on an otherwise typical comb, and to this day that identical failing can be traced, but it was accompanied by so many other good traits that it is rather to be sought after than avoided, where the other good points are still in evidence.

It is a generally accepted dogma that the male bird has most influence over the *outward* characteristics such as the head points, comb, eye, etc., and the colour of plumage, and, where the prepotency on both sides is equal, this is undoubtedly true; and that the hen has most influence over size, shape and constitution.

And, although both sexes contribute their quota to the result, the dictum may be accepted as a guide. What has been said about the comb is true of other desirable features. A deficiency on the one side must be counterbalanced in mating by a corresponding excess on the other.

It should, however, be borne in mind that the cockerel is of more importance than any one of his mates, since he is responsible for half the blood of the whole of his progeny, and an endeavour should always be made to

get as good a male bird as the means at one's disposal will allow.

Mating for Size.—As already indicated, where size is desired the hens or pullets should have this feature. A very great deal can be done by correct feeding and rearing to produce size, just as neglect in these particulars during chickenhood will produce dwarfs from the largest stock. But it is very difficult to raise large robust stock from puny hens. I have known, and have bred, large stock from small-sized hens, but that has been, as a rule, when the hens have lacked size through being hatched late in the season, and when their parents have been of good size.

Of more importance almost than mere size or weight is the possession of a good frame, with strong, stout, well-set legs. It is a general rule, also, that large birds are more usually produced from hens in their second year than from pullets, the difficulty in this case being to get the hens to lay sufficiently early in the season. The secret is to take pains to get them well through the moult early, and then to avoid overfeeding.

The typical mating is to have a cockerel at least nine months old, as near perfection as you can get him, with short, stout legs, and good in type; and though of good size yet not over-large, and certainly not over-fed, or over-shown, and to mate him with three or four hens in their second year, or if these are not ready early enough, then with a few well-grown and matured pullets. You cannot have the cockerel too large provided he is active enough, but this combination of activity and size is a prevailing difficulty. It may be taken as a safe general rule that you will get larger stock where the hens are large and the cock a good medium size than where the size is on the male side only, and it is quite certain that the eggs will be more fertile and produce earlier stock.

If the cockerel has been bred from large stock the probability is that you will rear from him some cockerels larger than himself; but it is well to remember that the whole tendency of breeding is to maintain the average or normal size, and that to perpetuate either extreme is a matter of artificial selection continued from one generation to another.

If you especially wish to breed large males you must see to it not only that the sire and the dam are large, but also that the sire of the dam was large. With all these precautions, however, it will be found that the stock varies considerably in size, many reverting to the normal of both sexes, even where mating and feeding combined have been directed to producing extra large birds; but the more carefully both these points are watched the greater will be the proportion of progeny of the size desired.

Mating for Type.—A very big Orpington is of little use in the show-pen unless he is of the right type, and type is produced even more by careful and consistent mating than from mere size. By careful handling a difference of several pounds may easily be made in the size, but feeding has but comparatively little influence over type, though even here it may be noted that both very early- or very late-hatched birds are usually shorter and cobbier in build than those hatched and reared in more congenial weather. The natural inference from this fact is that where birds have a fairly large range, and are able to forage a good deal for themselves, the greater number of worms and the abundance of insect life with its large proportion of nitrogenous food consumed by the birds has been the cause of more massive bone, and this hint should be borne in mind when feeding the less-favoured stock.

Type or shape is, or should be, the most important factor in any breed, and the standard concisely puts this when it describes the Orpington as "cobby and compact." Any elongated form is alien to the Orpington. A typical Orpington has short, stout shanks, and is so well feathered on thigh that little of this is seen. The breast is broad, rounded, and prominent, the back broad, short and well curved. This shortness is more apparent than real, owing to the fulness of the neck-hackle, which should fall in a graceful contour till it almost meets the saddle, which should itself be full and broad, and gently rise to meet the tail. As the carriage of the bird is described as "*erect* and graceful," the head, when the bird stands erect, should be much higher than the sickle feathers of the tail, which should be "medium in size, flowing and

inclined backward." A huge tail is a great disfigurement to an Orpington, almost as much so as a long, horizontal back, or long shanks and thighs. I have seen cockerels with sickle feathers which were so long that they would not disgrace a Yokohama fowl, and even with the lesser sickles trailing on the ground. Some strains are noted for it, and, when once admitted, it is very difficult to eradicate.

Looking at the profile of an Orpington, there should be a clean, curvilineal line extending from the throat to the under-side of the true tail feathers, allowing for a slight fulness of the outline around the fluff of the thighs, while the contour of the back should be a wide-mouthed U with a curved beginning and ending, the curve of the tail being about one-fourth lower than the head.

It is much easier to get this shape in small or medium-sized birds than in the larger ones, as these are very apt to be elongated in the back. Naturally, a wider curve is looked for in larger birds, but this should never be carried to excess, or approach the Langshan in type.

In mating to produce such specimens too much care cannot be taken to ensure that the pedigree of the stock is correct, or you may find a decided reversion to a long-backed type.

In choosing a cockerel see that he is typical in shape, with broad back and breast, and short and stout on his legs, with no tendency to stand in at the hocks, but with feet well set apart, like an Old English Game cock. The cock is half the battle, perhaps more.

If you wish to breed large pullets select hens that have been short and stout-legged as pullets. Plenty of bone is a *sine quâ non*. When I say short, I mean short in comparison with the body, for a big frame naturally requires more timber to carry it.

Although the head does not count much in the scale of points, it does count in the show-pen. A neat, well-set, and evenly-serrated comb puts a finish to a bird that nothing else can give, therefore avoid coarseness. And if circumstances compel you to have it on one side see that the defect is counterbalanced on the other. Choose, if you can, a cockerel with a large, intelligent

black eye. A cockerel with a light eye is useless for breeding show stock. There is a natural tendency to loss of this density of colour as the bird advances in age, and though you may tolerate a dark bay, or chestnut colour in a cock which you know had a darker eye as a youngster, it should not be tolerated in a young bird.

The colour of the eye would seem in some way to be connected with the colour of the leg, since dark-eyed birds have most frequently black scales on the shank, while light-eyed ones frequently have slate-coloured legs.

Any fluff or feather on the legs is a mark for which birds are often passed over in the show-pen, while plucking them ensures disqualification. You should therefore be sure that your breeding stock have *clean* legs, and that they have been clean from the time of hatching. Birds rarely if ever shed fluff or feather on the shank naturally, but they are not infrequently taken out from birds intended for show or sale, and when the fluff is fine it is difficult to detect the removal until the new growth appears.

In choosing a male see that his toes are not crooked. Deformed feet are not only unsightly, but are the frequent cause of unfertile eggs.

Mating for Colour.—At first sight this may be thought to be an unnecessary section, since the bird is self-coloured, and both sexes may be bred to perfection from the same mating.

It is true that all the progeny will be black, and that the plumage may be expected to be free from any coloured feathers; but since all healthy black fowls have a sheen or lustre upon their feathers, and the Standard has fixed upon a "green" sheen, it is not so easily produced as may at first sight appear.

The *brilliance* of the sheen may be augmented or diminished by feeding, washing, or shading, but the particular colour of the sheen must be inbred. This colour may be green, or blue, or violet, or bronze, or ebony black, or, after long exposure and a season's wear, a rusty brownish-black, or it may be, and commonly is, a combination of these various shades. It is comparatively rarely that a brilliant green sheen with no suspicion of purple or blue is seen, and a cock

may have a green body-colour with a bronze tail which shows altogether purple in one light and green in another, or he may have a brilliant green neck-hackle, and breast and body-colour with purple bars across the wings or on the sickles.

My opinion is that the cockerel has most influence over colour, and that if the cockerel is bright and lustrous, with a green sheen, and sound in his under-colour—*i. e.* dark slate-coloured fluff down to the skin—he will produce a great proportion of good-coloured offspring, even if the hens to which he is mated fail somewhat in sheen. It often happens that a bright top-coloured cockerel is light in under-colour, and then he is not so prepotent in giving good stock.

I have known many a pullet that was of a blue or mazarine sheen moult into a good, sound-coloured hen. Many a pullet has been bought cheaply at the summer or early autumn shows for a small price on account of being blue, which has moulted a brilliant green before the larger events, and taken a high place.

This leads me to believe that blue is the stronger colour, and is due to an excess of colouring matter.

It is well known that most breeds lose in colour as they advance in age—*e. g.* buff hens are usually paler than they were as pullets—and the colour fades in all breeds as the moult approaches. The blue colour stands the stress of weather longest. I should not hesitate to breed from a hen that was blue in sheen if good in other ways: but I should hesitate about a cockerel, because it is rarely, if ever, that a cockerel which has much blue or purple moults out a good colour.

On close examination of a "blue bird" it will be found that this colour is in the form of bars across the feather, and that the wider these bars are found, and the more frequent their appearance, the bluer the bird appears. When present only in a slight degree it may pass away.

The bronze appearance seems to be a close commingling of both colours, and the bars are not readily noticeable. In one light it may look bronze, and in another either purple or green, like a piece of "shot" silk.

Other birds are a lack-lustre jet black, which if held

in certain lights may show *in parts* a greenish hue, but which never covers the whole surface.

These are not desirable specimens, and often turn a rusty-brown colour. On that account they are even more objectionable than the blue.

These various shades of colour can only be correctly judged in the daylight. It is a singular and striking fact that at night-time in a great show one whole row of Black Orpingtons will look blue, and those on the opposite side look green, which shows not only the effect of light and shade, but also that few even among show birds are quite free from the blue or purple bars.

It is also a striking and well-known fact that in all black breeds great brilliance of colour on both sides often produces cockerels with red feathers in the hackle, and sometimes even on the wing-bar. And the converse is true, also, that cockerels with a few red feathers in the hackle will breed the most brilliant-coloured pullets. This is true of Black Hamburghs, and Black Minorcas also, and though it may, in some cases, be the least expensive way of producing such pullets, the probability is that a large percentage of the cockerels will have the same defect, and if persisted in would lead to double mating, which is a misfortune for any breed.

If you can manage it, breed from birds with a green sheen on both sides; if not, then see to it that the cockerel is green, or that the bars of purple are as faint and infrequent as possible.

It is worth striving after, for it is very beautiful when seen to perfection, and a good-coloured bird, though it may fail in size, often beats a larger but faultily-coloured bird, and deservedly so, from an artistic point of view.

One good feature about the Black Orpington is that the proportion of good birds bred from a well-mated pen is greater than from almost any other breed, and, when bred, they stand exposure to the weather better than any other colour, and look well in a flock till nearly the end of the breeding season. There is no doubt, however, that exposure to sun and rain diminishes the bloom even of the black plumage, and a bird that is intended for show at the early summer shows is better

kept out of the breeding pen, or carefully watched and given a roomy scratching shed, and not allowed out in stormy weather.

A little iron in the drinking-water of Blacks is a help to maintain brilliance of plumage, and during the moult a little linseed, boiled, and added to the soft food a short time preparatory to a show helps to restore the gloss.

To Prepare for Show.—Very little trouble is required. The birds are naturally tame, and are easily trained to stand well in the pen, though they differ widely in this respect, and, in every case, it is necessary that they should not be wild when approached, but submit quietly to be handled or turned round by the judging-stick.

If the bird has got dirty it is necessary to wash it. In this case it should be *well* done, and care be taken that after washing (see Chapter VII, p. 116, on Washing) all soap should be got out of the feathers—especially from the fluff—or it will not web out again, and the bird will appear less in size and have a bedraggled appearance. When it is necessary to wash, the operation should be performed at least two or three days before the show, to enable the plumage to regain its gloss, and, as directed, a little linseed should be added to its food.

In ordinary cases all that is needed so far as plumage is concerned is to wipe over the surface of the plumage with a damp sponge, and then rub it dry with a soft linen or silk kerchief.

The only other parts needing attention are the legs and head. These should be well washed with soap and water, the comb briskly rubbed till dry, and a mixture of oil and vinegar rubbed over it and the face and then rubbed off again.

The legs, after drying, may have a touch of olive oil rubbed on and then wiped off, just sufficient to give a polish, but no grease of any kind should be allowed to remain on the legs, or it may attract dust and dirt from the show hamper and spoil the bird's looks, besides leading to a suspicion of faking. On no account should *coloured* oil or any such preparation be applied; and if the bird's legs are either naturally of a slate colour, or have become so through age, as they generally do, no

attempt to darken them should be attempted. It is no detriment to a moulted bird to have paler legs, and to attempt to make them as black as a chicken's is an attempt to defraud.

The Rose-combed Black Orpington

This variety, brought out about the same time as the single-combed variety, had a comparatively short life. It never took the public fancy strongly, and is now practically extinct. Why, it is not easy to determine, unless it was that the rose-comb was looked upon as the prerogative of the Wyandotte. There must be something in this notion, since the same fate has befallen all the other rose-comb varieties, whether white, buff, or other colour. I kept the rose-combed variety nearly twenty years ago, and considered them quite as useful as their colleagues, and a more distinct variety, there being no other black fowl with clean black legs and a rose-comb with a large body and a red face, whereas the single-comb could then hardly be distinguished from that of a Black Rock or a clean-legged Langshan. However, fashion decrees and fanciers obey, unless some strong motive leads to a booming and financing of them. Except for the comb, the bird should in all other respects follow the single-comb. But it was never bred to such a perfection in type, and the weedy ones looked very weedy.

The Buff Orpington

The Buff Orpington is, to-day, probably the most popular fowl in the world, whether as a fancier's fowl or as kept by the multitude for purely utility purposes. And it is likely to remain popular on account of its intrinsic merits. It is easy to rear, gentle and docile in character, a good layer of tinted eggs both in winter and summer, and a first-class table-fowl. And although it does not yet breed as true to type and colour as the Black variety, it has much more pronounced utility qualities. It lays at a much earlier age, produces more eggs in the year, and its mis-marked cockerels find a readier sale as table-birds, because of the ease with which they are fattened, and because both flesh and

legs are white. When dressed for table, a well-fattened bird looks almost as good as one of its progenitors, the Dorking.

Its Introduction.—Introduced by the late Mr. William Cook in 1894, eight years after the Black, it at once hit the public fancy because of its pleasing colour, although very different then from the beautiful, even-coloured specimens now so plentiful.

When first exhibited by Mr. Cook, probably at his stall in the Dairy Show, not even the originator himself could have foreseen its great future. It was a large bird, not much less in size than the present-day specimens. But like most new varieties it had a mongrel appearance. It was tri-coloured, very red on the wing-bar and shoulders, with various shades of buff on the back, paler buff on the breast, and almost invariably with black feathers in the tail. The legs were white and short, but some had feathers on the shanks, and others showed distinctly the mark of the fifth toe. The owner made no secret of its origin. Indeed it bore upon it the marks of the Dorking in its shape, and in the colour of its legs, and of the Cochin in its colour and feathered shanks.

Mr. Cook's own account of it is that he had discovered by various crosses made with the Buff Cochin that the progeny were hardy and good layers, as Lincolnshire farmers had found the breed known as the Lincolnshire Buff. These birds were not bred to type or colour, and were undoubtedly a cross-bred fowl with both Cochin and Dorking blood in them. But they were all shapes and all sizes, sometimes had freely-feathered shanks, and sometimes buff legs and skin. Mr. Cook determined to bring out a bird of an even buff colour that should have a massive body, with a good plump breast; and stout, clean, and white legs.

He states that he first selected Golden Spangled Hamburgh cocks, the largest he could find. These birds have a rich, bay-coloured plumage spangled with black, and with a lustrous black tail. These he mated with Dorking hens. He found the reddish-brown progeny of these the best layers, and with them he mated a Buff Cochin cock, and states that he found about two out of every three of these came with clean

legs. He spent about ten years in breeding out the feathered legs and broodiness of the Cochin before he introduced them.

At first they were loudly decried as mongrels, and as nothing but Lincolnshire Buffs. And in the early days there is no doubt that many Lincolnshire Buffs were sold as Buff Orpingtons, and many of them laid the foundation of fresh strains of Orpingtons.

As a breeder of them from the time they were introduced, I know that the fifth toe frequently made its appearance in the newly-hatched chicks. Sometimes on one foot only, sometimes a forked double toe on one or both feet, and that for many years a large proportion came with feathers on their shanks, and with a pearl-coloured eye. I have never been able to trace any sign of the Gold Spangled Hamburgh blood. I never saw a spangled feather, and although many came with black-striped hackles, this may have come from the Dorking. The white leg soon proved predominant over the yellow of the Cochin, and though traces of fawn colour still appear on the toes, or even on the lower part of the shank, I am inclined to think that this has come through a second infusion of Cochin blood by way of the more perfectly buff-coloured Buff Plymouth Rock, a near cousin of the Buff Orpington. The fifth toe has been eliminated despite its ancient ancestry in the Dorking, but the feathered shank and the orange eye still persist and reappear in the most startling and unexpected quarters. And the Cochin has also prevailed in colour. The true black tail has disappeared, whether derived from the Hamburgh or the Dorking, and black feathers are no more frequent in the Buff Orpington than they are in the Cochin. In point of colour the Cochin has dominated, and a good Buff can now equal the Cochin in its own fashionable attire. It is true that a good Buff Cochin has the most glorious mass of buff plumage to be found on any fowl, and its beautiful mellowness of shade is still the desideratum of the Orpington breeder, and is but rarely met with. But it is found here and there, and, when found, is valued accordingly. The Cochin blood has prevailed in the Buff as in the Black, though it has not left behind that extreme looseness and fluffiness of feather found in the Black, and it

is sincerely to be hoped it will not do so. In one respect it has left its mark more than in the Black, viz. in the conformation of the tail. The Black has a tail, sometimes, like a Sumatra Game, much to its disfigurement, but sparsity of feather, rather than excess, is the rule in the Buff. But the Buff Orpington has not yet arrived at the shapely contour of the Black, and is more commonly seen with a longish Dorking back, though, since more emphasis has been laid on type and less on colour alone, it is coming more into line with the rounded Orpington type.

THE TYPICAL BUFF ORPINGTON STANDARD

The Colour should be clear, sound, even buff of one shade throughout, and buff to the skin. Its skin and flesh should be fine in texture, and white.

In Type it should be like the Black Orpington already described. Deep, massive, broad and cobby in body, short on the leg, with plenty of bone. Its breast should be deep and full, and carried well forward. The tail should be short and compact, and its back short and nicely curved, with a wide saddle. In carriage it should be bold and upright, not stooping like the Cochin.

Head and Eye.—The eye should be red or brown (red preferred); the beak, white or horn colour. The comb, face, ear-lobes and wattles, a bright red. The comb small to medium in size, firmly set on the head, evenly serrated and straight. In some of the best-coloured hens it often lops over to one side, but this is a disfigurement commonly caused by too close confinement in order to preserve its colour.

Legs and Feet.—Legs should be short, white, and well rounded and free from fluff, and as free as possible from pink or redness on the sides of the shank, or from tan-coloured scales. The four toes should be straight and well spread out, especially in the cock. The toe-nails should be white also.

Size.—Cockerels should weigh from 8 to 11 lb.; pullets from 6 to 9 lb. Adult birds may be a trifle heavier, but colour has more value than mere size, and a typical well-coloured bird of medium size is always to be preferred to a large one lacking these qualities.

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The Typical Buff Orpington Standard

The Colour should be clear, sound, even buff of one shade throughout, and buff to the skin. Its skin and flesh should be fine in texture, and white.

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Head and Eye.—The eye should be red or brown (red preferred); the beak, white or horn colour. The comb, face, ear-lobes and wattles, a bright red. The comb small to medium in size, firmly set on the head, evenly serrated and straight. In some of the best-coloured hens it often lops over to one side, but this is a disfigurement commonly caused by too close confinement in order to preserve its colour.

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Size.—Cockerels should weigh from 8 to 11 lb.; pullets from 6 to 9 lb. Adult birds may be a trifle heavier, but colour has more value than mere size, and a typical well-coloured bird of medium size is always to be preferred to a large one lacking these qualities.

Condition or bloom is also of value in the show-pen.

Defects.—Birds are penalized, or put back in the scale of points, for any bodily deformity such as a roach-back, a wry-tail, or badly-twisted toes. They may also be put back for side-spikes on the comb (although these are too often passed over without notice), white in the ear-lobe, long legs, or feathers on the shank.

A little white in ear-lobe is often caused, like the overhanging comb, through the bird being shaded too much, and pullets often win with this defect. It is especially objectionable in the cock. A very slight trace of fluff on the shank does not keep an otherwise good bird out of the money prizes, and is infinitely better than a plucked shank. Another serious defect is smut or slate-coloured fluff, which often occurs on the saddle.

Disqualifications.—Plucking the shank is the most frequent cause of disqualification, and rightly so since it is an attempt to defraud. Cutting the lobes to remove traces of white or plucking feathers from the tail or flights are also grounds for disqualification.

The Development of the Buff

During the fifteen years of its existence the Buff Orpington Fancy has passed through various phases. When introduced it was lacking in almost every one of the ideal points aimed at. And though, in a measure, every one of its ideals has been borne in mind, special stress has been laid from time to time upon some special feature, and the value of "points for judging" has been altered. This will be clearly shown by a comparison of the three standards of points printed below.

Points for Judging Buff Orpingtons

About 1896.		About 1900.		1907.	
Colour, including condition	50	Colour	35	Colour	25
Type	30	Type	20	Type	25
Head	10	Head and comb	10	Head and comb	15
Legs and feet	10	Condition	10	Condition	15
		Feet and legs	15	Feet and legs	10
		Size	10	Size	10
	100		100		100

For a long time colour was more than half the battle, and even to-day, though technically it figures less, it is in fact predominant. But in the early days, and down to about 1900, it was given so prominent a place that type was in 1900 deliberately lessened by ten points and then almost lost sight of altogether. Mr. Lewis Wright refers to this in his *Book of Poultry*, 1902 edition. I went round the pens at the Palace Show with him in 1898, when he pointed out that not a single Buff Orpington cockerel was typical in shape, and that a nearer approach to the Orpington type was found among the Buff Plymouth Rocks. Many of the best-coloured birds were tall and narrow, and almost as long in the leg as Langshans.

Soon after this, in 1900, the Club altered its Standard to give less points to colour, though type had not yet gained its true place. It is nearer the mark to-day, though there is still room for improvement. It is a good sign, too, that greater value is now given to head and comb, since ugly-combed specimens often with side-spikes and other malformations were given the chief honours. A bad head spoils the appearance of any breed, and is persistent in its transmission.

Mating Buff Orpingtons

In breeding Buff Orpingtons, colour counts first, type second, and size third, though every breeder tries to secure all the three. But just as the Club has proceeded by stages, gaining one point first and then another, so must the individual breeder proceed, unless he is the happy possessor of birds with all the good qualities fixed

Size and Type.—These need not detain us long, since the remarks on mating Blacks for size and type apply with equal force. In size the hen has most influence. Good big birds are never bred from weedy, under-sized pullets. And well-matured pullets, after they have laid their first batch of eggs, or, better still, hens in their second year, throw the largest stock: whilst feeding on wholesome, but not stimulating, food and a good grass range have great influence. The food for size is well-ground oats, either Sussex oats, or the

best you can procure at a cheaper rate nearer home. Scalded bran is also a good bone- and frame-maker.

In type, both sexes play an important part, but while it may be necessary to use a hen or pullet which is long in the back because of her size, care should be taken that the cock should be of typical shape, with a broad, deep, massive frame, and a short, broad back.

Mating for Colour.—There are fashions in colour. At one time, not unreasonably, the darkest birds were all the rage. There is a great tendency in Buffs to breed lighter each year, and if two Buffs of a very soft, light shade are bred together, some of the progeny will be almost white, and very many of them have white feathers in flights and tail.

The present-day tendency, which has prevailed for the past five or six years, is to go for very pale-coloured birds almost of a lemon shade. Such birds are very handsome, but they are comparatively of little value in the breeding pen unless mated to birds of a darker shade than themselves.

The old Standard said: "Clear, sound, even dense buff to the skin from *lemon to orange* (not red or chocolate)," allowing a little richness in top-colour of cocks.

The words "lemon or orange" have slipped out of the present Standard, but "any even shade of buff" still holds good. If a good soft medium shade, like that of a typical Buff Cochin, were more in favour, there would not be the difficulty in breeding good specimens of both sexes from the same pen.

As it is to-day, it is almost necessary to have two breeding pens, one for cockerels and the other for pullets. This is detrimental to any breed. And, as a matter of fact, it will be found that at the great classic shows it rarely happens that the winners in the two sexes come from the same yard. It is more common for one to win the chief prizes in cockerels and another in pullets.

Certainly the breeder who has limited space, or limited means, will be better advised to concentrate his money and his energies on breeding exhibition specimens of one sex, although it will be at once apparent that if one man can breed good pullets and another good cockerels, the same results would follow if the respective

pens were concentrated in one yard and mated as they are in the separated yards.

It is difficult to advise on the best way of mating, since methods are various and nature is capricious. Besides, what answers one season may not answer in another, and, strange as it may appear, mated pens that breed well in the beginning of a season may fall away in the end of it, or *vice versâ*.

There must, of course, be a reason for the elusiveness of buff colouring. Sometimes this is easily accounted for, especially in large pens containing seven or eight birds, by some hens being much better layers than others, and the difficulty of knowing which hen is laying (unless trap-nests are used) at one time or another.

But I believe the health and stamina of the birds has much to do with it. If the cockerel is especially vigorous his coloration prevails; and if the hens or pullets are especially fit and in good trim, so their colour is more certain to be imparted. Again, at the beginning of a season, if the cockerel has not been over-shown, he is more powerful in the colour line than later on, when his energies have been dissipated. Hence the advisability of a rest from time to time to renew his loss of colouring matter. For the same reason I hold that a *cock* cannot be depended on for the same amount of colour as a cockerel. This may be an advantage, at times, if he has been too harsh in colour as a cockerel; and the same holds good of the hens.

I should hesitate to lay this down as an absolute law, but observation convinces me that there is something more than mere fancy in it. It is an undoubted fact that most buff birds lose their individual colour with age, and moult lighter each year, though there are exceptions to this rule; and, further, that the progeny of any birds of any given shade are usually lighter than the parents; and I see no reason, therefore, why this loss or accentuation of colour should not vary during the mating season, owing either to the health of the bird or to the colouring pigment having been temporarily exhausted. This tendency to loss of colour leads to a statement of a general law for mating.

Mating for Cockerels.—Choose a cockerel of the shade you desire for the show-pen, *if* you can get him.

The fashionable shade is at present *nearer* to the lemon than the orange, but a good medium, rich, golden shade, without any suspicion of redness, is the best. Avoid bay-coloured wings, or deep cinnamon flights; see that his *under-colour* is sound. When the feathers are lifted see that the shaft of the feather is buff, and of the same shade as the feather, and that it is buff right to the root, or as near as can be. The flight feathers should be buff and not tinged with white (a frequent fault with the paler shades), and if possible the *covered* part of the secondaries should be buff, though a little sprinkling of black here is not a serious defect. If you can get it, see that the neck-hackle feathers are also of sound colour underneath. The most common failing is for these to be buff only on the surface and to be washy underneath. If he has a *red* eye so much the better. In type and size let him be as good as you can procure.

To a cockerel as near like this in colour, etc., as you can find mate three to six hens or early pullets, a shade or two *darker* than himself, but not more. Too great an infusion of colour will only lead to *unevenness* in colour, which will manifest itself on the wings of the cockerels bred from him. The under-colour should again be noticed. A *medium* under-colour with a buff shaft is best. If too dense, the excess of colour will show itself. If too light or white, even though the top-colour is darker, the progeny will be splashed, and white flights are sure to be present.

Mealiness.—And here may be noticed a prevailing fault of colour known as "mealiness" (see Glossary). This is a failure in the soundness or evenness of the colour of a feather, as if the buff colour had been finely sprinkled with flour. In pronounced cases it looks *very* patchy, like a handful of coarse bran, some flakes of which expose the white surface of the bran and thus show the wheat colour. It is most commonly found on the small wing-coverts of the pullet or hen. Sometimes the whole feather is affected, and is very plainly seen; at other times it is nearer the base of the feather, and is covered by the overlapping feathers. The mealiness is put down among the serious defects and is a fatal fault in the show-pen.

Some over-zealous judges go so far as to discard a

bird from the prize list if it shows the very *faintest* trace, requiring almost a magnifying-glass for its discovery, and certainly quite hidden unless searched for by turning up the feathers.

It is a singular fact that this fault occurs most frequently in the pens which breed the best- and soundest-coloured cockerels. I have sometimes examined and found as many as seventy-five per cent. of mealy pullets bred from a pen which has produced a large proportion of winning and high-class cockerels. If such a bird is good in other ways, and the mealiness is not excessive, I should not hesitate to mate it with a sound-coloured cockerel for cock-breeding. But a mealy pullet never, so far as I know, breeds a sound pullet.

Mealiness is a failure in the colour of a given part, usually the wing-bow. A chief failing in cockerels is an excess of colour in the wing-bow, and the one may serve to counteract the other, though if the practice were persisted in, mealy-winged cockerels would follow. Where sound pullets can be got, especially if bred from a pen which has bred good cockerels, I should very much prefer them. It may sound like treason to some fanciers to commend or even hint at this, but I have known yards, where the plan of double mating has been followed, in which it has been most successfully carried out.

Mating for breeding Buff Pullets.—In this case the pullets should be chosen as near to perfection as one can get; of a soft medium shade, *quite* free from mealiness, sound in top- and under-colour, and quite free from smuttiness.

Let them be as large and typical as possible, remembering that you must have large stock birds if you are to get large chickens. The pullets bred will resemble their parents in size and colour, and in a great degree type also, if well mated.

As there is a tendency for the progeny to come lighter each season, mate up hens, if you can find them, that have kept their colour during and after the moult. There are a few examples here and there to be found where the hen moults out as fresh and sound as a pullet. These are invaluable for breeding good stock of either sex.

The cockerel to mate with, for the purpose of breeding pullets, should be a shade darker than the pullets, to compensate for loss of colour. Take care he is not red in colour on the wing, or harsh in tone of body-colour, but he may well be a shade darker than the fashionable show colour. If he is a brother of good show pullets so much the better.

Soundness of Under-colour is the great point to look for when mating stock. Birds may look very well and yet when handled may prove to be nearly white in under-colour. This indicates a lack of colouring pigment. In this case like will not produce like, even as far as top-colour is concerned; but most of the progeny will be mealy, or patched with white on the secondary feathers, or white in the flight feathers or tail, and perhaps in all these parts. If one has pullets like this, and is content to improve slowly, then a sound under-coloured cockerel may show improvement in some of the stock. Soundness of under-colour means that the feather is buff underneath and has a buff shaft. Nearly all birds are paler in this colour as the end of the shaft is reached, but this paleness should not extend to white. Many birds are advertised as "buff to the skin," but few are found to answer this description. And birds that are "buff to the skin" are sometimes too dense in colour, and the result is harshness in the progeny. A colour that is buff throughout, yet gets paler as it extends to the root of the feather, is the ideal.

Preserving the Buff Colour.—Little more remains to be said except that it requires as much pains to preserve the buff colour when it has been bred as to breed it. Exposure to sun and rain quickly puts the best-coloured pullets out of condition, though cockerels stand the elements much better. Most of the exhibition specimens that grace the show-pens in the autumn have been carefully sheltered from the rain from the age of about four months, when the chicken moult begins. They may be let out early in the morning, and towards sunset in the evening, or in well-shaded runs they may be out during the day. To allow a bird to get wet with rain, and then be exposed to the hot sun to dry, quickly fades the feathers, on the back and saddle especially; and the feathers show a faint fringe

or lacing of a lighter shade. Yet it often happens that fanciers of limited means and small covered runs grow and exhibit some of the best.

Effect of Washing.—A buff to be shown to perfection must be perfectly clean. If soiled in plumage it must be washed. And although washing may improve the general appearance there is a danger of injury to the colour. Many a bird of soft and beautiful colour has been turned into a harsh colour through the effect on the colouring pigment of the *soda* in the soap. It has a strange chemical action which has the effect of *intensifying* the colour, and to wash a bird whose colour is already dark enough is to ruin its chance in the show-pen, though it may improve the colour of a buff that is *too pale*. Washing will not turn a patchy or mealy bird even in colour. I have an idea that the addition of a little acid (vinegar or acetic acid) in the final water would neutralize the effect of the alkali and leave a buff, after washing, the same colour as it was before being washed. It is worth trying, though it is better worth trying to keep a chicken's colour pure from the time of its first adult moult till the show season is over. It is not the *wetting* that does the mischief, else buff birds would be darker after every shower of rain, but a chemical action in the soap which acts on buff pigment, though it seems to have no effect on a black, or white, or multi-coloured plumage.

Other Imperfections in Colour demand only a few words. *Lacing* destroys the evenness of colour, and is most common on the breast feathers of both sexes. When the feather has a pale fringe, or a white tipping, it indicates *lack* of colour, and is most common on birds of the paler shade, and is a decided disfigurement.

On the other hand, there is a *dark lacing*, more common still, which is noticeable chiefly in rich-coloured pullets, and may occur in all parts of the body, though it often happens that a pullet with a fine sound-coloured breast is laced on the back and the wings. It looks pretty, and if intensified may make a new variety; but it is contrary to the Buff standard and is a defect. I consider this is due to an excess of colour, as it is not common in *hens* whose store of pigment is less abundant.

Shaftiness is another form of lack of colouring pigment, and is the name given to feathers the shaft of which is lighter than the web. It destroys the beauty and evenness of many an otherwise good bird.

Brassiness is a term given to the hackles on both sexes and to the back of the cock when these feathers have a "brassy" coloured, metallic fringe. Such feathers usually have a darker centre. It spoils the softness of colour and is a defect. I have an idea that this brassiness is often the effect of exposure to the weather, as it is so common in other breeds, *e.g.* the Barred Rock.

Smutty under-colour is the only other blemish in colour to note. This is a black or blue smudge in the fluff instead of buff. Though it may occur in any part of the body it is most commonly found in the back or saddle. When found in any great intensity it is usually accompanied by tickings of black upon the feathers in its vicinity. It is commoner in rich- than in pale-coloured birds, and is often quite unsuspected in otherwise sound-coloured birds. Many judges pass a bird altogether for the slightest trace of this, just as they do for mealiness. It is a bad fault in breeding stock as it usually repeats itself, and throws birds with ticked or mossy feathers.

It will have been noted from the list of defects above named that it is by no means an easy task to breed and exhibit a good Buff Orpington.

Yet the very difficulties themselves act as a spur and an incentive to the fancier, and its adherents increase in number as the years pass by. The many pitfalls and uncertainties in mating also keep up the popularity.

There is no other breed I know of where the winners at the great events are changed so often. Owing to the gradual loss of colour I have mentioned, it is very rare that the same breeder is in the front for more than a couple of years. When he has to change his blood a great uncertainty comes in, and many of the best birds every season are bred by a novice in the Fancy. There is no other breed in which there is a greater chance for the novice to come rapidly to the front, and this is as it should be. When one or two men dominate a fancy, especially if they are greedy exhibitors, it soon spells

certain ruin. In Buffs the little man has a good chance, if he has the means of shading his birds, and this is often possible even in a backyard. And, if he has not the desire to do much exhibiting, he will have no difficulty in getting a good round sum for a typical and sound specimen, while those not up to show form may be mated to breed better stock, and in the meantime will amply repay him by their undoubted economic qualities.

Weeding out the Chickens.—Even at the time of hatching some wasters can be detected. Any with fluff on the shanks, or deformed toes, or with a dark patch of colour on the head, especially if with a striped back, like a newly-hatched Brown Leghorn or Partridge Wyandotte, can be put on one side, as also any hatched with side-spikes to the comb. Birds of a medium shade of buff are likely to be the best. The fluff at time of birth is a good indication of the future under-colour.

A chick with light fluff, indeed all shades of fluff, will come darker with its first chicken feathers, and darker still when it puts on its first adult plumage at about four months; and at each moult afterwards go lighter. Chicks with much black in the flight feathers can be discarded, as this never grows less. But white in the flight feathers up to three months old often comes a pure buff with its final chicken moult. If this moult is in any way retarded through cold or weakness the adult feathers may come with a light tip, especially in the wings. Some breeders assert that this gradually becomes buff as the bird develops. I have not found it so, though I have known a cockerel with sound under-colour, but white in the flights, moult his adult plumage in the second year quite a sound buff, as also in the case of early-hatched chicks in their second moult in the autumn. But I have never known any which show signs of white in the secondaries cast it off afterwards, and these are of no use except for utility purposes.

Cockerels which look a typical shape at three months often grow very lanky when passing through the moult, nd until six months or more, and then "come down" it is called, and make large typical birds. A cockerel ich develops its plumage slowly often makes the

finest adult. Pullets showing mealiness never improve, and can be put on one side as "layers" only. Every breeder knows to his cost that many which "seem sound" at first often develop this blemish at later stages. Not every promising chicken maintains its place, and the "weeding" process has to be long continued. Yet the sooner it is begun the better the chances for the rest. Black in the *early* stages, and white in the later are most to be feared.

The Rose-combed Buff Orpington

The Rose-combed Buff, like its Black namesake, has never caught the eye of the Fancy, and has had a short life. The Standard for it is similar in all respects to the single-comb except that the comb is described as "small and neat, firmly set on the head with a good working and a nice spike at the back lying well down to the head."

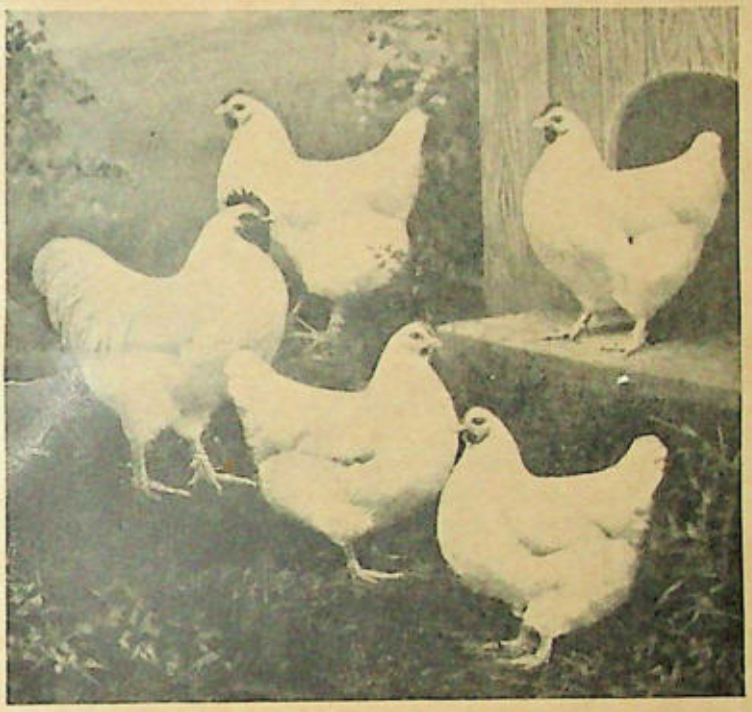
This description is so like that for a Wyandotte that nothing more is wanted except buff legs to make a Buff Wyandotte. This latter breed has had a fitful life and only appears occasionally in the "Any Other Variety Wyandotte Class," while the Rose-comb Orpington is less seldom seen. I have not seen one for seven or eight years.

One Buff breed alone has caught on firmly, and it is perhaps as well, since of the making of breeds there is no end; and if one may further paraphrase the words of the "wise man," "much study of them is a weariness to the Fancy."

The White Orpington

If the Buff Orpington has, at the time of writing, the larger number of admirers, it is very closely followed by breeders of White Orpingtons, and at the great International Show of December 1908, held in the Crystal Palace, the two Club Shows ran a neck-and-neck race in popularity, since each variety was represented by exactly 150 entries, with the Black a good third with 140 entries.

The late Mr. W. Cook brought out a White Orpington about 1889, soon after the Black and before



A GROUP OF TYPICAL WHITE ORPINGTONS.

Buff. He states that they were made by crossing White Leghorn cocks with Black Hamburgh hens, and that the pullets from this cross all came white. He mated these with a Rose-comb White Dorking cock, but was several years before he could produce white birds; some came blue, and others cuckoo-coloured.

This original breed was never taken up largely. No club was formed for them, and so far as I know they were never exhibited. In general appearance there was a very wide departure from Orpington type as we now recognize it. They were much smaller birds with white legs and large flowing tails, with neat rose-combs of the Hamburgh type. After a few years they seem to have died out, though they may still be kept here and there for utility purposes.

The single-combed White Orpington followed, made by using a single-combed Dorking, but they were of the same type, small birds about half the size of the Blacks, and I do not remember in twenty years ever seeing one in a show-pen.

The Albion Fowl.—Some few years after the introduction of the Buff Orpington in 1894, a white fowl of true Orpington type began to be talked about, and at the Dairy Show of 1900 two classes containing eighteen exhibits were on view, shown by two exhibitors, Mr. W. Richardson and Mr. Godfrey Shaw, who were also exhibiting Buff Orpingtons.

This is the only show of note in which I find any account of the so-called "Albions," but it is noteworthy that in a couple of years later White Orpingtons were admitted into the Variety Orpington Club. In 1904 there were over fifty exhibited at the Dairy Show, and it is worthy of note that, at this show, where about 300 Orpingtons of all colours were shown, the silver medal of the Dairy Association for the best Orpington in the show was awarded to a White Orpington cockerel.

From this time their popularity has spread like wildfire, and in four or five years they have almost caught up the Buff in the race for fame, and are more than its equal in true Orpington type, being almost equal to the Black in this respect.

The reason for their popularity is again their undoubted utility qualities. Their white legs and

plumage, with fine white flesh make them the daintiest of table-birds. They are quiet, hardy, easy to rear, good sitters and mothers, and the very best of winter layers. I know no layer of brown eggs to equal them either in summer or winter. The one thing against them, if kept in a dirty or smoky neighbourhood, is their colour, but their good qualities will make them general favourites in spite of this. No matter how cold or exposed the place, any one, with proper care in housing and feeding, may be sure of eggs.

How they were made.—As I have said, the breed first called by the name was chiefly a rose-combed bird. It never reached the show bench, and is, I believe, nearly if not quite defunct, though I have seen it figuring in some recent manuals as if it were the White Orpington of to-day. It would seem as if the "Albion" had something to do with its birth. Was the Albion a sport from the Buff or the Black Orpington? Or was it made by a cross between the two? Or was it made by selecting the whitest of the Light Sussex fowl? This latter variety, bred chiefly for table purposes, in and around the great fattening districts in Sussex, is a black and white variety, and some specimens are almost white, in fact the show standard for them is pure white colour throughout, except for striping with black in neck-hackle, and a little black in flights and a black tail.

Sussex would seem to be the home and place of origin of more than one variety of Orpington, in which Old English Game and Dorking have played the chief part.

I have seen White Orpingtons made by the cross suggested (Black and Buff Orpington) of pure Orpington type and pure white in colour, although in the produce of this cross I have seen both black birds with coloured hackles, buff birds with black hackles, cuckoo-marked specimens, and a few dun-coloured as well as the pure whites, and some of the whites had bluish legs, and others came with buff or black feathers in various parts of their bodies.

These latter defects are still noticeable in the White Orpington. Many birds otherwise pure in colour come with buff feathers in the hackle or tail, and others, usually of the purest white, come with tickings or

feathers of black; and sometimes a true white bird comes with bluish legs.

The variety is now fairly established, however it was made, and breeds as true to colour, size, and type as any variety of Orpington.

The beautiful engraving of White Orpingtons (page 351) shows the present-day type to advantage. It will be noticed that they show no trace of Cochin blood. There is not the abundant fluff of the Black Orpington with its heavy thighs and cushion, while the type is equal to the Black and better than the Buff.

The Standard of Perfection calls attention to the undoubted utility qualities of the breed, and urges judges to adhere to the points named.

The Colour should be snow white, free from admixture with any other colour.

The Type should be that of the Black Orpington, broad and cobby in body, the breast broad, deep, rounded and full, with straight breast-bone. The tail, rather short and compact. The back short in appearance and nicely curved, with a wide saddle. The carriage bold and upright.

The Head and Comb.—Face, ear-lobes, wattles, and comb, bright red. The comb, single, erect, medium in size, firmly set on the head, evenly serrated and free from side-spikes. Eye, red.

Feet and Legs.—Legs white, short, stout, straight, bone well rounded; perfectly free from feathers. Toes, four on each foot, straight and well set apart, and the toe-nails white.

Value of points.—The Variety Orpington Club awards 30 points for colour, and 30 for size and type combined.

The White Orpington Club, formed 1906, gives 25 for colour, 25 for type, 15 for condition, 10 each for size, feet and legs, and head and comb, reserving 5 for the eye colour.

Defects.—Side-spikes on comb, long legs, feather or fluff on legs or toes, discoloured legs, sappiness or yellow in plumage.

Rose-combed White

There is a Rose-combed White, and a few were shown

in 1905, but even already the variety seems dead. It would appear that the public will not endure a rose-combed Orpington; and when the public ceases to patronize, the fancier ceases to breed to any large extent.

To Mate a Breeding Pen

The same rule applies to the White as to the Black in reference both to size and type.

Colour is the chief thing, although it is to be hoped that the true Orpington type will never be lost sight of. The type, however, is more perfect than the colour. Like all white breeds there is a great tendency to sappiness, *i. e.* a yellow tinge in the colour of the plumage. The very best specimen yet bred would look a rich creamy colour after long exposure to the weather in the breeding pen. This shows most plainly in the hackles and wings of the cock. The hens preserve a seemingly white appearance all through the season except on the neck-hackle. In breeding for colour take note of under-colour. See that the skin is a bluish-white cast, and that the quill of the *new* feathers is bluish, not sappy or yellow, and that the whole of the under-colour is pure white.

If possible, select birds, especially the male, with *red* eyes. It is a mark of great beauty and is, moreover, a true mark of the albino.

Avoid birds which throw buff feathers, a trace of black is no objection, and a good typical hen or pullet with a bluish tinge in the leg will breed the purest coloured cockerels. Avoid any trace of yellow in leg-colour.

Try to counteract the defect in one sex by an excess in the other, *e. g.* if a hen or pullet has a large comb select a neat head in the cock, or if you must breed from a hen with long legs or light in bone, see that the cock excels in these points.

It is a strong point in favour of White Orpingtons that both sexes can be bred for exhibition from the same pen.

How to keep them White is the great problem. It matters little how exposed your breeding pen is so far as colour is concerned, or how weather-stained they

become, they will moult out white again if they have been bred white.

But the young stock need shelter, like the Buffs, from the time they begin to get their first adult feathers, usually about four months after hatching. They then need a good roomy shelter and freedom from exposure to the southern sky. An early morning outing or an evening run round will be the only exercise in the open permissible. If the scratching-shed faces the south, screens of canvas should protect them from the sun's direct rays.

The Nature of the Soil has something to do with colour. Sandy soil with much iron in it is bad. I once sold a pen of White Orpingtons, and afterwards exchanged them for better ones. They came back to me the colour of Yorkshire canaries, simply because they had been dusting in a fine coloured sand, and the colour remained till the birds moulted. For the same reason sulphate of iron should not be given in their drinking-water, and food-stuffs with a yellow colour, such as maize, must be avoided. Oats, dari, rice, and buck-wheat should form the basis of the feed, at any rate during the moult.

Washing.—A white bird should be washed preparatory to a show, and it is best if done several days before. It has been noted that washing with soap turns a buff-coloured bird a darker shade, unless counteracted by an acid. Washing only whitens a bird's colour. But as an acid prevents a buff from growing darker, I am not sure that it will not whiten a white bird. Certain it is that I have known birds sold for half their value because they were sappy in colour, and then shown shortly afterwards by their new owner as white as snow. There are several exhibitors who show birds of an immaculate whiteness, of almost an unearthly hue, and I am suspicious of the means adopted to procure it.

At present I am not prepared to advise this method of bleaching, as it may lead to fraud, because a specimen worthless for breeding may be sold as a perfect stock bird, and there would be less incentive to breed a pure white specimen. It is one thing to show how to wash a fowl to prevent its inherent good qualities from being destroyed, but quite another to show how to cover up

inbred defects. The point to aim at is to breed by selection a pure albino, and to prevent its loss of purity by careful handling and by a correct diet. To bleach an imperfect bird is, practically, to whitewash it, and it is an offence against exhibition etiquette and morals almost as grave as dying a bird of imperfect colour.

Sun-bleaching is a different matter. As linen is spread in the sun to bleach, so many a sappy bird, *i. e.* a bird with the natural sap not dried out of the feather, may be vastly improved by allowing it to run in the sun, but care must be taken not to over-expose it or it will become tanned. A white bird may be either exposed too much or sheltered too much.

Where White Orpingtons are kept for utility purposes only, by all means allow them all the sunshine they can get. In a fairly clean place they will keep clean, and appear quite white until they are placed side by side with one duly cared for and protected from the elements. And such birds will be hardier and healthier for the exposure, and moreover will breed specimens quite as white and with more stamina than those which have been deprived of their natural exercise.

Postscript—Origin of White Orpingtons

Since writing the above I have had an interesting letter from Mr. Godfrey Shaw, who claims to have been the originator of the White Orpington. He says: "I made the breed by getting a pen of Light Sussex and breeding the black out, hence the good legs and flesh."

These were shown in "Any Other Variety" classes from 1897, and then were shown, as I have stated, as "Albions," and the name afterwards changed to White Orpingtons.

How the "Light Sussex" originated I don't know, but it is certain that the White Dorking had a prominent place. The Sussex Club still has a note in its Standard, under the head of "Serious Defects," for which a bird should be passed, "other than four toes," . . . or "rose-comb," and these are distinguishing marks of the White Dorking, so that, whatever other blood is

in the White Orpington, the White Dorking has the chief place. It is also clear that other breeders have introduced other blood, and that the Buff Orpington and the Black play no small part.

Mr. W. Richardson, a well-known breeder of Buff Orpingtons, kindly writes and says: "The Albions are pure sports from the Buff Orpingtons"; that he "simply changed their names," and that they have no other breed in them, and that they have no connection with the so-called White Orpington.

What seems clear to me from the two accounts of these early breeders is, that the Light Sussex and the Buff Orpington are both blended in the White Orpington. This alone would account for buff and black feathers, which alike appear so frequently in White Orpington chicks.

VARIETY ORPINGTONS

Under this heading I place the other varieties of Orpingtons, and as they are less popular, and likely to remain so, I shall devote less consideration to them.

The Jubilee Orpington

This variety was introduced by the late Mr. W. Cook in 1897, hence its name. It is almost identical with a breed called the "Speckled Sussex," although the latter is a far older variety, and is somewhat less loose in its plumage, and is said to carry more meat on its breast. In shape the Jubilee is a typical Orpington, though most of the exhibition cockerels I have seen have been disfigured with ugly combs, and are somewhat smaller in size. The *colour* is a very attractive one, the prevailing shade being a bright mahogany. The neck-hackle, saddle, and back are of this colour, with a black stripe to the feather and a white tip. The breast is also mahogany, with a black spangle and a white tip. The three colours should be well broken, avoiding a ticked effect on the one hand and a blotchy effect on the other. In adult birds the white is more marked, corresponding to the general loss of colour as age increases. The true tail and sickle feathers are black and white, with or without the mahogany.

The secondary feathers also contain the three colours, but the hidden flight feathers contain more white.

The colours in both sexes are similar, and one good feature about the breed is that there is no need for double mating.

They look like first-class table-birds, and are said to be good layers. Classes are formed for them at the large shows, and though they have a place in the Variety Orpington Club, they will probably get a club of their own. At present the numbers who exhibit them are few, and the entries are not more numerous than the Speckled Sussex, which to the casual observer is an identical variety.

The value of points is, for colour, 35; size and type, 30; head, 10; legs and feet, 10; condition, 15.

Spangled Orpingtons

This is a still later form of Orpington, and is yet far removed from its ideal. Classes for them at the chief shows were mainly combined with Jubilee till about 1903. When, in 1904, classes were formed for them at the International Show, there were only three exhibitors, though the number has since risen, as a specialist club has been formed for them.

The plumage is black and white, the black feathers showing a white tip, and the hackles also being tipped. The wing-bow is black and white, and the wing-bar black. The legs should be white with black mottles, as even as possible, but such are, at present, rarely seen. Most of them are nearly or quite black, and the general appearance is that of a Black Orpington of only medium type and size, faintly speckled with white. Like most new crosses they are a hardy fowl and good layers, but personally I see little beauty in them. They have one good feature for show purposes, viz. that they take little trouble to prepare for exhibition.

They are not unlike the Light Sussex, with a decided dash of Black Orpington blood infused.

The points for judging are the same as for the Jubilee—colour, 35; type and size, 30; head, 10; feet and legs, 10; condition, 15.

Defects are feathers on leg, long legs, poor shape,

or much white in lobes. The latter, like the comb, wattles and face, should be red.

Rose-combed Jubilee and Spangles

are admitted to the Standard, but few specimens are exhibited, and they are likely to share the fate of other rose-combed varieties, though in their case there is the advantage that they could not be mistaken for other breeds, and are a step further removed from the Sussex fowls, into the class for which only single-comb specimens are admitted.

Cuckoo Orpingtons

made their *début* at the Dairy Show of 1908. Like the rest of the family, they have fair Orpington shape and size. The Standard for them says:—

General Shape and Carriage.—Cobby and compact, erect and graceful.

Size and Weight.—Large, from 10 to 14 lb. for a fully-matured cock, and 7½ to 10½ lb. for a hen.

In colour they resemble the old-fashioned Barred Rock, *i.e.* with wider bars than the American Rock now so fashionable.

With these exceptions there is nothing but the *stout white* legs to distinguish them from the Rock.

I do not know how Messrs. Cook and Gilbert produced them. The cuckoo marking consists of alternate bands of black and white, or of a light bluish-grey, barred across with bands of a darker bluish colour. But it is well known that when birds of a black plumage are crossed with white ones barring often results, and it would be possible, were it worth the while, to produce them in this way from pure Orpington blood.

The more probable origin of the variety is the infusion of the blood of the Barred Plymouth Rock. On a recent visit to a breeder's poultry yards in Sussex, at the time of the Dairy Show, I saw some cross-bred pullets which would have passed muster in the classes I had just left behind. They had been bred by mating a short-legged, well-barred Rock cockerel with some large Buff Orpington pullets. It had been done simply as a cross to produce strong, sturdy birds,

and not for experimental purposes. I saw a score of pullets all more or less barred in plumage, rather wider in the barring than the sire, but with *white* and not yellow legs, and of good Orpington type. The cockerels were mostly a mixture of colours, showing a conglomerate mass of imperfect barring mingled with straw or buff colour, some with red wing-bows, and nearly all with straw-coloured hackles. It was a singular coincidence that I should see the new variety exhibited for the first time at the Dairy Show, and on the same day some mongrels which would pass as members of the same family on the female side.

The Fancy is a vague and capricious creature, but in the coming race for popularity the Cuckoo Orpington is heavily handicapped by the Rock, while many of its more stable companions are firmer favourites. It may be, however, that those who like the sober cuckoo colouring may find it equal or better as a layer than the Rock, while its white flesh and sturdy Orpington shape will make it a better table-bird. In any case it is likely to be useful as well as novel.

Colour of Cuckoo Orpingtons.—*Beak:* White; *Eye:* Red; *Comb and Wattles:* Red; *Face:* Red, free from any trace of white. *Lobes:* Red, no white whatever allowed. *Legs:* White, or white mottled with black, but white preferred. *Toe-nails:* White. *Plumage:* Light bluish-grey ground, each feather being barred across with a darker blue-black, proportioned to the size of the feather, and the same on all parts of the body.

Value of Points in Cuckoo Orpingtons.

Cock or Hen.

Defects in condition	10
,, colour and plumage	25
,, head	10
,, want of shape	15
,, ,, size	20
,, legs and feet	10
,, saddle and back	5
,, skin and flesh	5
A Perfect Bird to count	100

Serious Defects.—Any feather or fluff on legs; long legs; any yellow on legs and feet; more than four toes; side spikes on comb; white in lobe; any deformity.

The Blue Orpington

There has been a long-continued and well-sustained rage for buff fowls, in spite of the enormous difficulty in the way of keeping the colour sound and pure. It is now probable that we are on the eve of a craze for blue. Both the Leghorn and the Wyandotte Fancy are now suffering from an attack, and it is not unlikely that the Orpington Fancy may be afflicted in the same way.

Like the Athenians of old, fanciers still crave for "some new thing!" How this new coloration may be produced and fixed is discussed more at length in the Chapter on "Colour." But if Orpington fanciers go in for this colour, it may at least be said for them that it is "no new thing," but a return to an earlier stage, since, as already stated in the beginning of the chapter on the White Orpington, Mr. Cook found in breeding his Whites that, when he crossed the pullets from a White Leghorn and Black Hamburgh cross with a White Dorking, he got some blue chickens. These were thrown aside as "wasters," or we might have had "Blue Orpingtons" twenty years ago, and I presume they would have had white legs. If the Orpington now joins in the race it will not be far behind, since we have the black and the white, from which the blue is formed, already near perfection in type and size. There is no doubt that slate-coloured legs would be easier to establish and be more in keeping with the plumage, but it would not be so popular as a table-fowl. Perhaps a readier way to get them would be to use the newly-arrived Cuckoo Orpington. The colour is there already and only wants spreading evenly over the plumage instead of being defined in bars. A judicious admixture of Black and White with the Cuckoo would soon bring *some* specimens of the desired hue. But whoever undertakes the task must be prepared for a lot of mis-marked chicks destined speedily for the pot, and not for the exhibition pen. When it comes it will be at once a handsome and a useful fowl, and add another to the already overwhelming variety of the Orpington race.

CHAPTER XIV

AMERICAN BREEDS OF POULTRY

DOMINIQUE—JAVA—PLYMOUTH ROCKS—WYANDOTTES—
RHODE ISLAND RED

We owe several of our most popular and modern breeds of poultry to the skill and enterprise of our American brethren. Other breeds than those named above have come to us through American fanciers, such as the Cochin and Brahma (classed as Asiatics) and the Leghorn, which is included in the Mediterranean breeds. The Plymouth Rock and the Wyandotte are, however, distinctly of American origin, and flourish there to-day, and are as popular, and perhaps claim a more prominent place among the numerous varieties kept, than they do with us, and this is more especially the case with the Barred Rock and the White Wyandotte.

The chief characteristics of these American breeds are (1) their great size and hardiness combined with rapid growth, and their yellow legs and yellow skin. In America, the yellow-fleshed birds are preferred for table purposes, and are in great demand at a tender age as broilers. They are good all-round birds, as they are above the average as layers. The Wyandotte is perhaps the more prolific, but the eggs of most of the varieties are rather small, and of various tints from cream to chocolate.

THE DOMINIQUE AND THE JAVA

These ancient American breeds have played such an important part in forming the Barred Plymouth Rock, the Black Rock, and the Black Wyandotte, not to mention many varieties of the coming blue breeds, that



BARRED PLYMOUTH ROCKS.

they deserve a short notice, although neither of them are bred for exhibition purposes in England, and I am not sure that classes are now formed for them in American shows. The fame of the offspring has dimmed the glory of the ancestors.

The Dominique

In the *Illustrated Book of Poultry*, revised edition, 1880, there is a very fine coloured plate of a pair of Dominiques, while there is the barest mention of the Plymouth Rock. In the new edition of 1902 many pages are devoted to the latter, while the Dominique shrinks into a paragraph, *sic transit gloria mundi*.

Mr. Lewis Wright says, "The Dominique is, perhaps, the oldest of the distinctive American breeds, being mentioned in the earliest poultry-books as an indigenous and valued variety."

It resembles the rose-combed Cuckoo Dorking in colour, but has four toes only, and yellow legs. The rose-comb is like the Hamburgh's, the ear-lobes small and round, smooth and red in colour. The character of the marking is less clear and defined than in its descendant the Rock, and is crescentic in barring and much wider. In this respect it resembles the Rock in its earlier days, though many specimens are still to be found with the broad crescent-shaped markings of the Dominique. The present-day fashion for the Barred Rock is to have narrow bars running nearly straight across the feather. Another noticeable feature in the Dominique is the wealth of sickle feather, which almost equals that of the Leghorn, while its prevailing colour is much lighter than that of the body. These features are still too common in the untrimmed Rocks of to day

The American Standard for the Dominique in 1880 was—

General Shape and Colour.—Comb: Rose, large, bright red, similar to Hamburgh's. *Wattles:* Red, well-rounded, medium length. *Beak:* Yellow. *Legs:* Yellow. *Deaf-ear:* Red. *Plumage:* A light-blue ground, shaded with a dark slaty blue all over the body, forming bands of various widths.

The Points.—Size, 25; comb, 20; plumage, 25; symmetry, 20; condition, 10.

Disqualifications. — Legs other than yellow, or feathered; comb, other than rose; splashes of white in the breast or back; red or brassy colour in hackle or saddle.

The general tendency was for birds to be very light in shade, and when a deeper shade was produced the colour of the tail was black or nearly so. Mr. Galpin, who imported, about 1867, some of the earlier birds, says that they had evidently been carelessly bred, as "many chickens came black, and several had single combs." To me this seems to indicate that the American fanciers had already begun to cross the Dominique with the Black single-combed Java to produce a deeper colour.

The size of the birds was medium, the weight being about 7 lb. for cocks and 6 lb. for hens, and they were said to be very hardy in constitution and good layers.

The Black Java

This breed was not mentioned in the early editions of the *Illustrated Book of Poultry*. In the 1902 edition it is stated that they were mentioned in American Poultry books in 1850, and that twenty years later they played a part in the origin of the Plymouth Rock. It is not unlikely that they had been used earlier, since Mr. Galpin bred single combs from the stock of Dominiques he imported as mentioned above.

They are a larger fowl than the Dominique, the cocks weighing 10 lb. or more, and the hens 8 lb. The black pullets which are still bred every year from the Barred Rocks, are usually the largest chickens in the hatch, and a matured pullet often weighs 7 lb. and hens 8 lb. or more.

Some of the Black Javas were imported into England about 1885, but they never seemed to have caught the popular taste. The Black Orpington came out about the same time and became favourite, though it undoubtedly borrowed its chief qualities from the Java blood which had been infused into the Black Rock hens from which the Orpington was bred. This affords another instance of the child becoming more famous than its parent. The Barred Rock and Black Orping-

ton flourish with their borrowed plumes while the Dominique and the Java are almost forgotten!

I have seen no standard of perfection for the Java, but the Black Rock pullets, so familiar to us, are very like it.

Mr. Lewis Wright says it was a black fowl, with close plumage, with glossy green reflections; that the legs were black with a yellow shade under the feet, and that the eye was brown, very large and full, "of a peculiar soft, and yet sprightly expression." "The comb is single, rather small, but somewhat thick at the base and in the main evenly serrated; but the serrations commence farther behind the beak than usual, having a kind of smooth edge first."

All these traits are preserved in the Black Rock pullets, with the exception of the eye-colour. The "brown" or bay iris is seldom seen, and a pale yellowish-green shade has taken its place, and is much more commonly seen in Rocks of all colours, although a "bay iris" is the standard colour. The American Standard for the Dominique does not mention the eye-colour. If it is of a "daw" colour it would account for the change in the colour of the Black Rock pullet's eye.

However that may be, the Black Java lives with us in all its outward aspects unchanged, in the Black Rock pullet, and its good qualities of great size, robust constitution, and excellence in laying have not deteriorated in its descendant. It is singular, however, that these pullets are still counted among the fancier's weeds, and not at all easy to dispose of except for the table. This doubtless had something to do with the effort to make the Black Rock a distinct breed, with improved leg-colour. The Black Rock pullet has also been largely used in forming the Black Wyandotte.

The origin of the Java breed appears to be uncertain, no definite account having appeared, so far as I can find. It would appear to be closely allied to the Langshan and the Cochin. The Black Javas, sported "White Javas," and the cross between them Mottled Javas, with speckled plumage like the Houdan. This is an occurrence common to all black breeds. Where there is a black we find a white, and usually either a black-and-white in the form of barring, or mottling, or

lacing, and in the near future we are going to have it as a blue.

PLYMOUTH ROCKS

Sub-varieties: Barred; White; Buff; Black.

The Barred Rock

Since the first introduction of the Barred Plymouth Rock into England in the year 1871, it has remained one of the prime favourites, and, in spite of the inrush of many other breeds, it is likely to continue so, both on account of its extreme hardiness and robust usefulness, as well as for its undoubted and distinguished beauty of plumage. In its own line of beauty—the sober, dignified cuckoo plumage—it has had no serious rival. Its nearest competitor, the Scotch Grey, has never been popular in England, while the other "cuckoos" are, like the Cuckoo Leghorn, either notoriously deficient in style or beauty, or else rarely seen. It breeds fairly true to colour, although a specimen approaching perfection in evenness of colour and barring is by no means common. But its off-coloured birds are always in demand as farmers' fowl, or else find a ready sale for the table.

There is hardly another breed in England to-day that has had so long a career of even popularity, or that has had fewer "ups and downs." Good specimens always demand a fair price, hundreds of birds being sold every season at £10 to £50 each. One of the chief reasons for this continued demand arises from the fact that it requires considerable skill in breeding, and therefore offers a constant incentive to the fancier's efforts.

Its Origin.—There are many and various claims of American breeders for the honour of its introduction, and such opposite breeds as the Black Spanish and the White Cochin crossed with the Dominique, or the Buff Cochin and Dominique, or as I have described in the Chapter on "Colour," the Dominique and the Black Java, and later on, a cross of Dark Brahma blood, all claim to have had a part in its origin. I have indicated in the Chapter on "Colour" that buff colour crossed with

black produced the cuckoo colour, and the other breeds named, being black or white, would easily amalgamate with the cuckoo colour of the Dominique, which has, without a doubt, played a part in its manufacture, and with the exception of the rose-comb, its numerous points are reproduced every year, so tenacious is the cuckoo blood when once infused. As the Rose-combed Dominique was crossed with the Black Java—a single-combed fowl—single combs would come as recessives in the F^2 generation, and continue to breed single combs ever afterwards. A rose-combed Barred Rock rarely if ever comes from a pure strain, while even if the cross was made with the pea-combed Brahma we know that both rose and single combs would be produced.

The consensus of opinion is that the Dominique cock and the Java hen have played the chief part in the production of the Barred Rock. A knowledge of this fact helps to explain one of the chief difficulties the breeder has to contend with to-day, viz. the battle with the persistent black plumage of the Java, and light cuckoo colour and too abundant tail feathers of the Dominique. On the whole, the Java seems to have impressed its shape and type more firmly than the Dominique, while the latter has infused the yellow pigment of the legs and the failures of colour still so common in the tail, where white feathers will persist in making their appearance, especially in the lower part of the sickles. The Dominique is also responsible for the excessive length of feather sometimes seen, which leads to the nefarious practice of plucking the tail, and the consequent growth of rotten feathers. No fowl can endure the strain of a continual growth of sickles without weakness or disease in the parts speedily following. Nature intends one pair only to grow each year, and not parts of two or three. It is time the various clubs formed for the protection of this breed should stamp out the practice and not allow birds with partially developed tails to compete for prizes. Otherwise they might take refuge in the practice formerly adopted, I believe, by the Black Pekin Club, and sanction tail plucking, and then bid farewell to all attempts at honest breeding, and for ever abandon the hope of seeing a well-barred tail! Pekin Bantam breeders have at last set their faces against this practice.

Will the barred breeders remove this barrier to true progress?

The three main points to consider in an ideal bird are colour, type and size, and in the order given.

The Colour.—For the perennial difficulty attached to breeding a perfectly coloured and evenly marked barred bird, I must, to save space, refer the reader to the Chapter on "Colour" (page 238), where many of the difficulties of breeding this curious mixture of black and white—the particulate inheritance called barring—is referred to, and especially how the difficulty is enhanced by the desire to breed also the rich orange-coloured leg which is such a distinguished mark of beauty. And here we may note, before referring to the cuckoo colour, the well-known fact that many of the best and soundest coloured birds have dark spots on their yellow legs. And when these are not numerous, it is not much of a defect where it is counterbalanced by the brightness and depth of the bluish black barring. The same remark applies also to the bronzed cast of leg-colour so common in good coloured pullets. This wears off as the bird approaches maturity, and is frequently cast altogether when the scales of the leg fall away at the first adult moult, and the leg assumes a good colour. A little black in either form is an indication of a good reserve of black pigment. This at any rate is my experience after eighteen years of breeding yellow-legged fowls which are either black or black and white in plumage.

Blue plumage, in poultry coloration, is akin to, and indeed the produce of, black and white. And the general hue of the Barred Rock's plumage, especially when seen at its best in the twilight of an autumn evening, is blue. Mr. Bateman defines the colour as a picture in "black and white, seen through blue spectacles." The Poultry Club Standard defines it as "a ground colour of greyish white, finely and evenly barred with bluish black, the two colours blending into each other, free from rust or smutty colour."

The ideal colour is best seen in birds from six to nine months old, when the plumage is fresh, and the birds have been shaded from exposure to the sun and weather; or in freshly-moulted adult stock. On exposure in the



FEATHERS OF TYPICAL BARRED PLYMOUTH ROCKS.

Kindly sent by Mr JAMES BATEMAN.

1 Adult feathers from a pullet, with the American type of narrow barring. Note the great number of bars and their clear definition down to the root.

2 Feathers from the back of the Challenge Cup winning hen.

5 to 10 are feathers from a cock, an ideal stock bird.

5. SADDLE-HACKLE. 6. NECK-HACKLE. 7. BREAST. 8. BACK. 9. WING. 10. TAIL COVERT.

breeding pen the general tendency of the cock or cockerel is to become "brassy" on the back and wing-bow, when the colours become "blurred" and indistinct. In the hens the "blue-black" is apt to turn a rusty or brownish black.

Some strains stand exposure to the elements much better than others, and it will be found that birds of the medium shade of colour stand better than either extreme, viz. those in which the bars are of a distinct bluish black, and the light intervening spaces are not white, but a paler shade of blue, or greyish white. The American birds are of a more black and white colour, forming a more distinct type of barring than the British, and the bars are much narrower and more numerous on each feather. This shade has become more fashionable with us in recent years, and is certainly very pleasing to the eye. British judges are also paying much attention to the barring of the unexposed part of the feather, termed "barred to the skin." Feathers taken from the back of a well-barred specimen have often from seven to ten distinct bars across the feather, and I have often seen feathers taken from the cushion feathers of a well-barred hen of the American type with as many as twelve distinct bars.

There is no breed which alters more in appearance, and in apparent value, during the stages of the growth of the adult plumage than the Barred Rock. A pullet that looks like making a champion when her plumage is half or three parts grown may finish badly, and be altogether too dark, through the overlapping of the feathers. This often happens when the hen has the most desirable quality of a black bar on the *end* of the feather. It is a great blemish in many an otherwise good bird to have the tip of the feather white. This is also an indication of lack of breeding quality, showing a deficiency of colouring pigment.

Whatever the shade of colour may be, it should be uniform throughout, and in the cock it is a distinct mark of beauty when the neck-hackle and the saddle-hackle correspond in colour, though the saddle may be a little darker; and when the beautiful, fine barring is continued down to the skin, and is not simply an outward show of barring with white under-colour.

COLOUR IN DETAIL.

In both Sexes.—*Beak:* Bright yellow. *Eye:* Iris colour, bay. *Comb, Face and Wattles:* Bright red. *Ear-lobes:* Brilliant red, free from any trace of white. *Legs:* Bright yellow or orange.

In the Cock.—*Plumage:* Cuckoo feathered, but not rounded crescentic markings of a blurred and indistinct character generally known as cuckoo; but a ground colour of grey or bluish white, *finely* and *evenly* barred with a dark blue of the blue-black shade. The two colours not to be sharply defined as if cut with a knife, or ruled with pen and ink (which is approached in the pencilled Hamburgh), but blending one into the other with a delicate fringe. It should be free from rusty or brown colour, and not smutty, as when the dark obtrudes itself into the lighter shade. *Head and hackle, and back and saddle-hackle:* Very fine, but even and distinct barring down to the skin. *Breast and thighs:* Evenly barred down to the hocks, but the barring is broader. *Shoulders and wing-bows:* Distinctly and evenly barred to harmonize with other parts. This is a most difficult point to get, as in nine cases out of ten, even in the show-pen, the wing-bow is either brassy, or "shot" with white, or blurred and indistinct. The *natural* colour is red (as in the *Gallus Bankiva*), and here the struggle for possession tends to infuse the yellow pigment into its natural seat. *Wing-bars:* Alternate barring, even and well defined. *Secondaries:* The same. *True tail:* Greyish white, well barred, free from *white* feathers (a common failing). *Sickles:* Fine, distinct, even barring from root to tip. This is seldom seen, and leads to the fraudulent habit of plucking the feathers, which are often well barred for the first half and then lose colour. The sickle coverts should correspond to the body-colour.

In the Hen.—*Plumage:* As in the cock, clear and distinct barring of bluish black on a grey ground. The barring should be as fine as can be on all parts of the body, and finest on the head and neck. In the primary and secondary wing feathers, and the tail, the barring is wider than other parts. The entire plumage should be of one shade, and free from rusty feathers. A

common failing is, as in the cock, to get white, or pale and indistinctly-barred feathers.

Mating for Colour

It is always a pity, and militates against the popularity of a breed, when double mating is necessary, *i. e.* when birds of one shade are to be selected to breed show cocks, and of another to breed show pullets. But all the best and most successful breeders do so. The natural tendency is for the majority of the cockerels to come too light and washy in colour, and for the pullets to be smutty, and a considerable percentage black, like their ancestors.

Where Single Mating is attempted the medium shade of colour is the best, with markings as clear and well defined as possible, and with the great reserve of under-colour known as "barring to the skin." Such birds are rare. And even with such mating some cockerels would be a very light shade, and some pullets black. They follow Mendel's law of segregation.

The breeder's aim is to combat this natural tendency. An extreme case of mating would be to choose a very light, but well and finely-barred cockerel, bred from good coloured specimens, and mate him with black pullets, also well bred, and preferably from the same stock. Many good specimens of both sexes are bred every year in this way, though there would be a greater proportion of black pullets. This latter is always the case where pullets very intense in their black, with deep and wide dark bars, are selected, or where either they or the cockerel have thrown many entirely black feathers in their plumage.

Where single mating is attempted it will be found that the best-coloured cocks come from the darkest hens, and the best pullets come from those of a clearer and brighter shade. To be accurate in this mating, either trap nests should be employed, or great care taken to distinguish the eggs, and the chicks when hatched should be marked either by punching holes in the web of their feet, or by means of marking rings.

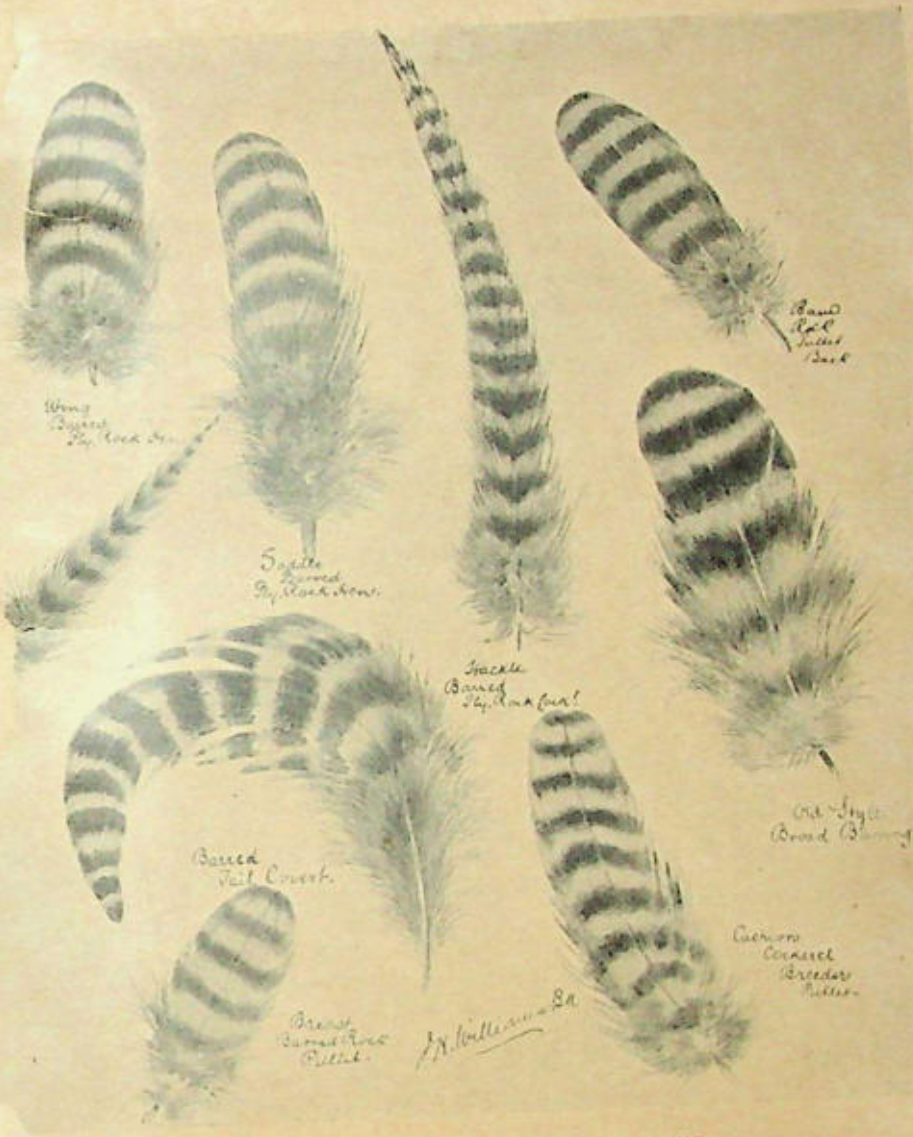
The *character* of the barring is as important as the colour. A broad crescentic marking can never give the

clear, beautifully-defined barring like that of the finer and straighter barring of the American type, which is called "ringleted," and gives the appearance of circles of colour running round the body. The difference between the American type of feather, and that of the finely-barred pullet's feathers given on the plate, is that the American feathers are much broader. It is this which gives the "ringlet" appearance.

The mating of a black pullet with a finely-barred cockerel is not tried as often as it might be. The perpetual casting aside of the black pullets has caused us loss of colour. The blue sheen on the bars is much less commonly seen than it used to be. If a black pullet *with good sheen* was used, it would do much to restore this defect, while the barring would not suffer if the pullet had been bred from finely-barred stock herself.

For Cock-breeding the most generally-adopted course, in double mating, is to choose a male bird of a darker shade than the standard colour, and always, where possible, bred from a good cockerel-breeding strain, and mate him to well-barred hens of a rich medium or dark shade. Such a mating will throw pullets too dark, and some black, but some cockerels of the desired hue.

For Pullet-breeding, hens of the same shade may be selected, but a cockerel of a shade lighter than the standard colour. The cock should be of a clean, bright colour, but well barred. Such a mating will produce many cockerels too light either for exhibition or stock, and only fit for the pot, but some pullets of the clear, bright and distinct barring so much admired. But no mating of any kind, even with inbred and well-selected stock, will throw a large percentage of birds fit for the show-pen, and where the stock is selected from outward appearance only, and with no care as to their relationship, while many fairly decent-looking birds may be produced, very few indeed of first-class barring will make their appearance. This is shown by the well-known fact that the most successful breeders, who carry all before them at the great shows one season, are either left altogether out of it another season, or have to buy their winners—an odd bird produced here or there in



FEATHERS OF BARRED PLYMOUTH ROCKS.
Taken from birds in the breeding pens of the Rev. T. W. STURGES.

some smaller breeder's yard, a chance specimen bred, it may be, from a well-bred bird, but cast off, as an unlikely breeder, from a good yard. Many a breeder who has sold a small pen of birds, or even a single setting of eggs, to a neighbour has had to buy back his winner, while he has himself bred a hundred times as many birds without getting so good a specimen. Strange as it may appear, this very uncertainty keeps the ball of popularity rolling, as it enables the outsider to have a "good look in" at the prize money, or to sell his best at a remunerative figure. It also adds unlimited humour to the advertisement columns when the season comes round for the sale of eggs or stock.

Breeding for Type.—Type or shape is as important in any breed as mere colour, though there is always a danger of this being neglected where colour is much sought after and is difficult of attainment. It leads to birds being too much inbred in order to secure colour, the best *coloured* birds being selected for the breeding pen, though they may be deficient in size and stamina and wanting in type. There is no doubt that many strains suffer from these defects, and are not so robust as they were some years ago. When judiciously exercised, and care is taken that none but robust birds are bred from, inbreeding has no ill effect, and is, indeed, necessary to produce birds of the highest type.

Too many birds are still seen in the show-pen deficient in size, with narrow bodies, deficient in breast, too long in the leg, and often inkneed, and sometimes with too much fluff. A Plymouth Rock should be large, with a broad, deep breast, indicative of good table qualities, since it is this quality which brought the breed into prominence and is still one of the chief claims to its popularity, and the reason why the mis-marked birds find so ready a sale.

General Characteristics of the Male

Head and Neck.—Medium size, carried well up, erect, not stooping like the Cochin, with a good breadth of crown, and a good arch above the eye. *Beak:* Stout at base and well curved. *Eye:* Large, bay colour preferred, not pearl colour. *Comb:* Single, medium in size, evenly

serrated. A *tiny* comb looks mean. *Face:* Smooth, bright red. *Ear-lobes:* Well developed and pendent, free from white. *Wattles:* Well developed and neatly rounded. *Neck:* Thick and densely hackled, of medium length and well arched.

Body.—Large, deep, square and compact. *Breast:* Broad and deep, nicely rounded. *Back:* Broad and short. *Wings:* Medium size, carried well up, and covered at bow by neck-hackle, and the tips covered by saddle-hackle. When viewed in profile the body to present the outline of a semicircle.

Tail.—Small and neat, after the Cochin type, spread at the base, and "cone-shaped" when viewed in the rear; well covered with sickles and tail coverts. A long, Leghorn-like tail is a disfigurement.

Legs and Feet.—*Thighs:* Large, strong, wide-set. *Shanks:* Medium length, stout, free from fluff. *Toes:* Four in number, straight, well spaced.

General Shape and Carriage.—Upright and imposing, taller and more erect than the Orpington, and with less fluff and more agility.

Size and Weight.—Large; weight 9 to 12 lb. when matured.

General Characteristics of Hen

Head.—*Beak*, *Eye* and *Face*, as in cock. *Ear-lobe:* Neat, not pendent. *Wattles:* Small and neatly rounded. *Neck:* Moderate length, nicely arched.

Body.—Large, broad, deep, well rounded at sides. *Breast:* Evenly barred, full, broad and deep, and carried lower than the cock's. *Back:* Apparently flat at the base of the hackle, and then almost horizontal to the end of the tail, with a slight convex curve over the cushion, in this respect forming a contrast to the cock. *Tail:* Small and neat. *General appearance:* Square and compact.

Size and Weight.—Large; matured pullets, 7 to 8 lb.; hens, 9 lb. or over.

White Plymouth Rocks

These beautiful birds, which in type and size follow the standard for type already given in detail, differ only in colour, which should be pure white, free from straw colour,

The *legs* and *beak* should be yellow; *eye*, bay colour; *comb*, *face*, *ear-lobes* and *wattles*, red. They are a pure breed, if we grant that designation to the barred variety, from which they are a sport. The white plumage is everywhere a common sport from black, or black and white fowl. They are said to show their origin by occasionally throwing a barred specimen, or more commonly a white with an odd barred feather. Like their ancestors they are very liable to "brassiness," or "sunburn," though many specimens absolutely white are shown when they have been protected from sun and weather.

They are the most popular fowl of the day in America, having displaced the Barred Rock from the premier position since their advent in 1880. They are fairly popular in England, but have such keen competitors in the White Orpington and the White Wyandotte that it is doubtful whether they will ever be generally adopted, and they will certainly never be as keenly sought after as their distinguished ancestors.

Single Matings are all that is necessary to breed exhibition specimens of both sexes. They are a strong, hardy, large, useful and beautiful addition to our numerous varieties.

The Buff Plymouth Rock

Whether the Buff Rock has any real kinship to the Barred I cannot say. It certainly could not have originated as a sport, like the white, and if there is any "Rock" blood in it, this has been largely swamped by the infusion of Buff Cochin blood, which is the source of all our large buff-coloured fowls.

At one time it was very popular in England, and soon after it was taken up by English fanciers became a more perfectly-coloured buff fowl than the Buff Orpington. The yellow legs were in its favour. It lacked, however, the size of the Orpingtons, and breeders began to cross the two varieties, and crosses were shown in either Buff Orpington or Buff Rock classes, according as they had white or yellow legs. The Rock improved the Buff Orpington in the colour of its plumage, but it left its stigma on the legs in a deep yellow stain at the base of

the shanks, which is still common in otherwise good birds to-day, and it also imparted the Rock type, with its narrower body, taller shanks, and longer back.

I bred the Buff Rock for ten years, and never had fowls with more hardiness of constitution, more beautiful appearance, or better layers of rich, tinted eggs in the winter months. They laid, as a rule, a larger and longer shaped egg than the Orpington, and one more uniform in colour. In spite of their Cochin origin they were less broody than their cousins, and laid more eggs. Yet, notwithstanding their many good qualities, they rapidly declined in popularity. It seemed as though the Fancy could only endure *one* buff fowl, and it fastened upon the Orpington as chief favourite. The Buff Rock was not "puffed" and advertised to the same degree, and came later into the field. But its merits were so great that it did not die out, and there are signs of its return to favour.

In Colour it may be any shade of buff from lemon to rich orange, but the paler shade has always been the most popular in the show-pen, so long as "washiness" or "mealiness" were avoided. A deep red tinge on the wing-bow is to be avoided, as also black or white feathers in any part of the plumage.

In Shape it should resemble the standard for the barred variety, and be quite distinct from the Orpington. In the *latter* breed, yellow-legged chickens are still hatched occasionally, showing the latent Rock blood which was unfortunately infused, and many otherwise good birds still revert to the taller and narrower Rock type.

The Black Rock

During the last few years the Black Rock has been bred as a distinct variety. It is a wonder it has not been taken up long ago, since, as we have seen, black sports from the Barred variety have always been with us. By inbreeding the black blood, cockerels have been bred, and these have come with good yellow legs, and occasionally a good yellow-legged hen has been bred.

There will always be the old difficulty of the conflict between the yellow pigment in the leg and the black of

the plumage, though it ought to be less than in the Leghorn, as it is not so profuse in feathering. They are certain to be strong, hardy, useful fowls, of good size and true Rock type, but the dusky-legged pullets will always be abundant, as well as the disfiguring white sickles in the cock.

The mating described in the Chapter on "Colour," under the heading of Black Leghorn, will be of service to the fancier of this variety. In judging, soundness of plumage in the cock and clear yellow leg in the pullets should receive its meed of commendation, while a brilliant sheen should be looked for in both sexes.

To secure good leg-colour, the Black Leghorn has been introduced, with a consequent loss of shape in the progeny and with too much feather in the tail.

It is a standing disgrace to Rock breeders that so many birds are shown with either half-formed or plucked tails, and fanciers seem almost to glory in the defect. A glance at the year book of the Rock clubs, which contains photos of winning specimens, will show this clearly. Compare the Barred specimens, with their imperfect tails, with those of the White or Buff, and the mutilation is at once manifest. The Whites do not need plucking because the colour is sound, and the Buffs are often sound in sickle feathers and so are allowed to remain as nature made them. Why not the Barred specimens? The white streaks or wide and defective barring should remain on view and points be deducted, or the absence of fully-developed feathers should be taken to imply the defect.

Its nearest and greatest rival will be the Black Wyandotte. Whether both will remain popular remains to be seen. For purity of race and conformity to type the Rock easily holds the pre-eminence.

Blue Plymouth Rocks

Now that we have both a White and a Black variety of Rocks, the blue plumage should be easy to accomplish. One dash of Black and two of White should give it to us, though Barred sports would be sure to arrive. I don't commend it as desirable, but there is no reason why the admirers of this colour should not have it if

they so desire. It would be easier to breed and be truer to type and Rock character than can be said of many modern attempts at blue.

Value of Points in Plymouth Rocks

Where there are so many colours, each variety should have its separate standard of value for this point, while all may agree in points for type, size and condition. The one standard at present given, though it may be altered any day, is as follows—

	Deduct up to
Defects in head	5
„ comb	10
Bad formation of tail	5
Want of shank-colour	5
White in ear-lobe	5
Faults of plumage (colour)	25
Want of size	20
„ symmetry (type)	15
„ condition	10
A perfect bird to count	100

Serious defects for which birds should be passed: Legs feathered, or any other colour but yellow (allowance should be made for blacks), white ear lobes, red, white, or black feathers in barred or buffs, or any coloured feathers in whites or blacks; any bodily deformity. (There ought to be added: Imperfectly developed, or plucked tails, or faked or plucked plumage in other parts of the body.)

WYANDOTTES

Sub-varieties: Silver Laced Wyandottes, Golden Laced Wyandottes, White Wyandottes, Buff Wyandottes, Buff Laced Wyandottes, Blue Laced Wyandottes, Partridge Wyandottes (gold pencilled), Silver Pencilled Wyandottes, Black Wyandottes, Black Laced Wyandottes, Columbian Wyandottes, Blue Wyandottes, Cuckoo Wyandottes.

This is a mighty array of varieties in a modern breed, and is a clear indication of the hold it has taken upon the popular fancy. At our great exhibitions there is



PARTRIDGE WYANDOTTE HEN.

The Property of Mr. Hubert Wright, 1st Palace, 1905, etc

no breed which musters more largely in aggregate numbers, or which has more numerous varieties of colour. Whenever a breed thus takes a firm hold on the Fancy we may be sure it is in popular demand as a farmers' fowl, and is very generally kept for utility purposes, for the simple reason that when the fancier has no outlet for his second- and third-rate stock he soon ceases to breed them in large numbers, and the breed, or the particular variety, languishes. It may be taken for granted as a safe general rule that the *number* of exhibits, at our large shows, of any particular variety, is a good index of the popularity of the breed among the community at large. The fancier makes the breed, but it is maintained by the multitude of poultry keepers who are not exhibitors, but like fowls that appeal to their taste, and are useful for providing meaty morsels for the table, or which are renowned for their capacity to fill the egg-basket, or for both. And there is no fowl on the market at the present day which fulfils, as a general purpose fowl, both these requirements better than the many varieties of the Wyandotte. It is a large fowl, the cockerels weighing 7 lb. or more and the pullets about 6 lb., while the adults of a year or more weigh from 1 to 2 lb. more. It has a good meaty breast of excellent flavour, grows quickly, is hardy, and readily fattens. The legs and the skin are yellow in all the varieties, which tells a little against them in the English market, though preferred in America. The hens are good sitters and gentle brooders, though they are not as persistent in this habit as many other varieties. The eggs are tinted and of various shades, from cream to chocolate. In some of the varieties the eggs are rather small in size and average about 2 ozs., but they are readily saleable, and some strains lay larger eggs than others. As a rule it will be found that, where double mating is the fashion, the cock-breeding pullets lay the larger-sized egg, the reason being, so far as I can make out, that they are not so closely inbred. A well-marked pullet is often selected for that point chiefly, little or no regard being paid to the size or general physique, whereas the cock breeders are selected for size and robustness combined with the other desired qualities.

The most marked peculiarity of the breed is the rose-comb, and this, with the stout yellow legs, distinguishes it at a glance from any other breed. The comb will be described later on in detail. I mention it here because it has not a little to do with its utility. A single comb, especially when large or overgrown, is easily affected by the frost, or by cold biting winds, and when so affected the laying at once stops, or even when the hens lay the eggs will be found unfertile unless the cock has been dubbed. The Wyandotte is not affected by the weather in anything like the same degree. If the comb is neat in size there is no need for dubbing, and the hens are not affected by the cold to the same extent, eggs being both plentiful and fertile in the coldest weather. This point has had not a little to do with the popularity of the breed.

Wyandotte Type.—The chief points in this, as in other breeds, are type and colour. This should be the same for all the varieties, and I will not attempt to describe it, referring my readers to the beautiful coloured illustrations of the pair of ideal Silver Laced Wyandottes and Partridge Wyandottes; and also to that of the Dark Brahmas, which more ancient breed they should greatly resemble.

The Wyandotte is a *made* breed, and of recent origin, the first of the race bred and exhibited in England being shown by Mr. T. Heath in 1884, who for a quarter of a century has been one of the most successful exhibitors. They had been known and written about in American journals for some ten years previously. But these earlier birds had Hamburgh combs and were called Sebright Cochins. The Silver Sebright Bantam is one of the most perfectly laced fowl we have, and is still the envy of Laced Wyandotte breeders. About 1880 a larger bird with the rose-comb now so characteristic of the Wyandotte was shown. This was probably a cross between the Silver-Spangled Hamburgh and the Light Brahma.

The Comb.—The Brahma has a neat, close-fitting pea-comb, and the Hamburgh a broad rose-comb full of "working," and with a long tapering spike. From such a parentage has the Wyandotte comb sprung. It should fit close to the head like the Brahma's, be full of

neat "working" like the Hamburgh's, and its spike, or finish at the back, should follow the course of the neck, and not with a horizontal or upward tendency like the Hamburgh. This latter tendency is still seen in some specimens, and is considered a disfigurement. A slight tendency in this direction is noticeable in the plate illustrating the Partridge Wyandotte cock, a more typical comb being shown in the Silver Laced cock. The comb should not be large and meaty, nor projecting over the side of the face—a common fault with Gold Laced Wyandottes, though by no means confined to that variety. It should be full and square on the front, not a hollow depression with two side ridges. A perfect comb is seldom seen. They are either hollow, or too plain, or too large, or finish badly behind with no spike, or a spike crooked, or turned up. They are not as easy to breed as good single combs. The various imperfections, and especially when they are overgrown, give rise to much trimming, though not to the extent it is practised in the Hamburghs. The practice cannot be too strongly condemned. I have written fully about the comb because it is the Wyandotte's distinguishing characteristic, and is a mark of great beauty when neat, well formed, and natural.

GENERAL CHARACTERISTICS OF THE WYANDOTTE COCK

The Head should be short and broad, though neat, to carry the comb well. The *face*, smooth in texture, not coarse. *Ear lobe and wattles:* Medium in length, though larger than in the Brahma. *Neck:* Medium length and well arched, with full and flowing hackle, carried erect like the Brahma, not low and crouching like the Cochin.

Body.—*Breast:* Full and broad, well rounded and deep, forming a nice curve from the throat to the top of the thigh. *Back:* broad and short, the saddle rising to the tail, in the cock, with a nice concave curve.

Tail.—Well developed, spread at the base, the true tail feathers carried rather upright, but well covered with broad sickles of medium length. The head and neck should rise higher than the tail, giving the bird an alert and graceful appearance.

Legs and Feet.—Thighs of medium length, but showing more than in the Orpington, well covered with soft feathers. *Shanks:* medium length, strong, but not coarse in bone and well set apart. *Toes:* Four in number, well spread out.

General Shape and Carriage.—Cobby, well set together, yet graceful and well-balanced as in the Brahma, giving the bird a noble and majestic appearance.

Size and Weight.—Rather large, weight about 6½ to 7 lb. for cockerels. Adults 1 or 2 lb. heavier. Many specimens are 10 lb. or more, but quality and shape are more important than size.

General Characteristics of the Wyandotte Hen

The hen is much the same as the cock, but the comb is neater and the wattles smaller, and the hackles full and short. The *body* should correspond with the cock's, but less of the thigh is shown, and the back is a *trifle* longer and less curved, but *not* like the Rock. The *back* should be short and broad, and the breast wide and well rounded. The *tail* should be well spread at the base, and the cushion full and abundant. In other points as in the cock. *Weight:* 5½ to 6 lb. for pullets. Hens a pound or so more.

Thin, narrow, lanky, long-backed specimens, sometimes win on account of the beauty of their plumage but type should hold a prominent place.

The Colours of Wyandottes are as numerous as the tints of the rainbow. To describe in full all the points, to enumerate the defects and appraise their value would take a volume in itself, and while the main features can be pointed out, and understood by the reader who grasps the simple rules given in the Chapter on "Colour," which he is recommended to read first, if he wishes for detailed minutiæ he should buy a monograph on the Wyandotte alone, and join the club which fosters the interest of the variety he fancies. The following notes on the several varieties are given in the order in which these were introduced.

The Silver Laced Wyandotte

This was the earliest, and was brought out about 1880 in America and shortly afterwards introduced into

this country. It at once made firm friends, and in spite of ups and downs, still remains one of the prime favourites, as it is certainly one of the most beautiful. It is one of the most difficult to breed up to Standard requirements, and (like the Barred Rock) the chief winners of each year crop out in most unlikely places. A bird as perfect in its lacing and in the regularity of it as the Silver Laced Cockerel which illustrates this chapter is never seen. It may be as perfect in parts, but never in the whole. The ideal is scarcely attainable.

It is a study in black and white, the white ground-colour, called Silver, giving the variety its name. The difficulty lies in breeding the colour so that the black should appear in the places the Standard requires and nowhere else. Instead of keeping to its own province in the tail, the striping of the hackle and the lacing of the breast and thighs of the cock and the body of the hen, it steals into the "ground-colour," and produces feathers which are described as "mossy," when minute ticks or pencillings invade the whole surface of the feather, and especially on the back and cushion of the hen; or "ticked" or "streaky" feathers in which the white webbing is ticked or streaked with black. Sometimes the black dominates the entire hackle, or the throat. At other times there is a worse failure, and the white prevails, and there is either a silvery hackle, or the black stripe becomes grey, or a dirty brown, or the stripe is black only for a short distance from the top. A common failing in otherwise excellent specimens is an outer fringe of white beyond the black lacing, or a white tip to the feather. And many specimens which *appear* well laced, are only laced at the tip or exposed part of the feather, instead of following round the entire web. In this breed, as in most others, there is a general tendency to *loss* of colour, and for the birds to breed paler each year, hence, if specimens as near perfection as possible in both sexes were bred together, the general tendency would be for birds deficient in black lacing to be bred. This has led to double mating.

Double Mating.—The general principle is, e. g. *in breeding cockerels*, to choose a male as near perfection as possible, and to mate him with hens, bred from a good cock-breeding strain, that are too dark for show

purposes, with lacing heavier than Standard requirements, even if it be so far as a dense neck-hackle, or with tickings of black in feathers on the saddle.

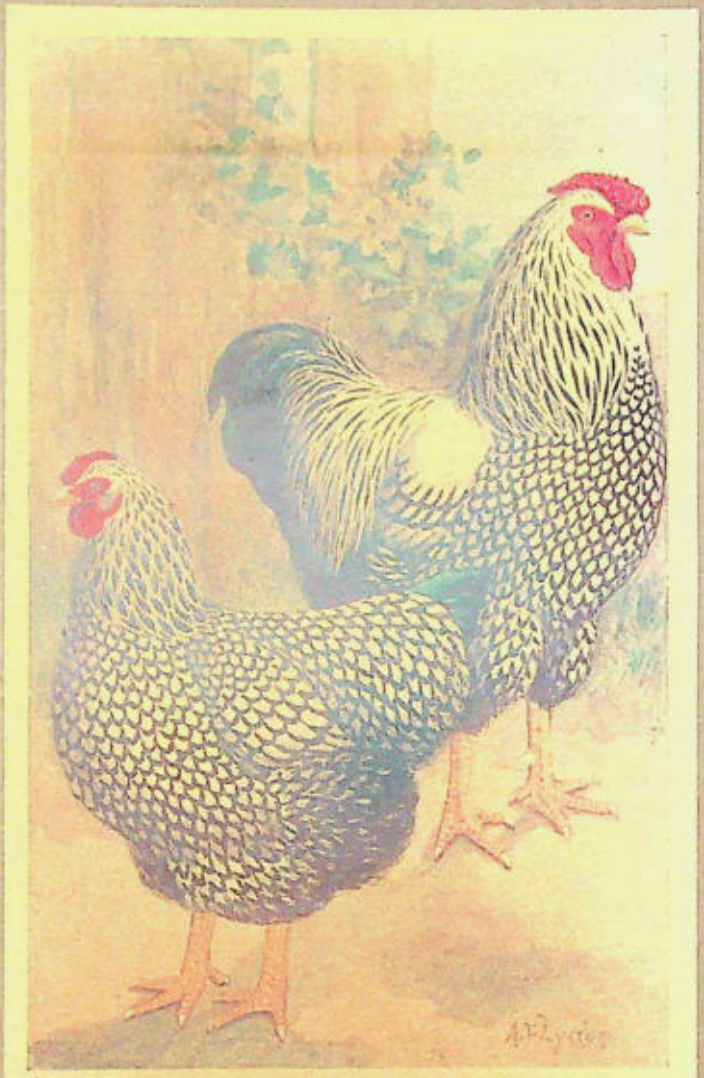
In breeding Pullets the reverse is done, and to Standard pullets a cock darker than is required for exhibition, and too heavily laced, is used. Care must be taken, in this case, that the cock has a sound black tail, that his flights are sound in colour, and that the under-colour is *dark slate* and not a pale grey. These are indications of a reserve of black pigment which are necessary if the colour of the progeny is to keep up to Standard requirements. The novice should place himself in some reliable breeder's hands, and it is better, for a time at any rate, to confine his attention to the breeding, for exhibition purposes, of one only of the two sexes.

The Standard Requirements

if given in detail for the Silver Laced, will apply to the other laced varieties.

In both Sexes.—*Beak:* Horn colour, with yellow tip. *Eye:* Bright bay. *Comb, Face, Ear-lobes, and Wattles:* Bright red. The lobes are often tinged with white, which is a blemish. *Shanks and feet:* Bright yellow.

In the Cock.—*Head:* Silvery white, with a clear black stripe through the centre of each feather. The stripe should not run out at the tip, but have a silver border throughout. The black should run well up into the feather, and should not be grey or a nasty brown. A good hackle is rarely seen, and is a point of great beauty. *The Saddle-hackle* should match. *The Shoulder tip:* White, laced with black. *Wing-bow:* Silvery white, free from ticking, though this latter is useful in a pullet breeder. *Wing-coverts:* Evenly laced, forming two or more *bars*, well defined. *The Secondaries:* Black on inner web, and wide white stripe on outer web, but edged with black. *Flight feathers:* The same, but broadly striped with white on outer edge. Entire white colour shows a lack of pigment. *Breast and Under-parts:* The web white with jet-black lacing with a green lustre, well defined and regular in width, and free from white tips, or white outer lacing, and the lacing to follow the feather over the whole of the



Silver-Laced Wyandottes.

webbed surface. *Under-colour:* The whole of the fluffy portion of the feather to be dark slate colour. *Tail:* The true tail feathers, the sickle feathers and the coverts to be black with a green lustre. *Thighs and Fluff:* Black or dark slate powdered with dark grey. Clear lacing round the thighs as much as possible. This is rarely seen perfect.

In the Hen.—*Head:* Silvery white. *Neck:* Silvery white, with a clear black stripe, as in the cock, free from ticks. The broader and denser the striping the better for cock-breeding. *Breast and Back:* The web of the feather, silver, with regular and well-defined black lacing around the *whole* of the webbed portion, the broader and more open the centre the better, according to present fashion, though the almond-shaped centre is very beautiful. The black lacing should have a lustrous green sheen. The back and cushion are often cloudy or mossy. *Wings:* Same as back. *Secondaries and Primaries:* As in cock. *Tail:* Black, showing green lustre. *Tail Coverts:* Same as the body. *Thighs and Fluff:* Black or dark slate, as also the under-colour of fluff over the body. The regularity of the lacing is a most important feature, but absolute evenness of spacing is never seen. The great importance attached to this feature is a great incentive to exhibitors to pluck feathers where they are too thickly clustered together. A well-known Club judge told me that he rarely found a bird at the great shows which had not been trimmed. The *quality* of the lacing should be as important as its regularity. A photograph of the best birds of the year is the best evidence of the irregularity of the lacing, though it cannot depict the quality of it, which is often a deciding point.

The faults of lacing most prevalent are (1) a broad black tip or spangle at the end, instead of an even width; (2) a white fringe or lacing outside the black lacing, sometimes only seen at the tip, at other times following the entire outline of the feather; (3) incomplete lacing, which only borders the tip of the feather; (4) too heavy a border. For some of these faults see the plate of Imperfect Feathers at the end of the chapter on Colour, and for specimens of well-laced feathers, the plate, p. 501.

Like all other white birds with yellow legs, brassiness is a common failing, and shows most on the back and wing-bow. Exhibition cockerels, therefore, should be shaded.

Golden Laced Wyandottes

The interest aroused by the advent of the Silver Wyandottes set many breeders at work to produce a gold-coloured specimen. How they were "made" at the first is not clearly known, but it is most likely that various attempts were made, and with different crossings. Mr. Raines, in his monograph, states: "I believe they were chiefly made up of a mixture of Rose-combed Leghorns, Golden Hamburghs, and Partridge Cochins; later on came an infusion of Black and Brown-red Game." I should have thought that a cross between the Golden Hamburgh cock and the Silver Wyandotte hen would have been the readier method, though the conflict of the red in the Hamburgh would destroy in parts the black lacing. Mr. Lewis Wright tells us that in 1888 Mr. Sid Conger came to the front with them by crossing his "Gold cocks" with the Silver hens of other breeders, but he does not state how the Gold cock was bred.

Later on Redcap blood appears to have been infused, which would account for the enormous combs seen in some specimens, though it would give the desired red lobe instead of the white one derived from the Hamburgh.

The cross with the Silver hens would help to perfect the form of the comb, and a further cross with the Indian Game would perfect it further and give it the Wyandotte close-fitting character. That the Indian Game blood has been infused is beyond question, and traces of the "type" of this breed are still to be seen. The ground-colour would be enriched and rendered a deeper bay, but dense neck-hackles would also result, as well as traces of double lacing. With such a mingled strain of various breeds the Gold Wyandotte must have been an intricate puzzle to breed true to colour and type, though a rare vitality would be infused. The best layers I ever had were of this breed, and I once had a pullet that laid 39 eggs in 40 days.

The Colour.—The name "Golden Laced" is somewhat of a misnomer, since the prevailing colour is a "rich bay." Birds are frequently exhibited too dark a colour to be pleasant to the eye—the tint being of a rich chestnut hue. A rich golden bay is the colour to aim at, and that of a solid, not a patchy character. It need not be further described, as a reference to the colour for Silver Wyandottes is sufficiently clear if "rich golden bay" is substituted for the silver ground-colour. The variety is liable to the same failings in its lacing, and to the tendency to the white tips or lacings on the feather, which are more conspicuous on account of the dark background. Brightness of colour, and evenness, together with regularity of lacing, are of prime importance in the show-pen. They are not, as a rule, as showy or well defined in marking as the Silvers, nor as consistent in shape, as may be imagined from their various parentage. They are as hardy as the Silver, equal as layers, and stand exposure to the weather with less detriment.

The White Wyandotte

The White Wyandotte is to-day one of the most popular of all the general purpose breeds. The fact that they have carried off the chief awards for the last few years in the annual laying competitions has had not a little to do with this, although their admirers are singularly oblivious of the fact that in the same competitions in which one pen has won the first place, others of the same variety are at the bottom of the list. The fact is that good laying qualities are more a matter of "strain" than of breed. Personally, I have found them the best layers, of the sitting breeds, that I have kept.

The White is a genuine Wyandotte, being a sport from the Silvers, and, as may be expected, carries black as a recessive character. When mated with any black breed the chickens are mostly black, though some will have partly white plumage, laced after the character of their parents.

The Colour should be a pure silvery white without any creaminess of tinge, and in some strains careful

selection has accomplished this. The reserve of black pigment has combated the yellow of the legs, and kept it confined to the shanks and beak. In many specimens the leg-colour is very pale, almost a rich cream tint, most noticeable when viewed in the dusk. This detracts from the beauty of the variety. The beak should be yellow and not horn colour, and care should be taken to breed only from a male with a perfect *red* lobe. Many specimens have white in them. This defect is more common in the Whites than in the other colours.

They are true to Wyandotte type, with the erect Brahma carriage, and a great point in their favour is that both sexes can be bred from the same pen. It is one of the nearest, if not the nearest, to a perfect albino we have, and when it is set off by a rich, bay-coloured eye (not a yellowish green daw colour) and the head-points are a bright red, it is a beautiful fowl. Especial care should be taken to see that the male bird is pure in his white and not sappy. The Whites are somewhat heavier than the other varieties, but type is of more value than mere size.

Buff Laced and Blue Laced Wyandottes

These two beautiful varieties are classed together because they are often bred from the same mated pen; and they are introduced here, out of order of date, because they are bred from the mating together of the Gold and the White.

They were first exhibited in 1897, though attempts at breeding them were made in America ten years earlier.

Mr. Lewis Wright thus refers to them: "Both these varieties originated in America, Mr. Ira C. Keller appearing to have been the first in the field. He commenced in 1886 to cross Golden Wyandottes with Whites, producing birds whose lacing was violet blue; these violet laced birds threw a certain number with white lacing, and from these were derived his Buff Laced breed." The aim was to produce a golden buff ground-colour laced with white. A reference to the Chapter on "Colour" will explain the rationale of this. The white colour of the White Wyandotte, mingled with the black

lacing of the Gold, produced the Blue. And the birds with blue, or "violet" lacing, bred, as all blues do, some white and some black laced fowl. The tendency of the White Wyandotte would also be to soften the "rich bay" ground-colour of the Golden Laced birds and produce a Buff. As may naturally be expected, there were many difficulties to contend with. In the Buff Laced, the Standard says: "*Tail:* white." But black tickings would appear, and sometimes traces of blue, both here and in the hackles. The *solid* buff colour would also be difficult to get with a good white fringe. Other breeds have been introduced to overcome this, and the Buff Wyandotte was introduced, and the laced "Chamois Polish." Needless to add, these only introduce further difficulties, such as the peculiar shape of the Polish skull and the crest, etc. Enough has been said to excite the interest of the amateur fond of experiments, and no more interesting experiments in colour can be imagined. There would be many mis-marked birds, but these would be interesting and certain to be excellent layers.

Colour in Buff Laced Wyandottes

In both Sexes.—*Beak*, *Eye*, *Comb*, etc., same as Silver Wyandotte, and of course the legs and comb characteristic of the breed.

In the Cock.—*Head:* Buff. *Neck and Saddle:* Rich buff with a white stripe replacing the black in the golds. *Breast and Thighs:* Rich buff with clear and regular white lacing; under-colour, *white* (not slate colour). *In other parts:* The black of the Gold Wyandotte is replaced with white. *Tail:* Pure white. This would be greatly improved if the tail were also buff laced.

In the Hen.—The colour is the same as in the cock, viz. rich buff, with regular white lacing. *Tail:* White; the lacing on the cushion may continue into the tail coverts.

The rich golden sheen on the neck-hackles of good specimens is the nearest approach to burnished gold seen on any fowl, and is exquisitely lovely. For some reason they have not caught the popular fancy to any great extent.

selection has accomplished this. The reserve of black pigment has combated the yellow of the legs, and kept it confined to the shanks and beak. In many specimens the leg-colour is very pale, almost a rich cream tint, most noticeable when viewed in the dusk. This detracts from the beauty of the variety. The beak should be yellow and not horn colour, and care should be taken to breed only from a male with a perfect *red* lobe. Many specimens have white in them. This defect is more common in the Whites than in the other colours.

They are true to Wyandotte type, with the erect Brahma carriage, and a great point in their favour is that both sexes can be bred from the same pen. It is one of the nearest, if not the nearest, to a perfect albino we have, and when it is set off by a rich, bay-coloured eye (not a yellowish green daw colour) and the head-points are a bright red, it is a beautiful fowl. Especial care should be taken to see that the male bird is pure in his white and not sappy. The Whites are somewhat heavier than the other varieties, but type is of more value than mere size.

Buff Laced and Blue Laced Wyandottes

These two beautiful varieties are classed together because they are often bred from the same mated pen; and they are introduced here, out of order of date, because they are bred from the mating together of the Gold and the White.

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lacing of the Gold, produced the Blue. And the birds with blue, or "violet" lacing, bred, as all blues do, some white and some black laced fowl. The tendency of the White Wyandotte would also be to soften the "rich bay" ground-colour of the Golden Laced birds and produce a Buff. As may naturally be expected, there were many difficulties to contend with. In the Buff Laced, the Standard says: "*Tail:* white." But black tickings would appear, and sometimes traces of blue, both here and in the hackles. The *solid* buff colour would also be difficult to get with a good white fringe. Other breeds have been introduced to overcome this, and the Buff Wyandotte was introduced, and the laced "Chamois Polish." Needless to add, these only introduce further difficulties, such as the peculiar shape of the Polish skull and the crest, etc. Enough has been said to excite the interest of the amateur fond of experiments, and no more interesting experiments in colour can be imagined. There would be many mis-marked birds, but these would be interesting and certain to be excellent layers.

Colour in Buff Laced Wyandottes

In both Sexes.—*Beak*, *Eye*, *Comb*, etc., same as Silver Wyandotte, and of course the legs and comb characteristic of the breed.

In the Cock.—*Head:* Buff. *Neck and Saddle:* Rich buff with a white stripe replacing the black in the golds. *Breast and Thighs:* Rich buff with clear and regular white lacing; under-colour, *white* (not slate colour). *In other parts:* The black of the Gold Wyandotte is replaced with white. *Tail:* Pure white. This would be greatly improved if the tail were also buff laced.

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The rich golden sheen on the neck-hackles of good specimens is the nearest approach to burnished gold seen on any fowl, and is exquisitely lovely. For some reason they have not caught the popular fancy to any great extent.

Colour of Blue Laced Wyandottes

The colour is the same as in the Gold, save that blue everywhere should replace the black. The difficulty is to keep the blue colour free from white or black, since blue mated to blue is certain to produce both black and white.

Brightness and equality of ground-colour is of more importance than the shade of lacing. The Gold mated to the Blue Laced would add to depth of colour.

The Standard calls particular attention to type, since the further introduction of Indian Game blood has done something to spoil the typical character. The Blue Laced is less popular than the Buff Laced, and a good, well-marked specimen is seldom seen.

The Buff Wyandotte

These were introduced in 1893, after the craze for buff-coloured fowls had well set in. They have never taken the public taste to any large extent, and are now practically dead, being only seen occasionally in "Any Other Variety" classes at the chief shows. Occasionally a first-class specimen appears, *e. g.* at the Birmingham show in December 1908. I awarded the special prize, for the best bird in the four A.O.V. classes provided, to a Buff Wyandotte cockerel. The chief point is colour, which should be one even shade of buff over the entire body. They are again a made breed, the chief ingredients being the Silver Wyandotte and the Buff Cochin, to which latter blood the tendency to feathers on the legs is to be attributed. The Buff Orpington and Buff Rock have also been infused into it, the rose-comb swiftly dominating the single.

The Partridge Wyandotte

This lovely coloured variety was introduced into this country from America in 1896, and exhibited by Mr. J. Wharton, at Liverpool, a year later.

There is no doubt that they owe their origin chiefly to the blood of the Partridge Cochin, whose exquisite pencilled plumage they inherit. The Gold Wyandotte



PARTRIDGE WYANDOTTE COCK

The Property of Mr. Hubert Wright, at Palace, Ware, etc.

gave them the comb and shape, and it is probable that, as in the Gold, the Indian Game has also been used to secure the lacing.

A glance at the two coloured illustrations, inserted by kind permission of Mr. Hubert Wright, will show their beauty more than words can do. The beauty of the hen is wonderful, and her exquisite colour and delicate pencilling make her one of the most beautiful of all our domestic races of poultry. In size they are equal to any and larger than most, adult cocks weighing 10 to 12 lb., and hens 7 or 8 lb. are not uncommon. This is a great point when the mis-marked specimens come to be disposed of, and make it a desirable table fowl.

For egg production in winter they are among the best. Though the eggs from pullet-breeding pens are not large, they are readily saleable when eggs are scarce, and the eggs from the larger and more robust cock-breeding pullets are well up to the average size. They are distinctly above the average in the laying line, and produce eggs in the winter when they are required to do so, and this makes greatly for utility.

They are among the hardiest of fowl, and the eggs are more fertile than from many breeds. The hens make gentle and good mothers, and are very docile in general character. With beauty and utility thus combined there is little wonder that they soon became very popular and, for some years after their introduction, good specimens fetched fabulous prices, £50 being a common figure, and the record price of £165 was paid for a winning cockerel at the International Show of 1904, which is now in one of my breeding pens and still vigorous and active.

When first introduced the cockerels showed much of the Gold Wyandotte character and colour, and were generally too dark, and less like the rich dark red colour of their Cochin ancestor. Mr. Marx then described them as "dull in colour, and defective in soundness of black on breast and thigh." If the pencilled breast and thighs then so common had been accepted as the Standard colour there would have been no need to resort to double mating, and if the cocks had lacked a little of their present definiteness of colour they would

have been more popular, since double mating always mitigates against this.

Double mating is now an essential for breeding exhibition specimens. One great point in favour of the Partridge is its lasting qualities as an exhibition fowl. A good cockerel or a good pullet maintains its beauty of plumage throughout several seasons, and the delicacy and beauty of a well-pencilled pullet is maintained or improved after each moult, so that the old birds often gain the championship prizes over the younger ones, whereas in many breeds a good adult cock or hen is rarely seen.

The fashion now is for a pure gold hackle lighter than the orange shade, especially on the back. The difficulty in these cases is to get the *saddle-hackle* to match. This should also be well striped.

Colour in Partridge Wyandottes

In both Sexes.—Beak, eye, comb, face, ear-lobes and wattles as in Silver or Gold Wyandottes.

Legs and Feet: Bright yellow. Toe-nails: Horn colour. This is still lacking, and the legs of the pullets are commonly of a dusky colour, and moreover the feathered shanks of the Cochin still protrude themselves, and either show feather, or marks where feathers have been plucked out. The Club has rightly set its face against this practice, and has inserted the following clause in its Standard: "Birds with feather on the leg, or traces of feather or down on the leg, shall not be incapable of winning prizes, but the same shall be a defect which the judge must, in awarding prizes, take into account. Birds which have had the same, or any part removed, must be passed." Many good birds are bred of either sex quite clear of feather on the shank, and it is only a matter of time before all will be clear. But as many of the most beautifully marked specimens still show traces of feather, it is not to be expected that they should be sacrificed, though they might well be confined to the breeding-pen.

In the Cock.—*Head:* Rich orange. *Neck:* Orange or golden red with paler shade at the back, each feather having a glossy black stripe down the centre. This

stripe should have an orange border at the tip, and the stripe should continue well up towards the root of the feather.

Back: Rich dark red (well shown in coloured illustration), not a dull or mahogany colour. It should be solid and not ticked with black, though this is common in cockerels till the moult is completed. *Wing-bar:* Rich lustrous black, free from tickings. *Flight feathers:* A sound black. Any white in flights or tail is fatal for breeding good cockerels, though a little often appears in the second year. *Secondaries:* Rich bay on outer web and black on the inner. Only the bay shows when the wing is closed, and this forms the wing-bay at the end. *Breast:* Black, as also the thighs and under-parts right to the tail. In an exhibition bird this should be free from bay tickings or lacing. *Tail:* Including sickles and coverts, a solid glossy black.

In the Hen.—*Head:* Rich orange. *Neck:* Golden yellow, *pencilled* with black. The Standard used to describe the neck-hackle as *striped*. But *no* well-laced pullets are *striped*, though this is a great point in choosing pullets for cock-breeding. The neck-hackle of an exhibition pullet should be *laced* or ticked, and not striped. *Breast, Back and Wings:* A light brown ground-colour, free from red or "foxiness," or from a yellow tinge; every feather distinctly and plentifully pencilled with a darker shade. There is usually a ticked or pencilled stripe running down the shaft of the feather, and two lines of the darker lacing following round the entire web of the feather, but leaving a lighter fringe, as in the neck-hackle. *Fluff:* Brown, and the more pencilling on it the better, as in the coloured illustration of the hen. Many otherwise good pullets fail here, and indeed nicely laced fluff is rarely seen. It is of great value in the breeding pen, as well as adding to the beauty in the show room. This is as difficult to get as a well-pencilled throat. *Tail:* True tail feathers black, shading to brown at the top and well pencilled.

The Standard for Type is the same as for other varieties of Wyandotte, though many specimens are still too Cochiny in type, with less of the majestic carriage of the Brahma.

Value of Points

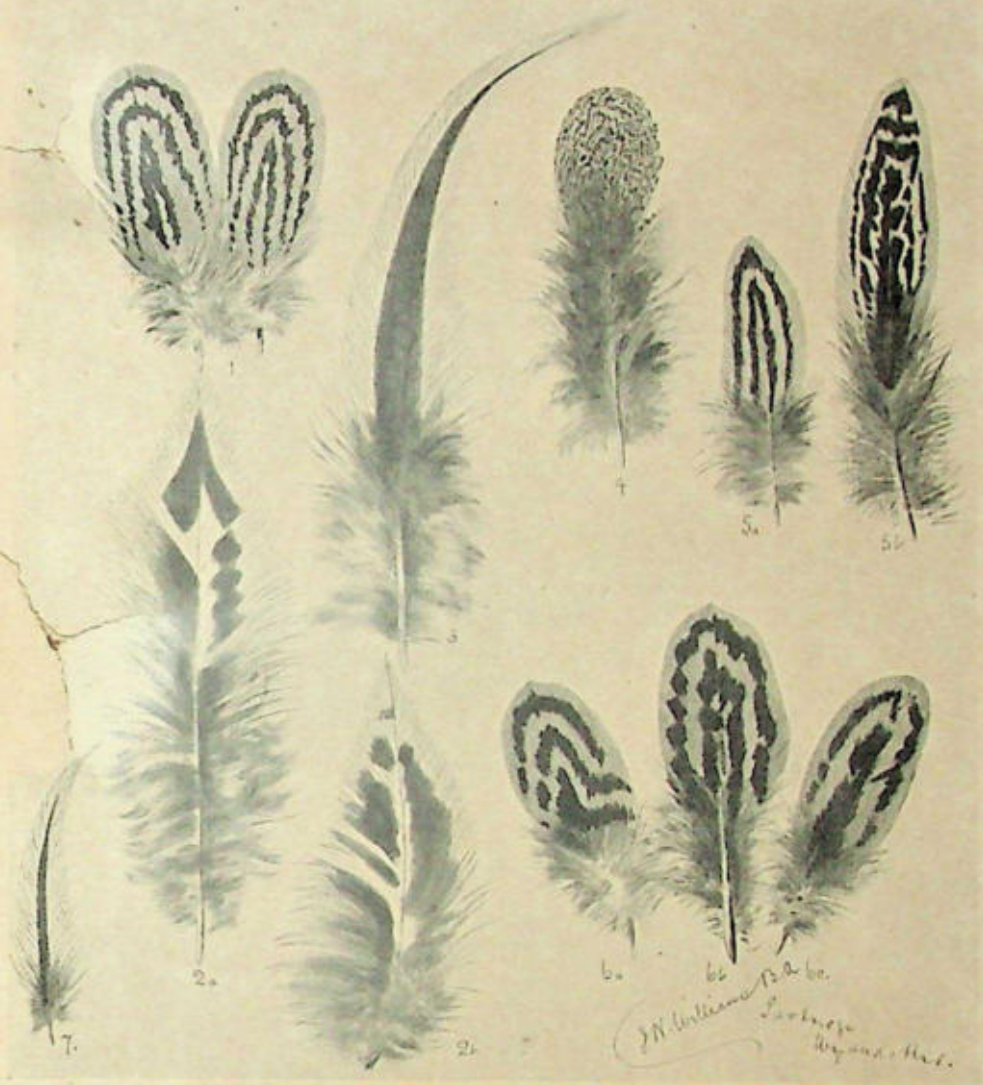
The Cock.		*The Hen.*	
Defects in comb.—Deduct up to	8	Defects in comb.—Deduct up to	6
,, ,, head, etc. ,, ,,	11	,, ,, head, etc. ,, ,,	11
,, ,, neck ,, ,,	12	,, ,, neck ,, ,,	8
,, ,, breast ,, ,,	10	,, ,, breast ,, ,,	13
,, ,, back ,, ,,	12	,, ,, back ,, ,,	13
,, ,, wings ,, ,,	10	,, ,, wings ,, ,,	13
,, ,, tail ,, ,,	7	,, ,, tail ,, ,,	7
,, ,, fluff ,, ,,	8	,, ,, fluff ,, ,,	7
,, ,, legs ,, ,,	8	,, ,, legs ,, ,,	8
Want of size and condition ,, ,,	14	Want of size and condition ,, ,,	14
A perfect bird to count .	100	A perfect bird to count .	100

Serious Defects for which Birds should be passed.—Permanent white in ear-lobes if covering more than one-third of surface, combs other than rose, or falling over, or too large. Wry tails, deformed beaks, or any bodily deformity. Legs other than yellow. [This latter is singular, since most good birds are not yellow but bronze.]

Hints on Mating.—The chief point should be that the birds are well bred, and if one desires to breed cockerels, all the birds in the pen should be "cock-bred," and not simply appear to be so, *e. g.* mis-marked pullet-bred pullets are often sold as cock-bred, and look like it, but they will not breed good male birds, and *vice versâ*. There is more security about *well-marked pullets*. They cannot be "cock-bred," but the cockerel to mate with them may look like a pullet-bred one and yet be a cock-bred one. See to it, then, that your stock is "line-bred" for cockerel or for pullet breeding.

To breed Cocks.—The male bird should be up to Standard requirements and as perfect as money can buy. Care should be taken that the black is sound, not only on the breast and fluff, but in flights and at the base of the tail. The pullets to mate with him should be cock-bred. They should be large and robust. The neck-hackles should be *well striped with black*. The lacing is indistinct, and the birds are generally darker in appearance, with more black in the pencilling. The reserve of black pigment shown in pencilling and sound fluff helps to keep the cock's breast black, and the light-coloured neck-hackle, if densely striped, repeats itself in the cock and becomes his chief adornment.

To breed Pullets.—The females should be as near



PARTRIDGE WYANDOTTE FEATHERS

1. Breast feathers and general type of marking of a good hen (kindly sent by Mr. R. Watson).
2a and 2b. Thigh feathers of a pullet-breeding cockerel
3. Neck-hackle of the 1904 International winning cock
4. Body feather of a cock-breeding hen
5a and 5b. Neck-hackles of a pullet-breeding hen
} From breeding-pens of Rev. W. Sturges.
6a, 6b, 6c. Specimens of the heavier markings approved by American fanciers (kindly sent by Mr. R. Watson).
7. A tiny neck-hackle from exhibition cock.

exhibition specimens as means will allow, with clear and well-defined concentric markings, and of a soft brown shade, even to the fluff. The neck-hackles are broken-pencilled and not striped. The male should be from a pullet-breeding pen, and is usually of a darker shade than the exhibition cockerel, with darker hackle, and the *striping* need not be so distinct, but pencilled like the pullets. The breast will not be solid black but laced or ticked with red, and this should continue to the thighs and fluff. Care should be taken that he is pullet-bred.

To keep the pedigree clear the eggs from each pen should be hatched either in separate drawers of an incubator, or under different hens, and when hatched should be marked by toe-punching, otherwise it is impossible to separate either the cockerels when grown, or the medium quality pullets. Mixing of strains spells confusion in future breeding.

Popularity waning.—Like other varieties that have had a rocket-like and rapid popularity, it now suffers from decline, and though still fairly popular there is nothing like the demand for medium quality birds, though first-class specimens are still saleable. The decline has come through (1) the sale at high prices of ill-mated pens; (2) the necessity of double mating; (3) the winning being confined to a few prominent fanciers—always a cause of decline; (4) the faking and rumours of faking; (5) big breeders exhibiting at small shows.

Its popularity is now being catered for by the club, especially in providing classes exclusively for novices. Young breeders should join the club. Its year book is a mine of information.

The Silver Pencilled Wyandotte

This breed is practically a Dark Brahma with clean legs. It is smaller than the Partridge, though similar in markings, substituting silver for gold or brown, and white for red. Why they should be so much smaller I do not know. They are as beautiful as the Partridge (or Gold Pencilled), and there is less difficulty about leg-colour and fluff on the legs. They were introduced into England in 1901.

Being a study in black and white there is the peren-

nial struggle in keeping the two colours confined to their proper domain, as in the Silver Laced variety. They are equal as layers, but so far as my experience goes are not so hardy. They are more consistent in type than the Partridge.

Mating Silver Pencilled Wyandottes

For Cock-breeding, as in other double matings, the cock should be an exhibition specimen, and the pullets large, with well-striped hackles and indistinct lacing. Both sexes should be cock-bred, and be as sound in their black as possible.

For Pullet-breeding, the females should be show birds, or good pullet-bred specimens, clear in their lacing even to the thighs, and the male be a pullet-bred specimen with ticked breast and thighs, and not so clear in his white.

The Yellow leg presents the usual difficulty and spreads its yellow tinge over the white plumage of the cock, and is especially marked on the wing-bow. As the cock-breeding pullets have usually darker legs, this helps to preserve the purity of colour, as also the more densely marked plumage.

Their popularity has not yet been established, and despite their beauty and utility it is doubtful if they will catch the public taste. One main reason for this is the difficulty in keeping the colour sound. They must be shaded. Another is the fact that they do not improve with the moult like the Partridge, and a good old cock or hen is rarely seen. There is the same difficulty and uncertainty as there is with the Silver Laced variety. It would be a pity if they fell out of the ranks, and a turn in the tide of war may yet bring them with flying colours to the front.

The Columbian Wyandotte

This is a recent aspirant for Wyandotte fame, and has already found a host of admirers, and has a club, like most of the other varieties, to look after its interests. It was included in the Poultry Club Standards in 1905, but it has since that date made rapid strides. In 1906 one of the leading breeders described them as "scratchy," but in 1907–8 many beautiful specimens were staged.

Why the breed is called "Columbian" I do not know, but the title is distinct, like the bird, from any other variety. Practically the Columbian Wyandotte is a Light Brahma with clean yellow legs, and has undoubtedly been manufactured from a cross between the Light Brahma and the White Wyandotte, and, as we have seen from the origin of the Silver and other varieties, this is a typical origin. But, as the White Wyandotte is a sport from the Silver, some of the progeny show traces of the Silver parentage, and the wings of the pullets are apt to show the black on the wing-bar or at the end of the wing; and there is also the scanty and irregular marking in the striped hackle.

The chief failure of present-day specimens is the scantiness of the true striped hackle, which should be that of the Light Brahma, and a further dash of Brahma blood could be used with advantage to set this right, even if it be at the cost of a little extra leg feathering for a season or two. The washiness of the neck-hackle must be got rid of, and the *abundance* of it is as much needed as its quality. It should come right round and meet under the throat instead of leaving it white. The faults described in the "Silver" are still common. The striping is often grey or a dirty brown, instead of the glossy greenish black, and, what is worse still, the edge of the feather is black instead of white, and the centre white, as there is an outer ticked fringe. The bird is really beautiful, as now shown in the best specimens, but it cannot yet compare with the Brahma, and this is not to be wondered at considering the longer pedigree of its ancestor.

It will be seen from the Club Standard, which I am enabled to print through the courtesy of the Hon. Secretary of the flourishing club formed for its advancement, that the members have set their faces against trimming the shanks. Fluff and feathers will be a trouble yet for years to come, as it was, and indeed is still, with other varieties of Wyandottes and the Orpingtons. Well-marked birds with slight feathering are of great value in the breeding-pen, and though this defect rightly penalizes the variety in the show-pen, yet, if shown, they should be shown as nature made them and not with plucked or shaved shanks.

Another trouble which besets the fancier of the Columbian is impurity in the colour of the white. They should be the colour of skimmed milk, or, as the Standard describes it, "pearly white." Sappiness, in various degrees, is still the bane of the Light Brahma fancier. It should be less so in the case of the Columbian owing to the albino nature of the White Wyandotte.

It will usually be found that the purest body-colour is accompanied with a slaty or at least a bluish under-colour. This abundance of black pigment militates against the yellow pigment of the leg, and keeps it in check, and for years to come birds with dark under-colour should be used both to preserve the purity of the white and to add to the intensity of the neck-hackle. This can, of course, be overdone, and show in ticked feathers on the saddle, but at least *one* of the sexes should possess it, and pure white under-colour be fought against until the hackles are improved.

Mating for Columbian Wyandottes

The rules should be much the same as for Light Brahmas, to which the reader is referred.

For Cock-breeding.—A male bird as near exhibition type as can be procured should be used. The pullets to accompany him should have a good supply of black pigment, as shown by the slaty under-colour and by the density of the hackle. Personally, I do not like to see the hackle so fashionable at present in Light Brahmas, nearly black with a *very* wide stripe and the merest apology for a silver fringe to it; but this is better than the washy sort, and is invaluable in the breeding pen.

For Pullet-breeding.—The hens should be of the desired type and colour, and a reserve of colour in the cock; a white under-colour would spell confusion.

The pedigree counts for something, and a cock bred from sound pullets should be used where possible.

For both sexes.—It is a pity whenever double mating has to be resorted to. When both males and females are bred up to Standard type, especially if they have *dense* neck-hackles, both sexes fit for the show bench may be bred from one pen.

The breed is certain to maintain its popularity on account of its great beauty. It has all the elegance of

its ancestor, and is a much better layer. This is probably due to the influence of the White Wyandotte, which at present leads the way.

Its utility cannot be questioned. All who keep them speak of them in the highest terms as excellent layers of a good-sized egg. The hens are very docile and good mothers. A little more size in them will come in time, as it has done in the *White*. They grow quickly and make good table birds, while they are as hardy as can be. *In type* they should easily be typically Wyandotte on account of their parentage, though it is to be hoped they will not follow some of the present-day Light Brahmas and become too slouching and Cochiny.

Standard of the Columbian Wyandotte

Colour in both Sexes.—*Beak:* Yellow or horn-coloured. *Eye:* Bright bay. *Comb, Face, Ear-lobes and Wattles:* Bright red. *Legs and Feet:* Yellow or orange yellow.

In the Cock.—*Head:* Silvery white. *Neck-hackle:* Silvery white with a distinct black stripe down the centre of each feather, but the hackles to be free from a black outer edging and black tips. *Saddle-hackle:* Silvery white. *Tail coverts:* Glossy green-black either laced or not with white. *Tail Feathers:* Glossy green-black. *Primaries:* Black or black edged with white. *Secondaries:* Black on the inner edge and white on the outer. *Rest of Body:* Pearly white, entirely free from ticking, the under-colour being either slate, bluish-white or white.

In the Hen.—*Head:* Silvery white. *Hackle:* Bright intense black feathers entirely surrounded with a silvery white margin. *Tail feathers:* Black, except the top pair, which may or may not be laced with white. *Primaries:* Black or black edged with white. *Secondaries:* Black on the inner edge and white on outer. *Rest of Plumage:* Pearly white, entirely free from ticking, the under-colour being either slate, bluish-white or white.

Scale of Points

Coarse or Brahma head.—Deduct up to		3
Defective comb . .	,,	5
Ear-lobes and wattles .	,,	4
Pale legs . . .	,,	5
Scanty hackle . .	,,	4
Defects in hackle . .	,,	20
Primaries out of order .	,,	4
Defects in tail . .	,,	5
Want of size and condition	,,	15
Want of type or shape .	,,	10
Impure body colour. .	,,	25
A perfect bird to count . .		100

Serious defects for which birds may be passed: Combs other than rose, wry-tails, deformed beaks, crooked backs, permanent white or yellow in the ear-lobes covering more than one-third of their surface, shanks other than yellow in colour (except adult cocks and hens, which may shade to light straw-colour), any feather or fluff on shanks or toes. Judges are instructed to disqualify birds if in their opinion any feathers have been removed from the shanks.

The Black Wyandotte

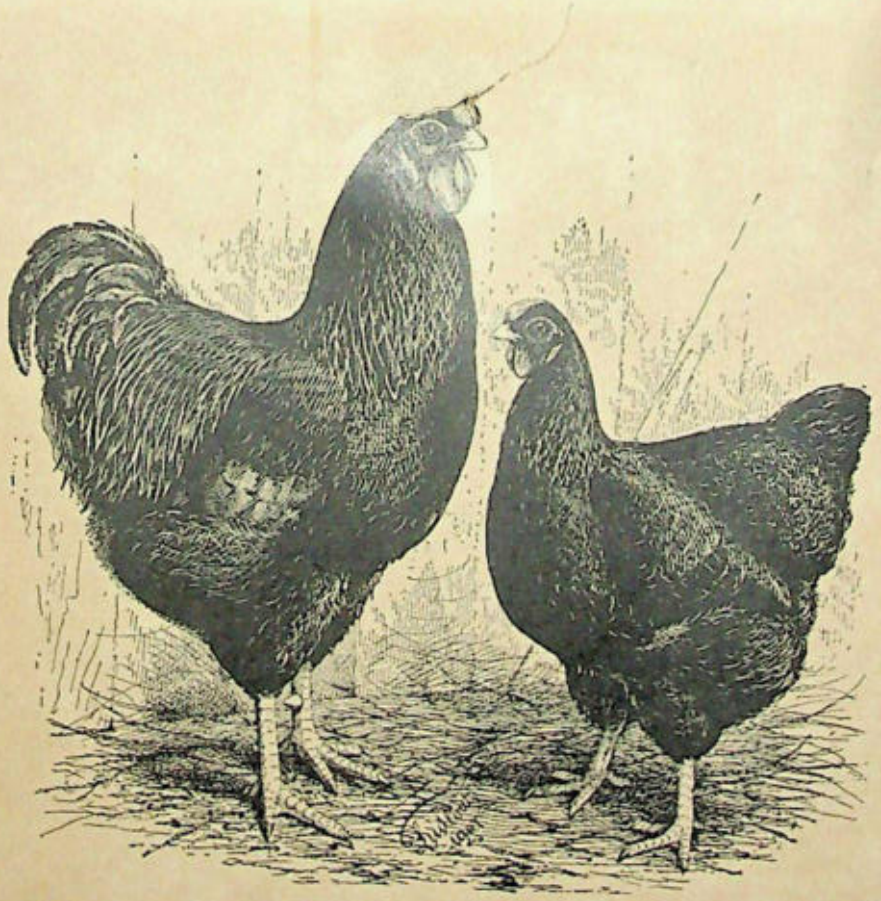
This is the most recent "rage of fashion" in Wyandotte circles, and, though bred for many years in America, was only "boomed" in England in 1906. It is said to be a sport from the Silver Laced variety.

The aim of English breeders is to produce a sound-coloured black bird, of Wyandotte type with yellow legs.

The American birds are smaller than our Standard, and though bred fairly true to type and sound in colour have almost black legs. They are content if it shows traces of yellow on the shank, and has a yellow foot underneath, much the same as the Black Rock pullets.

The breed had a phenomenal boom, and all the virtues under the sun were ascribed to it. Its good table qualities, prolific egg-laying capacity, its docility and hardiness, the fact that it would stand any climate, clean or dirty, and look well though uncared for and unwashed, etc., were boomed sky-high. The immediate demand for specimens was enormous, and every farmyard was scoured to find any black birds which happened to have rose-combs and traces of yellow in the leg, which were picked up at killing-prices and sold at times for almost fabulous sums.

With these miscellaneous specimens bred in any haphazard fashion, Wyandotte cockerels of various colours were mated. Dark Golds, Partridges, Silver Pencilled or Silver Laced were used, while those who had Black cockerels mated them to White Wyandotte pullets; or White cockerels were mated to Black Rocks, and produced some of the best specimens. Many birds thus bred were exhibited and carried off prizes as pure Wyandottes, and not a few with such alien blood as the Black Orpington, Black Leghorn, or Indian Game



THE BLACK WYANDOTTE CLUB'S IDEALS.

[Reproduced by permission.

found themselves with honours or prizes as Wyandottes! All had more or less pretence to black plumage, but when bred together all known colours were produced, and among the very best, and from eggs readily sold at 42*s.* a dozen, there were more white specimens than black. Other varieties of Wyandottes have had a mixed parentage, but the Black caps the lot. Birds were rapidly imported from America or Holland, where they had been fostered for years; some of the best realizing £100 apiece!

A Club was formed, and at the time of writing has over 130 members, and its year-book, which can be obtained for *3d.* from the Hon. Sec., Mrs. Bury, of Lomber Hey, High Lane, Cheshire, is one of the best year-books ever published, and is illustrated with photographs of recent winners. Some are wonderfully true to Wyandotte type and are sound in colour, while others look for all the world like the old and defunct Rose-combed Black Orpington.

They still realize high prices when they at all resemble Club type and Standard, and the improvement has been very decided.

Through the kindness of the secretary I am enabled to give the Standard for 1909. The Standard agreed upon is typically Wyandotte, and is as follows—

Standard of Excellence

General Characteristics.—Typically Wyandotte.

In both Sexes.—*Comb, Ear-lobes and Wattles:* Bright red. *Beak:* Bright yellow. *Eye:* Bright bay. *Legs and Feet:* Bright yellow. *Plumage:* Black with rich beetle-green sheen, under-colour as dark (black) as possible.

Scale of Points for Judging

Shape	20
Comb	10
Head	5
Colour	20
Under-colour	15
Legs	10
Size	12
Condition	8
Total	100

The Serious Defects for which a bird may be passed are exactly the same as for Partridge Wyandottes, to which the reader is referred.

Hints on Mating.—Though this breed is a self-coloured one, success cannot yet be attained by single mating, as is the case with the White variety. *The* difficulty is the old combination of the yellow leg with the dense black plumage. These difficulties and the way to overcome them are referred to in the case of Black Leghorns, dealt with in the Chapter on "Colour." There is not at present, apart from the mixed parentage, the same difficulty as in the Leghorn on account of (1) the fact that the Wyandotte has a shorter tail, and (2) that the Club winks at dusky legs, though it states they should be yellow in the Standard. Even the cocks have bronze legs at present, and, though I have examined many, I have never yet seen a good yellow-legged one with a sound tail and dense black under-colour, and the Club insists on a dense black under-colour and makes it of prime value, giving 15 points to it and only 10 for legs. So far the cocks exhibited are better in shape than the pullets, many of the best of them show Indian Game blood, with the fierce cruel face and beetling brow, and with the long sloping back and whip-tail, while others are too narrow and Leghorn-like.

If a novice cared to try his hand to make his own, I should commend either a White Wyandotte cock of typical shape, and as near a Wyandotte-shaped pair of Black Rock hens as I could find. Many of the best have been bred this way, and a couple of years would produce very fair specimens. Or I should mate a Black Wyandotte hen with a White Wyandotte cock of good shape and size. In these crosses the Black would dominate the White, and nearly all the chicks would be black, though some white ones would appear in the F^2 generation.

Mating to breed Cocks.—Sound colour on both sides is of prime importance. Let the cock have as good leg-colour as you can get, but be sure he is sound black in fluff, flights and tail. The pullets should also be sound in colour, and it does not matter if their legs are dark, because a yellow-legged pullet rarely breeds a sound-coloured cockerel.

To breed Pullets.—The pullets or hens should themselves be sound in colour and have as good legs as you can get. But the cockerel should have good yellow or

orange-coloured legs, if you can get him. It is *not* so important that his under-colour should be sound. I have already indicated that a *White* Wyandotte mated with sound-coloured hens will breed good pullets; much more one with a brilliant black sheen on his top-colour, even though he be white in his under-colour. As in other breeds, such a cockerel is more likely to be a success if he has been bred from a good hen, or is brother to good pullets, and that, even if he has coloured feathers in his hackle.

It will be years yet before they *breed* true, and though the improvement made has been wonderful, there is still room for improvement both in type and colour, and especially in *leg*-colour, which has not yet received its due meed of praise.

Meanwhile, scores will be bred for one fit to exhibit, and better birds will be sold for a few shillings than two or three years ago sold for pounds, while the madness reigned; and the farmer will have a chance of verifying all the optimistic appraisements lavished on an unformed variety. Will the breed last? It is certain to have a large number of enthusiastic admirers, for good specimens are undoubtedly handsome, and until they are as common as blackberries in the autumn many will pursue their fancy. But of the many who started in the race with flying colours only a few have continued. It is a winding path, and the surface is a rough one.

The Blue Wyandotte

is still in the making, and of the many blues, as of books, there is "no end." The specimens up to now exhibited have been miserable in the extreme, the veriest mongrels in type and nondescript in colour. They may yet be popular unless another conjurer first attracts the attention of the crowd and empties the pockets of those who come to the fair. There is a Club started for its furtherance, and I believe that a self-coloured blue, *i. e.* not a laced blue, has been decided upon. For the would-be breeder the Chapter on "Colour" and the hints on blue breeding will point out the way, and show the difficulties, as well as the methods of procedure.

With Black and White Wyandottes already on the way to perfection there should not be much difficulty, and certainly no need to introduce other than Wyandotte blood, which is already sufficiently mixed.

In the case of the Blue Laced variety we have seen how the white affected the black lacing and produced blue, and therefore a white and a black should produce some self-coloured blues, and the black and the buff would do the same. The black and white chickens of the F^2 generation would again throw blue as in the case of the Blue Andalusian. When the colour can be got solid in character and of a pleasing shade, without black or laced hackles or black or white in the tail, we shall see some handsome specimens, and both type and size ought to be easy to breed. They will of a certainty be good utility fowl, and they give those who are fond of experimenting a chance to achieve fame, it may be in a year, or it may take longer. But, like the comic song which comes and dies in a season, breeders should learn its lines while it is still the fashion, or they may find nobody willing to listen to their ditty.

The Cuckoo Wyandotte

This is one of the oldest varieties and yet one of the least popular. The land of its birth is America. It was expected to displace the Barred Rock in popular favour, but this it has failed to do. Probably its origin is the same as that of its successful rival, the single-combed Rock, and should be as easy to breed, since its progenitor was the Rose-combed Dominique.

But the tables are turned on it, and what little popularity it enjoyed is threatened by the advent of the Rose-combed Rock—though the various Rock clubs will not hear of the latter's introduction, and that rightly so, since the rose-comb and the yellow legs have for so long been given over to the Wyandotte. It would only "make confusion worse confounded" if we had two breeds which nobody could distinguish one from the other. They would be like Tweedledum and Tweedle-dee, though one brother may have a little more chest measurement than the other, or be a trifle taller and longer in the back. If we are to have another cuckoo

variety one of them must be "barred," and I vote for the resuscitation of the Wyandotte. They may be popular yet, since a cross with their cousin the Rock would give definiteness to the barring and increase their size. But I imagine that there will not be much hubbub about them. It will be a Quakers' meeting, as becomes the sober Quaker dress they wear.

Black Laced and Other Varieties

We are threatened with a Black Laced variety, *i. e.* a black bird with white lacing to its feathers, the converse of the Silver Pencilled. I have seen some fair specimens bred as sports from Black Wyandottes which had themselves been bred from a cock *silver pencilled*. This latter variety, it will be remembered, is a black and white pencilled fowl which has an outer *white* fringe to its pencilled feathers. It would be a novelty in lacing if introduced, but the difficulties in its path to glory and fame are many, and I am doubtful if there is room for it.

It would be easier to breed it like the Spangled Orpington, although it would have the yellow leg to impede its progress. But to get the regular lacing which is the hall-mark of the Wyandotte will be a difficult problem which few will care to solve. Let them all come. They can but live their life and die. They will add to our store of dead poultry and give us a few more eggs, unless they fill space which may be more worthily occupied, and so add to the ranks of the unemployed. If they only had a Government pension of 5*s.* a year per head for their up-keep until they were fit to sally forth they might survive. But Governments, like poultry fanciers, may have too much of a good thing, and the appetite palls, though the table may groan with delicacies.

Are we at the end of the chapter? Or shall I indicate other patterns in the kaleidoscope. Why not try a Blue Pencilled variety and introduce the exquisite pencilling of the Partridge to a taste of the "blues." The White would do it, and the kaleidoscope would go mad with envy. There would be certain to be white feathers somewhere in the plumage, and then we could

sport the red, white and blue. The palette is not empty, but the canvas has run short and I will leave others to dream of colour and to envy "Joseph's coat," and may their dreams and the interpretation thereof not bring them into trouble, unless it bring them also to Pharaoh's house and fill the granary. Otherwise the corn bills will be heavy and the "silver cup" may be claimed by others.

THE RHODE ISLAND RED

This is another American breed which need not detain us long. It has no merit as an exhibition fowl, and looks more like a badly-shaped Buff Orpington of too dark a colour, and with a black tail, and, indeed, much resembles some of the brick-red specimens of this now popular breed when it first appeared. The Buff Cochin is its ancestor, and the Brown Leghorn had also a share in its making. It is said to be a good layer, but even its utility qualities have not assisted much in making it popular. A glance at the *Feathered World* will show the relative demand, as the advertisement pages show sixteen columns allotted to the Buffs and a quarter-column to the Rhodes.

By the Standard allotted for them the cock's colour is cherry-red, with back and wing-bows darker, and a black tail. The hen is a lighter shade of golden red, the hackle tipped with black, and the tail black. The under-colour for both sexes red or salmon. They may have either rose- or single-combs, and the size and weight is that of small Buff Orpingtons—cockerels, 6½ lb.; pullets 5 lb.

To be popular in England a fowl must have beauty as well as utility. It must catch the fancier's eye, for he is the breeder, as well as the seeker after useful qualities.

CHAPTER XV

MEDITERRANEAN BREEDS

BLACK SPANISH—MINORCAS—ANDALUSIANS—LEGHORNS—ANCONAS

The Mediterraneans are *par excellence* the egg-laying breeds. They have all the non-sitting instinct developed almost to perfection, or, if you will, the natural broody instinct destroyed. This instinct is, however, only dormant and not dead. An occasional sitter is found in all the breeds, though this may in part be due to crossing which has taken place to improve fancy points. A cross of these with any breed produces sitters, and restores the natural instinct. The eggs are larger than from the sitting breeds, and are all white-shelled, though in some cases a tinted shell is a sign of the infusion, at some period, of other blood. The characteristic of the Mediterranean breeds is the very large, erect, and serrated single-comb in the cocks, and large drooping combs in the hens, accompanied with large wattles and white ear-lobes. They are sprightly and active in carriage, and should have abundance of plumage with well-developed sickles. The feathering is not loose and fluffy like the Asiatics, nor tight and close like the Game, but midway between the two.

How the non-sitting instinct arose is not known. It is probably the work of centuries. Some have attributed it to the practice of artificial incubation in Egypt carried on for centuries. If the broody instinct was persistently discouraged, and the hens not allowed to rear their own young, it can be understood how the disuse of the faculty would lead to its decline, especially when aided by selection and the keeping of those only which continued to lay with little or no desire for broodiness.

The same principle of selection may have brought this about when eggs were greatly in demand. Mr. Lewis Wright thinks this is the cause, since the northern shores of the Mediterranean Sea are peopled by Roman Catholics who are allowed the use of eggs on fast-days when the use of flesh-meat is forbidden. In any case, this may have led to the preference for this non-sitting fowl, probably reared in Egypt, in a pre-Christian era, long before there was any Roman Catholic religion.

THE BLACK SPANISH

This is the oldest of the race, and though now nearly extinct in England, was at one time "all the rage," and in the "forties" the most popular fowl we had. Most men of middle age can remember their parents' talk of the famous egg-laying capacities of the Spanish, and scores of folk at any show to-day can be heard calling the Minorca, or the Black Leghorn, "Black Spanish." A good name lives long. An occasional specimen is seen at our great shows, but very rarely is a class provided for them. They were once spoken of as a "hardy fowl," and as being able to roost out on the trees throughout the year. To-day they appear anything but strong, and at the best of times, with their ghostly features, they look the most sepulchral type of any living fowl. If we read any of the older poultry books, such as Dixon, 1848, or Doyle of about the same period, we find pages devoted to their many virtues, and this was long before the American races, or the many modern breeds, were heard of.

The Black Spanish seems to have reached us from Spain, whence it takes its name. Mr. Dixon wrote in 1848: "In North Devon they call the Spanish fowls 'Minorcas,' others call them Portugal Fowl, neither terms removing them far from their old-established location, if not their original home. It is a noble race of fowl, possessing many great merits; of spirited and animated appearance, of considerable size, excellent for the table, both in whiteness of flesh and skin, and also in flavour, laying exceedingly large eggs in considerable numbers." He also speaks of a "pure white, in shape

and carriage exactly like the Black Spanish, only wanting the white cheek-patch. They are much larger and broader than any of the Black I have ever seen, and they are very fine in the neighbourhood of London. The cock that came with the first lot (in 1846) is entirely black and long in the legs, but without the white cheek-patch." These were probably the Black and White Minorca, a contemporary of the Spanish, and from the same neighbourhood. In speaking of the eggs from these black and white fowls he says: "The eggs are equal in size and number to the Black Spanish. Some of mine last year weighed three, and some four ounces each."

Some attribute the decline to the showing mania for the tremendous extent of white face and ear-lobe, and to the elaborate preparation needed to get them into fit shape; and also to the practice of forcing the growth of huge combs. But their delicacy must to a large extent be attributed to their close inbreeding as well as to their being pampered for showing. The Black Minorca has now taken its place, and there are other new breeds of the non-sitting races equally as good for utility purposes as the Spanish in its prime. It succeeded at first because there was no other layer of large white eggs, and now its popularity is not likely to be resuscitated.

It is like the Black Minorca, except that it is not as large and has a white face and *very* large pendulous lobes. It is also taller and more gamey-looking, and the legs and shanks are longer and of a *pale* slate colour instead of dark slate or black.

Many modern Minorcas are too like the Spanish in style, and some dashes of Spanish blood have doubtless been infused to give the large lobe. The comb is smaller than the Minorca's and is more Andalusian in type.

Its scale of points indicates its cause of decline, viz. defects in comb and wattles, 15; face and lobes, *35* (an exaggerated estimate of any single point like this spells downfall); plumage, 10; shape, 15; want of size, 15; condition, 10. Birds with coarse lobes, or with any stain of blue or red, or any black on legs, are to be passed. It is all lobe, and that an exaggerated one,

from start to finish. It has killed the Spanish. May the Minorca be spared!

THE MINORCA

Sub-varieties: Black, White, Cuckoo, Rose-comb.

The Black Minorca

This breed probably came to us from the small island in the Mediterranean of the same name. For many years after its importation it was bred almost exclusively in Devon and the adjoining western counties. Like many other of our breeds it was much smaller when first introduced, the adult males weighing about 5½ lb. and the hens a pound less. It was known as the "Red-faced Spanish" to distinguish it from its white-faced relative, and it is probable that both breeds had a common origin.

Modern Minorcas are getting too like the Spanish in their stilty carriage and gait, and differ considerably from the square- and massive-shaped bodies of the Minorca of even ten or twelve years ago. This is probably due to the infusion of other blood, including the Spanish to obtain the larger lobe, the Black Langshan to get the black eye and legs and the more brilliant plumage, and probably a dash of Game blood also. Traces of all these "infusions" are still to be seen. The occasional feathered shank and smaller comb point to the Langshan, the red eye to the Game, and the white face, exaggerated lobe and pale legs to the Spanish. These are all considered to be defects, and are to be avoided.

The results of these crosses have perchance added at various times to the robustness of the breed. But the prevailing desire for exaggerated size in the white ear-lobe, and for the enormous comb, in both sexes, has undone the vitality imparted, and though the Minorca of to-day is beyond all question one of the most useful breeds we have, it is not as robust as it once was. The cocks have suffered more than the hens in this respect, and while it is common enough to find hens two or three years old maintaining all the freshness and vigour of youth, and fit for the show-pen, it is rare to find

a cock that has survived his first season and still maintains a sound red face, and a comb erect and in good proportion. And when such a bird is found it is usually one which as a youngster was considered to have a comb and lobe too small.

The sound path in these matters is the *via media*, avoiding exaggerations on either side. In the revolt from our methods the Americans have gone too far, and the comb of a winning pullet there would in any of our large shows be passed for "a mean-looking comb." Their standard also asks for "thin" lobes. We prefer them thick.

Their Utility Qualities.—Before providing details of the standard points of a Minorca I give the foundation of the Minorca's popularity in its undoubted usefulness. It lays the largest white egg of any living fowl where it is kept in suitable surroundings; and its flesh is a dish for an epicure. In spite of the vaunted qualities of the Dorking and Indian Game, which may carry more flesh on the breast, it is one of the best-flavoured fowls we have, the flesh being white, juicy, tender, and abundant, and it possesses little offal. There are no big sinewy thighs as in some of the heavy sitting breeds. It is the largest of the so-called "light breeds." A well-developed cockerel will weigh 7 lb. or more, and pullets a pound less, while many show specimens exceed these weights by 1 or 2 lb.

They are *active* fowls and forage well where they have space to roam, and to grow cockerels well they should have liberty. But they thrive in the most confined quarters, and are essentially the fowl for a town-dweller, or for the artisan with confined space in a backyard. Many of the best exhibition pullets of the year are grown in very tiny covered runs, and if care is taken that the birds get scratching exercise, and are not fed with over-fattening foods, they are champion layers under such conditions.

They stand confined spaces well, and where an Orpington would become simply rolls of fat the Minorca keeps in good laying condition.

They are tame and readily eat out of the hand of the person accustomed to feed them, though they can fly when in an open range, or when startled.

They are quiet and do not cackle away for an hour after laying an egg, as though it were a wonderful event. They are a steady, sober, business-like fowl.

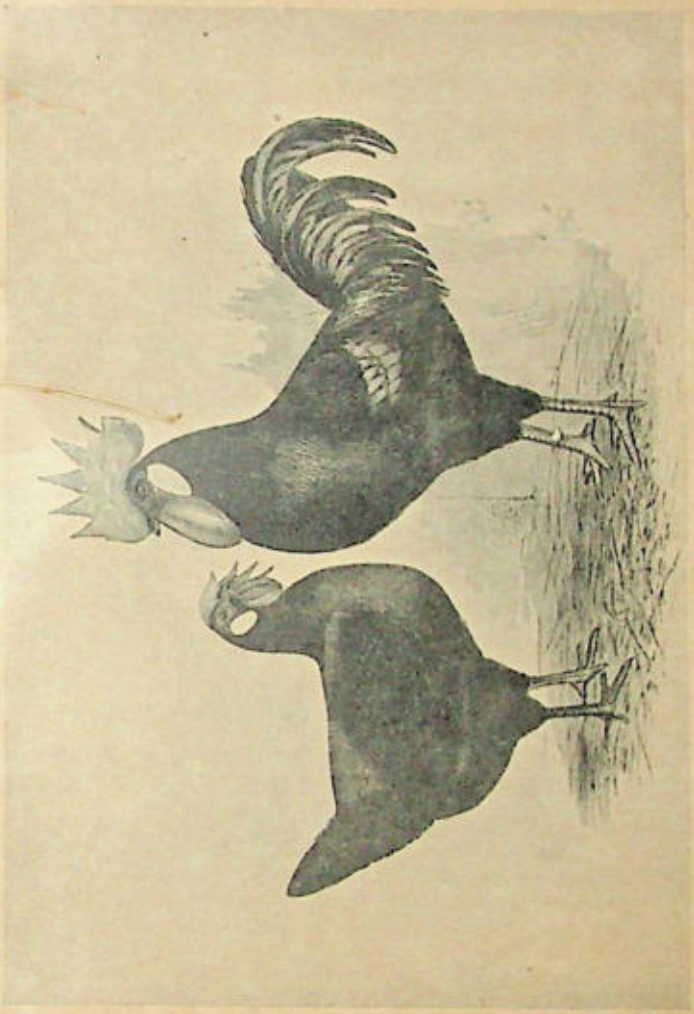
All these points are in their favour, and the fanciers in and around London are able to maintain a large and flourishing club, called the "London Minorca Club," and, in confined runs for the most part, breed some of the best specimens every year. I had almost written that they do better in confined quarters, so well adapted are they for the purpose. They certainly lay more eggs where they are sheltered by surrounding buildings from stress of weather, and thrive much better in winter in such places than in open and exposed quarters, unless plenty of artificial shelter is provided. And they do better on a light soil than a heavy one, and above all on a *well-drained* soil. The thing they cannot stand in winter is a wet, undrained soil. Otherwise they are hardy enough, as some of the best are bred in the north and in Scotland, though the home they love is still the more balmy and sunny west and south-west.

One reason why so many of the good birds come from the northern counties is that they come on to lay at a later age, which gives them a chance of developing their frames more than the rapidly-maturing southerners. The growth to rapid maturity often has to be checked by moving the pullets from one pen to another, when size is a desideratum, though this can be carried too far, and the laying qualities injured. It *has been* injured in some exhibition strains, and the pullets will not lay till nine or ten months old. If eggs are the chief aim, pullets hatched in April and May will begin to lay in October or earlier, if they are kept growing and allowed a fair amount of stimulating food.

For crossing with other breeds they have hardly an equal, and invariably increase the size of the eggs, while they most frequently add to their abundance.

A strain of Minorcas bred for laying will readily yield an average of 150 to 170 eggs a year, and though the shell is white, their large size, excellent flavour, and deep-coloured yolk make them readily saleable, and town-dwellers who keep them and get winter eggs have no difficulty in selling all they have to dispose of. Where they are kept for this purpose the medium-

sized fowl do better than the very large ones, and medium-sized head points should be preferred to those in excess.



THE MINORCA CLUB'S IDEAL MINORCAS. (*By kind permission.*)

THE EXHIBITION MINORCA

By the courtesy of the Minorca Club, of which I have for many years been a vice-president, I am able to give

a copy of ideal Minorcas of both sexes, which will enable the reader to understand many of the "points," and also to give a copy of the Standard of Perfection, to which I add a few explanatory notes of my own.

General Characteristics and Colour of Cock

Head.—Long and broad, so as to carry the comb quite erect.

Beak.—Fairly long, but stout; dark horn colour or black.

Eye.—Full, bright, and expressive.

Note.—A dark eye, as nearly black as possible, sets off a Minorca. Many otherwise good birds are spoilt by a "gamey" eye. Where black cannot be got, dark brown is next best, but red eyes, or those of a daw character, are to be avoided. A dark eye is usually accompanied by a dark leg.

Comb.—Single, large, evenly serrated, perfectly upright, firmly set on the head, straight in front, free from any twist or thumb mark, reaching well to the back of the head, moderately rough in texture, free from any side-sprigs.

Note.—A glance at the ideal Minorca comb as illustrated will make this long description clearer. The comb is perhaps the most important "fancy" point in a Minorca, and certainly the most difficult to breed true to the ideal. If anything, the drawing represents too large a comb. It should be noted that the spikes, or serrations, are five in number (but one more is not out of place). Also that the spikes are wedge-shaped, not pencil-spiked, and that their depth from point to the wider base is about equal to the depth of the blade, or flat portion, from the head to the base of the spikes. Note also that the centre spike should be erect and slightly taller than the rest, and that an imaginary line drawn from point to point would describe a semi-circle. The front of the comb should not protrude over the beak, otherwise the bird could not eat with comfort, or without damage to the comb. A firm comb, with a thick base and correctly formed, is of more importance than one of great size, and one 6 inches long and 4½ inches deep from the tip of the centre spike to the base is big enough for the largest and most fully-developed specimen. It should follow the line of the neck-hackle but without touching it, otherwise there is a temptation, too often indulged in, to cut a piece from underneath to prevent its falling over. It should also have a moderately rough or granulated surface, not a smooth one like the Spanish fowl.

Face.—Fine in quality, as free from feathers or hairs as possible.

Note.—The face should be a dark blood-red colour, and free from white spots or streaks. To remove feathers is trimming and illegal. Better far a gipsy face, *i. e.* one covered with tiny feathers, than a pale red face streaked with white. Any white extending beyond the ear-lobe, and over the face or the ear is a fatal defect. The gipsy face is much more common in hens than cocks. "My face is my fortune, sir, she said," is the Minorca's motto. Take care also that the face is red underneath the lobe, otherwise "white face" is sure to come with age.

Ear-lobes.—Medium in size, almond-shaped, smooth, flat, fitting close to the head.

Note.—A hollow, loose, or folded lobe is a disfigurement. The best are smooth, of kid-like texture, though a good-shaped and thick lobe slightly wrinkled is not a bad feature. A smooth, thin lobe is common enough and of little value. While the lobe should keep its place and not wobble about as the bird moves, I like to see it thick and with a rounded edge, with the white surface following well underneath. Such lobes have plenty of substance and keep their shape well. The craze for over-sized lobes is dying out and more importance is rightly attached to its shape and texture. Still, it is likely to continue, seeing that the Minorca's head is its crown of glory, and a good comb, lobe and face go a long way towards achieving the ideal.

Wattles.—Long, rounded at the ends.

Note.—They should be nicely half-folded, like the half skin of a stout banana, not wrinkled or bunched together.

Neck.—Long, nicely arched, with flowing hackle.
Body.—Broad at the shoulders, square and compact.

Note.—One of the failings in the drawing of the ideal is that the breast is not deep enough, nor thick enough through from the centre of the back to the centre of the breast, and the back slopes at too great an angle. In this respect the London Minorca Club's ideal is better.

Breast.—Full and rounded.
Back.—Broad and rather long.

Note.—Care should be taken that the back is flat and not roached.

Wings.—Moderate in length and fitting close to the body.

Note.—The flights and secondaries should be *black*, not grey. Chickens often come with *white* flights which are exchanged for

black at the first adult moult. White or grey in flights is a blemish but not a fatal defect.

Tail.—Full, sickles long, well arched, and carried well back.

Note.—It is a very rare thing for a Minorca to sport white sickles. A prevailing fault is high carriage of tail, which is also sometimes turned up towards the head so as to merit the term "squirrel tail." The carriage in the "ideal" is correct.

Legs and Feet.—Thighs and shanks of medium length and stout. Colour, "very dark slate."

Note.—Many of the best birds have now black legs to accompany the black eye, and these points are to be highly prized. A light slate is too reminiscent of "Spanish" blood.

Toes.—Four in number.

Note.—As in all other breeds these should be straight and well spread apart. A cockerel with crooked toes is rarely a good stock-getter.

General Shape and Carriage.—Upright and graceful.

Size and Weight.—Medium, rather large to be preferred, considered with symmetry and type. Adult cocks should weigh at least 7 lb.; cockerels, 6 lb.

Note.—These weights are now commonly exceeded. But quality is more important than size.

General Characteristics of Hen

Head.—Beak and eye as in the cock.

Comb.—Single, fairly large, evenly serrated, arched, drooping well down over side of face so as not totally to obstruct the sight, slightly rough in texture, free from any side-sprigs.

Note.—The blade of the comb before the first spike should fold over the head and make a loop in front of sufficient substance to carry the comb free from the face on the other side, and not obscure the sight. It is pitiful to see a soft, flabby comb lying flat on the face, obscuring the sight and making the hen go peering about like a blind mute. The comb should be well and *deeply* serrated like the cock's, and have five or six wedge-shaped spikes, although this is not of such importance as in the cock. The comb in the ideal is a little too large.

Ear-lobes, Face and Wattles.—As in the cock, the ear-lobe being rather more rounded, but still oblong.

and *not* round. Birds crossed with the Hamburgh to get a *smooth* lobe, often have lobes almost circular.

Neck.—Long and nicely arched.

Body.—Broad at the shoulders, square and compact.

Note.—The ideal sketch is excellent. The back is longer and not so drooping, and the body is square at the shoulders and angular.

Tail.—Full and neat, carried well back.

Legs and Feet.—As in the cock.

Note.—Medium size and length, and black or dark slate in colour.

General Shape and Carriage.—Upright and graceful.

Size and Weight.—Medium, rather large to be preferred. Adult hens should weigh at least 6 lb., pullets 5 lb.

Note.—These weights are commonly exceeded. I have had pullets 7 to 8 lb. Quality is more important than size.

Plumage.—In both sexes "glossy black."

Note.—The true Minorca colour is a *bluish* black. Many prefer the green sheen, which I think has been borrowed from the Langshan. A dull black is to be avoided.

Value of Points in Minorcas

	Deduct up to
Defects in face: Bloated red, coarseness, or too hairy	15
Comb badly shaped or twisted . .	15
Wrinkled, folded or stained lobe . .	10
Too light in legs, eyes, or beak . .	8
Other defects in colour	10
Crooked breast-bone	7
Want of size	15
„ „ style or symmetry . . .	10
„ „ condition	10
A perfect bird to count . . .	100

Note.—Although defects in face, comb and lobe count 40 in this list, in practice they count more, and so does the light eye. A red or pearl-eyed bird ought not to win however good in other points.

Serious Defects, for which birds should be passed.—White in face; wry or squirrel-tailed; feathers on leg; other than single-combed; coloured plumage other than black or white in the several varieties; other than four toes; legs other colour than black or slate in Black Minorcas, or white in White Minorcas.

Note.—Since the big lobe craze has diminished white faces are uncommon. A brilliant-plumaged cockerel often has red feathers in the neck-hackle and on the wing-bow, which, as we have seen in the Chapter on "Colour," are the natural quarters for red colour. These feathers are no sign of impurity of race, but are incident to all black breeds. They are a disqualification in exhibition specimens, but the cocks with them are most useful as pullet-breeders. They add to the brilliance of the pullet's plumage, but a fair percentage of the cockerels bred from them will have coloured feathers themselves. If not extra good in other ways they are better killed for table, or used for crossing with other breeds. To pluck the feathers and then exhibit or sell the birds as if they were sound in colour is to defraud, and the practice is too common. Beware of it in selling classes at shows.

Breeding and Mating for Exhibition

The novice who has studied the Standard of Perfection I have annotated in such detail, and compared it with the ideal sketch, should have a fair notion of what a Minorca *should* be. But he will search long and in vain to find a perfect specimen, though a few are "staged" each year nearly approaching it. In mating the stock, care should be taken that the birds are of robust health, not over-shown or pampered specimens. If the cock has any marked fault, see that the pullets excel where he is deficient, *e. g.* if he has a light eye see that the pullets have dark ones; if his comb has too many serrations, that the hens are correct; if his lobes are wrinkled, folded, or thin, that the hens make up for it; or if the hens have a high carriage of tail, that he carries it low. In fact, never breed from a high or squirrel-tailed cock, however good in other respects.

Single Mating.—Good exhibition specimens are bred from the same pen every year, though nine out of ten of the most noted breeders practise double mating.

Where only one pen can be afforded or kept, and the owner wishes to breed show birds of both sexes, he

should secure as typical a cockerel as he can get and mate him with about three hens for cock-breeding and the same number for pullet-breeding—the chief difference between the two lots being that the cock-breeding hens should be rather taller on the leg, and should have combs thick, firm at the base and well serrated. Such a comb when held erect will look like a cock's with a good stretch of smooth, unserrated blade in the front, and rise neatly from the beak without a lot of folds and wrinkles, and it will follow the line of the neck behind. Some good cock-breeders have combs almost erect. For the pullets the combs should be extra large if the cock's is small, and should lean gracefully to one side. It will commonly be found that a comb with six or even seven deeply-cut serrations, hangs more gracefully than one with four or five. The lobes should be as large and thick as can be obtained. The tendency in the Minorca is always toward the small lobe, and the percentage of large lobes is small. The size of lobe may be too large and disproportionate for exhibition, it cannot well be too large for breeding purposes.

Double Mating.—Competition being so keen, the most expert breeders nearly always have two or more breeding pens, and when these are kept distinct, and the progeny registered, there is an advantage in having birds "line-bred" in these directions. The method of mating has already been partly indicated.

To breed Show Cocks.—The bird should be as near the ideal as your opportunities or the amount you have to spend will permit. The greatest care should be taken that his comb, face, and lobes are good, and also that there is brilliant colour in the plumage. The cock has the greatest influence in these respects, though there is certainly inter-action between the sexes, *e.g.* if the cock has large lobes and the hen small or thin lobes, few good-lobed cocks will be bred. See that the comb is a natural one and not a trimmed one, and that no side-sprigs are present, or traces of the place where they once grew. There is usually a scar, or a dark blotch visible when the comb is held up to the light.

The hens to mate need not be show birds, and their combs will usually be too thick to look well, and should be as described for single mating. If you are anxious

for good lobes, both sides should have them, though a folded lobe in a hen or pullet is not a great matter.

To breed Show Pullets.—The general rule applies, viz. let the pullets be as good as you can get, and with good size. Although white in face is to be avoided as far as possible I should not reject a good big hen with large lobes to breed pullets, even if she was not quite sound in the face. See that they have low tail carriage.

The Cockerel to mate with them should have a *large* comb of good shape. If thin and upright it will do, but the combs of pullet-bred cockerels usually lean over, and before attempting to breed from should be dubbed.

Dubbing.—A cockerel with a large comb, especially if it is weak at the base and overhangs, will never fertilize eggs and get stock so long as cold weather lasts, and to wait till April or May is to wait till the season for breeding show birds has gone. I have tried to breed from them scores of times and have failed. A touch of frost, or a hen-pecked comb, and good-bye to fertility! Besides, even the weight of such a comb often makes the bird uncomfortable, or unable to take food properly, and the result is the same. The great majority of successful breeders dub their stock cockerels about November or December, or as soon as the big shows are over. A dubbed cock has twice or thrice the vigour and will last longer as a stock bird, and though the operation may seem cruel it is in reality a kindness to him. The operation only takes about two minutes, with the aid of a razor and a pair of dubbing shears. The large wattles and the loose skin adjoining should first be removed, and then the comb, leaving only about half an inch of the blade attached to the head. A sponge and cold water soon stops the bleeding and a thin film of medicated wool should be placed on the surface. When the bird is put down he will crow lustily, and, if permitted to do so, would eat a hearty meal. It usually takes about ten days to heal, when he is ready to put in the breeding pen. On the ground alike of kindness to the bird and service to the breeder, dubbing, when skilfully performed, is to be commended, and it is almost universally necessary in the case of pullet-breeding cockerels. A move in the direction of single mating, and of smaller combs, would lessen the

necessity, but in northern climates it would still be of frequent necessity. It is one of the disagreeable things which must be tolerated.

In breeding for utility only there is no need for dubbing, as the combs may be moderated in size and the birds not being penned up to prepare for show, may run out in all weathers and get their combs hardened, or if a serrated point gets touched with the frost it does not matter.

To prepare for Exhibition.—Both comb and lobe in the Minorca need preparation as a rule, and readers are referred to the chapter with this heading, which applies to all the Mediterranean breeds and not to the Minorca alone.

Rearing Minorca Chickens is fairly easy if the stock birds are strong. They grow and feather rapidly, though not as precociously as Leghorns. In a rearer, care should be taken that they do not get over-heated or remain too long, as otherwise the combs of the cockerels get "sprung" or over-grown—a common cause of thumb marks. The same applies to those under a hen. Many a cockerel's comb is ruined through the bird remaining a week too long with the hen or in the rearer. The most precocious cockerels rarely make the best specimens. The comb grows too rapidly and the bird rarely attains a good size. They should be separated from the pullets when about three months old, and allowed as wide a range as possible, and in their sleeping apartments should never be over-crowded.

When hatched, the throat, breast, and under-parts are white, and the feet are often yellowish. The more white in the chick the better the colour in the adult. A chicken hatched black all over never gets a brilliant plumage. The same remark applies to all black breeds. They nearly always have one or more white flights, but these drop out at the adult moult, which usually takes place from four months old and after. Birds with side-sprigs on the comb, or deformed bodies or crooked toes, may be disposed of at an early age, or any with feathered shanks. Comb and lobe develop at the same time late in the bird's growth, at the end of the moult. The slow-growing, lanky-looking cockerels make the best specimens. In birds intended for exhibition the growth

should not be forced by stimulating or over-fattening food until the moult is finished.

The White Minorca

This is a sport from the black and is similar in all points except colour. This should be a pure white and free from black tickings. The face should be free from white, and the legs of a pinky white colour. Unless kept in a very clean atmosphere they require washing before an exhibition. They are said to be as hardy and useful as their black relatives, and even to excel them in laying. They have, however, never been very popular, and though classes are provided for them at the club shows they rarely fill well.

It is a remarkable fact that these "sports" rarely occur except in the yards of exhibitors who practise inbreeding or "line-breeding" to a great extent. It would seem to be a matter of the mating of cousins. A similar consanguineous mating of cousins in the human race is responsible for more than the average output of albinos.

The White Minorca so closely resembles the White Leghorn, from which it is distinguished chiefly by the leg-colour, that this may account for its lack of popularity. In the multiplicity of breeds, distinct and marked characteristics are required to secure many adherents. All the same it is a very beautiful and most useful fowl, and can hold its own when in competition with the black.

The Barred Minorca

This recent aspirant for fame is described in the Chapter on "Colour." When exhibited at the International Show, in 1908, it certainly made a good start and appeared full of Minorca character, in shape and style and head-points, and the barring was of good quality. They appear to be chiefly of Dutch origin. Whether they will become popular remains to be seen. They are much more pleasing than the Cuckoo Leghorn, which, with a longer life, has made little progress. If a standard is favoured, it must follow the lines of the older varieties and differ only in colour.

The Rose-combed Minorca

This variety, though long bred in America, the land of the rose-combed breeds, has only within the last few years been known in England. It is, I believe, admitted to the standards of the Northern or British Minorca Club, but has not been admitted into the old Minorca Club.

It is admittedly a cross between the Black Hamburgh, with its rose-comb, and the Black Minorca, and still shows the most evident traces of the cross in its more abundant plumage, especially of the tail, and in its rounded lobes. The comb has made more progress, and although it still greatly resembles the Hamburgh, an attempt has been made to make it follow the Wyandotte type, and follow the line of the neck instead of the horizontal and long "leader" so characteristic of the Hamburgh.

There is no doubt that it is a first-class utility fowl, and though the egg may not be as large as the Black Minorca's, it will probably lay more of them, since no fowl excels the Hamburgh as a layer in the number of its output.

It will be hardy also, as the effect of a recent cross, and its rose-comb will be less liable to the effects of frost. It is at present smaller than the Minorca, though size could easily be bred if required.

What it lacks most at present is Minorca character, and Minorca fanciers therefore fight shy of it; and though increasing in the number of its adherents it is not at present widely bred.

It is sure to throw, for a time, a number of single-combed specimens, but these will rapidly diminish.

It is already more than half Minorca blood, as is proved by the fact that the Hamburgh used to produce it threw a large percentage of single-combed chicks. If it had been pure Hamburgh we know from Mendel's laws that the rose-comb would have been dominant, and all the chicks would have had rose-combs in the *first* generation. But the Black Hamburgh itself has been crossed with the Minorca to get size, and a large specimen would be sure to be selected in making the new variety. It should be popular with those who like

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Tail.—Large and flowing and carried *rather high*, but not squirrel.

General Shape.—Very upright and strutting, with prominent breast and keen, alert appearance.

Colour of Andalusians

In both Sexes.—*Beak:* Dark slate or horn. *Eye:* Dark red or reddish-brown. *Comb, Face and Wattles: Bright* red. *Legs:* Dark slate or leaden-blue.

In the Cock.—*Head, Hackle, Back and Saddle, Shoulders and Wing-bows:* A rich lustrous black. *Breast and Thighs:* Clear silver-blue ground-colour, with distinct black lacing on each feather. *Secondaries, Flight Feathers and Tail:* Clear silver-blue. *Sickle Feathers and Tail Coverts:* Purplish black.

In the Hen.—*Head and Hackle:* Black, with lacing on the lower feathers. *Breast, Back, Body and Thighs:* Silver-blue ground-colour as clear as possible, with distinct black lacing on each feather. The *Wing-bars* should be distinctly laced also. *Tail:* Laced at the ends if possible.

The chief difficulty is to get a clear blue ground-colour and well-defined lacing combined. Most pullets are sooty in ground-colour about the throat and breast.

Points for judging Andalusians.—Comb 10. Lobe 10. Defects in face 15. Defects in colour of plumage 20, and of lacing 20. Size and shape 15. Condition 10.

Serious Defects.—A bird should be passed for squirrel- or wry-tail; *very* white in face or very much red in lobe, for drab or rusty saddle or hackle, for crooked toes; or for other than slate-coloured legs.

Mating

It is essential in breeding, to mate together heavily-laced birds for pullet-breeding, as the tendency is to lose colour. The lacing in any case must be heavy on one side. If a light-coloured but well-laced cock is used, the hens must be on the dark side. If a dark cock is used with true black where black should be, the hens may be light-coloured, but should be well-laced.

If the two sexes come from the same strain, though not

too near in relationship, good specimens of both sexes can be bred from the same mating, and although the most successful breeder told me that many black and white chicks would come from any mating, yet he believed that of the true blues, he got as many exhibition specimens, and in as large a proportion, as from any other breed. In Andalusians as in Minorcas, or, indeed, in any other breed, the best way is to go to a reliable breeder and purchase a pen of related stock, and not to purchase a cock here and a pullet there. The lacing takes years of patience to fix in anything like a definite way, and to cross strains is to lose all that has been gained by line-breeding. A well-laced Andalusian hen, when fully developed and in bloom, is a unique picture and very beautiful.

THE LEGHORN

Sub-varieties: Brown, White, Cuckoo, Black, Pile, Duckwing, Buff, Partridge, Blue, Anconas

The Leghorn is the egg-layer *par excellence*, and is a very useful and popular fowl, though its popularity is not as great as the Wyandotte or the Orpington, which are of much later origin. A glance at the catalogue of the great International Show held at the Crystal Palace in November each year will show the relative esteem in which fanciers hold the respective breeds. In 1908 we find there in round numbers 780 Orpingtons, 640 Wyandottes, and 260 Leghorns, though the latter have sometimes mustered over 300. The reason for this lesser number is that the farming class prefer a general purpose fowl, whose value as a table-bird is a few pence more than the Leghorn, forgetful of the fact that the output of eggs from the Leghorn class would very much more than counterbalance this.

They also object to the more active habits of the Leghorn, which, unless penned up or kept in separate enclosures, will leap fences and wander far afield. Where this is a serious objection, a cross of a Leghorn cock with the heavier breeds would add 20 to 50 per cent. to the egg production, and produce a more sober and stay-at-home race almost equal for table purposes. Where eggs are the chief object (and they are certainly

the most profitable part of utility farming), nothing can beat the Leghorn varieties.

Its introduction to us, like most of the yellow-legged breeds, came to us through our American cousins, who imported them from Leghorn. And as there were rose-combs as well as single in the heterogeneous stock first imported, they bred the original browns with rose-combs also. Their genius seems to be fascinated with this class of head-gear. But English fanciers have not taken to it, and prefer to keep to the large single-comb as the hall-mark of the Leghorn in common with the other Mediterranean breeds.

The Leghorn is as popular to-day as ever after having stood the test of well-nigh forty years, and, unlike some of the newer breeds, which are certainly doomed to speedy extinction, has not been boomed into an ephemeral popularity. Neither has it withered with age nor been spoilt by the fancier's fads. Some of the varieties have been "improved" to the detriment of their utility, especially in certain "strains." But the rank and file are as robust and vigorous as ever, and they are so widely spread that there is little fear of inbreeding destroying their general utility. For elegance and beauty and variety of colour they can hardly be excelled.

As president of the Leghorn Club I am able to give the revised Standard of Perfection which will shortly appear in the Poultry Club Standards. It is not improbable that this Standard, and the scale of points for judging, will, with the aid of the clubs formed for fostering the several varieties, undergo further revision, since the value of such points as colour and size are by no means identical in value in the whole of the varieties.

To enter into *full* details of the history, manufacture, methods of mating, rearing, selection of chickens would occupy a separate treatise. It is hoped, however, that the hints here given, together with the Chapters on "Colour" and "Preparing for Exhibition," will be of interest and assistance to the novice. To those who are keen on any special variety I would also commend Mr. H. Herford's book on Leghorns of all varieties and Mr. Verrey's treatise on "The Leghorn Fowl," as well as to such a masterpiece as Lewis Wright's *Book on Poultry*,



BROWN LEGHORNS.

though all these do not bring the history of the more recent varieties up to date. I am indebted for some notes to Mr. Verrey's paper on "Mating Leghorns" in the Report of the National Poultry Conference, held at Reading in 1907.

The Brown Leghorn

This ancient variety is of the black-red type, like the parent of all breeds of poultry, the *Gallus Bankiva*.

The first Brown Leghorns reached England in 1872, but they had been known and bred in America some twenty years earlier, where they were imported direct from Italy. The original stock was very small, only weighing about 3½ lb. each, and Leghorns in their native home are not much larger to-day. It is noteworthy that these smaller Leghorns are better layers than the larger specimens—*i. e.* they lay more eggs, but the size of the egg is not equal to that laid by the modern type.

When first introduced they were said to be more of the *brown*-red type than the black-red, and the cocks had breasts mottled with brown instead of black. In their chickenhood the modern Leghorn cockerels reproduce this type and have mottled breasts until their adult moult, and should not therefore be cast aside by the novice for this incipient defect.

Had the brown breast been retained as the Standard colour, we should have been spared the confusion of double mating; but having decided upon the black breast, after the pattern of the Black-red Game, fanciers resorted to a cross with the Game to bring about more speedily the desired result. The result has been more brilliance of colour, the rich black breast, and probably the brighter-coloured neck-hackle, with the loss, however, of the black striping, one of the most beautiful of the Brown Leghorn cock's features. As the legs of the Black-red Game are willow, this may also account, as Mr. Verrey points out, for "dusky feet and spots on the legs of Brown Leghorn pullets." This cross may also be responsible for the slightly tinted egg, and for the accompanying desire of some pullets to become broody.

Of course *all* Brown Leghorns were not crossed in

this way, but birds so crossed have been inbred to others, and traces are still to be found of the amalgamation.

In spite of traces of this alien blood, I consider the Brown Leghorn the most typical variety we have, although some specimens are still of too stilty a character.

The Coloured Plate of the Brown Leghorns shows a very typical specimen, as will be gathered by comparing his appearance with the Standard of Perfection. The *faults* in the plate are (1) one serration too many in the front blade of the comb. The centre spike should also be a trifle wider and larger, and more in the centre of the comb. (2) The lobe should be more pendulous, and not stretch towards the wattles. (3) The colour of the neck-hackle is shown too red on the back, and the saddle-hackle is not solid enough, and does not show the striping. (4) The diamond on wing-bay is not clearly shown. (5) The legs are a little willowy in cast and not decided enough as "yellow or orange." It is very difficult to produce perfect colouring from block printing.

A Typical Cock may be described as having a *comb* of fine texture (not so rough as a Minorca's), large, erect, firmly fixed to its base, evenly serrated, with broad wedge-shaped spikes following, but not closely, the line of the neck, free from wrinkles or hollow indentations called thumb-marks on the front, and free from side-sprigs at the back. Brown Leghorns are very liable to this defect.

The *neck* should be well arched and the hackle full and flowing. The *wattles* should be long, thin and fine in texture but not bunched together. The *face* bright red, and fine in texture, not coarse, wrinkled or bloated, and free from white. The *lobes*, medium size, almond in shape, pendulous, smooth and fine in texture like white kid. White lobes are preferable to those of a cream colour. The *plumage* should be bright, and the *hackle* a rich orange-red, striped with black, but not too densely. The *body* should be wedge-shaped, wide at the shoulders and tapering toward the tail, the *back* slightly rounded and sloping to the tail (not straight and angular as in the Minorca). The *breast* should be

round and prominent, as in the illustration, and the *breast-bone* should be straight. (*A most common failure* is a crooked breast, and this defect has been tolerated too long and too leniently.) The *tail* should be full and the *sickles* broad, well spread (not whipped together like a Game fowl), and carried at an angle of about forty degrees from the perpendicular, *i. e.* a little more erect than sloping. *Shanks* rather long and free from feathers, and the *thighs* a moderate length and showing below the line of the breast curve—a trifle more thigh than in the illustration. The *carriage* should be upright, sprightly, and alert. The *size* medium. Six pounds is a good weight for a cockerel. The *breast*, *under-parts* and *tail* should be a glossy black with a green sheen.

A Typical Hen.—As portrayed in the coloured plate. The chief differences from the cock are *comb* fine in texture, large, but not overgrown or beefy, rising from a firm base and falling gracefully over one side of the face, but not so as to obstruct the sight. The *body* wide at the shoulders and tapering to the tail, which should not be carried so upright as in the cock. The *breast* round and very full and nicely curved from the neck. The *back* long, fairly broad, and not so sloping as the cock's, and but slightly rounded. *Tail:* Fairly long, but carried closely and at a slightly lower angle than the cock's. It should be curved and not rectilineal as in the Minorca.

The Colour of the Hen is difficult to describe. The *hackle* a rich golden-yellow, broadly and sharply striped with black. This striping is essential in pullets selected for cock-breeding, but in the softer-coloured exhibition pullet it is most commonly pencilled or ticked and not striped. *Breast:* Salmon-red, running into maroon round the head and wattles, and ashen-grey at the thighs. It should be solid in colour, and as free from shaftiness as possible. *Body-colour*, a rich but soft brown, very closely and evenly pencilled with black, and free from shaftiness, and the wings should be free from feathers of a foxy-red colour, upon which the pencilling is usually faint (see Chapter on "Colour"). The *tail* black, but the more pencilling on the outer feathers the better. The *flight feathers* are black with a

fine outer edging of brown colour. White in flights is a common but serious defect. The *secondary feathers* are black on the inner web and brown on the outer, and like the body finely pencilled with black. (Brown Leghorn feathers are illustrated on the Plates of Feathers, pp. 483 and 501.)

Serious Defects for which a Bird should be passed.—Cock's comb twisted or falling over, or hen's erect; ear-lobe red; any white on face; legs any colour but yellow or orange; wry or squirrel-tails or any bodily deformity. To this should be added any feather on the leg. And also as grave defects, side-sprigs on comb or white flights.

Mating Brown Leghorns

It is necessary to mate two pens to breed exhibition specimens, one for cockerel- and the other for pullet-breeding. For utility purposes good-looking birds of both sexes can be produced, and a good-looking cockerel is often bred from an exhibition pullet pen.

For Cock-breeding the male should be a good exhibition specimen, as already described. The hens to mate with him are more coarsely pencilled. Care should be taken to select birds with well-striped neck-hackles, the denser the better. Cock-breeding pullets should be large birds and are often a little taller on the leg. Their combs should be well serrated, and when held erect resemble a cock's, with a firm base, fitting well to the arch of the neck. A little ruddiness of colour is an advantage, and they should be sound in under-colour and flights. Low tail carriage is an advantage. The lobes should be large and smooth. Such birds are useless for exhibition; but, if cockerel-bred, will throw good cockerels. They are usually more robust than the pullet-bred birds, and lay a larger egg. Rusty-coloured birds are often bred from pullet pens, and ruddiness alone is not a sufficient guide to their suitability.

For Pullet-breeding.—The pullets are either show birds or pullet-bred birds of a nice soft colour, with pencilling as fine as can be got, and with no tendency to rustiness. To combat the natural tendency to ruddiness on the wing, the pullet-breeding cock should be

of a darker shade of colour, and with a densely-pencilled neck-hackle. The black helps to subdue the red and keep it in check. See that the cock is sound in his black, except the breast where a few ruddy feathers are no disadvantage, or the fluff on the thighs ticked with brown. The brilliant plumage on the cock, and the sober but delicate colouring of the hen, will always make them objects of admiration, and the fact that they require careful mating which exercises all the breeder's skill is an incentive to the true fancier. There is hardly another breed in which it is so difficult to obtain the desired softness of colour in the female or more difficult to maintain the softness when once achieved. The tendency to lose the black pencilling and for rusty-red to creep in is the chief difficulty.

Their Utility is fair but not excellent. They are good layers of a medium-sized egg, and the chicks feather quickly and are fairly strong. They have a great tendency to crooked breasts, which I attribute to prolonged inbreeding in certain yards, and to consequent loss of stamina. There are straight-breasted birds, and once a bird with a strong and straight breast-bone is introduced, the common failing is soon overcome, though it may be with loss of colour for a season. I have rarely found 25 per cent. of exhibition browns without indented breasts.

The White Leghorn

This was the earliest introduction from America, and came over to us in 1870, though not brought from Italy till a later period than the Brown. When first introduced they were small, smart, sprightly birds. The plumage was more cream colour than white, and the lobes were not pure white, though the legs were a deep yellow. It is now the largest of all the Leghorn varieties, and the white colour is immaculate.

There is some ground for Mr. Verrey's contention that this spotless whiteness is the result of alien blood. He considers that a White Minorca cross was introduced to impart the spotless plumage, but there was a corresponding loss in leg-colour, and that to remedy this, as well as to impart size, another cross was made with the

White Malay. Breeders of the modern type deny the allegations, and direct proof of the cross does not seem to be forthcoming. No one, so far as I am aware, has confessed to the introduction of this blood.

But beyond all question many modern specimens are very much after the Malay type, and, if they were penned side by side, the likeness would be at once apparent. The long, stilty shanks and the flat hocks, with the sparse feathering, betray the likeness, as well as the narrow attenuated body and the low carriage of the whipped tail. Another feature, otherwise unaccounted for, is that yellow feathers often appear in chickens of this type, and that cocks which have been white as snow in their first year, sport yellow or cinnamon feathers in neck and saddle-hackle in their second moult, *i. e.* when about eighteen months old. As the White Malay is a sport from the Cinnamon, this would account for its occasional appearance in the cross. I have no desire to rekindle the ashes of a dead controversy, and while I return the Scottish verdict of "not proven," I feel tempted to add, "don't do it again."

In any case the modern exhibition White cockerels from 1900 to 1907 were not of Leghorn type. Their legs were too long and the breast was not prominent, their sprightly alertness had departed, and in its place was a heavy tight-feathered bird, with legs bent in at the hocks, as if tired of life. The hens also, instead of the bright and alert Leghorn type, were like White Plymouth Rocks with their long, straight backs and more sober gait, stately dames of 8 lb. weight instead of the medium size.

There was a noticeable improvement in 1908, and there is still room for a return to type. The colour was perfect, but this and size seemed to be the one aim of breeders.

The evolution of the Leghorn can easily be traced in the various editions of the illustrated poultry books, and the change is great in the extreme from the tiny high-tailed specimens (which nobody wishes to see again, except in the farmyards where egg production is the one and only aim) to the tall but drooping giants of to-day.

Let us keep the white colour, but breed true to



WHITE LEGHORN COCKEREL
Bred and exhibited by the Author

Leghorn type, and though extra size may be allowed in the White variety, it should not be carried to extreme lengths.

The General Characteristics in both sexes should be that of the race to which they belong. The *colour* pure white, without a straw tinge. The *lobes* white or cream, the former preferred.

Their Utility Qualities.—I have bred both types and find them hardy and easy to rear. The modern type do not mature so quickly as the smaller birds, but it must be said in their favour that they lay eggs of a very fine size, even larger than the Black, and I know of no other breed except the Black Minorca to equal them, and moreover they lay plenty of them. They have not lost the utility features so much as extremists on the other side would make out.

Mating

Though good specimens of both sexes can be produced from the same pen, still the most successful breeders practise double mating.

For breeding Cockerels.—To as typical a cock as can be found or afforded, mate pullets or hens bred from a pen which has produced show cocks. The chief difference in outward appearance is in the comb, those more suitable for cock-breeding having smaller combs with more substance and a firmer base. Some of them carry the comb nearly erect. There is no doubt whatever that when birds of both sexes have been selected to breed suitable head-gear in the cockerels, blood tells.

For breeding Pullets, the reverse process is adopted. The cockerel should have a large, thin comb, which usually requires dubbing before the breeding season commences, and the pullets as typical as can be got and pullet-bred.

For some years past there has been a deficiency of size and substance in the pullets' combs. A small stiff comb is out of place in a large bird, just as an overgrown comb dwarfs the size of a tiny one. By dual mating this ought to be overcome.

For exhibition the White Leghorn must be well washed some days before the show. This is not a

difficult matter, and the method is described in the Chapter on "Preparing for Exhibition." It is necessary also to keep the cockerels shaded from the sun while they put on the final plumage, though they can be allowed out morning and evening. Cold winds are apt to blister and discolour the lobes.

It is advisable also not to feed on maize, which is said to cause the sappiness in colour which breeders desire to avoid.

The White Leghorn is a popular fowl and in large demand both for exhibition-breeding and utility. In 1908 a Club was formed for the furtherance of the modern type, and it already numbers over two hundred members.

The Cuckoo Leghorn

This variety, though only introduced in England in 1884, is one of the oldest, and has been bred in America and Denmark as the Dominique Leghorn. If it has Dominique blood in it, there is but little trace of the cross, as it is the smallest of all the varieties and more like the original type than any other. It has found few admirers in England, and has made but little headway from an exhibition point of view.

The best hen I ever saw was exhibited at the Leghorn Club Show at Leeds in 1908. Both lobes and comb were unusually good for a Cuckoo, and the barring was clear and well defined; but both size and shape bore indications of a Barred Rock cross at some time, though it may have been a distant cross.

The chief failings in colour are those peculiar to the barred breeds, viz. white in the tail of the cockerels, sometimes dusky legs, and a blurred sootiness in the ground colour.

The barring of the Cuckoo Leghorn is not meant to be as clear and straight and well-defined as in the new American type of Barred Rock, but more like the broader old-fashioned type, and to have zigzag markings with the colours gently blending into one another.

The best I ever saw both in size and markings were bred from a cross between a Black Leghorn cockerel, with good lobes and legs and light under-colour, mated with Black Rock hens. The cockerels were of the Leghorn



WHITE LEGHORN PULLET.
Bred and exhibited by the Author.

type and well barred. If one of these cockerels, already half Leghorn, had been mated with Cuckoo hens, I should expect to have seen a great advance both in size, head points, and clearness of marking, while the Leghorn type would have been preserved either in this generation with three-quarter Leghorn blood, or in later broods.

If an objection be made that they would not be Leghorns, but a cross, I reply that there would have been no Leghorns as a fancier's fowl without a cross, and that when this can be done without loss of type and a general spoiling of Leghorn characteristics, it does good and not harm. Such an infusion of new blood would rescue the Cuckoo Leghorn from being merely a utility fowl, whose existence is threatened even in that class, since the fancier is the fountain-head of the world's supply of utility stock.

If any Cuckoo admirer would like to see the breed advance, yet detests an infusion of any but Leghorn blood, let him use a typical Black Leghorn to infuse colour, and, if necessary, add a medium-sized White Leghorn afterwards to clear the ground colour. The barring is so insistent in its nature that it would remain in spite of the new blood, and only Leghorn blood would be used, while the undoubted utility qualities of the Cuckoo Leghorn would be preserved, and possibly improved. As they remain at present, they are too puny and weedy long to survive in days when beauty and utility go hand in hand.

For the difficulties which are to be encountered in breeding the barred plumage reference should be made to the Chapter on "Colour;" and for the Cuckoo Standard, to the end of this chapter.

The Black Leghorn

This is one of my prime favourites, and after twelve years' persistent breeding it still holds first place. I know of no other variety which combines so many good qualities. It is still a popular fowl, and though it has suffered like many others from the fierce competition of the newer breeds, it still holds its own.

Apart from its beauty as a study in broadcloth and

gold, like a gentleman in evening attire, it has an elegance of its own, and is as typical in its form and as noble in its carriage and outline as any of its numerous relatives.

The foundation of its success, however, is its super-excellent character as the premier egg-producer of to-day. It would not be difficult to raise birds which would average 200 eggs apiece in the year, and I have often had individual birds to exceed this figure, and, next to the Black Minorca, I know of no other breed which lays eggs of such a size, except the exhibition White Leghorn. The average weight is seven eggs a pound, and often six will weigh as much. It is true they are white and have to overcome the English prejudice for tinted eggs, but their size and quality easily accomplishes this, and as the birds are as hard as nails, and will lay well in the winter, and do well in confined quarters, they lay when "eggs are eggs" and in great demand.

That they can hold their own in competition with all other breeds is shown by the fact that, at our great International Show, they have more than once carried off the trophy for the best fowl of *any* breed in the competition against 4000 others of all breeds and all colours.

Purity of Descent.—The Black Leghorn is of pure Italian blood, and has long been known and bred in Italy, as well as in Germany, Switzerland and Belgium. Some of the best are found to-day in Belgium, while the rank and file are a common sight throughout the Continent. They were known in America at the same time as the White and Brown varieties, but were neither "made" nor introduced to us from there. In 1881 I saw them by the thousand dotted here and there over the whole of Switzerland, and again, in 1886, in Germany and Belgium as well. Shortly after this period they were known and exhibited in England, and some of the best were imported from Belgium. In their original home fanciers are few and far between, and the birds run wild and, for the most part, uncared for. They are small birds, naturally, under such conditions, and as wild as sparrows, but prodigious layers. I found them in all altitudes, from the borders of the Italian lakes in perpetual summer to

the highest mountain passes amid the eternal snows, and they seemed to thrive alike in all.

Their Improvement.—With the additional care and feeding bestowed upon them by expert fanciers, and care in selection, they soon began to put on extra size and to improve in colour. But many of them, even in the exhibition pen, had dusky legs and stained ear-lobes, with very indifferent head points, while nearly all the males showed white in the tail sickles. As classes began to fill better, and the Blacks began to assume gentlemanly attire, general attention was attracted to them, and fanciers of the older and better-known breeds began about 1900 to take them up and set about to "improve" them. The *Ancona* of that day had better leg-colour and better lobes, and they are a kindred race, if not of the same origin, and there is little doubt that the best leg-coloured pullets of that time were due to the infusion of this blood, traces of which showed chiefly in *mottled* breasts, which led to the practice of plucking out many of the tipped feathers.

Then others introduced the Brown Leghorn to secure the same features, and traces are still common, especially in chickenhood, while from the "champion strains" chicks with yellow legs and backs streaked with brown are often hatched, hardly distinguishable at first from the Brown; but these features usually disappear as the chick grows. These "infusions" were not so bad, though harmful, because they kept the type and Leghorn character true. But this was followed by the usual craze for size, and beyond any doubt Minorca blood has been used for this purpose. Singularly enough, yellow legs (though these are often spotted with black) and increased size of comb and lobe have accompanied the larger bulk.

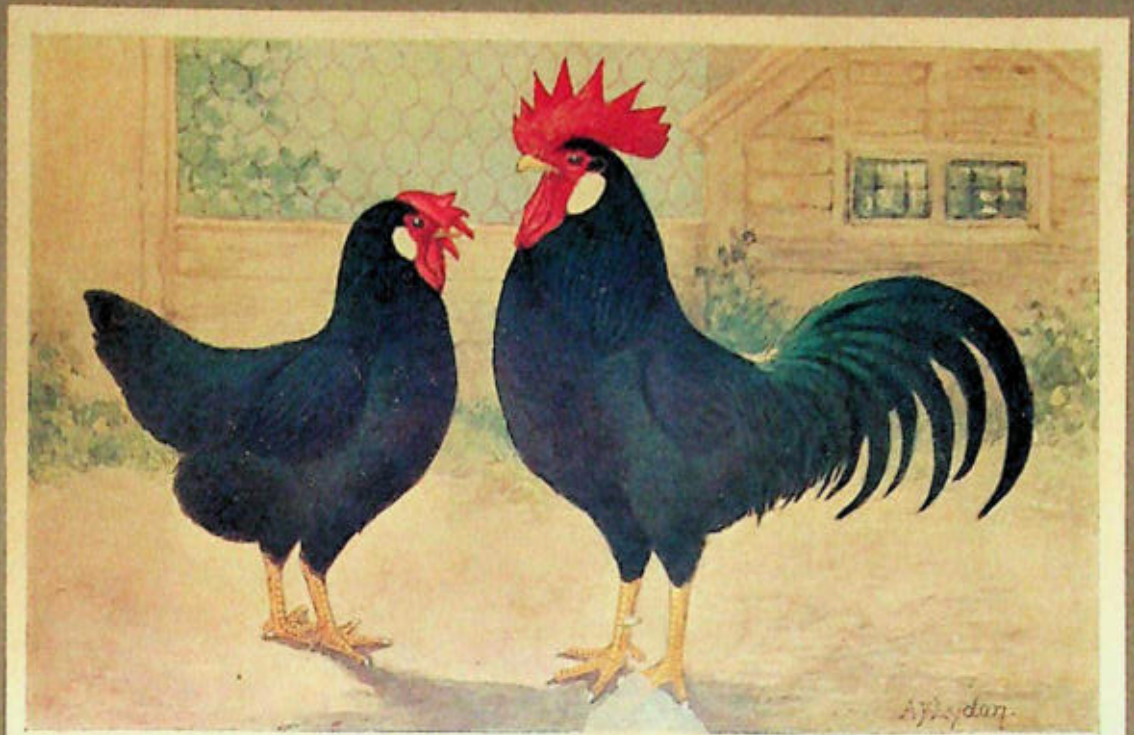
The number of "wasters" with *black* legs which were produced in this way is not stated, but they must have been considerable, and very few, if any, good pullets came from this source. Character and type were lost in a great degree, and this has been most noticeable during the past two or three years, while the angularity of the Minorca has displaced the rotundity of the Leghorn. As the birds gained in size they lost much of their alert and sprightly carriage, and in some measure

their hardiness. Some Blacks shown last year almost rivalled the White Leghorn in size. This is a pity, and if continued will spell decline, if not decay, in a vigorous and useful race.

So far as I know the infusions are all of Mediterranean blood, although traces of feather on the shank occasionally point to a touch of the Langshan, which may have crept in mingled with the Minorca blood. These changes are only confined to a few breeders, and Blacks of the true Leghorn type are still found in hundreds of fanciers' yards. The Black Leghorn has so much good in its foundation qualities that all that was necessary could have been evolved without this "haste-to-be-rich" admixture, and care will have to be taken lest the essential features die.

The General Characteristics of the variety are the same as in the other varieties, and the colour is simplicity itself, viz. *Plumage:* Rich blue-black, perfectly free from feathers of any other colour. Some judges prefer the *green* sheen, but much depends on the light in which a bird is seen. In some lights it looks blue, and in others green. Either lustre will pass muster, but blue is the original. In both sexes the *beak* should be yellow or horn, and the *legs* yellow or orange, and the *toe-nails* yellow. The *lobes* white or cream, white being preferred. *Eye:* Red. *The difficulty in colour*, as readers of the Chapter on "Colour" will have noted, is to get the sound black plumage *combined* with the yellow leg.

In Cockerels it is easy to get the yellow leg, but the sickle feathers, and especially the two main ones, are usually streaked with white when the tail is fully developed, and not one male in ten is exhibited without traces of it when the sickles have finished their growth. Moreover, when there is a sound tail the legs are rarely of a good shade of colour, but somewhat willowy in cast, or with black spots. The under-colour is usually light also, if not white. This has led to the nefarious custom of either plucking the tail feathers so lacking in colour, or of showing them with partially developed sickles, the originals having been hand-moulted some weeks before. Whatever may be said of Barred Rocks being slow in growing these feathers, the same is not true of the Leg-



BLACK LEG

horn, and when this particular part of the bird is not in keeping with the rest, it should be penalized in the show-pen, and a black half-tail should not be considered the equal of a full tail which shows traces of white.

In Pullets the chief difficulty has been, not with plumage, but with leg-colour. Most pullets, though not all, have good, dense black under-colour, but the legs are often dusky, and in more than nine cases out of ten the beak is not yellow, but horn colour or black.

These facts indicate that there is abundance of yellow pigment in the male and a deficiency of it, or super-abundance of black in the female.

Hints on Mating

These will be found in detail in the Colour Chapter (p. 227).

It is sufficient to say here that while good birds of both sexes can be bred from the one pen, with an exhibition cock mated with three or four yellow-legged pullets for pullet-breeding, and the same number with stiff combs and dusky legs for cock-breeding, it is better, where possible, to mate two pens, or to have *all* good pullets and mate alternately a sound-coloured cock and one with light under-colour for pullet-breeding.

Mating for Cocks.—Take an exhibition cock, like the one in the illustration, if you can get him, and mate with pullets of dense under-colour, the legs being a secondary consideration. Let the combs be of good substance, well serrated and with a firm base, as already described, and a few sound-coloured cocks may be expected.

Mating for Pullets.—Choose exhibition pullets with good legs and as sound under-colour as you can get, but let rich leg-colour be the first thing looked for.

The cockerel to mate with them should have the right type of comb and leg-colour and beak, and be as brilliant in sheen as you can get. If the under-colour is *white* as snow he is none the worse, nor is a white tail a fatal objection, though I prefer him without much white. Such a cockerel, especially if bred from good pullets, will perpetuate the yellow leg in the pullets, though

the cockerels will only be of use for table or stock purposes. These pullet-bred cockerels are excellent for the table if killed at about twelve weeks old, before the final chicken moult, when they will be found to be as plump as pheasants and quite tender. The most precocious ones should be killed off, as they never make large birds when they crow at six weeks old. Any with side sprigs, or badly serrated combs, or crooked toes, etc., should be killed, and only the bigger and more likely birds be retained. These usually develop more slowly.

The Chickens are hardy and grow very fast. When moved from pen to pen they are often given to flying over the fences, but not if gently trained, and if shut in their scratching-sheds till they are familiar with them and with their sleeping apartments, they give less trouble. They should not be unduly forced, and after they are three months old little flesh-meat should be given them. *When hatched*, they are black and white, the breast and under-parts being of the latter colour. The brightest-legged birds, especially if the beaks are yellow, are usually cockerels. The best birds have dusky yellow legs which brighten with age, and some retain their duskiness till within a few weeks of maturity, just at the commencement of laying. The most precocious pullets lay smaller eggs, but they increase in size after the first batch.

The cockerels are of prime value for crossing with the heavier breeds, and the progeny are hardy and make good layers, since the cockerel of a good laying strain imparts that quality to the chicks he begets. They are very shy birds, and always retire to the furthermost corner of their pen when approached by strangers, and should always be handled and treated with gentleness, when they give little trouble. On a wide range they do well and are good foragers, but a confined run suits them well, as they do not readily become too fat. Those who want eggs, and plenty of them, all the year round cannot afford to be without them; while the fancier will find his hands full in attempting to combine the black and the gold and to breed and perpetuate these features when achieved.

The Pile Leghorn

The Pile Leghorn is a new variety made at home, its chief ingredients being derived from the two oldest varieties, the White and the Brown. If you look at the illustration of the Brown Leghorn and substitute white for all those parts which are either black or brown pencilled with black, you have the Pile (or pied) Leghorn. For a coloured illustration, see the Frontispiece.

In 1881 Mr. G. Payne mated a White Leghorn cock with a Brown Leghorn hen. The pullets raised were white except in breast-colour. Other crosses of White and Brown were made till the colour was fixed. As we have seen, white plumage is usually dominant over black, and has a softening effect on the red.

The Brown hen originally mated is stated to have had white flights, which showed a tendency to albinism, and so helped the change of colour. The first Piles were exhibited in 1883, and the pullets gained prizes, but a large number of chickens had to be bred to secure a few true to colour.

Later on the Pile Game, in which the same coloration had been long fixed, was used, and helped to complete and to render the colours more permanent, and to this day the Pile presents a more "Gamey" appearance than any other of the varieties.

The Colour of the Cockerel is like the Brown except that the *breast*, *thighs*, *under-parts*, *tail*, and *wing-bar* are white instead of black. The *neck-hackle* is bright orange without the black stripe, and I presume that a Brown cock without the striping was used. The *back* and *saddle* are (or should be) rich maroon, the *shoulders* and *wing-bows* dark red, and the *wing-bay*, being the other part of the secondary feathers, red also or dark chestnut.

The Hen should be entirely white in body-colour except the *breast*, which should be salmon-red like the Brown, and the *neck-hackle* white with a golden tinge.

The Chief Difficulties in the Cock are to keep the tail and flights a pure white free from black tickings; to maintain the rich dense colour on the back and wing; and to keep the hackle a solid gold colour, and not with a white centre to replace the black. A fresh

infusion of black-red blood from the Brown Leghorn would intensify the colour of hackle, especially if the hackle of the Brown was bright and stripeless, and would add to the solidity of the wing and back, but it would add to the black of the tail. It will probably always be a hard task to find all these three difficult parts overcome in the same bird, but the solidity of the red colours is more important than the black ticks.

In the Hen.—The chief difficulty is to maintain a rich-coloured breast without getting what is called a rosy wing, since red finds its natural seat there.

Mating of Pile Leghorns

It will be readily understood that the hens with a rich breast and a rosy wing are best to mate with an ideal coloured cock to breed good cockerels, and that the somewhat paler-coloured cocks are best to keep the colour of the pullets' wings free from rosiness. As in the other varieties many good birds of both sexes can be bred from the same pen, and there is not the same necessity for double mating that there is in the Browns.

The wasters from this variety will naturally be like their parents, white or brown, though they need not be numerous. The colour has now become so fixed that a dash of fresh colour is not often needed, especially if the hints on mating are carried out and the excess of colour on one side be mated to the deficiency on the other.

The popularity of the Pile Leghorn is for some reason not as great as some of the other varieties, although none is more striking; especially is this true of the cocks, when the colour is dense and the wing perfect in its tri-coloured divisions.

They are hardy and useful, and as good layers as the average Leghorn, which is saying a great deal.

The Duckwing Leghorn

This again is an English-made variety and from the same originator, Mr. G. Payne. As the Pile Game suggested the Pile Leghorn, so the Duckwing Game suggested this charming but little cultivated variety.

In colour it is a reduplication of the Game in all but

one respect, viz. that, in the Leghorn, the neck-hackle is striped with black and not a silvery-white as in the Duckwing Game cock.

The body-colour of a Silver Duckwing hen is one of the most delicate colours in the whole range of poultry coloration, a clear delicate French-grey daintily pencilled with black, like the Brown, and presenting a charming contrast with the fawn colour of the breast and neck, while the silvery neck-hackle striped with black gives the finishing touch. It is a more pleasing contrast than in the Brown Leghorn.

For some years there was a confusion caused through the two varieties of the Gold and Silver Duckwing, the cocks looking quite distinct, but the Gold pullet looked at best only like a very poor imitation of a Brown Leghorn.

Their Origin.—Captain Payne, who was the first to exhibit Duckwings in *both* sexes, and who did most to originate the breed, has not taken the public into his confidence, but as he was the originator of the Pile Leghorn, from the Brown and the White, it is presumed that he used some of the mis-marked birds bred in this way as the foundation for the Duckwing. We know from the laws of colour that the white would dominate all the black, and that some would come with blue plumage (a mingled black and white, particulate inheritance) where the Pile shows white on the breast and tail, etc., viz. in all those parts where the black feathers are found in the Brown Leghorn. This would form the foundation for the silver pencilling in the Duckwing. It is also stated by various writers that use was made of an utterly alien cross, viz. the Phœnix or Yokohama fowl. This ancient Japanese race is noted chiefly for the excessive length of tail feathering. It is bred in all colours, and the Duckwing colour is among them. The colour, so long fixed in the Phœnix, would impart itself to the Leghorn, and also the abundant sickle feathering, which sometimes manifests itself even now.

Another breeder, Mr. Terrot, had exhibited Duckwing cockerels before Mr. Payne, and the breeds used to make them were the Game Duckwing cock and the Silver Grey Dorking hen and Brown Leghorn. It will

be seen, therefore, that the Duckwing Leghorn of to-day is made of very various breeds, two of which carried the Duckwing colours on the male side, and the Silver Dorking pullet the sweet soft colour of the pullets.

I have often thought that the huge combs sometimes seen on the cockerels are derivable from the Dorking, as well as the square build of the body, and in fact the resemblance is often striking between the Silver cockerels of both breeds, while the colour has been derived from the Phœnix and the Game.

If I had to start a new strain of Duckwing I should confine it to the Brown and Black Leghorn, and expect the black pigment in the Black to harmonize with the black plumage of the Brown Leghorn, while it destroyed the brown of the partridge colour and left the silver in its place, finely pencilled with black. If the colours did not become sufficiently definite, a cross with the Duckwing Game would be desirable, and a dash only of it should suffice. As it is they are of a very composite mixture and difficult to breed true to colour, and this is a hindrance to their popularity.

The Colour.—The reader is referred for details to the "Standards" printed at the end of the chapter. Briefly, the Duckwing is a copy of the Brown; all the black in the cockerel remaining intact, the wing-bar having an additional iridescent blue sheen, while the various shades of gold, orange, red and maroon are replaced by white in the Silver Duckwing, and softened in colour in the Gold Duckwing to a deep gold or orange. In the pullets the salmon breast remains, though of a bright shade, while the "rich brown" of the body-colour has become a pale silvery-grey or French-grey in the "Silver," and a darker shade of grey in the "Gold," and the gold of the neck-hackle has become silvery-white, and still retains the black striping.

Hints on Mating of Duckwings

Gold Duckwings.—The cock is a gorgeously coloured bird, though not so dense in colour as was formerly fashionable. In the opinion of Mr. Hesford, an early and successful breeder, they are still bred of too dark a

shade, and instead of the "straw-coloured hackle" he would prefer a "creamy tinge."

The difficulty is, that the pullets bred from a rich-coloured cock are too rusty in colour, and are only poor imitations of the Brown. This was my experience ten years ago when I bred them. Such pullets are necessary in the breeding pen to maintain the colour of the cock, but, like cock-bred Brown Leghorn pullets, they are unfit for the show-pen. In fact, where a good Gold-bred pullet is not obtainable a Brown Leghorn pullet may be used to maintain the colour.

When it is desired to breed Gold pullets for exhibition, a pullet should be selected as free from rust as possible, or a Silver-bred pullet with a rich breast be used instead.

In my opinion the Gold Duckwings are destined to a short life unless some alteration of the Standard takes place, and that especially in the softening and toning down of the cock's colour.

The Silver Duckwing is to my mind a much more handsome bird than the Gold, though the colour may not stand exposure to the elements so well.

One great advantage is that a well-mated pen will produce good specimens of both sexes. The natural tendency is for the pullets to become too washy in colour, and, in the breeding pen, pullets of a rather darker shade than the show tint are desirable, with clear striped hackles in both sexes. Care should be taken to have the white colour solid in the cock, and to see that the hen is free from brown feathers. There is no other Leghorn pullet more beautiful than the delicately-coloured Silver Duckwing when free from rustiness and with the solid, fawn-coloured breast.

Their Utility Qualities are said to be of the highest. Their composite character would add to their vigour for a time, though how far this has worn off by now I have no means of determining. When any breed gets into few hands its vigour is sure to decline. They *were* first-rate layers, though I never found them to equal either the Black or White, either in number or size of eggs. I have found the Duckwing more disposed to broodiness than the other colours in the Leghorn, though I should not like to entrust eggs to

them. The desire of the Dorking to "sit" has not yet been eliminated from the traces of this blood which still remain.

The Buff Leghorn

The Buff Leghorn came to us from Denmark, and the first exhibit in England was in 1888. When I first began my periodical visits to the Crystal Palace shows, nearly twenty years ago, they were few in number, but they soon caught the eye of the Fancy, and were fairly popular before the Buff craze set in with the introduction of the Buff Orpington in 1895, though they do not seem to have taken the same hold on popular esteem.

The original Buff Leghorn was not what we understand by a "Buff" to-day. In the words of Mr. Verrey, one of the oldest exhibitors, "The cocks were of an almost cinnamon colour on breast and back, with a lighter hackle; the tail feathers were white in the centre, margined round with an edging of buff, the effect being very striking."

In the desire to improve the colour of these "Chamois" or "Yellow" Leghorns with their white tails, and open white-laced feathers, resort was made to the Buff Cochin, the fountain-head of buff colour.

The details of the crossing which thus took place are narrated by Mrs. Lister Kay, in Mr. Harrison Weir's book, *Our Poultry*. Having purchased Leghorns from Denmark—a cock and two hens—she mated the cock, which is described as of "lemony colour," with a poor comb standing off the back of the head at an angle of 45°, and with flights almost white, and squirrel-tailed, with two Buff Cochin hens, and also with two Leghorn hens. Details are given of the breeding for eight years, till Leghorns were produced in 1893 with only one part Cochin blood and thirty-one parts Leghorn, showing how the Cochin shape had been bred out while the loveliness of the colour had been retained. The labour involved in this breeding was enormous, and I know of no other instance in which the public has been admitted to the confidence of the breeder so fully as in this case, detailed in Vol. II, pp. 512–19 of *Our Poultry*.

The hundreds of birds bred not fit for show were either killed or exported to America, and for many years, 1892–7, Mrs. Lister Kay carried all before her in the show-pen. The desire to be on a level with these specimens led fanciers to import birds back from America, and with the new blood thus obtained the number of breeders rapidly multiplied.

There is little doubt but that the Buff Rock was introduced by English breeders both to maintain colour and size, and in recent years specimens have been shown bearing, in the more bulky size and shape, evident traces of this cross.

The breed, however, never became very popular, and although a Club has been formed for its advancement it does not seem to make much headway. I have bred them for twelve years, and while they are excellent layers I do not find them equal to the Black or the White, and they are not so hardy. The Club has recently set its face against the demand for increased size, being determined to keep the breed true to the Leghorn type. For some reason or other good combed specimens are rare. The original stock was weak in this respect, and the small comb of the Cochin has left its mark, more especially in the pullets.

The Colour and Hints on Mating of Buff Leghorns

The colour should be one even solid shade throughout, though it may vary from a lemon buff to a rich orange shade. The rules for breeding are the same as for Buff Orpingtons, to which the amateur is referred. The "cinnamon" colour still shows itself and is an undesirable shade. The points to bear in mind are: (1) That there is always a tendency to loss of colour, as in all Buff breeds, and that to breed good cockerels the hens should be of a deeper shade than the desired tint, and conversely, in breeding pullets the male should have a reserve of colour to impart to the pullets. (2) That under-colour is a matter of the highest importance. If neglected, white tails and flights are certain to come. (3) That colour should be infused gradually, *i.e.* the sexes should not be of extreme shades, or patchiness is sure to result.

Utility Qualities.—For egg-laying they are above the average, and the eggs are a good size, though usually slightly tinted in colour, which is doubtless due to the distant Cochin cross, as well as to that of the more recent Buff Rock. They are very timid fowls and seem to have forgotten the slow-moving instincts of their Cochin ancestors. To those who love the buff colour and a well-filled egg-basket they can be recommended, while the exhibitor will still have his hands full to maintain the colour and to improve the head-points.

The Partridge Leghorn

Mr. Verrey states that Partridge Leghorns have long been known in Denmark.

However that may be, they have only quite recently, *i. e.* from about 1905, been seen in England, and they are not yet advanced sufficiently to take rank with the other varieties, or to compete with them, but they have made considerable strides towards that stage.

The chief exhibitor, and I believe the originator, is the Rev. J. Raine. The aim is to produce a Leghorn with the beautiful pencilling of the Partridge Wyandotte, but true in all other ways to Leghorn character.

This is being done by a cross between the Partridge Wyandotte and the Brown Leghorn. Both are of the black-red type, and the cockerels of either breed are coloured similarly. In this fact lies one of the chief difficulties, since a Partridge Leghorn cockerel would look like a badly-marked Brown Leghorn, and the head-points would not be so good for years, as the lobes would be liable to a red tinge and the comb small.

There is the further difficulty that if such a show cockerel could be produced he would not breed good pullets, but double-mating would be necessary, as it is with the Partridge Wyandotte. This is always a barrier to popularity.

The originator has endeavoured to obviate this difficulty by breeding the cockerel with red breast instead of a black one, more like a pullet-bred Partridge Wyandotte cockerel. This should have the desired result of making it possible to breed exhibition specimens of both sexes from the same pen, though it will

take the Fancy some time to get accustomed to a red or mottled breast. If the breast could be pencilled like the pullet's breast it would be very beautiful.

The pullets have advanced more towards perfection, and several were shown at the International Show of 1908, and at the Club Show held at Leeds, with markings very like the Wyandotte, though the accuracy and delicate character of the pencilling is not yet achieved, nor are the combs sufficiently developed.

It will undoubtedly be a hardy bird and a good layer, and as beautiful as any in the breed.

Nor need the originator blush at the "cross" which is manifest, since it will be as "pure" as most, and of a less composite character than many.

To those who admire beauty of plumage combined with utility, and who would like to start early in the race with a new favourite, the present is the time. When specimens are bred as correct in type as the Brown, and as beautiful in plumage as the Partridge, they will command a big price and be more widely adopted.

Blue Leghorn

This is the most recent candidate for popular favour, and like mushrooms which spring up in a single night, so the Fancy has been smothered with the "Blues" in a single season. At the International Show of 1908 the Blue Leghorns outnumbered any of the other colours, while at Leeds, a month later, they numbered as many as the *whole* of the other classes combined.

Like the mushroom-bed in another respect, there were "Blues" here and there before the main crop came. A reference to the advertisement columns of the *Feathered World* for any time during the past eight or ten years will reveal an odd advertisement or two, and at the great Norwich Show of 1906 there were some very pretty specimens, of a pleasing shade of blue, like the ground-colour of a good Blue Andalusian fowl, but without the lacing, while the legs were a good yellow.

Whether these Blues have had any share in the numerous output of the intervening period I have no information, but the Fancy has been smitten, and their ardour fanned into flame by the press, particularly

by a long and scintillant controversy in the *Feathered World*.

The grand array, at the two exhibitions I have named, were of all shapes and sizes, and with garments of all colours from dirty-white to a navy-blue or black, like a scratch regiment for home defence in a time of distress. And the officers which wore the medals were hardly distinguishable from the rank and file. It was in truth an international army, in which American blood was not "barred," nor the natives of Andalusia with their laces shut out. The cosmopolitan blood of the Black and the White Leghorn were strongly in evidence with their "grey attire," while every farmyard in the kingdom had been scoured for natives which wore a blue ribbon. The truth is that the forces had been summoned before they had undergone sufficient drill, and before the "War Office" had decided upon the colour of their "uniform." Some voted for blue capes and some for black. All of them were to wear blue waistcoats, though some were trimmed with lace and others were plain, and the vote was unanimous for yellow leggings and red caps with white buttons on the side.

Still, like many another scratch army, there was abundance of raw material to make an efficient "body," and by the time they are "called out" again they will make a more presentable array, since the uniform is decided upon, and is to be a clear blue, though a darker coloured cloak is allowable for those who prefer it, since it is feared that the "clear blue" might not endure the vicissitudes of the weather.

How to breed the Blue.—Readers are referred to the latter part of the Chapter on "Colour" to see how the "Black Watch" and "Buffs" amalgamate, or how the White with a recessive character of Black, when mated with Black may produce the colour now in vogue.

The Blue Andalusian was once without lacing, and there is no ostensible reason why the Black Leghorn and the White should not, after due selection, produce the Blue. If the patience and skill shown in making the Buff Leghorn is imitated by the breeders of the Blue, there is no reason why in a few years they should not be equally presentable, and that without the infusion of such alien blood.

There should be no need for introducing Andalusian blood, and there would be the difficulty of the blue leg to overcome, as well as the laced plumage; but even were such blood introduced it is not so far off in relationship as either the Game, the Dorking, or the Cochin, which have entered into the composition of the other colours. The Andalusian is a member of the same Mediterranean race and has many characteristics in common.

A White Leghorn often sports a few black feathers, and such a one mated to a Black without too dense an under-colour would soon produce a Blue. The introduction of the Buff Leghorn would present difficulties in a straw-coloured hackle which is hard to eradicate. A cross with a Cuckoo-coloured fowl would also produce the Blue, and I am told that the Cuckoo Leghorn has already been the basis of winners.

It is to be hoped that the Rock (which in the buff colour has spoiled the grace and beauty of many a Buff Leghorn) will not creep into the camp and breed mischief, but the presence of so many breeders of the Barred Rock in the ranks of the "Blues" points to a danger in this direction.

There are colours enough in the Leghorn family to accomplish all that is desired, if due patience is exercised.

The blue coat is a pleasing colour when set off with yellow stockings, as the founders of the Bluecoat schools discovered long ago. May the new school of "Blues" stand the weather as well as they have done, and be as useful to their generation!

Their utility is sure to be considerable for a time, and the egg proclivity great. And this will be equally true of the many which will not be presentable.

> "Full many a 'blue' is born to blush unseen
> And waste its sweetness on the desert air,"

or to be more exact, "on the dunghill mound," not in the fancier's yard; and many a crowing youngster will be killed before he has had the time to don his tunic! This is the common fate of all new ventures, and those who throw in their lot with it must expect it. But a rare specimen may come forth at any time.

"The princeps copy, clad in blue and gold."
J. Ferriar, *Bibliomania*, line 6.
"Now cheaply bought for thrice their weight in gold."
Ibid., line 65.

Those who have no eye for colour may pass the best of them unheeded. They have "never felt the witchery of the soft blue . . ." for which so many seek and so few find. It is as rare as the blue in an English sky, the dull and sombre grey being more prevalent. The land of the blue skies has given us the Blue Andalusian, why not the Blue Leghorn?

Hints on Mating Blue Leghorns

First make the blue and then maintain its hue. It is primarily a mixture of black and white, as proved by the Andalusian offspring and their mating. The point to guard against is loss of colour. The blue colour is always half-way to white, and unless the darker shade is used loss of colour is certain. Although the clear blue is the standard colour, and dark-hackled cocks are at a discount, they will always be needed in the breeding pen to maintain colour, and will be far more useful than a fresh infusion of black which would otherwise be necessary from time to time, besides being less likely to impart the smoky and indistinct hue so commonly seen. The yellow leg will also be a difficulty, and will be liable to throw straw-coloured hackles and wing-bows. Dense under-colour is the best antidote to this tendency. The soft blue is very charming in combination with the bright yellow leg, but the shade of which Robert Southey wrote, "Blue, darkly, deeply, beautifully blue," will be invaluable, when created, to maintain the quality and quantity of the colour.

The rule for breeding is therefore as in other varieties.

To breed Cocks.—With a male bird of the desired shade mate females of a darker hue than desired.

To breed Hens.—Use a cock with a darker top than is required in the show-pen, and take care in both cases to see that the tail is sound in colour and the under-colour as dense as can be found.

True blue blood, whether in man or man's creative effort, has always been a rare quality, and is usually

associated with an ancient pedigree. When the modern Leghorn can boast of this latter quality, the former may be more common, meanwhile *des nouveaux venus* may afford a passable resemblance, and either by a marriageable alliance as a speedy method, or by slowly building up its inherent graces, become worthy of its name.

THE ANCONA

The Ancona is one of the more modern breeds of poultry, and was little known as a distinct breed in this country until some twelve or fourteen years ago. When I first knew them twelve years ago, they were called Anconas, but were hardly distinguishable from Mottled Leghorns. They were irregularly splashed fowls, with more white than black in their plumage, and with the tails of the cockerels nearly white, with long, flowing sickles like the other varieties of the Leghorn family. They now claim to be a distinct breed, and are rightly named as having come from Ancona in Italy. They are probably near akin to the Black Leghorn, and share with them the characteristics of extreme agility and wildness, of being very precocious, of rapid growth and early maturity, and of being marvellous layers of a large white egg.

Whatever their origin, they were soon taken up by a group of fanciers, who at once set about to "improve" them in size and markings. There is no doubt they were crossed with the Black Minorca to increase their size and head points. One result of this cross was said to be a diminution of their hardiness, and it certainly would reduce their activity.

With the increase in size there came a desire to make their markings more regular and distinctive. Ten years ago a fresh "Standard of Perfection" was drawn up. The result has been that the breed presents a much darker appearance, and is now more of a black than mottled bird. The plumage is of a good beetle-green ground-colour, tipped with white V-shaped tips at the end of each feather, avoiding laced ends. As only the point of the tip shows, they look much darker. The tail also is black instead of white, and is only

tipped with white. The leg-colour was changed from a pure yellow to "yellow mottled with black spots." One of my earliest acquaintances with the Ancona, after the change had been made, was at the Dairy Show, where an eager aspirant for honours had used a blue ink pencil to mark the spots on a yellow leg! He had forgotten, however, to put them on the sides and back of the shank, and the imposition was discovered and the bird disqualified.

With the increase of black pigment and sound under-colour, the black spots soon found their way naturally into the legs, though many still come with pure yellow, and win with them. Many breeders regret the change in colour and type. It has never caught hold of the fancy to any great extent, and the Black Mottled Leghorn, by which name it was once known, is either dead or seldom seen.

In its general habit and character it is nearest akin to the Black Leghorn, and there is no doubt that infusions of this blood have constantly been made, indeed I have often sold birds for that avowed purpose.

They are the wildest and most timid birds I ever bred, and a run wired over the top is as necessary for them as for the Hamburgh. They can stand a cold climate well, but wet is very harmful, and especially so to the growing chickens. By general report they are not as good layers as when they were first introduced, and in this respect they do but share the fate of most new-comers when undue stress is laid upon purely fancy points. But they are still much above the average as layers, and their eggs are readily saleable.

Hints on Mating.—To breed exhibition specimens the same rules apply as to the Black Leghorn and the Blue, and they are not unlikely to be a factor in the creation of the new colour. If the V-shaped tipping is to be maintained birds with this character must be selected, and not those which show a crescentic end, or a broad daub, as these indicate lack of colour, and especial care should be taken to see that the flight feathers are sound, the tail black to the roots, and the legs mottled. All these show a reserve of black pigment, and the general tendency is to a lack of colour.



ANCONA COCK.
Property of Mr. Sam Peel.
Winner, 1st, Skipton, etc.

The Standard.—There is no need to give this in detail, as the Leghorn Standard applies in all details with the exception that a little higher tail-carriage is allowed, and that not so much thigh is seen. They, like the original White and Black Leghorn, and the present-day type, more resemble their near relation, the Cuckoo Leghorn. Although the V-shaped tip is made a great point, it is seldom, if ever, seen in perfection, even in the best specimens.

The Rose-combed Ancona

This variety has been admitted to the Ancona Club, and is simply the original Ancona crossed with the Spangled Hamburgh or Silver Wyandotte to impart the small rose-comb. These are seldom seen of a really good shape, and the variety has not been in great demand. In all other respects it is like the single-combed variety.

THE LEGHORN CLUB STANDARDS

General Characteristics of Cock

Head and Neck.—*Beak*: Stout, the point standing well clear of the front of the comb. *Comb:* Fine in texture, large but not overgrown, single, perfectly straight and erect, deeply and evenly serrated, the spikes broadening at the base; extending well beyond the back of the head and following, without touching, the line of the hackle; free from thumb-marks and side-sprigs. *Face:* Fine in texture, and free from wrinkles or folds. *Wattles:* Long, thin, and fine in texture. *Lobes:* Well developed and rather pendent, equally matched in size and shape, smooth, open, and free from folds. *Neck:* Well arched and full in hackle.

Body.—*Body:* Wedge-shaped, wide at the shoulders, and narrowing to the root of the tail. *Breast:* Round and prominent, the breast-bone straight. *Back:* Slightly rounded and sloping to the tail. *Wings:* Large, carried well clipped up.

Tail.—Moderately full, carried at an angle of 40° to 45° from line of the back.

Legs and Feet.—*Legs:* Moderately long. *Thighs:* Fairly prominent and well covered with feathers. *Shanks and Feet:* Free from feathers. *Bone:* Fine quality and round. Flat shins objectionable.

Carriage.—Sprightly and alert.

Size.—Medium, rather large to be preferred, consistently with symmetry and type.

General Characteristics of Hen

Head and Neck.—*Beak, Wattles, Face, Lobes and Neck:* As in the cock. *Comb:* Fine in texture, large but not overgrown, single, deeply and evenly serrated, free from side sprigs, rising from a firm base and falling gracefully over to either side of face.

Body.—*Body:* Wide at the shoulders and narrowing slightly to the tail, longer and not carried so upright as in the cock. *Breast:* Round, very full and nicely curved from the neck. *Back:* Long, fairly broad, and but slightly rounded.

Tail.—Fairly long and moderately full, but carried closely and at a slightly lower angle than the cock.

Legs and Feet.—As in the cock.

Carriage.—Description of cock applies.

Size.—As in the cock.

Serious defects, for which a bird should be passed:—Cock's comb twisted or falling over, or hen's erect; ear-lobe red; any white in face; legs any colour but yellow or orange; wry or squirrel tails, or any bodily deformity.

Colour in White Leghorns

In both Sexes.—*Beak:* Yellow. *Eye:* Red. *Comb and Wattles:* Bright red. *Face:* Bright red, without any trace of white. *Lobes:* White or cream, the former preferred. *Toe-nails:* Yellow. *Legs:* Yellow or orange. *Plumage:* Pure white (straw colour is to be avoided).

Value of Points in White Leghorns

(cock or hen)

Defects.	Deduct up to
Defects in comb	12
,, ear-lobe, folded, wrinkled or stained with red	15
,, colour	25
,, legs	8
Want of condition	10
,, size	15
,, symmetry	15
A perfect bird to count . .	100

The Brown Leghorn

Colour in Brown Leghorns

In both Sexes.—*Beak:* Yellow or horn. *Eye:* red. *Comb and Wattles:* Bright red. *Face:* Bright red, without any trace of white. *Lobes:* White or cream, the former preferred. *Toe-nails:* Horn or nearly white. *Legs:* Yellow or orange.

In the Cock.—*Head and Hackle:* Rich orange red, striped with black; crimson red at the front of the hackle below the wattles. *Back, Shoulder Coverts, and Wing-bow:* Deep crimson red or maroon. *Wing coverts:* Steel blue, with green reflections, forming a broad bar across the wing; primary wing feathers brown. *Secondaries:* Deep bay on outer web, which is all that appears when the wing is closed, and black on the inner web, and covering the points. *Saddle:* A rich orange red, with or without a few black stripes. *Breast and Under-parts:* A glossy black, quite free from brown splashes. *Tail:* Black, with green reflections; any white in tail is very objectionable. *Tail coverts:* Black edged with brown.

In the Hen.—*Hackle:* Rich golden yellow, broadly and sharply striped with black. [The exhibition hen has a pencilled and not a striped hackle.] *Breast:* Salmon red, running into maroon around the head and wattles, and ashy grey at the thighs. *Body-colour:* A rich brown, very closely and evenly pencilled with black; feathers free from light shafts. *Tail:* Black, outer feathers pencilled with brown.

VALUE OF POINTS IN BROWN LEGHORNS

(BOTH SEXES)

Defects.	Deduct up to
Defects in comb	12
Ear-lobe folded or wrinkled	6
Stain of red on ear-lobe	10
Want of hackle	10
Faults in colour	20
Want of size	15
,, symmetry	15
,, condition	12
A perfect bird to count	100

The Pile Leghorn

COLOUR IN PILE LEGHORNS

In both Sexes.—*Beak:* Yellow or Horn. *Eye:* Red. *Comb and Wattles:* Bright Red. *Face:* Bright red, without any trace of white. *Lobes:* White. *Legs:* Yellow. *Toe-nails:* Yellow.

In the Cock.—*Head and Hackle:* Bright orange. *Breast and Thighs:* White. *Back and Saddle:* Rich maroon. *Shoulders and Wing-bows:* Dark red. *Wing-bar:* White. *Secondary flight feathers:* Dark chestnut outer web, which is all that is seen when the wing is closed, and white inner web. *Tail, Sickle feathers, and Tail coverts:* White.

In the Hen.—*Neck-hackle:* White, tinged with golden colour. *Breast:* Deep salmon red, shading off to white thighs. *Rest of Body:* White.

VALUE OF POINTS IN PILE LEGHORNS

(COCK OR HEN)

Defects.	Deduct up to
Defects in comb	10
Ear-lobes red, wrinkled, or folded	10
Fault in colour	30
,, legs	5
Want of size	15
,, condition	10
,, symmetry	20
A perfect bird to count	100

The Duckwing Leghorn

COLOUR IN GOLDEN DUCKWING LEGHORNS

In both Sexes.—*Beak and Toe-nails:* Yellow or horn colour. *Eye:* Red. *Comb, Face, and Wattles:* Bright red. *Ear-lobes:* White. *Legs:* Yellow or orange.

In the Cock.—*Head and Hackle:* A rather light yellow or straw colour, a few shades deeper at the front below the wattles, the longer feathers striped with black. *Back:* Deep rich gold. *Saddle and Saddle-hackle:* Deep gold, shaded down in hackle to pale gold. *Shoulder coverts and Wing-bow:* Bright golden or orange, solid in colour (an admixture of lighter feathers is very objectionable). *Wing coverts:* Metallic blue (bluish violet), forming an even bar across the wing, which should be sharp, clean cut, and not too broad. *Primaries:* Black, with white edging on the outer web. *Secondaries:* White outer web, which is all that is seen when the wing is closed, forming the wing-bay; black inner web and end of feather. *Breast:* Black, with green lustre. *Under-parts:* Black throughout. *Tail:* Black, richly glossed with green; grey fluff at the base.

In the Hen.—*Head:* Grey (a brown cap very objectionable). *Hackle:* White, each feather sharply striped with black or dark grey (a slight tinge of yellow in the ground-colour admitted). *Breast and Under-colour:* Bright salmon red (this point is very important), darker on throat, and shaded off to ashy grey or fawn colour on the under-parts. *Back, Wings, Sides, and Saddle:* Dark slaty grey, finely pencilled with darker grey or black. *Tail:* Grey, slightly darker than the body-colour. Inside feathers a dull black or dark grey.

COLOUR IN SILVER DUCKWING LEGHORNS

In both Sexes.—*Beak and Toe-nails:* Yellow or horn colour. *Eye:* Red. *Comb, Face, and Wattles:* Bright red. *Ear-lobes:* White. *Legs:* Yellow or orange.

In the Cock.—*Head and Hackle:* Silvery white, the long

feathers striped with black. *Back, Saddle, and Hackle:* Silvery white. *Shoulders and Wing-bow:* Silvery white, as solid as possible (any admixture of red or rusty feathers very objectionable). *Wing coverts:* Metallic blue (bluish violet), forming an even bar across the wing, which should be sharp, clear-cut, and not too broad. *Primaries:* Black, with white edging on outer edge. *Secondaries:* White outer edge, which is all that is visible when the wing is closed, forming the wing-bay; black inner web and end of feathers. *Thighs and Under-parts:* Black throughout. *Tail:* Black, richly glossed with green; grey fluff at base.

In the Hen.—*Head:* Silvery white. *Hackle:* Silvery white, each feather sharply striped with black or dark grey. *Breast and Under-parts:* Light salmon or fawn colour, darker on throat and shaded off to ashy grey on the under-parts. *Back, Wings, Sides, and Saddle:* Clear delicate silvery grey or French grey, without a shade of red or brown, finely pencilled with dark grey or black (purity of colour very important). *Tail:* Grey, slightly darker than the body-colour; inside feathers a dull black or dark grey.

VALUE OF POINTS IN DUCKWING LEGHORNS

(COCK OR HEN)

Defects.	Deduct up to
Defects in comb	10
Ear-lobe folded or wrinkled	5
Stain of red on ear-lobe	10
Want of hackle	10
Faults in colour	20
Want of size	15
,, symmetry	20
,, condition	10
A perfect bird to count	100

The Buff Leghorn

COLOUR IN BUFF LEGHORNS

In both Sexes.—*Beak:* Yellow. *Eye:* Red. *Comb and Wattles:* Bright red. *Face:* Bright red, without any trace of white. *Lobes:* White or cream, the former preferred. *Toe-nails:* White. *Legs:* Yellow or orange. *Plumage:* Any shade of buff from lemon buff to rich buff, on the one side avoiding washiness, and on the other side a reddish tinge. The colour to be perfectly uniform throughout, allowing for the greater lustre on the hackle and saddle feathers, and of the wing-bow in the case of the cock only.

VALUE OF POINTS IN BUFF LEGHORNS

(These are approximate only, as the new scale of points is not printed)

(COCK OR HEN)

Defects.	Deduct up to
Defects in comb	10
,, ear-lobe, folded, wrinkled or stained	15
,, colour	30
,, legs	10
Want of condition	10
,, size	10
,, symmetry	15
A perfect bird to count	100

The Black Leghorn

COLOUR IN BLACK LEGHORNS

In both Sexes.—*Beak:* Yellow or horn colour. *Eye:* Red. *Comb and Wattles:* Bright red. *Face:* Bright red, without any trace of white. *Lobes:* White or cream, the former preferred. *Legs:* Yellow or orange. *Toe-nails:* Yellow. *Plumage:* Rich blue-black, perfectly free from feathers of any other colour.

VALUE OF POINTS IN BLACK LEGHORNS

(COCK OR HEN)

Defects.	Deduct up to
Defects in comb	10
,, ear-lobe, folded, wrinkled, or stained with red	10
,, colour	25
,, legs	15
Want of condition	10
,, size	10
,, symmetry	20
A perfect bird to count	100

The Cuckoo Leghorn

COLOUR IN CUCKOO LEGHORNS

In both Sexes.—*Beak:* Yellow or horn. *Eye:* Red. *Comb and Wattles:* Bright red. *Face:* Bright red, without any trace of white. *Lobes:* White. *Legs:* Yellow. *Toe-nails:* Yellow or horn. *Plumage:* Light bluish-grey ground, each feather barred across with bands of darker grey or blue. The marking to be uniform throughout, and the colours shading into each other so that no distinct line or separation of the colours is perceptible.

VALUE OF POINTS IN CUCKOO LEGHORNS

(COCK OR HEN)

Defects.	Deduct up to
Defects in comb	10
,, ear-lobe, folded, wrinkled, or stained with red	10
,, colour	25
,, legs	10
Want of condition	10
,, size	15
,, symmetry	20
A perfect bird to count	100

The Mottled Leghorn

COLOUR IN BLACK MOTTLED LEGHORNS

In both Sexes.—*Beak:* Yellow or horn. *Eye:* Red. *Comb and Wattles:* Bright red. *Face:* Bright red, without any trace of white. *Lobes:* White. *Legs:* Yellow. *Toe-nails:* Yellow or horn. *Plumage:* An even distribution of black and white mottling, neither colour predominating, with an entire absence of lacing. A green sheen on the black most desirable.

COLOUR IN RED MOTTLED LEGHORNS

The description of Black Mottled applies to Red Mottled, except in plumage, where "brownish-red" should be substituted for "black."

VALUE OF POINTS IN MOTTLED LEGHORNS

(COCK OR HEN)

Defects.	Deduct up to
Defects in comb	10
,, ear-lobe, folded, wrinkled, or stained with red	10
,, colour	25
,, legs	10
Want of condition	10
,, size	15
,, symmetry	20
A perfect bird to count	100

The Blue Leghorn

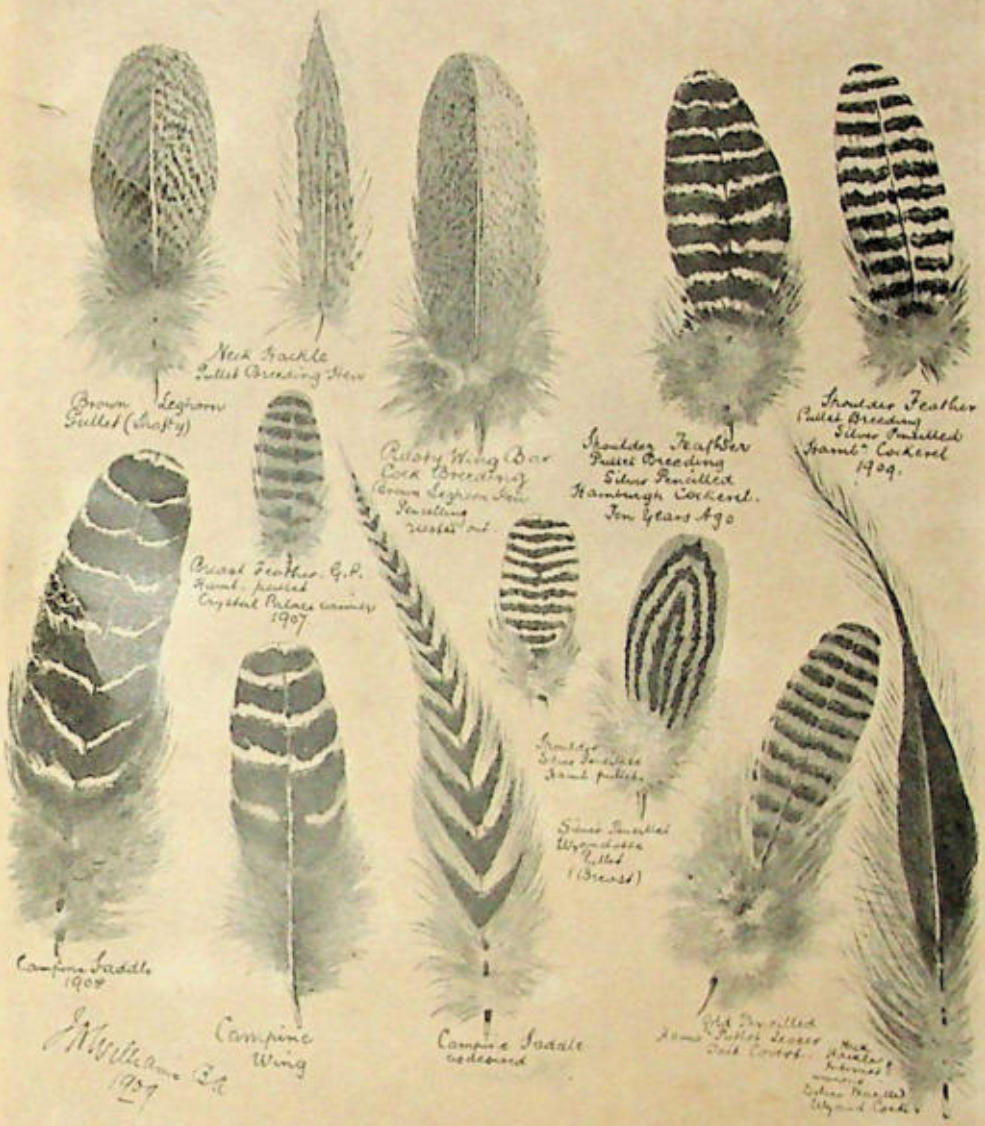
COLOUR IN BLUE LEGHORNS

In both Sexes.—*Beak:* Yellow or horn colour. *Eye:* Red. *Comb and Wattles:* Bright red. *Face:* Bright red, without any trace of white. *Lobes:* White or cream—the former preferred.

Legs: Yellow or orange. *Toe-nails:* Yellow. *Plumage:* One even medium shade of blue from head to tail, a little darker blue allowed in hackles and saddle of cocks, but the more even the colour the better. Any barring to be included under serious defects.

VALUE OF POINTS IN BLUE LEGHORNS
(COCK OR HEN)

Defects.	Deduct up to
Defects in comb	10
,, ear-lobe, folded, wrinkled, or stained with red	10
,, colour	30
,, legs	10
Want of condition	10
,, size	10
,, type or symmetry	20
A perfect bird to count	100



FEATHERS OF BROWN LEGHORNS, HAMBURGHS, CAMPINES, AND WYANDOTTES.

(Note the similarity of the Hamburgh feather of ten years ago with the modern Campines. Also that the Campine feathers end with a white bar, and the Hamburgh with a black one.)

CHAPTER XVI

UNCLASSIFIED BREEDS OF POULTRY

CAMPINES — INDIAN GAME — LAKENVELDERS — POLISH — SILKIE — SCOTCH GREY — SULTAN — SUMATRA GAME — SUSSEX

With but few exceptions all the various breeds and varieties of poultry described in this book have found their way into the Poultry Club Standards, and so bear the hall-mark of distinctness in character as well as beauty in markings.

There are several breeds which cannot well be classified in the larger groups we have already considered, which are admitted to the Standard and therefore deserve notice. They are arranged in this chapter in alphabetical order.

THE CAMPINE, SILVER—GOLD

This is first on the list and first in fame for beauty and utility alike. It has a character all its own, and stands out distinctly from any other breed, though it bears a likeness in its markings to the Silver Pencilled Hamburgh. The Campine is undoubtedly an ancient breed, and is probably referred to by the writer Aldrovandus (A.D. 1600) of whom I made mention when writing of the Hamburghs. In addition to its antiquity it has the virtue, in the poultry world, of being one of the few not spoilt by the admission of alien blood, though it is said that some few breeders have recently introduced the Hamburgh to secure more distinctness in the marking, and clearness in the silvery white ground-colour. Therein lies a danger, for whereas the pencilling of the Hamburgh should be "the *same* width as the intervening ground-colour," the barring of the

Campine should be "as near as possible *three times* the width of the ground-colour," so that what would be gained in one direction would be more than lost in the other. And, moreover, the barring in the Campine assumes different characters on the various parts of the body, viz. "straight or slightly curved on the breast," but "on the top, the shoulders, saddle-hackle and tail in a more or less V-shaped direction," whereas in the Hamburgh "each feather is . . . pencilled *straight across* with fine parallel lines."

In Campines both sexes are barred alike, and both can be bred from the same pen, the reverse holding good with Hamburghs.

During its brief show existence of ten years in England, the Campine has had many vicissitudes and the Standard has been altered several times. Through the kindness of the secretary of the club, the Rev. E. L. Jones, I am enabled to give it in its final form at the close of this section, and a comparison of it with the Hamburgh Standard will show how widely the two breeds are apart. In their distinctness lies the safety of both. The new comer in the show-pen must have a greater distinctness of its own than the single-comb confers upon it, if it is to live as a fancier's fowl and gain favour; and it has much to do before it can fairly be judged by its ideal.

This, again, is not a bad thing. For, strange as it may seem, no sooner does a variety breed true to its Standard than the zest for breeding it departs, since only those can then win who can devote much time to gain extra size, or to get an extra sheen. To-day, the good Campine is hard to find. It has so many wants. Head-points are still deficient and good combs in both sexes scarce. The cocks have a singular tendency to side-spikes, whether as token of their ancient kinship to the Rose-combed Hamburgh or as the result of a more recent cross I am not able to say. There is a Rose-comb Campine also in Belgium, and in numberless cases the Single and Rose varieties have run together in the same yards. This may be the cause of the frequently recurring side-spike. In any case a determined endeavour should be made to eradicate this unsightly blemish. The breeder should kill and eat the cockerels

so mis-marked at an early age, and judges should rigorously exclude them from the list of prizes or honours. The lobes, of the cocks especially, are seldom white and clear. The tails also are too often black or mossy, and the sickle feathers and lesser sickles are wanting in length. In this respect they are years behind the Hamburgh with its glorious wealth of feather. But we must remember that the latter held pride of place in the show-pen for generations, while the Campine languished as a utility fowl on the bleak and dreary wastes of La Campine.

There is an allied race in Belgium, known as the Braekel, which is similar to the Campine in all respects except that it is larger in size, and from what I can gather has a rather more fully-developed comb. It also differs from the *modern* Campine in having both neck- and *saddle*-hackles clear silver, and not barred. The earlier Campines were similar silver saddle-hackled birds, and this colour certainly gave the male bird a more distinguished and picturesque appearance. But the Club has decided to have only the neck-hackle white, and the saddle barred in the cock, as it has always been in the hen. This alteration should make it easier to breed exhibition birds of both sexes from the same pen, and so prove of distinct advantage to the breed, but it introduces another difficulty, in making it much harder to get a pure white neck-hackle in either sex. There is a correlation between the neck- and saddle-hackles, and when a cock is bred with a well-barred saddle-hackle, the purity of the neck-hackle will suffer and also the pullets from the same source.

The same difficulty is experienced with the Pencilled Hamburghs, and all that can be expected, for some time, will be to get the top part of the neck-hackles pure silver and the bases ticked with black.

The Campine, as we know it, has Braekel blood in it. But both are of the same race, the larger size of the Braekel being due to its cultivation for centuries on the richer soil of Flanders, while the Campine was bred on the open plains, and is naturally, in consequence of its ancient upbringing in exposed quarters, a very hardy fowl. M. Louis Vander-Snickt, the great Belgian authority on poultry, declared, at the Reading Con-

ference, that both Campines and Brackels have "been famous since the time of Charles V (1519 A.D.) for producing delicious milk chickens in winter, and in summer for the enormous quantity of cockerels (poulets de grains) which must be killed or caponized before they are four months old." The natives declare that when Julius Cæsar visited their country he took a number of these fowls back with h[illegible]naped direction." Where epicures declared that they w[illegible] feather is [illegible] penciled

Their utility qualities[illegible]m," and that the hom[illegible] the Campine when young[illegible]ere "food for the gods." carries a great deal of br[illegible]There is no doubt that proportion to its size. As [illegible]s very good eating, and Like most other breeds th[illegible]ast meat and little offal in strains, and the latter ma[illegible]layers they are hard to beat. Hamburgh. The average[illegible]re are big-egg and little-egg a fair size, and wonderfully[illegible] be due to a cross with the hen is only about 4 lb. a[illegible] size of the egg is 2 ozs., just I have seen Campine e[illegible] for the size of the bird, as the White Leghorn 7 to the [illegible]d the cockerel 1 lb. heavier. have had pullet's eggs 9 t[illegible]s as large as the Black or of egg is often due to breed[illegible]und, and on the other hand or to selecting stock for the[illegible]he pound. The small size way a diminution in size is sure[illegible]om late-hatched pullets, plan for those who breed for utili[illegible]arkings only. In this smart cockerel to hens in their s[illegible]ake place. The best when size is easy to maintain and [illegible] only is to mate a stronger. [illegible]ond or third year.

The Brackel weighs 6 lb. or more the chicks will be much larger, but the egg is no heavie[illegible] hoped that Campine breeders will not s[illegible], and is therefore size in their birds. They will naturally[illegible]er, and it is to be with us on account of the extra care bestow[illegible]trive after undue and more generous feeding, but they are n[illegible]lly grow larger eaters and good foragers, and should not be[illegible]ed upon them, the egg supply will diminish and large egg[illegible]aturally small shells be the rule. [illegible]e over-fed, or

M. Vander-Snickt states that there are[illegible]s with thin Brackels, "White, Black, Blue, Gold Chamois, [illegible] Silver Chamois, like a White Peacock." I have[illegible] also in seen these colours in England, and only the Silver[illegible]nd even Gold Campine are seen at our shows, but very [illegible]ightly the latter, which are usually smaller in size, less discrels



SILVER CAMPINE COCKEREL.
Property of Rev. E. Lewis Jones.
Winner, 1st, Dairy, etc.

in markings, and likely to die out as an exhibition fowl.

It is a noteworthy fact that the Silver Campine breeds remarkably true to colour. After many inquiries I have never heard of a *black* chicken being produced from these "barred" parents. As this is so common an event in all other barred breeds, it seems to me another indication of the antiquity of the race. Nor have I heard of a *white* chicken, though many specimens are hatched with nearly white breasts, white flights, and broad white ground-colour between the bars.

The Brackel, whose blood is intermingled with the Campine, is less distinct in its barring. M. Vander-Snickt, in describing the Silver variety, says, "No more beautiful sight can be seen than a flock of 100 hens with snow-white necks and dark bodies. It is of no moment if the grey body-colour is barred, flowered, or simply ashen-grey, for, except at feeding-time, the birds are always seen at a distance, and never penned in a cage." These "flowered" bodies, with their irregular patches of colour, have left their mark on the Campine's breast, and the irregular lacing now so common on the breasts of the best birds is a point to be fought against. The Hamburgh is much more regular in its definition, but it is not desirable to attempt the remedy by this infusion of blood, since other evils attend it.

The chickens are fairly easy to rear, though they do not endure wet weather very well till they are half grown, and they cannot stand overcrowding.

They are wild in their habits, and can readily leap or fly over a high fence, but I have found them more tractable than the Black Leghorn or the Ancona, and they readily cluster round one at feeding-time. It is much a matter of handling or training. When not needed for showing, or after show time is over, cutting the flight feathers of one wing, or tying them up, readily keeps them in their own quarters. The more timid and agile a breed is, the better it lays, and the more slow and cumbersome, the worse. Agility for eggs, and slow movement for flesh, are almost always the usual combinations.

THE IDEAL CAMPINE

is so well described in the Standard of Perfection printed at the end of the chapter that few words are needed here. It has the colouring of a good Silver Pencilled Hamburgh pullet, though it differs altogether from the Silver cockerel, which is nearly white. But instead of the barring being of equal width with the ground-colour, it should be three times as wide, only leaving a narrow, well-defined and clear streak of ground-colour visible. It is a shorter, cobbier bird than the Hamburgh, and with a broader front. Both sexes are marked in the same way, and the mackerel markings of the body are set off with a silver cape which should be as free from ticking as possible. The comb should be erect in the cock, single, and well serrated, and following the line of the neck behind without touching it. In the hen it should fall gracefully over to one side of the face. At present about nine out of ten show pullets are deficient in comb, which stands erect or nearly so. This is doubtless a virtue so far as egg production in cold weather is concerned, and no attempt to grow a large Leghorn comb is desirable; still there should be enough of it to fall gracefully over to one side. There are specimens with good combs, and these should be encouraged, otherwise the bird will always present an immature and scrappy appearance.

The eye should be dark brown, and the pupil black—as distinguished from the red eye of the Hamburgh—and the leg-colour a leaden blue.

The Colour.—This should be pure white without the barring running into it and giving it a blurred appearance, and the barring a pure black with a rich beetle-green sheen. The end of each barred feather should be white.

Attention is drawn to the list of serious defects in the Standard. Since the alteration in the Standard to a barred saddle-hackle in the cock, many specimens are shown with "henny" tails almost devoid of sickles, and the hackles are very short and broad. They are improving, and when these are well defined, and accompanied with a barred tail also, the marking will be very beautiful.



SILVER CAMPINE PULLET.
Property of Mr. W. Hunter Gandy.
Winner, 1st, Dairy Show.

Hints on Mating.—The breed is now in the making so far as the perfection of its marking is concerned. It has so many wants. Among these are: (1) Better combs; (2) white lobes in the cockerel; (3) definite barring on the cock's saddle-hackle—this latter accompanied with a developed tail—and (4) brilliant sheen. When birds approaching the Standard are found there will be little difficulty in mating, since both sexes can be bred from one mating. Until then the best possible must be chosen, taking care not to mate birds together which both contain the same defect.

The Rev. E. L. Jones, one of the most successful breeders, wrote in *Monthly Hints*: "The question is how to breed this bird, and it is a question I have been trying to solve for the past four years. First of all see that your breeders have good points, and that their tails are as free as possible from 'greyness' or mossiness. Then select the best marked of your cockerels—dark in colour and with rich sheen or lustre. Select from the hens or pullets those which have broad black—too broad for exhibition—and see to it that they are sound in fluff, dark grey in colour. Let them, too, be as rich as possible in sheen. Reject as breeders all who are not sound in eye, as a wrong eye is very persistent—dominant, as the Mendelists say. Also see that the ear-lobe of the cockerel is white; it is almost universally so in pullets. In all your breeders always examine the individual feathers and reject any which do not show a white bar (faint it often is) at the end. Rely upon your hens for size, shape, and alertness of carriage."

The advice here given concurs in a general way with the line I have taken throughout in mating black and white plumaged birds, viz. that the thing to avoid is lack of colour. The natural tendency is for the progeny to come too light. The most marked defect is the paleness of the breast in both sexes, especially near the throat. *Clearness* of the white is important, as there are but few without mossiness.

I have written so fully on this breed because it is one of current interest, a breed which the amateur may well take up with a chance of success, and one that is sure to supply him with a well-filled egg-basket. With ordinary

care he is equally sure to be delighted with the pleasant picture they make on a green lawn, and if he ventures into the show-pen he may, when he least expects it, walk away with a champion prize. The breed deserves success on account of its sterling merit and its ancient pedigree.

THE CAMPINE STANDARD

General Characteristics

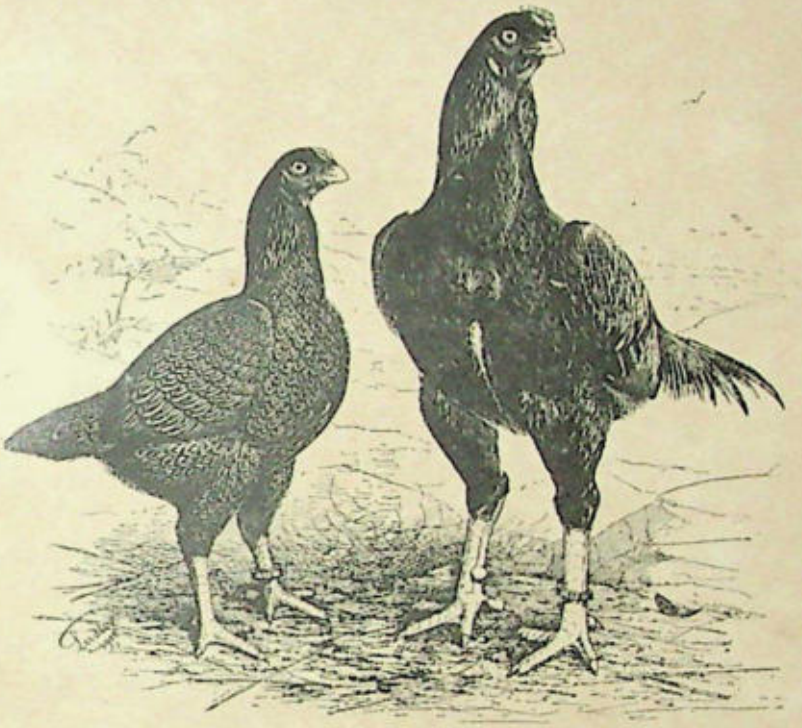
Beak: Rather short. *Eyes:* Bright and prominent. *Comb:* Single, medium size, with even serrations, coming well back, but clear of the neck, free from excrescences. Upright in cocks, falling over in hens. *Face:* Smooth. *Ear-lobes:* Medium size, inclined to almond shape, free from wrinkles. *Wattles:* Fine in texture, length in proportion to comb. *Neck:* Medium length, nicely arched, well furnished with hackle. *Breast:* Very full, round, carried well forward. *Back:* Rather long. *Body:* Broad, narrowing to tail, close and compact. *Wings:* Large, neatly tucked up. *Tail:* A good length, carried well out from the body; in cocks, sickles and secondaries broad and plentiful. *Legs and Feet:* Legs, medium length; toes, slender and well spread; four toes on each foot; shanks free from feathers or fluff. *Size:* The larger the better, maintaining the type. *Carriage:* Very alert and graceful. *Markings:* Every feather on the bird's body, with the exception of those of the neck-hackle, should be barred in a transverse direction; these bars should be as clear as possible, with well-defined edges; they should run across the feather so as to form as near as possible rings round the body. The barrings on the feathers of breast and under-part of the body should run across the feather either in a straight or a slightly-curved direction, but on the top, the shoulders, saddle-hackle and tail, in a more or less V-shaped direction. The bars in all cases should be clear, well defined, and with clear-cut edges. The bars should be as nearly as possible three times the width of the ground-colour, which must be clear and distinct. The saddle of the cock should be furnished with a good flow of properly-developed hackles.

THE INDIAN GAME

The Indian Game is one of the monarchs of the poultry world, and no show with any pretension to rank is without separate classes for it. It is famous for two things: first, its wonderful table properties, combining great size with abundance of flesh-meat on the breast, which quality makes it the most popular fowl of the day for crossing with other breeds; and, secondly, the brilliance of its plumage and the beauty of its laced

markings. Although the Standards give 8 lb. as the weight of an adult cock, and 6 lb. for the hen, these weights would be considered small for exhibition stock. They look heavier, and they handle much heavier than they appear; 2 lb. heavier would be nearer the mark.

Their expression is morose and sullen, and they are only approached in this respect by the Malay and the



INDIAN GAME.

Aseel, both of which claim parentage. Like many other modern breeds, it is of a composite nature.

Its natural home would appear to be Devon and Cornwall, where they are still more extensively bred than in any other counties, and their popularity was for a long time confined to these parts, where they seem to have flourished for over sixty years.

In Mr. Lewis Wright's *Book of Poultry*, published in 1880, the notice is very scanty, and they were then

supposed to be chiefly of Malay blood crossed with Game, to which Mr. Comyns thought a "touch of Aseel and Indian Jungle Fowl" had been added.

The latter description is now known to be near the exact truth. The originator is said to be Sir Walter Raleigh Gilbert, who stated to a friend in 1846 that he had formed them by crossing a Red Aseel imported from India with English Black-breasted Red Game of Lord Derby's famous strain. In later days it would seem that the Sumatra Game blood was infused, which would add to the brilliance of the plumage, besides adding a quality now considered undesirable, viz. excess of feather in the tail.

The Aseel has a "pearl or a yellow eye" among its many colours, the Black-red Game a red eye, and in the Standard for Indian Game the eye-colour is described as "varying from pale yellow to pale red"; and the colour of the cock in his black is "rich glossy green-black," which describes the Sumatra Game. Mr. Wright thinks the "red eye" a sign of the Game cross.

In the Chapter on "Wyandottes" we saw that Indian Game blood was used to add depth of colour to the Gold variety, and it is more than probable that the cross so formed was afterwards used in breeding the Indian Game to add to its lacing.

However that may be, the various amalgamations of half-a-century have produced a bird remarkable in many ways for strength and beauty and usefulness. Other breeds will come and go, but the "Cornish Game," to give a familiar appellation, is not likely to leave us.

General Characteristics

To all intents and purposes the Indian Game is a magnified and glorified Aseel, possessing the indomitable courage of its ancestor and many familiar likenesses, in its tight feather, broad and prominent shoulders, and naked point at the breast-bone.

The head is a composite of the three races, not so short as the Aseel, nor so long as the Game, and with the savage aspect of the Malay. It is described as "rather long and thick, broad in skull, rather heavy eyebrows, giving a cruel expression." The eye is full

and bold, and the comb, a pea-comb, close fitting. As a matter of fact the comb of the cock is seldom neat, and when an attempt was made a few years ago to show undubbed birds they looked very unsightly, and they are now always dubbed for shows, except in the case of very young chickens. The wattles also are dubbed. The hen's comb is neat. The face is red and smooth, and the ear-lobes red, neat, and small. The neck is medium length and stout, and slightly arched.

General Characteristics of Cock

The Body is thick-set and broad, with prominent shoulders. *Breast:* Wide, deep, and prominent. *Back:* Flat, short, broad, and tapering towards the tail. *Wings:* Short, muscular, often bare at the top, and tightly clipped up.

Tail.—Medium length, tight-feathered, the *secondaries* narrow. It is carried low, at an angle of about 45 from the sloping body. There is a tendency to grow too much feather, and tails are too often plucked to produce the smart, whipped appearance. A big-tailed specimen looks awkward.

Legs and Feet.—Medium length, strong and thick—the more bone the better. A modern tendency is to show cockerels too tall, probably due to the rage for double lacing in the hen, which has led to neglect of type.

General Carriage.—Upright, commanding, courageous. General appearance strong, muscular, and active, with legs set well apart and not inkneed.

Plumage.—Close, narrow, and hard. Soft feathers and fluff very objectionable.

General Characteristics of Hen

The description of the cock applies. The tail is short and fine, tight-feathered, each feather overlapping, carried slightly higher than the cock's. The back should be broad at the shoulders, short, and flat.

Colour of Indian Game

In both Sexes.—*Beak:* Horn or yellow. *Legs:* Rich yellow or orange. *Comb, Face, Ear-lobes:* Red.

In the Cock.—The prevailing colour is a rich glossy green-black, much the same as a Black-red Game. The *breast*, *underparts*, *thighs*, *tail*, and *sickles* of this colour. The *flights* and *secondaries* are black also, with chestnut colour on the outer web, which makes a rich bay diamond on the wing-bay. A little chestnut also intermingles in the base of the hackles, saddle-hackles, and on the wing-bow, the original spots for these colours. Except in the wing-bay the traces of this colour are often very small.

The Hen differs entirely from other members of the Black-red group, and is gloriously laced from head to tail and from throat to thigh. The ground-colour is a rich bay or chestnut, every feather being edged with a lustrous beetle-green, and those specimens are accounted best which have a double lacing, one inside the other, making it more resemble the Partridge Wyandotte. The *neck-hackle* is black at the top and then bay, edged with black. The *back* and *wing-bows* should be very distinctly laced, and the *wing-bars* heavily laced, while the end of the *secondaries* or *wing-bay* is a rich bay with a narrow edging of black. The *tail* should also be fringed with beetle-green black.

Points for Judging.—These are numerous in division, but, roughly, 20 are given for head-points, 42 for colour and shape of body, 8 for legs, and 20 for size, symmetry, and condition.

Serious Defects are any malformation, single- or strawberry-combs, red hackles, or knock-knees or bow-legs. The straightness, stoutness, and strength of legs is a matter of importance.

Hints for Mating

Both sexes can be bred from the same pen for exhibition. But it is only natural to seek for heavily-laced and dark hens to mate with the cock for cock-breeding, and lighter ground and narrower lacing to breed pullets. A noted breeder confided to me that he liked cockerels with more red in the wing-bow, and more distinct red lacing in the hackles, both of neck and saddle, to produce pullets. It adds confusion and destroys popularity to *push* distinct matings to extremes, though in slight



1. Laced Wyandotte, breast feather.
2. ,, ,, neck-hackle of cock-breeding hen.
3. ,, ,, feather from the back.
4a and 4b. Mealy feathers from wing of Buff Orpington hen.
5. Triple-laced feathers from Indian Game hen. Though very beautiful, this triple lacing is not desirable, and may be due to the influence of Dark Brahma blood.
6. Laced Wyandotte, a mossy feather.
7. Correctly marked double lacing, from Indian Game hen.
8. Flight feather of Brown Leghorn hen.

(The Indian Game feathers were kindly sent by Mr. W. Brent, a well-known exhibitor.)

differences of colour it will always be advisable to correct the tendency to loss of colour in this as in other breeds. I have many times heard it said that the rage for double lacing, to the neglect of other points which must follow when this feature is pushed to extremes, has led to considerable loss of type, with the result of narrower, taller, and longer-backed birds. Type and colour should go hand in hand, if the noble and majestic courage and stamina of the cock, and the rich and beautiful lacing of the hen are to be preserved. White feathers in any part of the plumage are a serious defect, though a little "greyness" is often seen in old stagers. It is noteworthy that the birds have wonderful staying power as exhibition stock, and are often shown several years old.

The Utility of the Indian Game has already been remarked upon. They have won a place in the first rank as table-fowl, despite the gibes of Mr. Harrison Weir and others, and have done not a little to diminish the prejudice of the English people against yellow flesh. When mated with the white-fleshed Dorking—a favourite cross—progeny with white flesh and plenty of it are produced, and these frequently win in table classes, where shown, either living or dead. *As layers* they are only of medium worth, so far as number is concerned, as none of the breeds used in their make-up are noted layers. The egg is of a brown tint and medium size. *Chickens* are best when bred from two-year-old hens. They are fairly hardy, but do not stand confinement well, or they get leg weakness. Hard food is the best diet.

THE LAKENVELDER

This is a still later breed than the Campine, having been introduced in 1902 from Holland. It has been spoken of as "Lakenfelder de Jerusalem," where it is said to have originated. It is much like the Campine except in colour. Its body-colour is a dead white, while the neck and saddle-hackle are a dense velvety black, and the tail black also, with long, flowing sickles. The comb is single and erect in both sexes. The lobes are white and almond shaped, the shanks a blue-slate colour,

and the eye red. The tail is more developed and carried at a lower angle than in the Campines.

They are small, sprightly birds, the cock weighing about 5 lb. and the hen 4 lb. The great contrast between the dense velvety black of the hackles and tail attracts attention at once.

For some reason they have not caught on, and are not now likely to do so, as they have no supreme merit either as layers of a small white egg, or as table-fowl.

The difficulty, from a show point, has been to get the saddle-hackle of a solid black—patchiness too frequently resulting. The guide for breeding is to note the under-colour.

In their native haunts they are said, like the Campine from which they may have originated, to be champion layers, but in England this has not been found to be so. Despite their unique colour they have not found many admirers, and one only sees a specimen now and again in mixed classes.

POLISH

This is an ancient breed of almost endless colours, laced, spangled, speckled and plain, the varieties finding their way into the Poultry Club Standards being the Silver Polish, Gold Polish, White, Chamois, or White Laced Buff, Black Polish with white crest, and Blue Polish with white crest.

Once the pride of the show-pen, and by no means indifferent as layers, and filling a large space in Early Victorian poultry books, they are now almost dead, except to fame, and only an odd specimen is seen now and again.

It is now essentially a fancy fowl, and is not to be compared, either as food for the table or as a supplier of eggs, with the many useful modern breeds.

Its name is probably derived from its "poll" or crest, which is of an unusually large size, and is the bird's chief adornment.

It attracted the attention of Darwin, who mentions it in *Animals . . . under Domestication* (vol. i, chap. vii, p. 227). He writes: "*Crested or Polish breed.* Head

with a large rounded crest of feathers, supported on a hemispherical protuberance of the frontal bones which includes the anterior part of the brain. . . . The orifice of the nostrils raised and crescentic. Beak short. Comb absent, or small and of crescentic shape. Wattles either present or replaced by a beard-like tuft of feathers. Legs leaden blue. Sexual differences appear late in life. Do not incubate."

The chief interest, from Darwin's point of view, was the peculiar skull formation, which he describes above, and the very marked difference between the naked skull of this fowl and that of any other uncrested variety is most marked. Reference is made to this in the Chapter on "Mendelism," and it affords the basis of many experiments made by Davenport, where it is shown that these abnormal developments are recessive to the normal, and though this is no proof positive of its modern development as an acquired character, it points in that direction. The breed is an ancient one as compared with most varieties. Mr. Dixon thinks the Polish is one of the breeds quoted by Aldrovandus (A.D. 1600) under the name Paduan. Darwin states that the peculiarities of the skull formation were pointed out by P. Borelli in 1657, and goes on to say, "I may add that in 1737 one Polish sub-breed, viz. the Gold Spangled, was known; but, judging from Albin's description, the comb was then larger, the crest of feathers much smaller, the breast more coarsely spotted, and the stomach and thighs much blacker. A golden-spangled fowl in this condition would now be of no value."

Mr. Darwin thinks that the crest in the Polish fowl is a *female* characteristic which has been transferred to the male also, and quotes from Blumenbach (A.D. 1813), a writer on *Abnormal Characteristics in Domestic Animals*, that in his day "the skull of the hen alone was protuberant"; and later says, "Hence there can be no doubt that this remarkable character in the skull of the Polish fowls was formerly in Germany confined to the female sex, but has now been transferred to the males, and has thus become common to both sexes" (p. 257).

It would seem, therefore, that the abnormal development of the crest has caused the bony protuberance to

support it, and that when "the crest is not much developed it is supported on a fatty mass." A good figure of the skull of a Polish fowl is given in Lewis Wright, p. 441.

Another peculiarity in the Polish is the absence of comb. The Poultry Club Standard says: "*Comb*, if any, should consist of only two small horns, preference being given to birds quite without."

In the allied breeds like the Crève-cœur, La Flèche, and Houdan, this has been developed.

There is little doubt but that Polish blood has been the basis of all the French breeds, and so it has proved to others, if not to us, both useful as well as highly ornamental, and, as such, deserves mention. It is not improbable that the excessive development of the crest, with the corresponding diminution of comb, has been the cause of its downfall as an English fancier's fowl.

Crested birds in our climate are peculiarly liable to roup and kindred ailments, and when not kept in suitable surroundings are very wretched looking. At the best of times the good crest is very difficult to grow. They are good summer layers of large white eggs, and, as we know from the French breeds, when crossed with other breeds make excellent table-birds.

I have never seen a Blue Polish, but, if the colour is really good, it is not improbable that the variety may be requisitioned for that quality, and its crest and skull formation bred out again. Polish fowls are more popular in America than with us. If only on account of their rare beauty it is a pity that so few English fanciers take them up. There are fewer now than ten years ago, when the late Mr. J. Partington showed superb specimens.

General Characteristics

The breed is very like the more familiar Houdan in appearance, though a pound or two less in weight.

The Cock.—*Head:* Medium size. *Crest:* Large as possible, and circular, free from any split or parting, high and smooth in the front, compact in the centre, and falling evenly with long, untwisted feathers far down the nape of the neck. *Eye:* Bright, large, and

red in colour. *Comb:* Absent, or two small horns. *Face and Wattles:* In two varieties, viz. the black and the blue, which have white crests, the face is red and smooth, and the wattles large and pendent. In the other varieties the face is hidden with the muff, and a pendulous beard or tuft of feathers takes the place of wattles. *Ear-lobes:* Small and circular and bluish white in colour. *Neck:* Long and tapering. *Body:* Long, deep, good shoulders. *Breast:* Full and round. *Back:* Fairly long and flat. *Wings:* Large. *Tail:* Fully furnished and carried at a low angle. *Legs and Feet:* Fairly long thighs and shank, so as to give a graceful bearing. *Shanks:* Free from feather.

General Shape and Carriage.—Proud and stately, erect. *Weight:* About 6 to 7 lb.

The Hen.—*Head, Neck, Body:* As the cock. *Tail:* Neat and carried rather low. *Weight:* About 5 lb.

Points for Judging, give 60 out of 100 for crest and colour, which are the dominating points.

Colour in Polish Fowl

The Silver Laced or Spangled Polish is the one most frequently seen. The only points differing from other silver-laced breeds being in—

(1) The *Crest*, which is silver in colour, but black at the base and the ends of the feather;

(2) The *Tail*, which is laced with *black* (other laced breeds like the Wyandotte, or Pencilled Hamburgh are laced with white);

(3) The *Sickles* also are laced with black, and spangled at the end. The *Beard* is mottled or laced also in both sexes.

Though often called the Spangled Polish, it is now really a laced fowl. It is seldom that the lacing is as perfect as in other laced breeds, and the irregularly marked breasts often present the appearance of the Spangled Hamburgh.

The Golden Polish is similar to the Silver, substituting gold for silver.

The White Polish is pure white throughout.

The Black Polish is set off with a white crest, and the **Blue** is the same. The contrast is very striking.

The Chamois Polish is buff in colour, each feather being tipped with white, and the sickles buff, laced with white. This variety has been suggested as suitable for crossing with the Buff Laced Wyandotte to perfect its markings.

The finest crests are found on the Silver and Golden Polish.

Mr. Wright says that a group of Chamois Polish, disporting themselves on the grass run is "a picture of surpassing loveliness." They are rarely seen, but if the neck-hackles shine like the burnished gold of the Buff Laced Wyandotte I can imagine no more charming sight.

THE SILKIE

No compendium of poultry would be complete without a mention of the Silkie fowl, which is a kind of enlarged Bantam, the cock weighing 3 lb. and the hen 2 lb., and instead of the ordinary webbed feather, being covered with a mass of silky fluff, or hair. In ordinary fowls the rib or stem of the feather is stiff. In the Silkie it is thin and weak, and the "fibre weak and non-elastic." In type it is Cochiny, and has short feathered shanks, with Dorking-like feet and five toes.

Darwin's description, *Animals . . . under Domestication*, chapter vii, is: "*Silkie Fowls:* Feathers silky, with the primary wing and tail feathers imperfect; skin, and periosteum of bones black; comb and wattles dark leaden blue," etc.

He points out another peculiarity, viz. the skin, which is a deep violet colour, almost black. The flesh is said to be good eating, though somewhat unsightly in appearance. Another peculiar feature is the comb, which in the cock is an almost circular cushion of purple-black flesh, covered with fine nodules, at the back of which is a crest soft and full, with a streamer of fine silky hairs streaming from the back of it, about an inch and a half long. In the hen the comb is small and neat, and the crest is like a powder puff, round in shape. The face and wattles are a purple-black, and the lobes small, oval in shape, and of a peculiar turquoise blue.

It is altogether a quaint, singular little creature, broad, stout looking, with a dainty strut, and a bright, intelligent-looking black eye, and legs and feet of a lead colour.

The essential points in judging are silkiness of feather in all parts of the plumage, correct leg-colour, the five toes, and well-feathered legs with fine silky feathers without any trace of a vulture hock. The correct colour of face, comb, and lobes each count for ten points, but a bird with a red comb or light eye could not win, however good other points may be.

The white colour is recessive to black, as may be imagined from the prevalent black pigment in skin, etc.

It has so many peculiar features that it is used in many experiments to test the Mendelian theories. In crossing, the silky feathers soon give way to the normal, but the black skin persists.

The Silkie is probably of Japanese origin and of ancient descent, since its many peculiar features, which breed true to type, must have taken a long time to perfect. Breeders of the Black Minorca are familiar with the silky, hair-like feathers which are common on the thighs and in the fluff of many of the best-coloured birds. This is derived from the Langshan, another Asiatic race.

They lay small cream-coloured eggs all the year round, but are persistent sitters, and want to incubate after each dozen eggs. In this fact lies their chief merit, as they are a perfect god-send to breeders of bantams, owing to their gentle and persistent habits. They are now being crossed with larger fowls, like the Wyandotte, to make broody hens of a larger size to hatch the eggs of larger breeds. They are probably the most regular, dependable, and persistent sitters known, and are often available in the early parts of the year when broody hens are scarce indeed.

Colour.—The most common colour is white, and the purer the colour the better, though many are creamy or sappy in tint.

There are also Black Silkies, which are again becoming fashionable, and Blue, though they are rarely seen. These are naturally the result of mating together the Black and the White. The purple head-gear would not

afford so great a contrast as in the White variety, but the appearance would be very quaint and pretty.

Fanciers who keep the Silkie grow very fond of them for their gentle habits and eccentric appearance, for much the same reason as Pug dogs are idolized as pets. The mystery of their origin adds an additional charm.

THE SCOTCH GREYS

At first glance this breed is hardly distinguishable from the Barred Plymouth Rock, as it is marked in the same way and is cuckoo coloured. A closer scrutiny will show that the Scotch Grey is of rather lighter build, that the tail is more abundantly furnished with sickle feathers, and, above all, that its shanks are not yellow, but white, or white lightly mottled with black. Good specimens are as large and heavy as the Rock, and the standard weight is given as from 9 to 11 lb. for cocks, and 7 to 9 lb. for hens.

It has been called the Scotch Dorking, though it has probably no Dorking blood in its veins. The Standard says of its shape and carriage: "Neither Dorking nor Game, but a blend of both, *i. e.* having feathers allied to both; erect, lively, active, bold and graceful." It has a more active and "gamey" look than the Rock, and is quicker in its movements. The fact that breeders find that it never throws a five-toed chicken is no proof that Dorking blood is not in it, since I cannot recall a case for the past six or seven years where a Buff Orpington has thrown a five-toed chick, although Dorking blood has undoubtedly been used in its formation. Its origin is doubtful. It so much resembles the Dominique in colour and style, except for the substitution of a single comb for the rose, that it is generally understood to have been derived in this way. But Mr. Harrison Weir thinks it is an original Scotch breed bred from the intermingling of ordinary farmyard stock, and quotes from Daniel's *Rural Sports* (1813), which describes them as "square, plump, short in leg and thigh . . . eyes red, *and ear-lobes white or pink*; the bodies of the hens were brown, or a grey-brown, with dark hackles, and the cocks had mottled grey and black breasts. The *Cuckoo Greys* were called Shepherd's

Plaids." Of the Scotch Grey he says, "This is a very old breed," and quotes Mrs. Ferguson Blair to impress the fact that such of them as were carefully bred had "light pink ear-lobes."

He declaims against the "red ear-lobe" as a sign of the introduction of alien blood, whether of Shanghai or Plymouth Rock. It would seem, therefore, that the breed is an old one, raised from mongrel stock, and known in Scotland, where it is still chiefly bred, long before the advent of the Plymouth Rock in 1872, and often shown at Scottish shows at an earlier date.

Mr. Lewis Wright says they were then much smaller than they are now, and it is probable that the Rock would be used, as soon as it "caught on," to perfect the plumage, as well as to increase the size. As a proof of this cross Mr. Weir says that on crossing some Scotch Grey hens, quite recently, with an Old Kent . . . white-shanked cock he "hatched two chicks with yellow feet," a reversion to type when thus crossed. Its utility qualities are considerable, as the breed is an excellent table-fowl, and a good layer of large eggs of a pale cream colour. They are not good sitters, as the broodiness soon passes off, and in this they are totally distinct from the Rock. Both the colour of the egg and this non-sitting trait show us that there is not a *large* element of Rock in them, since both are dominant characteristics. They are said not to stand confined quarters, and in this again they differ from the Rock. Their popularity is not great. At English shows they are about as rare as the Polish or the Sultan, though they are largely bred in Scotland, and are more popular in America than with us, which is a pity. But as with the Buffs, so with the Barred, there seems only room for one popular fowl.

Mating

In mating, the usual difficulties of "blurred markings" and white in tail have to be contended with, and the difficulty of keeping the blue colour is experienced.

In colour the *cock's plumage* is described as a ground-colour of pale greyish-blue, finely and evenly barred with a dark metallic blue, and the alternating bands of equal

afford so great a contrast as in the White variety, but the appearance would be very quaint and pretty.

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width. The shade all over the body should be of the same tint and the markings fine.

The hen is similar, except that the markings are larger and broader. This is much the same as in the old type of Barred Rock. Both black and very light chicks come from loosely-mated pens, and the remedy is the same as that described for Rock breeding, viz. to avoid breeding from stock with white feathers, and to see that the black pigment is plentiful and under-colour sound.

The Points for Judging

There is a club in Scotland to look after its interests. The points in Scotch Greys as drawn up by the Club in 1885 are summed up as 25, and divided as follows: Size 5, head 3, tail 3, colour 5, symmetry 5, condition 4. Total 25. But the Standard as now printed in the Poultry Club year-books differs very widely from this.

Dividing the points into 100, 10 are given for head and comb, and no less than 50 for colour, dividing the body into five sections and awarding ten each for hackle, shoulders, back, breast and tail. Size gets 15, symmetry and condition 10 each, and legs 5.

This shows at once the difficulty of getting a good coloured bird, and the corresponding value placed upon it. It is the only instance I know where colour is thus divided into sections, and at least affords a good hint to English standard makers, who might thus emphasize the importance of a difficult section, *e. g.* the wing-bow of a Barred Rock is very seldom clearly marked, and when found should be duly appraised.

The intense patriotism of Scotchmen will not allow the breed to die out either in Scotland or in "foreign parts," but whether it will ever become fashionable with us is more than doubtful.

THE SULTAN

This is a quaint, snow-white, crested fowl from the land of the Sultan, hence its name. Introduced from Constantinople in 1854, they have only been bred for a few ardent fanciers.

An odd specimen turns up now and again at Birming-

ham, which has several large classes for unclassified breeds, but otherwise they are, like their ancestors the Polish, seldom seen. They are medium in size, the cocks about 6 lb. and the hens 4½ lb.

In appearance they are more like the White Polish than any other, but they have heavily-feathered shanks with vulture hocks and five toes like the Houdan, while the comb is a nearer approach to that of the horned Crève-cœur than any other, and the crest is large, globular and compact.

In habit they are said to have a strange mixture of wildness and tameness, as when startled they will fly like Guinea fowls and alight on any tree or building within reach, and shortly afterwards come down and eat out of one's hand.

They lay a large white egg. The chicks are very hardy, like their parents. For the lovers of the curious they should afford a pleasing change, though they cannot claim the merit of utility in the same degree as the Silkie.

SUMATRA GAME

This is another ancient breed recently introduced into this country. During its brief sojourn of six or seven years it has found about a score of admirers, who have formed themselves into a Club for its welfare.

It is probably a native of the island whose name it bears, and ancient in its descent.

Its chief attraction lies in the wealth of its tail plumage, and the extra brilliance of its rich, glossy, beetle-green plumage. By the kindness of Miss Rilot, the ardent secretary of the Sumatra Club and one of its judges, I am enabled to give the Standard in full, from which its general appearance may well be gathered.

The birds are said to be hardy, and good layers of a fair-sized egg, and to be good for food.

They are very pugnacious and full of spirit.

The inherent love of the fancier "to go one better," and to win a prize by all or any means, is well illustrated by the fact that no sooner was the Sumatra introduced, than somebody tried by crossing the fierce pugnacity of the Aseel with the black-plumaged Langshan to

produce a pea-combed and black-plumaged fowl to compete with the Sumatra in its own class. It is a thousand pities that "well" cannot be let alone. The Club has set its face against the cross and stamped it out. Whether the strong individuality of the breed and its glorious sheen will make a sufficient number of admirers to make it "go," still remains a question. No breed lives long which does not frequently appear in the show-pen, and if the breed is to have classes of its own they must be guaranteed to fill by its supporters. This is an expensive matter, and had not the small Club formed for its maintenance been generous in its support the breed would, before now, have vanished into the obscurity from which it came.

This is another breed in which the novice may soon come to the front, and although there are not many special classes provided except at the larger shows, the breed can well hold its own in the variety classes at agricultural and other shows. When in good condition it stands out for distinction and grace, and often bears away the coveted award. They lose somewhat of their grace of outline and stately carriage when confined in the show-pen. But just as a true-born aristocrat can be detected no matter what his attire, so the Sumatra stands out from other breeds even in disadvantageous surroundings. Its large, bright and bold dark eye gives it a distinctness quite apart from any other.

The Black Sumatra Game Fowl Standard

GENERAL CHARACTERISTICS OF COCK

Head and Neck.—*Head:* Small, rather short, and somewhat rounded. *Beak:* Strong, of medium length, slightly curved. *Eye:* Large and very bright, with a quick and fearless expression. *Comb:* Pea, low in front, fitting close to the head, the smaller the better. *Face:* Smooth and fine in texture. *Ear-lobes and Wattles:* As small as possible, and fitting very closely. *Neck:* Rather long, nicely arched, and well covered with very long and flowing hackle.

Body.—*Breast:* Broad, full, and rounded, with straight breast-bone. *Back:* Of medium length, broad at shoulders, and very slightly tapering to tail. Saddle-hackle very long and flowing. *Stern:* Narrower than shoulders, but firm and compact. The whole body very firm and muscular. *Wings:* Strong, long, and large, carried with fronts slightly raised, the feathers folded very closely together, not carried drooping or over the back.

Tail: Long and drooping, with a large quantity of sickles and coverts, which should rise slightly above the stern and then fall streaming behind, nearly to the ground. Sickle and covert feathers should not be too broad.

Legs and Feet.—*Thighs:* Of strictly medium length, thick, strong, and muscular, set well apart. *Shanks:* Of strictly medium length, straight and strong, set well apart, with smooth, even scales, not flat or thin. There is no objection to two or more spurs on each leg, it being a peculiarity of the breed for this to occur. *Feet:* Broad and flat, four long, straight toes on each foot, spread well apart, with strong nails, the back toes standing well backward and flat on ground. *Plumage:* Very full and flowing, but not soft or fluffy. *General shape and carriage* somewhat long, straight and upright in front, with a pheasant-like carriage, giving a proud and stately appearance. *Size and Weight:* 5 to 6 lb.

General Characteristics of Hen

The same as in cock. *Size and Weight:* 4 to 5 lb.

Colour in Both Sexes.—*Beak:* Dark olive or black (olive preferred). *Eye:* Very dark red, dark brown, or black (dark red preferred). *Face, Comb, Lobes, and Wattles:* Black or "gipsy" faced or very dark red ("gipsy" faced preferred). *Legs and Feet:* Dark olive or black (olive preferred). *Plumage* throughout very rich glossy beetle-green or green-black, with as much sheen as possible.

Disqualifications.—Other than four toes, single, or rose-combs. Dubbing or any deformity.

Value of Points

Defects.	Deduct up to
Head and beak	5
Comb, face, lobes, wattles	10
Eye	5
Neck	5
Legs and feet	10
Colour and sheen	15
Carriage, type, and symmetry	20
Want of feather	15
Condition	15
A perfect bird to count	100

THE SUSSEX FOWL

The descent from the aristocratic Sumatra to the Sussex fowl is like coming from the castle to the lodge at the gate, or to the cottages which fringe the estate. It is a barn-door fowl, a poulterer's pet, as its name denotes, though, like some of its owners of humble

origin, it has mingled its blood with families of a higher rank in life, and added not a little of its usefulness and vigour to them.

Moreover, encouraged by the affluence of its near relations the Orpingtons, it has aspired also to the dignity of the show arena, and has found for itself a place in the latest editions of the Poultry Club Standards.

How much of the ancient Dorking and Game have found their way into its composition it is hard to say.

Its keenest defender is the late Mr. Harrison Weir, who illustrates it with pencil and pen, in his own inimitable way, in his great book, *Our Poultry*, though even he, after unstinted praise of its virtues and of its long-renowned usefulness, declaims against its degeneracy in these latter days.

It has been spoilt by Shanghai crosses, etc., and though it is now a clean-legged bird once more, it has also lost the fifth toe, the hall-mark of its usefulness. But, then, one cannot appear at Court in corduroy, and dress must change with altered circumstances.

Its chief merit, and that no small one, is its usefulness to the poulterer. It claims classes of its own at the great Dairy Show in the dead poultry classes, and when it competes with "Any Other Variety" usually secures prizes, finding its keenest rivals in the Orpingtons, which have run away with its plumes. But its merits are not only in its table qualities, though these are predominant, as it is also a capital winter layer, and owing to its mingled blood is of a robust constitution. Like many another aspirant for a rise in the world, it is often mistaken for a gentleman, and one has often to look twice to be sure that the "Speckled Sussex" is not one of the dignitaries which marched out at the great Jubilee procession in 1897.

They readily lay on fat and flesh, and have deep, well-developed breasts, with clean white legs and flesh, and provide a dish for an epicure. Whether the French copied from us, or we from them, the Sussex is the nearest approach to their composite breeds as a table-fowl, though their appearance is as wide apart as the two nationalities are distinct.

The Varieties

The varieties at present recognized are the Red (or Brown), the Light, and the Speckled. The Buff, which has not thrown off its Cochin garters, has been left to Lincolnshire.

General Characteristics of the Cock

The Orpington character prevails. *Single-comb:* Erect. *Ear-lobes and Wattles:* Medium in size. *Body:* Broad and square, carried well forward, with a long and deep breast-bone. The *shoulders* are wide, and the *back* broad and flat with less feather and fluff than the Orpington. There is more of the Game character about it. The skin is clear, fine in texture and white. *Tail:* Moderate. *Legs and Feet:* Thighs and shanks short and stout and free from feathers. *Toes:* Four only. *The general shape* is cobby and compact with erect carriage. *Size and Weight:* 9 lb. and upwards, and the plumage close.

The Hen is like the cock, except that the back is curved backwards. *Weight*: 7 lb. and upwards.

Colour of the Red Variety

Beak, Shanks and Feet and Skin: A clear white. *Eye:* Red or brown.

In the Cock.—*Plumage:* Glossy brown striped with black in the head and hackle. *Body:* Dark or chestnut-brown, with darker wings and wing-bow. *The tail* is black, with dark-brown tail coverts. Flight feathers black.

The Hen.—The colour is similar, dark brown and black in hackle striping, tail and flights.

Both look like the earlier Buff Orpingtons of too ruddy a type.

Colour of the Light Variety

The Cock.—Similar to above, except in colour of plumage and that the *eye* is orange. The *plumage* is white throughout except the *neck-hackle*, which is striped with black like a Columbian Wyandotte. The *tail* is black and the flights have black feathers. The *tail coverts*, like the hackle, are slightly tipped with black.

The Hen is similar, pure white except in hackle, which is striped with black, and has black in the flights, and a black tail.

Colour in the Speckled Variety

This looks like a cross between the two, black, white and brown feathers being intermingled, but some authorities think it the oldest variety of the three. The *eye* may be orange or brown in either sex. *Beak:* White or horn. *Legs, Feet and Skin:* White. *Comb, Face, Ear-lobes and Wattles:* Red.

In the Cock.—*Head:* Rich red, with black stripe in hackle, but with a white tip. *Wing-bow:* Red. *Flights:* White. *Tail:* Black and white. *Saddle-hackle:* Like the neck. *Body-colour:* Speckled as evenly as possible with black, white and brown.

In the Hen.—Same as cock, except that the whole body is speckled with the three colours, and the tail also has the three colours.

They are very like the Jubilee Orpington, except that the Orpington is a little deeper in colour, and insists on a mahogany stripe to the feather. The Sussex is quite as large and heavy, and has probably more breast-meat but less fluff.

The Points

In all the varieties size counts for most, then type and colour.

Defects are five toes, feathered shanks, other than single-comb, and any bodily deformity.

They are a good useful fowl, but bred far more loosely in type and colour than the Orpington. Utility is stamped on them in large letters, and beauty is quite a secondary point.

CHAPTER XVII

FRENCH BREEDS OF POULTRY

FAVEROLLES—HOUDAN—CRÈVE-CŒUR—LA BRESSE—LA FLÈCHE, ETC.

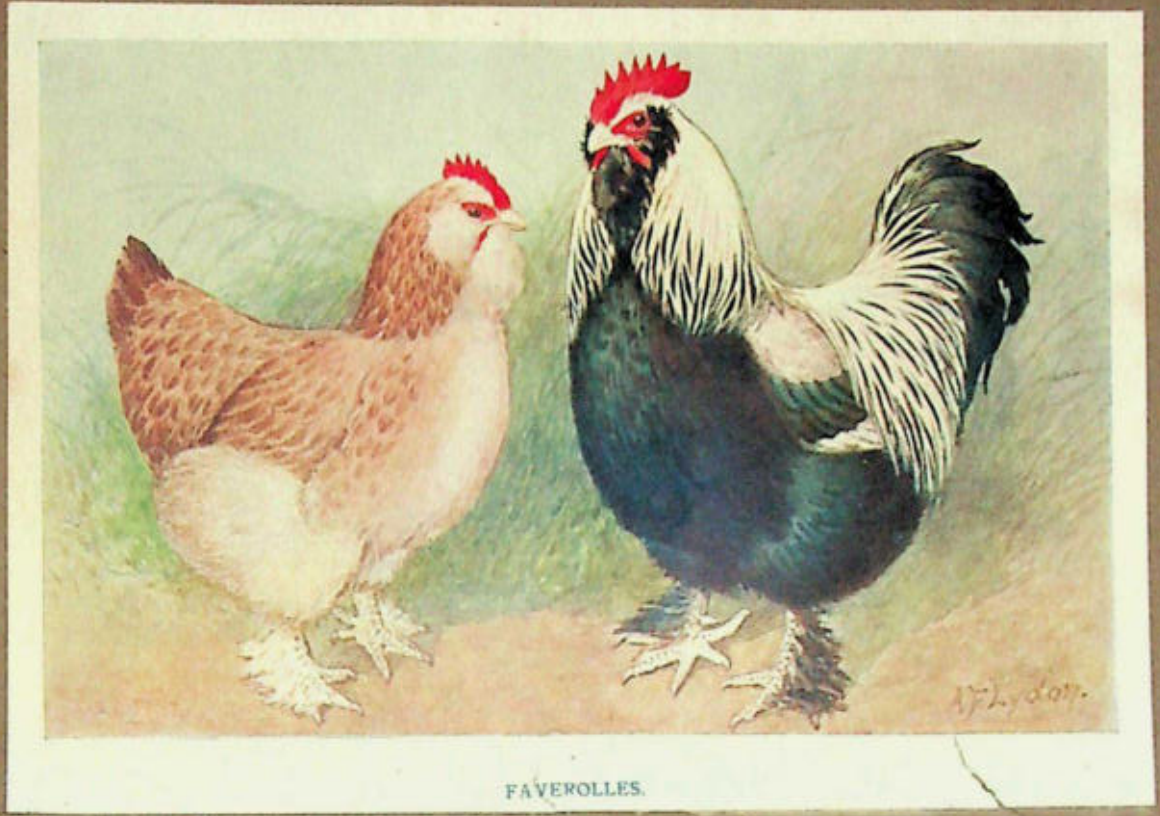
Of the numerous varieties of poultry bred in France, only the Faverolles and the Houdan are at all widely cultivated in England, though specimens of the other breeds are occasionally seen at our larger shows, when they usually appear in the "Any Other Variety" classes. Of these only a brief notice can be given.

Although we import an enormous quantity of eggs, and those of the finest quality, *from* France, it is noteworthy that the pure breeds which are cultivated there are more valuable on account of their table qualities than for their egg production. The French produce some of the best table-fowls in the world, and Mr. Brown declares that the flesh of the La Bresse has a flavour decidedly in advance of the Dorking. Poultry are much more common as an article of diet on the Continent, though we are slowly progressing in that direction.

It should be remembered, however, that such good qualities as they possess have chiefly been derived from our Dorking crossed with other breeds, and it is not unlikely that their superiority is due to the care bestowed on fattening them, and to the culinary skill for which the French are famous.

THE FAVEROLLES

This is the most popular French breed in England at the present time, although it is one of the most modern. It is very composite in its blood, being built up from the Houdan, Dorking, Cochin, Brahma, etc.



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It has the shape and comb of the Dorking, and the five toes, while it inherits the beard and muffling, or whiskers, of the Houdan, and the feathered shanks of the Cochin. There are various types and colours in France, but the Salmon Faverolles is the one favoured by English fanciers, so named from the colour of the hen. The cock resembles the Silver Dorking more than any other English breed.

It was famed as a good layer when it was introduced to us about 1896; but its very shape and size pronounces it to be a good table-fowl, and one hears less about its egg-laying proclivities than formerly.

There is an Ermine or White Faverolles, marked like the Light Brahma, and a Black variety, which may become popular later on, as there is a general demand in England for self-coloured fowls, whether white, black, or buff.

In shape and type all the colours should be alike, the Dorking element being the most pronounced. The chickens are said to be very hardy and to put on weight quickly, which is a matter of importance to those who raise early chickens for the market. So far, however, they have done nothing more than gain "commended" cards when shown in competition against other English breeds—the Orpington or the cross-bred Sussex usually taking higher places. As a cross with the Indian Game they have done better. There is little doubt, however, that they are more robust than the Dorking, and when bred, pure or crossed, as table-fowls for the general market, they take a high place, and should be popular with farmers, who like a fowl to carry lots of flesh and to be thoroughly hardy.

General Characteristics

The Cock.—*Head:* Broad, flat and short, free from crest. *Comb:* Single, erect and neat. *Ear-lobes:* Small, hidden by whiskers. *Wattles:* Small. *Beard and Muffling:* Full, but the beard is preferred short. *Neck:* Thick and short. *Body:* Thick, deep and broad; square, like the Dorking. *Breast:* Broad, prominent. *The Back:* Flat, square, very broad across the shoulders, more rounded than the Dorking and not so long. *The Tail:* Carried rather upright, sickles of medium length,

carried like a Brahma's. *The Legs and Feet.*—*Thighs:* Short, wide apart. *Shanks:* Rather short, straight, and sparingly feathered down to outer toe. *Toes:* Five in number, the fifth toe clearly divided from the fourth and turned up. *General carriage:* Active and alert. *Size:* Large, 7 to 9 lb.

The Hen.—*Head and Neck:* Like the cock, but with a neater comb and more erect carriage. *Body:* Longer and deeper as compared with the cock, with a longer and straighter back. *Tail:* Fan-shaped, furnished with broad feathers of medium length, carried at an angle of about 45°. *Size:* Large, about 6 to 7 lb.

Colour

In both Sexes.—*Beak:* Horn or white. *Eye:* Grey or hazel. *Face, Ear-lobes, and Wattles:* Red. *Shanks and Feet:* White.

In the Cock.—*Beard and Muffling:* Black, ticked with white. *Hackles:* Straw colour (many otherwise good specimens have a silvery hackle too like the Dorking's). *Back and Shoulders:* A tortoiseshell colour, a mixture of black, white and brown (many are altogether too silvery). *Breast:* Black (not ticked with white), and the same for *thighs*, *under-colour*, and *tail*. *Wing-bow:* Straw colour.

In the Hen.—*Beard and Muffling:* Creamy white. *Head and Neck-hackle:* A wheaten colour, striped with same colour of a darker shade. *Back and Shoulders* the same, the colour running lighter on the sides, while the *breast*, *thighs* and *under-parts* fade away to a cream colour. *The tail* a darker wheaten-brown.

The points for beard and muffling and colour count 45, and so are the most important.

Serious Defects are skin or legs any other colour than white, or absence of beard or whiskers.

The coloured illustration of the cock is excellent in shape and style, but the colour of the hackles should be straw, not silver, and should be devoid of striping. The hen is well depicted, and little fault can be found with it. Many exhibition specimens are too washy in colour. The colour might, however, have been a little more regular and softer on the wing, and not show the glint

of white on breast. Coloured plates cannot yet accurately depict the fineness and delicacy of colour the fancier looks for. I might add that the lustre of the cock's black plumage should be bronze, and not a beetle-green.

Hints on Mating

There is no other breed where the two sexes present so marked a contrast in colour, though the various members of the black-red family and the Dark Dorking present a somewhat similar appearance. In these classes the hens have salmon-coloured breasts, and the cocks a black breast, and the general rules for mating these breeds will apply to the Faverolles.

Black feathers in the tail of the hen or smutty under-colour are defects in the show-pen, but would help to maintain the colour in the cocks bred from them, and the more straw-coloured the hackles of the cock and the more red pigment on the back will help to breed good salmon-coloured pullets, as also the presence of bronze in his plumage and brownish feathers in his tail. With such a conglomeration of colours, and of mixed pedigree, the colour factor must be a puzzle for a long time, but the breed is fast losing its "farmyard" appearance, and the many varied types and colours once seen in the show-pen, when almost every yard sported its own colours, are fast coming to some uniformity. It is a valuable addition to our gallery of living pictures, while its economic qualities will ensure it a long life.

THE HOUDAN

This is one of the oldest of the French breeds, and perhaps the most familiar to us. Though bred by comparatively few as a pure breed, the cockerels are used in all parts of England to cross farmyard stock. It is more active and hardy than the Dorking, which largely enters into its composition, and enables it to breed good table-fowls with abundant white flesh, while it is not to be despised as a layer. The distinctness of its blood adds vigour to the other breeds with which it intermingles, though they mostly bear a mongrel appearance and all come with top-knots, beards and



HOUDAN COCK.
Property of Mr. Henry Edye.
Winner, 1st, International, etc.

whiskers, though of diminished size. Readers of the Chapter on "Mendelism" will note how the distinctive characteristics of the Houdan have made it one of the chief sources of experiment in the matter of inheritance.

In the early books on poultry it figured much more prominently than it does to-day, and half a century ago this breed, and the various colours of the Polish fowl, took a chief place among our ornamental races, before they were swamped by the various modern creations of America and the Mediterranean importations.

The Crève-cœur and the Polish fowl are said to have been used in its making, and from these its peculiar head-gear have been derived. The crest is very like that of the Crève-cœur in shape, but mottled black and white, the latter colour usually prevailing, and the beard and muff are the same. Its most noticeable feature is the comb, which the Standard describes as "well defined, even, smooth leaf-comb, in shape somewhat resembling a butterfly (with open wings) placed in the centre of the head." The "wings" of the comb are serrated like those of single-combed birds, while the centre is like a small, ill-shaped strawberry. This shape of comb is peculiar to the Houdan. The two horns of the V-shaped Crève-cœur comb bifurcate in the same way, and a cross between that fowl and a single-combed fowl like the Dorking would be likely to produce it.

Characteristics of Cock

In shape the Houdan is more like the Dorking, though it also resembles the Crève-cœur. The *Breast* is broad and deep, with a long and straight breast-bone. *Back:* Broad and moderately long. *Wing:* Carried well up. *Tail:* Full, and well arched, with long and prominent sickles, carried at a higher angle than the Dorking, and more like the Crève. *Thighs and Legs:* Stout, short, and wide apart, and finer in bone than the Dorking. *Toes:* Five in number, the fifth curving upwards like the Dorking. *The Crest:* Bold and full, inclined backward so as to fully expose the comb. (The *large* crest is not common in France, nor with us when bred for utility purposes, and is against the fowl's health when once grown.) *The Comb:* As described

above. *General Shape and Carriage:* Bold and lively. (The Houdan cocks are very active, and rare fertilizers.) The beard and whiskers are large, full, and compact, and hide most of the face, while the wattles are correspondingly small, as though the beard had taken their place. *Size and Weight:* 7 to 8 lb. (In the show-pen the larger the better.)

Characteristics of the Hen

Crest: Very large and globular. *Comb:* Leaf-shaped but small. *Muffles:* Large, and beard pendulous. *Wattles:* Very small and round. *Tail:* Medium length and carried almost straight (not erect as in the cock). *The body and legs and other parts* as in the cock. *Weight:* 6 to 7 lb.

Colour of Houdans

In both Sexes.—*Beak:* Horn. *Eye:* Red. *Ear-lobes:* Pinky-white. *Crest:* Black and white, usually lighter than the body-colour, but evenly distributed. *Beard and Muff:* The same. *Plumage:* Glossy green, black and white, evenly mottled, with crescentic white markings. Like all black and white birds, the white is greater in extent as the birds advance in age; and many exhibition chickens are almost black, but whether much mottled or little, it should be evenly distributed. The darker birds have usually darker legs, but these are not desirable.

Legs and Feet: Pinky-white, mottled with blue or black. As in all dark-legged birds the black turns slate-colour after the first moult.

Serious Defects: Red or straw-coloured feathers. These feathers are natural to all black birds, and indicate a reversion to the original type. The barndoor Houdan has them in abundance, but they are a serious defect in show birds. Other serious defects are an outside spur, other than five toes, or any deformity.

Hints on Mating

The rules for all black and white birds apply to the Houdan. Even-coloured birds on both sides would throw some good specimens, but many would be too light, as the general law as to loss of colour with time

prevails. A light cock should be mated with dark hens, or *vice versâ*. As in all other breeds, birds with similar defects should not be mated together.

The birds are vigorous to an advanced age, where climatic conditions suit them, but, so far as my experience goes, a cold and damp situation is most detrimental, and renders the stock peculiarly liable to roup. This is common with all crested breeds.

Their chief use in England has been to cross with farmyard stock, and this is likely to remain so. Breeders are comparatively few, and those chiefly confined to the southern counties.

THE CRÈVE-CŒUR

This is one of the oldest of the French breeds. To all intents and purposes they are practically a black-plumaged Houdan with four toes and with a two-horned V-shaped comb instead of a leaf-comb. They are seldom seen and but little bred or exhibited in England, and are said to be rather delicate in constitution. They derive their name from the peculiar shape of the comb (Crève-cœur = split hearts), the comb being like a V with a broad base and filled up half its height with a protuberant growth of flesh. The horns of the comb should be straight, not curved, and without branchings. The shape of the comb alone would stamp it as a very ancient breed, since to perfect its peculiar shape from either the single-comb or crosses with the rose, etc., would take a long period.

The General Characteristics, as already stated, are similar to the Houdan. The body is square and large and the legs short. It is a more cloddy bird than the Houdan, and a trifle larger. The entire plumage and legs are black. The crest of both sexes resembles the Houdan except in colour. The wattles are longer. They are said to be good layers of large white eggs. As with so many other black breeds, there is a White variety, and blues are not unknown, but rare.

LA BRESSE

From what I have seen of this breed it presents a more mongrelized appearance than any French breed. Their great feature is their value as table-fowls, and

they are well known, as they appear on every menu in Continental hotels, as "Poules de la Bresse." Some writers even place them ahead of the "La Flèche."

They are distinctly of the Mediterranean class, and are more like big mongrelized Leghorns than anything else, though with smaller combs, erect in the cock and falling over in the hens. I have only seen the white, but there are black, blue, and grey as well. Their various sizes and shapes may be inferred from the fact that while some writers call them "Dorkings with four toes," others say they are "more like the Ancona than the Dorking."

They are a "poulterer's" fowl, and seem to fill their office well, and they are also said to have the merit of being good layers. They may have a chance of becoming a favourite with the Utility Poultry Club, but as a fancier's fowl they are simply nowhere, and though they appear in mixed classes now and again, I have no recollection of seeing one in the prize list. The lobes may be any colour, red, blue, white, or a mixture, but as the lobes are not to be eaten this is of small consequence. They seem to be a good and useful "barn-door" fowl, and would not merit a notice but for their estimable culinary properties.

LA FLÈCHE

This bird, as its name implies, is *the* table-bird of France. Except for the comb, these birds resemble a Black Minorca more than any other breed. In the illustration in Wright's *Book of Poultry* the pair depicted would make ideal Minorcas if they had single-combs instead of the two small round horns which act as a substitute. The white lobes are, however, more rounded in shape and not so large.

They are splendid table-fowls, though again they are said to be delicate and not to mature very rapidly.

The comb is not as large as the Crève-cœur's, and does not branch as widely, and the two neat round horns seem to spring more directly from the head, and have no growth between. They are at once distinguished from the Crève by having either no crest, or only a small tuft inclining backwards behind the horns. It may be fancy, but I always think they are more

diabolical in appearance than any other breed. The colour of the plumage is black, the shanks clean, and either black or dark-blue, and the eye red. There are usually a few to be seen in the A.O.V. Classes at our greater shows, and they are not infrequently in the prize list. They lay a large white egg. It has been suggested that they are the outcome of a cross between the Black Spanish and the Polish. Weight, adult cocks, 8 lb.; hens, 6 lb. More points are given for size, symmetry, and condition than anything else, while 10 points are deducted if the crest is large.

OTHER FRENCH BREEDS

These can only be briefly enumerated.

Du Mans.—A breed resembling the La Flèche, but with a rose-comb. It might make a good cross for breeding rose-combed Minorcas. The plumage is black and the ear-lobes white. The flesh is fine and delicate, and it is a good layer.

Du Mantes.—A mongrel Faverolles, with single-comb, a beard, and thick, clean grey legs. It is speckled in plumage like the Houdan, but is a sitter. It is said to be a first-class layer.

Courtes Pattes.—Mr. Brown calls these a "quaint little fowl" with black plumage, with *very* short legs, a single-comb, of Mediterranean type. They are recommended as "a gardener's fowl," as they cannot scratch much, but I should not like to keep the best of them there unless on a cabbage-patch.

The Barbezieux, said to be the Minorca of France, a descendant of the Black Spanish race, and like its ancestors good alike for eggs and table purposes. It is bred for utility and has no pretensions to beauty or exhibition qualities.

There are other breeds still less known. Table qualities are the prime object, while the egg-basket is not overlooked. Utilitarians may well think that our Gallic neighbours take a saner view than we do of the purposes for which poultry were created. They set us the fashion in their Parisian gowns, but it would seem that they have no eye for beauty in other directions. When this is needed they buy or borrow from us.

CHAPTER XVIII

BANTAMS

At all the greater shows there is now an extensive array of classes for Bantams, while there are but few indeed of the smaller shows where several classes are not found. At the International Show of 1908 there were 275 classes for the large breeds of poultry, and 103 for Bantams. The larger breeds had 3560 exhibits, and the Bantams 1070. This one list alone will show to how great an extent the Bantam fancy has grown in recent years, and it is still largely increasing, so that it bids fair, in the near future, for every breed and variety of the larger breeds to have its counterpart in the smaller. The more the varieties extend the easier it becomes to still further extend them, since the main difficulty in the past has been to find breeds of the right colour small enough to cross with the new variety it is desired to bantamize. But as all our modern breeds are said to have descended from the *Gallus Bankiva*, and perhaps another large and heavily-feathered Asiatic ancestor, so the Bantams of to-day are largely indebted to the Game Bantam and to various crosses with the Silkie fowl. They are more "crossed" and hybridized even than the bigger breeds, and hence the necessity of inbreeding whenever a new variety is started, both to preserve the type, and also to keep down the size. No sooner is a new breed started to-day than a simultaneous effort is made to produce its counterpart, and the skill and ingenuity required in the selection of the parent stock and the subsequent matings is one of the great incentives to take up the fancy. They are great pets with ladies and children, and an example has been set by our gracious Queen Alexandra, who is a great



Sebrights.

Frizzles. White Japanese.

Black and White Rose-combs.

Silver Spangled Hamburghs. White Polish.

Silkies (centre).

Spanish. Silver Laced Wyandottes.

Indian Game. Modern Game. Scotch Greys. Old English Game.

White Pekins. Malays. Light Brahmas.

admirer of them and a frequent exhibitor. The perfection to which they have attained is testified to by the fact that a Bantam not infrequently bears away the coveted trophy for "the best bird in the show."

At the smaller shows they are usually divided into two classes for Game Bantams, and two for "Variety Bantams"; or two for clean-legged varieties and two for feather-legged varieties; and sometimes into six classes, in which the Game have two to themselves, with two for other clean-legged varieties and two for the feather-legged.

It is much less costly to exhibit Bantams than the larger breeds. The entry fee and the prize money are usually the same, but the cost of railway carriage to and from a show is only about one-fourth as much. Three or four Bantams and the divided hamper in which they are sent would not weigh more than one hamper with a large bird. In shows a long distance from home this makes a material difference.

There is a great charm about these little pets, and though some of the varieties are notoriously bad layers, like their larger ancestors, others give as good a return in eggs, when the diminished cost of housing and feeding are considered, as the bigger breeds, and many a delicate invalid could be tempted with a Bantam's egg who would turn aside from an ordinary one.

Three or four hens and a cock form a decent breeding pen, and the house to hold them need not be above 3 feet by 2 feet, while the run necessary to keep them in health may be correspondingly diminished. There is no trouble preparing hot food, since hard corn forms their staple diet, in order to keep down the size, and though they need careful management, they are not half the trouble of the bigger breeds, except at hatching time, when the young are more delicate. Some Bantam hens will hatch and rear their own chickens comfortably, and a bantamized hen of a larger breed will do, but most expert breeders employ the Silkie or a cross of the Silkie and another breed for this purpose. The eggs do not hatch well in an incubator, though it is a common and successful practice to remove the eggs from the hen a few days before hatching and then place them in an incubator to hatch out, a practice

successfully adopted also with the larger fowl, as there is then no danger of the chick being crushed.

One of the chief points for the exhibitor to aim at is diminished size, the general rule being that a Bantam should weigh *one-fifth the weight* of the original breed, so that when a cock weighs 6 lb. in a large breed the Bantam should weigh 18 to 20 ozs., and if the hen weighs 5 lb. the Bantam should be 16 ozs. Some allowance is made in the newer breeds for extra size, as it usually takes years to get type and size combined into regulation order.

This lilliputian size is one of the chief difficulties for the breeder, as the very tiny specimens rarely lay fertile eggs, and indeed there is considerable danger in their laying eggs at all when the size is diminished below the average, so that many a champion in the show-pen leaves no progeny behind.

When they are kept as pets only, with no intention of showing, they usually exceed the standard weights, but they are more easily reared, unless the other extreme is reached and the birds are over-fed and too fat.

This chapter can only glance at this dwarf race, as each of the numerous breeds with their sub-varieties could claim a chapter to itself. There are several standard works covering the whole ground, besides monographs of the more popular, and to these the reader who desires to exhibit is referred.

Most of the Bantams are simply a copy in miniature of the larger breeds, one-fifth or thereabouts of the size, and with similar markings and characteristics.

The scales of points, however, differ materially, and as the newer varieties approach perfection, the scale is amended from time to time, and the way to be "up to date" is either to join the club which fosters the variety, or at least to secure the latest "standard of perfection" issued by the club, and which may vary any year. The Poultry Club Standards are only revised at much longer intervals. In the case of the older and better-known varieties the standard remains permanent.

In all the Bantams it is desirable to breed as small

as possible, but type, symmetry and colour should have the first consideration and in the order named. It will also be found that in many of the varieties head-points count for more than in their large counterparts, *e. g.* in Minorca Bantams, defects in comb count 30 points, while in the larger it is 15; in Leghorn Bantams 20, in the larger 12. The reason of this is that in breeding the smaller birds, breeds with rose-combs, or peculiar combs like the Silkie, have been introduced, and perfect combs are more difficult of attainment. The same general rule naturally applies throughout, viz. that where any feature is the most difficult to obtain, it scores the highest number of points. In no single instance do the points count exactly the same in the larger and the smaller races, although the aim of the Bantam breeder is to produce a copy in miniature. In one case it is size, in another shape or colour; in others wealth of feather is most difficult to obtain in foot and shank or tail. It is therefore necessary for the amateur breeder to know which points are the most important for the time being, and not to despise a Bantam for a failing which would at once put the larger breed out of court.

Bantam breeders guard their secrets more jealously than any others, and the methods by which the various breeds have been bantamized, and brought to the measure of perfection they have attained, are not the popular possession of the Fancy, and there is no book of which I am aware that goes into the details of the matter. The reader of the Chapters on "Mendelism" and "Colour" who takes the pains to understand the law of the segregation of the gametes, and the dominant and recessive qualities will have a guide more valuable to him, than to the breeder of the established varieties, because there is more hybridizing to be done on systematic lines than is necessary for the larger breeds, and the choice of material is smaller.

The most popular varieties are the Game Bantams, the Black Rose-comb, the Sebright, and the Pekin in its various colours; though there are many charming minor varieties fast gaining ground, among which the Brahma Bantam takes a foremost place. Of these the Sebright has no large namesake, and this distinction

is shared by other breeds such as the Booted Bantam and the Japanese.

The Game Bantam is a copy in miniature of its elders, and exists in nearly all its varieties. The small size and the fineness of bone are two of its most difficult attainments. The weight for moderns is 20 ozs. for cockerels and 24 ozs. for cocks; for pullets 18 ozs. and hens 20 ozs. The various "points" are fairly equally divided between size, type, colour and feather. Coarseness is a great fault. The feather should be short and the bone light. Shortness and compactness of body with great reach of limb are essentials. The Black-reds are the most popular, and a good specimen realizes a high figure. Piles are sometimes victorious over the other colours, and are marvels of colour and daintiness. Birchens are more difficult to keep small, but are very attractive, while their counterparts, the Brown-reds, are as difficult as any to breed true to colour. A good Game Bantam cockerel, with its erect carriage and finely-drawn body, is the daintiest creature imaginable.

Old English Bantams follow the moderns closely in the race for popularity, and as the good ones are not in as few hands, and are later in origin, they are rising in demand. The Spangle is perhaps the most popular, the Black-reds are very attractive, but for quaintness of colour the Blue-reds take first place. They are as small in weight, but shorter in build and more bulky in body than the moderns.

Rose-combed Bantams are very popular, especially the black variety. They resemble the Black Hamburgh in style and shape. A good colour and a wealth of broad sickles are prominent features, while the comb and earlobes count for 35 per cent. of the marks. The remarks made about the trimming of Hamburghs' combs are said to apply with even greater force to the Bantam's. If the patience and skill which is devoted to the manipulation of combs were applied to breeding them, and due allowance made for minor defects for a time, the need for trimming would die a natural death. As it is, a clever faker escapes, and the clumsy hand is penalized, while the novice and the man who would exhibit his stock as Nature made them is discouraged.

In breeding, great care should be exercised to select a cock that has been *bred* with a good comb, neat in size, square in front, and the top "crowded with little round spikes," which have not been multiplied by the trimmer's dividing knife, not cut off at the sides, where they are apt to overhang. If a trimmed comb would breed its "like" something could be said for it, but where "cut and come again" is so fruitful in a wrong direction the practice is deplorable. For diminution in size the smallest hens that will breed should be selected, the cock being the fount of colour and style, and the hen of stamina and size.

The White Rose-comb is very pretty, but not bred so near to perfection nor so popular as the Black.

Sebright Bantams have many attractions. They are the most jaunty little creatures in existence, and the wondrous delicacy of their lacing is not equalled by any other breed, large or small. There are two colours, the Silver Laced and the Gold Laced, of which the former is the more strikingly attractive, and the more popular, and the lacing is usually more perfect. In the lacing their nearest compeers are the Silver Wyandottes, but the perfection of lacing is not comparable, while the comb is more like that of the Hamburgh, narrowing at the back, and slightly upturned, the top being covered with tiny coral-like points. The wings are carried low, almost touching the ground. *The peculiar feature of the cock* is that he is hen-feathered, and has no true hackle feathers, while the tail is hen-shaped, spread out and carried high. The body is short and compact, and the breast prominent.

The hen is similar in shape and general characteristics, but has a smaller comb and head-points. The lobe in both sexes is dark purple or dull red, the eye dark, the legs a slate-coloured blue. *The rules for breeding* are similar to those for breeding Silver Wyandottes. For cock-breeding a correctly-marked cock is mated to pullets heavy in lacing, or a heavily-marked cockerel to lightly-laced pullets, the general tendency being to a loss of intensity of colour.

In pullet-breeding mate a lightly-laced cock with pullets too heavily laced for the show-pen. It is said that if a cockerel has a tendency to sickle feathers he

is serviceable for pullet-breeding, and is more likely to be fertile, as sterility is a usual accompaniment of hen-feathered cocks. Of course, a Sebright cock with sickle feathers would be of no service for showing, nor would he be likely to breed good cocks.

The plumage of the Silver should be a clear silvery-white ground-colour with a sharp, fine lacing of beetle-green black. Every feather should be evenly laced, even the secondary feathers and the tail. These latter are the weak parts. There are specimens as nearly perfect as possible, but a great number fail at the bottom, or unexposed, part of the feather, where the lacing fails, or there are smudges of black. A good laced specimen is lacing at its best.

In the Golds the lacing is the same, and the ground-colour a uniform golden bay throughout. The difficulty is to get the colour even and to avoid a pale buff colour or a rustiness on the black. In buying a pen take care that all the birds are either cockerel-bred or pullet-bred. Inbreeding and keeping to one strain is necessary to achieve and to maintain success, and, as in so many other breeds, better results are obtained by mating together birds lightly laced with their mates heavily laced, than from breeding show specimens together.

This is one of the oldest breeds of Bantams, and has a pedigree dating back to 1800, when Sir John Sebright brought out the breed. There has been a Sebright Club for nearly 100 years. An interesting account of their origin is given in the first edition of Lewis Wright's *Book of Poultry*. The cross was between some common Bantams (*i.e.* probably Game) and the laced Polish, and then a hen-tailed Bantam cock was accidentally discovered, from which this peculiarity has been bred. It would appear that the Golds were first bred, and then the Silvers were made by the introduction of a white Bantam Cock. The actual and precise methods by which the Sebright was made does not seem to have been disclosed. They are very popular, and 150 specimens were exhibited at the club show of 1908.

The Pekin Bantam is a miniature of the Cochin, and though it cannot claim to stand alone, like the

Sebright, yet it has the undoubted merit of being even more perfect and beautiful than its elders in the feathering of the shanks and feet. In America they are called Cochin Bantams. The cock's standard weight is 32 ozs. and the hen's 28 ozs.

They are now bred in all the Cochin colours, Buff Partridge, Black, White Cuckoo, and Mottled. *The standard of perfection* is almost identical with that for the Cochin, and the same for the colour; and the breeder would not go wrong who referred and adhered to these standards.

They have single erect combs, long wattles, short and arched necks, bodies broad and deep, with a prominent and rounded breast; the nearer they are to rotundity the better. The cushion is pronounced, the tail short, and the fluff abundant. The shanks are heavily feathered, and so are the middle and outer toes.

The colours are the same as for the Cochins, and no description of the Buff, Partridge, White or Black is needed, save that the latter has a better sheen than the Cochin, and the more metallic it is the better. Of these colours the black is decidedly the most popular. The cuckoo colour is seldom seen and the mottle hardly ever, the latter colour being black mottled with white.

They are the hardiest of all the Bantams, and I have known them reared in backyards of the tiniest area. Like all heavily foot-feathered birds they are best when kept on short grass, but I have known many reared on boards only, with a very thin covering of peat moss or sand. For breeding purposes the feathers are often cut away from the feet and shanks of the cock to make him more sprightly, and the heavy fluff of the pullets is also cut short. They make the best of sitters. Mr. Lewis Wright says, "If a Pekin hen be crossed with a Silkie cock they produce the very best sitters for Bantams that can be produced, which cannot be equalled either as sitters or mothers for Bantam chicks."

The White Pekin is liable to a creamy or yellow tinge, and is often crossed with a Black Pekin to eradicate this taint. The white chicks from the cross are a purer white and breed true to colour, which is another illustration of Mendel's Law of Segregation and of the dominance of white over black. The black

chicks from the cross carry white as a recessive factor, and do not breed as true, though they may be useful in breeding cuckoo-coloured progeny.

It is a great pity that the practice has grown up of almost universally trimming the Pekin's tail feathers to preserve the short tail and the rotund appearance. A well-timed resolution recently passed by the Poultry Club to penalize this action will, it is hoped, have a good effect in putting an end to the practice. It only wants patient and persistent breeding from the shorter-tailed specimens to bring about a permanent amendment.

Booted Bantams differ from the Pekin in being taller and longer-limbed. The wings are carried drooping and are large and long. Stiff feathers on the hocks reach almost to the ground, and the carriage, instead of being stooping like the Cochin, with the head and tail on the same horizontal line, is erect and strutting. The tail is large and carried erect, and the sickles are long. The weight is less than the Pekin Bantams, being 22 ozs. for cockerels and 18 ozs. for pullets.

The White Booted has white legs and the Black Booted black legs, whereas the Pekins have yellow. There are also spangled Booteds, and occasionally a muffled sub-variety is seen. They are not often exhibited in the show-pen. They are the most heavily-feathered variety of Bantam, and great care is needed to keep the enormous foot-feathering intact.

The Japanese Bantam is another old variety with no large type corresponding to it. They are very odd, quaint little beings, with legs so short that the body is only just carried above the ground. They are more like a squat Booted than any other, with long wings almost touching the ground, but with tails so erect that they almost touch the head. There are whites, blacks, greys and buffs in colour. They have short, clean legs and feet, which are yellow in colour. The "white" has a black tail laced with white and with a ticked neck-hackle. They are an ancient race and are said to breed very true. There were 25 on view at the last International Show.

The Scotch Grey Bantam is a midget of the old

and large Scotch Grey. An admirable monograph is written on the breed by Mr. R. Fletcher Hearnshaw. The Scotch Grey can boast of a 50 years' pedigree. It was bred from small, late-hatched Scotch Greys and Black Rose-comb Bantams, the latter cross being said to account for the white in the lobes of so many show specimens. They are a hardy breed and good layers, and a good sort for an amateur to start with.

These are difficult to breed true, like the Barred Rock and the Scotch Greys. There are the usual wasters of very light chicks and black ones according to Mendel's Law, and of the rest some are medium in shade and others dark, and, like the bigger breeds, a good Black mated with well-barred but light chicks may throw good-coloured chicks. They are not as popular as many other breeds, but are coming to the front. Really sound specimens of an even shade, free from black feathers or others too light, are not plentiful.

The colour of the ground is a pale greyish-blue, finely and evenly barred with a dark metallic blue. A great point is the evenness of shade from head to tail.

Brahma Bantams are very pretty and striking. They are a much more recent addition than Pekins, and how much they owe to this breed and to the Silkie is not told us. They have not yet attained to the standard of one-fifth, but are rapidly diminishing in size. They do not lay as freely as the Rose-comb or the Scotch Grey, following their prototypes in this respect, but they are very taking, and the number of their admirers is increasing. There were nearly 100 at the last club show. These dwarfs of a giant race are very interesting, and are certain to find an increasing number of admirers.

Other varieties are too numerous to allow of more than a mere mention, except the Indian Game and the Malay Bantams, two other of our giant races which are being rapidly reduced to miniature.

The Malays head the list at the great shows, and the catalogue prices indicate the high values their owners place upon them, £50 being a common figure.

The Indian Game show the lovely lacing and sheen of their larger brethren, and are very pretty, and will be more taking still when their size is diminished.

Wyandottes of all colours are now added to the list,

and some pretty Partridges, aided by their ancient cousins the Partridge Cochin, are very striking. Whites and Columbians and Blacks are coming on.

The Barred Rock Bantam is making headway, through an alliance with the Scotch Grey; and the Buff Rock has long been known.

The Andalusian, Minorca, Leghorn, Spangled and Pencilled Hamburghs, Polish, Sultan, and even the defunct Black Spanish and the Aseel, all have their places and standards already assigned to them. The Ancona and the Orpington are being brought as additions, while the Nankin is almost extinct; the Rumpless Bantam maintains its place, and the Frizzles attract attention by their odd feathering, and are always on view at the larger shows.

Many as are the known varieties, there is still room for an increase in the number of these tiny competitors for place and honour. For utility little can be said for most of them, but for the display of ingenuity and for the cultivation of a delightful hobby nothing could be better. There is as much "money" in a *good* Bantam as in the larger breeds, and quite as much enjoyment. Their popularity is not likely to diminish, and the room they occupy is no criterion of their value or measure of their worth in adding to the innocent pleasure of a too materialistic age.



DUCKS.

Indian Runner Drake.
Rouen Drake and Duck.
Cayugas.
Pekin Drake
Aylesbury Drake.

CHAPTER XIX

DUCKS—GEESE—TURKEYS

Ducks: Rouen, Aylesbury, Pekin, Indian Runner, Cayuga, Campbell, and Buff Orpington Ducks; Ornamental breeds.
Geese: Embden, Toulouse, Chinese.
Turkeys: American Bronze, Cambridge, White, Black.

DUCKS

It is more than probable that the several varieties of domesticated ducks have all descended from the Mallard, or Wild Duck. Darwin writes in Vol. I of *Variations of Plants and Animals under Domestication*, "Unless we deny that domestication, prolonged during centuries, can effect such unimportant characteristics as colour, size, and, in a slight degree, proportional dimensions and mental disposition, there is no reason whatever to doubt that the domestic duck is descended from the wild duck, for the one differs from the other in no important character."

When once the distinct and savoury character of wild ducks' flesh had been discovered and appreciated, we may be sure that man would not be long before he attempted to domesticate them, so as to have them at hand when needed. Accordingly we find early writers like Columella describing the methods by which the taming may be accomplished.

The Rouen takes pride of place amongst ducks, occupying the same position in the duck family as that of the *Gallus Bankiva* and its princely descendants of the black-red type amongst poultry.

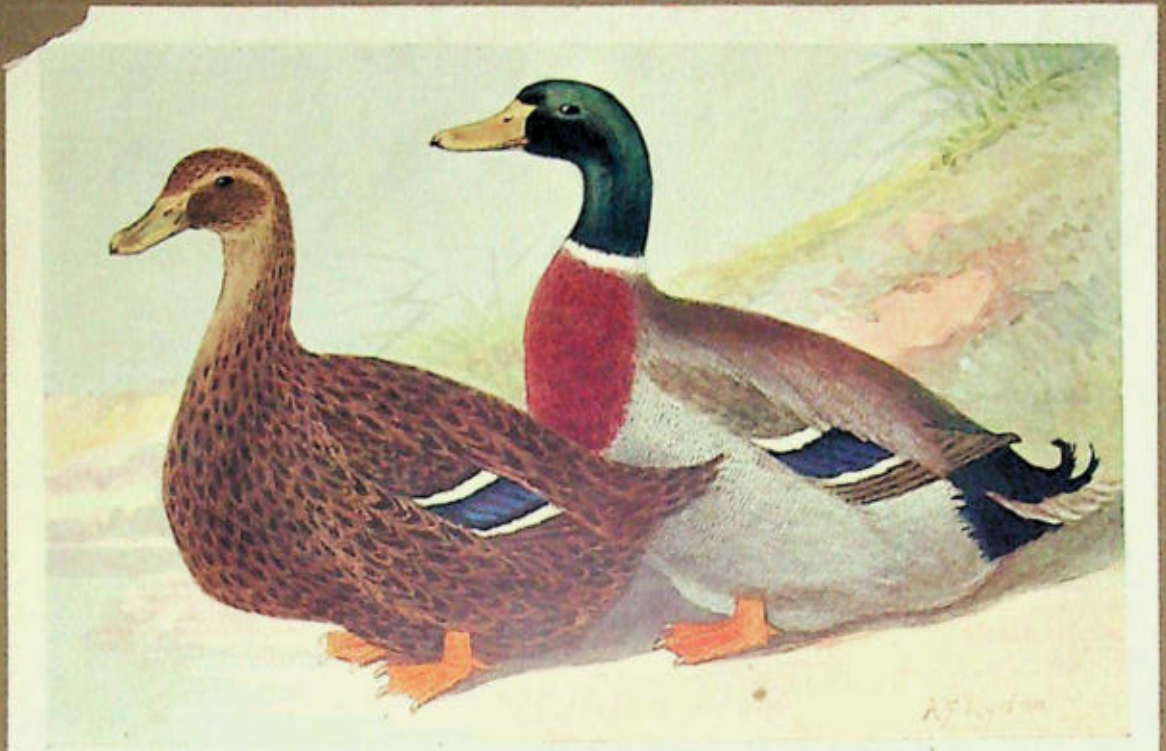
But ducks do not claim anything like the same space in the fancier's interest as either Bantams or the larger breeds of poultry. At the International Show of 1908, notwithstanding the wide classification of twenty-six

classes provided for them, there were only 217 exhibits, while Bantams were over 1000, and large poultry 3500, and the same relative proportions hold good for the Dairy Show.

One of the chief reasons for this is probably due to the fact that they are less amenable to the fancier's ways; they do not stand confinement as well as poultry, and are harder to present in tip-top form.

On the other hand they are more easily bred than poultry. The deaths and diseases among them are not as numerous. They thrive and fatten in places where poultry would die, and nine-tenths of the ducklings which find their way to the market have never seen water except in their drinking-vessels. They are much dirtier in their habits than fowls, and where they have no access to a stream or a pond make a great mess both in eating and drinking. For this reason it is a great mistake to let them run with fowls, as they commonly do in the farmyard. The duck usually gets the better of it, as it is a quick, greedy, and voracious eater.

For breeding purposes it is necessary for ducks to have access to water, although it is said that the sprightly Indian Runner duck will breed without pond or stream. The usual number to mate is three or four ducks to a drake. Their sleeping-house is best with a concrete floor, which can easily be cleansed, and littered with straw. Cleanliness in the sleeping-house is essential. Although some breeds of ducks, like the Rouen and the Aylesbury, are broody, it is much more common to hatch the young either under a hen or in an incubator. In the latter case hens' and ducks' eggs should not be hatched together, as ducks' eggs require a lower temperature, and the time occupied is twenty-eight days and not twenty-one. The food the ducklings require is much the same as for poultry. Egg and bread-crumbs make a good start, and then barley-meal or other ground grain, with the addition of Spratt's biscuit-meal and a little meat or Crissel. Green food should be liberally supplied. From a utility point of view ducks are more profitable than poultry, as they only take half the time to prepare for table, and when fed for the purpose are ready to kill at ten weeks old, before they enter upon their adult moult; and the



ROUEN DUCK AND DRAKE.

demand for ducklings always exceeds the supply. For laying, too, the Indian Runner duck is very prolific, and beats the average hen as a layer both summer and winter.

The Rouen Duck is strikingly beautiful, as a glance at the exquisite coloured plate will show. They are by far the most ornamental of our domesticated breeds, and excel their ancestor, the wild Mallard, in this respect, besides being double the size. When bred for exhibition the standard weight for the drake is from 9 to 11 lb., and for the duck a pound less, though these weights are seldom if ever seen on marketable birds. Though they give place to the Aylesbury as table-birds, owing to their taking longer to mature, and partly on account of their darker feathering and flesh, they are equal to them in flavour, and some judges consider them better. But their very heavy keels are against them. The coloured plate depicts their exquisite colouring better than words.

Colour of the Drake.—The beak of the drake is a greenish-yellow, with a black bean at the tip, but a black mark or saddle across the centre of the beak is a serious defect. The head and neck down to the white ring is a lustrous green, the ring should be clear-cut and almost meet at the back. The breast is a rich claret colour, and should be free from white lacing or chain armour, and clean-cut, not running into the body-colour. The flank and sides are finely pencilled with black on a blue French-grey ground, and the stern up to the vent is the same, and followed by rich black feathers up to the tail coverts, the curled feathers being a glossy green-black. The shanks and feet are a rich deep orange colour. The wing-bar is a striking feature, and for perfection in marking is the envy of all breeders of duckwing fowls. The bar is a broad purple-blue band flanked on either side with a narrow bar of black, followed by a strikingly effective narrow band of white. The back should be a rich greenish-black from the collar to the tail. The wings are a greyish-brown, and the flights a slaty-black with a brown tinge, but quite free from white.

Colour of the Duck.—Though less varied in colour the duck is almost as beautiful as her mate. The general

body-colour is a rich golden or chestnut-brown, which should be even in shade throughout, every feather except the wing-bar and flights being distinctly pencilled with black or very dark-brown, and the feathers of the back, wings, and rump should be of a rich green sheen. The wing-bar is the same as the drake's, and makes an even more striking contrast. The head is brown with a wider darker line from the base of the beak to the neck, with lighter stripes above it on either side. The bill is orange colour with a black splash in the centre, which must not touch the "bean" at the tip or extend to the sides. The beak in both sexes is less defined in colour in the summer, when the adult drake also loses its gorgeous and varied hues for a more sombre dress, somewhat resembling its mate's, resuming his true colour again in the early autumn.

The shape of both sexes is very similar, the bodies being as wide and long as possible, deep and square in keel with a good bow in the front, and the back long and broad. The wings are large. The legs and feet strong and medium length, and the body just clears the ground. The head is very massive, and the beak long, flat, and wide, set on a line with the eye. The neck is long and slightly curved and not arched like the Pekin's.

Although they differ so widely in colour, both sexes can be bred for exhibition from the same mating, but, following the general rule so often referred to in mating poultry, the best drakes are bred from females of the darker shade in order to counteract loss of colour, and the best ducks from the lighter shade, but with perfection in lacing. The drake assumes his full plumage at about three to four months old.

A show of ducks would lose its chief attraction if the Rouens were absent. They are only moderate layers and develop slowly. They are largely used for crossing purposes, and their blood contributes the colour to the ubiquitous farmyard duck and adds to their size and hardiness.

In judging, colour is the chief point, then size and symmetry.

The serious defects are bodily deformity, such as crooked backs or twisted wings. A lead-coloured beak is very objectionable, so also is white in plumage, except

on the wing-bar, and the absence of a ring in the drake or its presence in the duck.

The Aylesbury is the famous table-bird of the family, and is world-renowned. Its colour should be pure white and free from other coloured feathers. It is large, and should weigh 9 or 10 lb. at six months old for exhibition, though the thousands sent yearly to market are much smaller, and it is said that the poulterers object strongly to the immense keels of the show specimens. It is a finer-headed bird than the Rouen, with a very long, broad and strong bill of a pinky-white colour, difficult to preserve in its pure colour when the birds are at liberty. The shanks and feet are of a bright orange, paler in shade than the Rouen or the Pekin.

In shape, the sexes are similar, the chief features being the long, straight head and beak, the very massive body with good girth, and with a deep and straight keel extending from just behind the legs to the breast, giving a horizontal carriage.

Their chief merit is the rapidity with which they put on flesh. Many are sold at eight weeks old weighing four or more pounds in weight. They are not good layers, and are improved in this respect by a cross with the Pekin, which is also said to increase their hardiness, though it spells ruin for exhibition. Many birds sold as pure Aylesburies are cross-bred, and many of them find their way into agricultural shows, with a loss both in size, colour, and carriage.

The Pekin Duck differs entirely from the Aylesbury in shape and carriage, being more erect, with an absence of keel. It is elevated in front and slopes downward from throat to paunch, the latter being broad, and to the end of the tail curves so as to make a semicircle.

Many Pekins are shown with too much of an Aylesbury carriage, the cross having been made to attain size.

The wings are short and are carried close to the side. The bill is a bright orange colour, and free from black marks. The legs are also a bright orange, and are set far back, causing erect carriage. The eye is a dark leaden hue.

The colour is not a pure white, but creamy, and in the drake is of a deeper tinge—almost canary colour.

The colour is an important factor in choosing the drake, and the females should be as large as possible and very erect in carriage. Pure white plumage or dark marks on the beak are serious defects.

Size is a great point in judging, if attained without loss of colour and style, which are next highest in the scale of points. Exhibition drakes weigh from 8 to 9 lb., and the ducks a pound less.

They are excellent layers and non-sitters, and are fast gaining favour on the London markets over the heavy-keeled Aylesburies. They are great favourites on the American markets. They are very hardy, easy to rear, and the eggs are said to be more fertile than the Aylesbury. Their name denotes their place of origin, and, unlike the Aylesbury, which has an ancient pedigree, they are decidedly a modern introduction, having been first brought into this country in 1874. As an all-round duck of good table and good laying qualities combined they are hard to be beaten, though they are excelled in the former respect by the two breeds already named, and in egg-production by the Indian Runner.

The Indian Runner Duck is of a different type altogether from any of the former breeds, though nearest in character to the Pekin. Its chief merit is its enormous laying capacity, and it naturally follows that its table qualities are of secondary value, but this is more on account of the smallness of its size than from its lack of flavour, especially at a tender age.

Its most marked feature, apart from colour, is its erect Penguin-like carriage, and its long thin neck and finely-drawn flat head with the eye situated near the top. The beak, which is thick at the base, broad and long, comes as nearly as possible straight from the skull, giving a wedge-shaped appearance. The body is long and narrow, and there is no indication of keel on the breast. The legs are set far back, and the bird is very alert and racy-looking. The plumage is hard and close.

The markings are very distinct from any other breed. There are two colours, the fawn and the grey, but the former is the original colour, as in the first imported stock from India, and is the more popular.

The *marking* of the head and neck counts 20 points, and the body markings 25. The head is adorned with a fawn cap, and the cheek markings to match, a narrow line of white dividing the two, starting from the eye and running into the white neck, a narrow line of white also dividing the bill from the cheek markings.

The neck is white to slightly above the shoulders, and the breast and back fawn, the latter being a heart-shaped patch with the point reaching to the tail, leaving a distinct contrast with the white flights, a broad elongated stretch of white plumage dividing the fawn-coloured back and shoulders from the breast.

Whether grey or fawn, the colour should be even, except the tail of the drake, which is darker. In young birds the bill is yellow, but with age it changes to green. Serious defects are claret breasts, blue wing-bars, or horizontal carriage, all of which point to a cross with the Rouen.

The birds are great foragers, wander very far afield, and have a trick of laying away from home. Like some of the larger breeds, it is best to keep them confined till they have contributed their share to the egg-basket. Though only a modern introduction, they are sure to become increasingly popular on account of their laying propensities, as well as for their charm in style and colour. It is to be hoped that no craze for increased size will destroy the unique position they hold. The standard weight is only 4 to 4½ lb. Their counterpart in the poultry world, the Leghorns, have suffered from this cause. The small duck and the large and plentiful egg should be preserved. In judging, colour takes first place, and symmetry and carriage next, and these are the two points to look for in mating, especially the good colour in the drake.

Cayugas.—This is a black-coloured duck with a bright and lustrous green sheen. It is said to be of American origin, but has been bred in England for a long time. It has been made into an exhibition duck of altered shape and perfected colour at the expense of its utility, as the poulterers do not like a heavy keel. It is still hardy, of quiet habits, and a good layer. In shape it is now very like the Rouen, and the standard weight for drakes is 7 lb., and the duck 6 lb.

In judging, style and symmetry comes first, then colour and size. The beak of the bird is a strong fancy point. It should be slaty-black with a jet black saddle; an orange colour is a mark for disqualification, as indicating a too recent addition of foreign blood, or a reversion to an older cross. The black "saddle" should come to within an inch of the top, but should not touch either side of the beak, which should be long, straight, and flat, set like that of the Rouen, and not dished or saucer-shaped. Any other colour than black feathers is a serious defect in the show-pen. It is a good breed for dirty quarters, and makes a capital cross with the Indian Runner, where increased size, hardiness, and good laying are in demand.

It may have had much to do with the foundation of the Blue duck. One of the prettiest "Blues" I ever saw was a direct cross of the Cayuga drake and the fawn-coloured Indian Runner duck.

In breeding remember that size comes from the duck and colour from the drake, and it is better where exhibition specimens are aimed at to keep to one strain, otherwise the hybrid elements are released and "serious defects" in colour of beak and plumage are sure to follow. Like all black-plumaged birds, white feathers will appear now and again, especially after successive moults.

Other Breeds.—Buff fowls have found such popular favour that there is little wonder at the various attempts to breed buff or khaki-coloured ducks. As the nearest approach to buff is found in the Rouen duck and the Indian Runner drake, there is little doubt that these in various combinations formed the groundwork for colour. There are *Campbell Ducks*, small birds, said to be first-class layers. Khaki-Campbells, a laced bird of small size, 4 to 5 lb., khaki colour except for bronze head and tail, a miniature Rouen, of quick-maturing habits, and good layers. *The Buff Orpington Duck* followed, and is a much larger bird, the attempt having been made to produce an even rich shade of fawn throughout, with a darker shade to set off the head and neck. They are more popular in Australia than with us. Like the Orpington fowl, the aim is to combine excellence in laying and table qualities.

The standard colour for the Buff Orpington Duck is "a nice even rich shade of fawn-buff throughout; the head and upper portion of neck in the drake to be at least two shades darker." *Eye:* brown iris with blue pupil. *Legs and feet:* bright orange yellow. Size and weight: drakes 7 to 9 lb., ducks 6 to 8 lb. Shape: like the Rouen.

The Blue Orpington Duck has been out for years, but I have not seen a specimen, and they do not appear to be largely patronized. The new fashion for blue poultry may give them a lift, but neither these nor the Buff are likely to oust the older breeds, with those who desire uniformity of type and colour.

The standard colour for the Blue is "an even blue without lacing; a white bib allowed, but blue preferred." *Eye:* brown iris, with black pupil. *Legs and feet:* orange and black. *Size and weight:* same as for the Buff. *Shape:* like the Rouen.

The Muscovy Duck is attractive and ornamental, the plumage of the variety usually seen being a pied black-and-white, though there are entire white, and also black-plumaged birds. Their most striking feature is the head, which is very large in the drake, and the face, which is without feathers, is covered with a rough scarlet growth of caruncles. The drake is large, from 8 to 12 lb., and the duck only half the size. They are wild in their habits, and fly from one end of a pond to the other, or roost in trees. They are spiteful to other poultry, and in consequence are not bred largely. They are more ornamental than useful, and as progeny of the Muscovy with the Rouen or its descendants are sterile *inter se*, they are probably a distinct species. It is said that the eggs take 5 weeks to hatch instead of the usual 28 days. I have never seen one in a show-pen, and they more properly belong to the various ornamental breeds which are quaint, and sometimes very lovely in colour, like the Mandarin and Carolina, but are neither bred nor exhibited to any large extent in this country.

GEESE

These birds are hardy, easy to rear, and easier to feed. Like the donkey, they will live on little, and for

the greater part of their short lives find their own living on grass or stubble. They are as good as a lawn-mower on an overgrown poultry-pen, and they deserve to be called the cottagers' and farmers' friends. They are not in as great demand as formerly, but are still delightfully reminiscent of Michaelmas and Christmas. They are, and look like, an ancient race, and Cæsar found them when he visited our shores. Their stately and sedate carriage has a charm for many folk. A learned bishop once confided to me his admiration for them, and said that he admired their stately and orderly walk. They certainly perform it with a precision which must be the envy of many a drill-sergeant.

They make a speedy and profitable clearance of the oat stubble, and the droves of Irish geese which come over here in the summer to be fattened and got ready for the market show how they are appreciated, and that none too many are bred in England. There are two kinds only which are largely bred and exhibited, the Embden and the Toulouse.

The Embden Goose is, or should be, pure white, with an orange bill and legs and a light-blue eye. Bred for exhibition, they are very large, the standard weight for a gander being 30 lb., and for a goose 22 lb.

The Embden is a rapid grower, and speedily fattens when a suitable addition is made to his foraging fare.

The carriage should be sprightly, erect, and bold, like a monster Pekin Duck, with no trace of the keel shown by the Toulouse. The neck is long and swan-like, and the throat without the drooping gullet. The body is broad and thick, with a broad, solid breast. A gander has a long life and will breed for ten or more years. The goose is not a prolific layer, a score of eggs in a season being a fair average. If a goose is allowed to sit she will cover 10 or 12 eggs. Many are hatched under hens, and they cover about 3. It shows how little sense of the fitness of things a hen possesses to cover such monstrous eggs. But some hens would try and hatch chicks out of a bunch of turnips! The period of incubation is 28 days. The best time to hatch is April to get young geese ready for Michaelmas or Christmas, when they are only about half the standard weights

It takes two years for them to arrive at maturity and be really fit for stock purposes.

Toulouse Geese are grey and not white. The back and wings are a dark steel grey with a paler edging, and the breast a sound grey of a lighter shade, and shading lighter to the thighs. The stern, paunch and tail are white. Both bill and legs are orange, and the eye dark. The head is strong and massive, and the bill thick, with a uniform sweep from the tip to the back of the skull. The neck is shorter than the Embden's, and has a peculiar drooping mass of loose flesh under the lower mandible, called the gullet. The breast is more prominent, and continues with a uniform sweep from keel to paunch, which is very heavy, and the stern is almost square. If the Embden may be compared to the Pekin, this breed more resembles the Rouen in carriage and shape. The plumage is full, and looser than the Embden's, and though they look bigger, they are a little less in size. The standard weight is: gander 28 lb., goose 20 lb. The ordinary grey farmyard geese have Toulouse blood in them. Indeed, for utility purposes the two breeds, Embden and Toulouse, are often crossed, and mixed specimens are often shown at agricultural shows, hence the coloured feathers and squat carriage of some so-called Embdens, as well as traces of the gullet; while, on the other hand, Toulouse geese are shown too tall on the leg, without the dewlap, and with white feathers on the head and light eyes. The Toulouse is considered a better layer than the Embden, and is not as much inclined to broodiness. They do not lay on flesh so readily.

The Chinese Geese have no place in the Poultry Club Standards of 1895, though they are sometimes exhibited. They are more like the Toulouse than the Embden, both in colour and carriage. They are said to be very good layers, and excellent for the table. Their peculiar feature is the long, white, swan-like neck, and a large black knob on the base of the bill.

They are often crossed with the Embden for market purposes. They are even more noisy than the other two breeds. Geese are troublesome customers to exhibit, and, as may be expected, the railway rates are high, which makes it an expensive matter, and only those who have well-adapted places for rearing them and keeping them clean should exhibit them.

TURKEYS

In the exhibition pen the variety of turkey most commonly seen is the American Bronze, but there are separate classes at the larger shows, such as the Dairy and Birmingham, for White turkeys, and Buffs are occasionally seen. There is also a Black turkey known as the Norfolk, which, though not as large as the Mammoth American, yet often weighs 20 lb. or more, and is said to be the finest flavoured of any. The Cambridge Bronze, a little larger, is said to be a cross between these two. There is so much American blood now infused that the Cambridge and the American are practically the same. After the formation of the Turkey Club the standard weight was much increased, and the weight for Bronze cockerels is now given at 22 lb. and the cock 34 lb., and for pullets 14 lb. and hens 18 lb., and all these weights have been much exceeded.

The wild American turkey, which is now fast disappearing, was much heavier; the turkey being one of our domestic races which has diminished in size and in brilliance of colour through domestication, the contrary being the case with fowls and ducks.

This points to the obvious fact that turkeys thrive best on a wide range, though I have known them brought up in very confined spaces, when they are usually most miserable in appearance. They thrive best also on a dry soil, and are usually delicate to rear for the first six or eight weeks, till they "shoot the red," as the caruncles which adorn the head and neck are called. After these small fleshy protuberances begin to redden, the chicks are hardy, if well cared for, but they look very weakly and wretched before this takes place, and are both then, and afterwards, if at all delicate, the veriest pictures of misery. They need amply ventilated but dry quarters till the delicate period is past. From the time they begin to feather well, and shoot their tails, they grow with great rapidity and are voracious eaters. A good grass run diminishes the bill of fare. Maize-meal, barley-meal, and Spratt's or other good biscuit-meal form the staple diet, while greaves or Crissel should not be forgotten, or a plentiful supply of green food and grit.

The Bronze Turkey is a most gorgeous creature when

in good health and suitable surroundings, and when well tended is said to be very profitable. The immense sizes are suitable only for exhibition specimens, as medium-sized turkeys from 10 to 16 or 20 lb. are in much greater demand, especially since the practice of "gifts to customers" has been diminished.

The Mammoth American Bronze Turkey is the largest, and is the easiest to rear unless we except the Black Norfolk. Its general colour is a brilliant bronze, which glistens in the sun like burnished gold, the back and breast being the brightest hued, each feather being laced with a narrow black band. There are no "self"-coloured feathers on a good specimen in any part of the body, and when they are devoid of pencilling on wings or tail it is a serious defect in the show-pen. The more distinct the colours the better. The legs are dark and approach a brown colour in young birds, and more of a pinky flesh-colour in old birds. Pure white feathers in any part of the plumage are very objectionable.

The White Turkey is said to be more delicate to rear. Its plumage should be pure white, coloured feathers being a serious defect. The weight for a cockerel is 16 lb., and for a cock 26 lb.; pullets 10 lb., and hens 16 lb. The shanks and toes are white, pinkish, or flesh colour. A cock weighing less than 18 lb. or a hen less than 10 lb. is of no use for show purposes.

The Black Turkey, or the Norfolk breed, is smaller than the Bronze. It should be lustrous black throughout, with slaty-coloured legs and beak. The standard weight is, cockerels 18 lb., cocks 27 lb., pullets 12 lb., hens 18 lb. These are very marketable sizes. They are seldom seen at the shows, as neither colour nor size make them formidable competitors with the American breed, although they have increased in size since their rivals appeared. They are chiefly bred for marketing, and are as good as any.

Buff Turkeys are occasionally seen but are not likely to be largely bred, and there are others of a slaty-blue, as is natural when White and Black are allowed to breed together.

A turkey hen can brood 20 of her young, and is a gentle mother. Hens are often used to hatch them, or they may be hatched in an incubator. The period of incubation is 28 days.



FIG. 15.—POINTS OF A FOWL.

1. COMB.
2. FACE.
3. WATTLES.
4. EAR-LOBE.
5. HACKLES.
6. BREAST.
7. BACK.
8. SADDLE.
9. SADDLE-HACKLES.
10. SICKLES.
11. TAIL COVERTS.
12. TRUE TAIL FEATHERS.
13. WING-BOW.
14. WING-BAR.
15. THE PRIMARIES, OR FLIGHT FEATHERS.
16. WING-BUTTS, HIDDEN IN THE SKETCH BY SADDLE-HACKLE.
17. THE DIAMOND, OR WING-BAY.
18. THIGHS.
19. HOCKS.
20. LEGS, OFTEN CALLED "SHANKS."
21. SPURS.
22. TOES OR CLAWS.

For further explanation of these and other technical terms used in defining the "points" of a fowl, reference should be made to the Glossary.

CHAPTER XX

GLOSSARY OF TECHNICAL TERMS

IN COMMON USE AMONG POULTRY FANCIERS, WITH BRIEF DISSERTATIONS ON POINTS OF INTEREST

THE novice in the "Fancy" is often at a loss in defining the various parts of a fowl, or in understanding the terms in common use. It is essential, therefore, that he should understand at least the more common words in general use, in order that he may find the particular part referred to, or give a concise definition for the information of others.

Albino.—Literally "a person or animal whose skin and hair are unnaturally white, and pupil of the eye red." In fanciers' phraseology, a bird perfectly white, free from all tinge of yellow or sappiness; a specimen in which all colouring matter has been eliminated or destroyed. It is well known in breeding poultry that when the red and black pigment in certain definite parts of a fowl's body are opposed to each other, *e. g.* if a cock with an hereditary red hackle be mated to a hen whose sire had an hereditary black hackle, the resulting progeny would have white hackles. This has probably been the origin of the Duckwing Leghorn, where the hackle and the wing-bay are white. The only *perfect* breed of albinos that I know of is to be found in certain strains of White Leghorns. The best of these will keep white even when exposed to the sun and rain. There is no colouring matter to tan. In these birds the reddest of eyes are commonly found.

An albino is occasionally produced as a "sport" or accidental albino from birds of other colours; *e. g.* an occasional White Wyandotte is hatched from the eggs

of the Partridge Wyandotte, or a White Minorca from the mating of two Black Minorcas. The rules that govern this occasional production are not fully understood. It may probably be the result of the clashing of two different kinds of black, in one of which there is an abundance of red pigment, which sometimes manifests itself in the red feathers of the hackle, etc. In other breeds of white fowl no such perfect albinism has been bred as in that of the White Leghorn, though the White Wyandotte is fast approaching that condition. In the White Orpington, which in some strains has been bred from the crossing of the Buff Orpington and the Black (buff being a kind of red), the albinism is not perfect, and occasional buff and black feathers manifest themselves; the buff being the hardest to eliminate, and the soundest white being found in those with an occasional black feather. For further notes see Chapter on "Colour."

Amateur.—Literally "one who cultivates a study or art for the *love* of doing so, and not for gain"—not a professional. In poultry circles it is used as equivalent to "novice"—a new hand, a beginner. (See "Novice.")

Barred, Barring.—Alternate stripes of light and dark across a feather. (See Illustration of Barred Rock.)

Barred to the skin.—A term frequently applied to the marking on a "Barred Rock" fowl, when the barring is continued from the tip to the root of the feather.

Bean.—The bean-shaped patch of black on the tip of a Duck's bill, as in Rouens and Indian Runners.

Beard.—A tuft of feathers under the throat of some breeds of fowls as Faverolles, Houdans, and Polish. Note the coloured illustration of Faverolles, the beard being black in the cock and a creamy white in the hen. It is attached to the under mandible.

Beefy.—A term applied to a large, coarse, overgrown comb. It is more especially applied to the huge combs of the Mediterranean breeds, as Minorcas and Leghorns, though it is also seen in the large combs of the Orpington and other single-combed fowls.

Bib.—A tuft of feathers growing and pendent from a fowl's throat. Another name for beard.

Blocky.—A term sometimes used to designate a thick, square-set bird with legs set well apart, as distinct from a narrow, tall specimen.

Brassiness.—A brass-like, burnished appearance of the feathers of a fowl's back after being weathered or exposed to the sun. A common failing in Barred Rocks, also noticeable in Black and Buff Orpingtons.

Breed.—Any recognized family of fowl possessing distinctive characteristics. The *breed* includes all the *varieties* found in it, *e.g.* the Leghorn fowl is a breed quite distinct from any other. Its distinct characters are its large single comb, white ear-lobes, yellow legs, sprightly carriage, and abundant feather, a combination possessed by no other fowl. The varieties are numerous, as Black, Brown, White, Blue, Cuckoo, etc., which though very distinct in colour yet possess, or should possess, the common characteristics of the breed.

Brood.—The name given to a family of chickens under one hen.

Broody.—A desire to sit and hatch a brood of chicks.

Capon.—A male bird deprived of his generative organs. Once a common practice in England, but now almost obsolete, though more common in France. A caponized fowl lays on flesh more rapidly and in greater amount, and the flesh is more tender.

Carriage.—The bearing, attitude, or "style" of a bird.

Carunculated.—Having caruncles. A naked fleshy excrescence on the head or neck of a fowl. Most marked in the Turkey. It is sometimes applied to the small fleshy protuberances which form the Rose Comb.

Chick.—A newly-hatched fowl. Only applicable till the bird is a few weeks old, and must be brooded by the hen or kept in a heated rearer.

Chicken.—A fowl under a year old. For exhibition purposes, a bird hatched in the year the show is held. A young fowl whose breast and vent bones have not passed the cartilage stage.

Cloddy.—Heavy, thick-set.

Cloudy.—Indistinct. A term applied, *e.g.*, to the breast of an Andalusian when the lacing is not clear, or

to the body of a cuckoo-marked bird when the barring is indistinct, and the colours run into one another.

Cockerel.—A young cock under a year old, or a male bird hatched the same year in which it is exhibited.

Cockerel-bred.—See under "Pullet-bred."

Comb.—The fleshy protuberance on the top of a fowl's head, of many shapes and sizes, and one of the bird's chief adornments. *Single* as in the Game, Cochin, Leghorn, Minorca, Orpington, Rock, etc. *Rose* as in the Wyandotte, Hamburgh, Redcap, etc. The *pea-comb* is characteristic of the Brahma and the Indian Game, and resembles three small combs in one, the middle being the highest. The Houdan has a comb like a butterfly with wings outspread; while the Crève-cœur and the La Flèche have V-shaped combs, consisting of two coral-red horns, the Crève-cœur's being larger and tufted at the base. Apart from its ornamental value, the comb plays an important part in the circulatory system of the fowl. It is almost devoid of sensitiveness.

Condition.—The state of a fowl's general health and vigour. It is essential for a bird to be "in good condition" when sent for exhibition. Over-showing has a deleterious effect on the brilliance and beauty of the plumage.

Coverts.—See Tail coverts and Wing coverts.

Crest.—A crown or tuft of feathers on the head, as on the Houdan, Polish, or Crève-cœur, etc.

Crop.—The bag or receptacle for a bird's food immediately after it is eaten, and before its passage into the gizzard.

Crop-bound.—The diseased state of the crop or "craw" when the food cannot pass out into the gizzard. For its treatment see the Chapter on "Diseases."

Cushion.—The mass of feathers over the tail-end of a hen's back, covering the root of the tail. It is much developed in the Cochin hen, and too much so in some strains of Orpington fowl, and shows the prepotency of Cochin blood.

Deaf ears.—Another name for ear-lobes.

Diamond.—The wing-bay, so-called from its triangular shape. The term is much used by Game

breeders and by breeders of Pile, Duckwing, and Brown Leghorns. (No. 17, Fig. 15.)

Dubbing.—Cutting off the comb, wattles, etc., so as to leave the head clean. It is an ancient custom, practised from the early days of cock-fighting, and now in general use among breeders and exhibitors of Game fowl. It is also commonly practised by breeders of birds with large combs, in order to make them fit for early breeding. A large comb is easily affected by frost or cold winds, and renders the bird sterile. It is not a painful operation when skilfully performed, and a cockerel may be heard to crow vigorously, and, if permitted, to eat heartily immediately after dubbing. In the case of an overgrown comb, and more especially when it leans over heavily to one side, dubbing is essential to preserve life.

Duck-footed.—A term of reproach when applied to a fowl, and especially a Game fowl, when its hinder toe turns in like a duck's. The hinder toe should stand straight out, almost in a line with the centre toe, to give the bird balance in fighting. It is due to a faulty socket, which allows the toe to turn inwards toward the other toes. The Game Club Standards direct that a bird should be passed over, and left out of the prize list, for this defect.

Ear-lobes.—The folds of skin hanging below the small orifices forming the true ears. They form a chief point in the beauty of the Mediterranean breeds, as Minorcas, Andalusians, Leghorns, etc., in which they are white and of the texture of a kid glove. In the Asiatics and most large breeds of fowls they are red in colour, and are usually folded and pendent. Other colours less common are blue, as in the Silkie, or purple, as in Birchen Game, etc. (No. 4, Fig. 15.)

Face.—The bare skin around the eye. Its smoothness in texture, and coral redness, untainted with spots or streaks of whiteness, are highly prized in white-lobed fowls, especially when this soundness is found continued to mature age. (No. 2, Fig. 15.)

Coarse face is when the skin, instead of being smooth, is wrinkled or puckered, and is very objectionable and unsightly. Such faces rarely keep sound.

Gipsy face.—A face covered with short black

feathers or hairs, giving it a dark appearance. It is an offence against exhibition morals to pluck these from the face. It is not a very serious fault, especially as such faces have the merit of keeping sound in colour and free from the white, fungus-like growth, which is a fatal objection.

Fluff.—The soft downy feathers around the thighs, chiefly developed in the Asiatic fowl and their descendants, *e. g.* Cochins, Orpingtons. The term is also applied to the incipient soft feathers frequently seen on the shanks of a fowl that should be free from all trace of feathers, and to the soft part of the feathers on the body of a bird. The colour of this "fluff" is of great importance in determining the value of the fowl for exhibition purposes, and for breeding; *e. g.* if of an ashy-grey colour in a Minorca or Leghorn, or Black Wyandotte, it shows a deficiency of colouring pigment in the fowl which, unless counterbalanced by that of its mate's, would breed defective stock. And the same remarks apply with equal force to buff-coloured fowls.

The fluff is usually lighter in colour as it approaches the skin, hence the meaning and importance of such expressions as "buff to the skin," used of a sound coloured Buff Orpington. A poor specimen is buff on the surface, but immediately begins to lose colour, and the fluff is *white* near the roots of the feather, or, worse still, is white from just underneath the surface.

Flights.—The primary feathers of the wing of a fowl used in flying, as is implied in the name. These feathers are not visible when the wing is closed.

"*White in flights*" is a term used for a serious defect in these feathers, as, *e. g.*, in the case of a Black Minorca or Leghorn, or of a Brown Leghorn, in which the permanent or adult flight feathers are ticked or splashed with white instead of being solid in colour. Cockerels with this defect, if it is at all prominent, are, in some breeds, only fit for the pot. This hidden defect is the cause of many birds at exhibitions being left without a prize even when they are in some other respects superior to their competitors. It often seems to the looker-on that the bird should have won, but the judge has penalized it for the defect he has seen on an examination of the wing. The seriousness of this

blemish causes some unscrupulous fanciers to pluck out these feathers before exhibiting. When unnaturally absent the birds should be treated as if the *defect* was present, and sometimes sterner measures have to be adopted. (No. 15, Fig. 15.)

Folded Comb.—A hen's comb which falls over partly to one side and then folds back the other way, instead of falling gracefully to one side. A cap comb. A common fault in Minorcas and Leghorns.

Foot-Feather.—The stiff feathers on the feet of Brahmas, Cochins, Pekin Bantams, etc.

Foxy.—A term used to describe the *colour* of a fowl when it is "red" or "rusty" in colour. The defect is most common in birds of the black-red type, as in Black-red Game hens, Brown Leghorn or Gold Duck-wing Leghorn hens. The bird is said to be "foxy" or rusty when the colour of a part of the wing is red and harsh in shade when compared with other parts. It is most commonly seen in Brown Leghorn pullets in the centre of the wing (the part marked No. 14 in the figure of the cockerel). In bad cases it forms almost a coloured line round the wing when at rest, from the shoulder to the wing-butts. (See Chapter on Brown Leghorns.)

Frizzled.—This term is applied to a race of fowls in which each feather is curled back, as if scorched or frizzled, giving a quaint and grotesque appearance.

Furnished.—Fully feathered—completely furnished with feathers. When a young bird has the hackle feathers fully grown, and the sickle feathers in the tail well developed, he is said to be fully "furnished" like an adult fowl. In the early part of the show season, from May to September, chickens are often exhibited and win before they are "furnished," *i. e.* before they are of sufficient age to have developed certain parts of their plumage. In some breeds, notably Asiatics, and the breeds manufactured in part from them, as Orpingtons, Rocks, Wyandottes, etc., the adult tail feathers develop very slowly. This fault is occasionally taken advantage of by unfair exhibitors, who pluck the tail feathers from fowls that are older than the age specified in the class in which they are exhibited, in order to give them the appearance of youth. It also

leads to the first or chicken tail feathers being moulted by hand when these feathers are faulty in colour. Such practices cannot be too severely condemned.

Gipsy face.—See "Face."

Gullet.—The loose part of the lower mandible, the dewlap of a goose. It appears also on the throat of fowls, when it is unsightly, and looks like a miniature beard. It is most noticeable in the Cochin, and more modern breeds containing Cochin blood.

Hackles.—The feathers on the neck of a fowl. In the cock they are long and narrow, and are called "neck-hackles." (No. 5, Fig. 15.) The colour and shape of these constitute one of the main beauties of a fowl. Their value from a show point will be noted under the separate breeds. In the cock similar feathers growing at the end of the back nearest the tail are called "saddle-hackles." (No. 9.) As a rule the nearer the colour of the saddle- and neck-hackles match in shade or marking the better, but there are exceptions, as in the Light Brahma, where the neck-hackle is striped and the saddle-hackle plain.

Henny or Hen-feathered.—The term denotes the absence of neck- or saddle-hackle feathers and sickles in a male bird, making it look to be feathered like a hen. The Sebright bantam cock is hen-feathered, and so is a variety of Old English Game, known as "Henny."

Hock.—The joint of the leg between the shank and the thigh. (No. 19.) It is sometimes called the knee, but more especially in the term "In-kneed" or "Knock-kneed." This is a common ailment with large-limbed fowls, especially in chickenhood. When retained till adult age it is a serious defect. For its treatment see Chapter on "Diseases."

Ideal—Literally, "Existing in imagination only." Technically it refers to a drawing or painting of a variety of fowl supposed to be perfect in all points as to shape, colour, size, etc. Many of the specialist clubs have such an "ideal" for members to keep before them, and to aim at in the production of their stock. Every *single* point can be obtained. It is the combination of all the points in one and the same bird which is so difficult, if not impossible, of attainment. In America, where the judges are instructed to judge point by point, each of

which has its separate and distinct value, as in our standards of perfection, a bird which scores 95 points out of the 100 is really a first-class specimen, and as high a score as 97 is rarely attained. An absolutely perfect specimen, from a show point of view, has never been bred. It exists in the imagination only, a goal still unattained.

Inbreeding.—Breeding from stock related in blood to each other, *e.g.* mating a cockerel and a pullet together when bred from the same pair of birds; or mating a cock to a pullet of which he is the sire or a hen to a cockerel of which she is the dam. This practice of inbreeding is commonly resorted to by fanciers in order to "fix" some valuable point or characteristic. When practised with common-sense between birds constitutionally sound, and with scientific insight so as to achieve the desired end, valuable results are obtained. Without its practice we should never have obtained the many and beautiful breeds, and varieties in the breeds, which now adorn our poultry-yards. When practised on a scientific basis, and the degree of relationship is carefully noted, it is called line-breeding. Promiscuous and haphazard inbreeding is baneful, and its common resultant is puny and enfeebled stock, or downright mongrelism, as seen in farmyard or dunghill stock.

Keel.—The vertical part of the breast-bone of a fowl. In ducks, and more particularly in the Aylesbury and Rouen breeds, it is used to denote the loose flesh and skin below the breast-bone.

Knock-kneed.—See "Hock." A fowl has no knee, but a hock-joint which corresponds to the knee in man.

Laced, Lacing.—A stripe or edging all round a feather of a colour different from its ground-colour. The lacing is single, as in the case of the Andalusian or the Gold and Silver Wyandotte, or the Sebright bantam (see coloured illustration of Silver Wyandottes); or it may be double, as in many of the best specimens of Indian Game. It is distinct from "pencilling," which see.

In self-coloured fowls like the Buff Orpington any indication of lacing as a fringe of darker or lighter buff round the edge of the feather is a serious defect, as is a

lacing or splash of white on the black breast feathers of the Brown Leghorn or of any black-coloured fowl, and is usually accompanied by want of under-colour in the flights or the fluff. Perfect lacing should go right round the feather, and not only at the tip or end of it, and it should be fairly uniform in width and in depth of colour.

Leader.—A single spike terminating the back of the comb in a rose-combed fowl. In the Hamburgh it is long and horizontal, in a straight line with the surface of the comb. In the Wyandotte it is short and following the shape of the neck.

Leaf-comb.—Shaped like a leaf or a butterfly with open wings, as in the Houdan. (See "Comb.")

Leg.—In a live fowl this is the scaly part or shank. In a dressed fowl it is the thigh or drumstick.

Leg feathers.—The feathers growing from the outside of the shanks in some breeds, as in the Cochin or Langshan. In breeds descending from these, as *e.g.* the Buff or Black Orpington, "Feathered leg" is a term of reproach and a mark for disqualification. To pluck them out or cut them off is a serious offence against show rules.

Leggy.—On the leggy side. A term denoting too great length of shank and thigh. A bad fault in Indian Game, Orpingtons, etc., which are meant to be cloddy, with short, thick-set legs. A noted imperfection in the Modern White Leghorn.

Line-breeding.—Inbreeding carried out on definite and scientific lines.

Lobes.—See "Ear-lobes."

Markings.—A general term denoting the barring, lacing, pencilling, spangling, etc., of the plumage. The word is not in much use except by novices and those ignorant or confused in the use of generic terms.

Mealiness.—A term chiefly used to describe a defect in the plumage of buff-coloured fowls, in which the feather, instead of being a solid even-coloured shade throughout, is more or less speckled with white, as if "meal" had been dusted over it. (See also p. 344.)

Moons, Mooney.—Spangles. The word is used in reference to the bold "half-moon-shaped spangles" on the tail feathers of the Spangled Hamburgh.

Mossy.—Confused or indistinct colour in the markings is said to be mossy, *e. g.* where the darker colour of the lacing runs into the lighter ground-colour of the feathers. Commonly seen on the back of a pencilled or laced Wyandotte. The cock-breeding pullets of the Partridge Wyandotte are usually mossy, and in this case it is no detriment, as they are not meant to be distinctly pencilled.

Mottling, Mottled.—A small tip of white at the end of a feather, as in the Ancona; or the spots of black on the yellow legs of the same breed.

Muff, Muffling.—The tuft of feathers on each side of the face of some breeds, as the Houdan, Faverolles, etc.; also called *whiskers*. These should be of the same colour as the feathers under the throat called the *beard*.

Novice.—A new man, a beginner. In fanciers' phraseology one who has not done much winning at shows. Usually a person who has not won a prize in the open classes at great poultry exhibitions, such as the Dairy, Palace, International, Birmingham, or the various club shows. A novice also ceases to be a novice when he has won a first prize in the novice classes.

Sometimes the word has a more restricted meaning still, and a novice is an exhibitor who has never won a prize beyond a given value at *any* show. Where there are special classes for "novices," particulars are usually given in the schedule. As the novices are the feeders of the Fancy, every means should be taken to encourage them.

Pea-comb.—A triple comb resembling three small combs lying side by side, the middle one being the highest. A good specimen is often seen on a Brahma cock.

Pen.—(1) A wire cage, as at a show, to hold the exhibit. (2) A space enclosed for a number of fowls to breed in. (3) The fowls themselves put together for breeding purposes. It may consist of any number, but usually varies from three to ten birds.

Pencilled Spikes.—The spikes of a comb are so named when they are thin and not much wider at the base than at the apex. It applies to single-combed birds, and denotes a serious fault, as the "ideal" usually

describes them as wedge-shaped. For a good example of a wedge-shaped comb see the coloured illustration of the Black Leghorn.

Pencilling, Pencilled.—Small markings or stripes over a feather. These may run straight across, as in the Hamburgh, or follow the outline of the feather in a crescentic shape, as in the Partridge Cochin. For one of the most beautiful instances of "pencilling" on record, see the lovely coloured plate of the Partridge Wyandotte hen, and for a good specimen of Partridge Wyandotte pencilling see the plate on p. 403 of pencilled feathers of Partridge Wyandottes, both English and American, kindly lent by Mr. R. Watson. The pencilled feather is, as a rule, not so dense and solid in its colour as the lacing. The pencilling has more the appearance of fine etching. The lacing is mostly confined to the *outer* edge of the feather and the pencilling to the inner bands. The term is also applied to the *whole* colouring of the body feathers, as, *e. g.*, in the case of the Brown and the Duckwing Leghorn. (See the plate of the Brown Leghorn hen for a good specimen.)

Pile.—The name given to a variety of Game fowl and of Leghorns, the colour of which consists of various shades of red and white, including salmon-red, dark-red, maroon, and orange. It is probably a corruption of the word "pied." The "pile" is a home-made variety, and is made by a cross between the Black-red type and the White. (See Chapter on "Colour," p. 220.) This colour still needs a constant infusion of Black-red blood if the brilliance of the red pigment is to be maintained.

Poult.—A young turkey of either sex. The term is commonly used, however, in its original sense as indicating a young hen, a pullet.

Primaries.—Another name for the flight feathers, hidden, when the wing is closed and at rest, by the secondaries or visible wing feathers. (No. 15, Fig. 15.) For the importance of their colour see under "Flights."

Prepotency.—The power possessed by a bird of any breed of stamping his likeness, in colour or head-points, or other marked feature, upon his or her progeny, to the exclusion or diminution of the power of the other parent. As a rule this power is possessed in a greater

degree by fowls of ancient descent which bear marked characteristics inherited from a long train of ancestors, *e. g.* the black Java fowl has exercised a remarkable prepotency on the Barred Plymouth Rock, of which it was one of the originators. Although some of the progeny when mated with a cuckoo-coloured fowl, called the Dominique, come barred or cuckoo-coloured, and these cuckoo-coloured specimens have been inbred for many generations, black specimens are still annually reproduced with remarkable regularity. (See Chapter on "Mendelism.") The "Java" blood is prepotent and cannot be entirely eliminated. This is so much the case that recently some fanciers have seized upon the fact and established a new breed of Black Rocks, which breed more true to colour than the "Barred." This fact seems to controvert Darwin's statement in Chapter I of his *Origin of Species*, when he says, in writing of the domestic pigeon, "No instance is known of crossed descendants reverting to an ancestor of foreign blood removed by a greater number of generations than a dozen or twenty."

Pullet.—A young hen, not a year old. For exhibition purposes a bird hatched in the year in which it is shown. (See under "Cockerel.")

Pullet-bred, Pullet-breeding pen.—The term is used to denote that the bird in question was bred from a pen of fowls mated to produce *exhibition* pullets. The cockerels from such a pen are not usually exhibition stock, and are of value chiefly for breeding exhibition pullets. In some breeds of fowls, *e. g.* Brown Leghorns and Partridge Wyandottes, it is necessary to have two distinct matings for breeding exhibition cockerels and pullets, *e. g.* the rust or foxiness on the wing of a Brown Leghorn hen which is cock-bred would ruin the mating if used to produce pullets for the show-pen, while if mated to a cock-bred cockerel would be of service in adding to the brilliance of the cockerel's plumage. The mixing of cockerel-bred and pullet-bred specimens in the same mated pen produces poor specimens all round. In a pullet-breeding pen, therefore, it is necessary for all the birds to be pullet-bred, and *vice versâ* in the cockerel-breeding pen. Appearances, however, are often deceptive in these cases, and it is necessary to know the

pedigree of the birds to ensure correct results in the mating. A "pullet-breeder" does not mean that the bird in question will produce more pullets than cockerels, for as a general rule the sexes are about equal, but that it is "pullet-bred," and is meant to reproduce exhibition pullets. The same rule applies, though with less force, to self-coloured birds. The knowledge of these facts would often prevent great loss and disappointment, as it often happens that almost perfect specimens of either sex, when mated together promiscuously, produce only mongrels of both sexes.

Reachy.—Tall, able to reach high, upstanding. The word is chiefly applied to Modern Game fowl, and reachiness is one of the most important points of a show specimen, both in the big fowl and in bantams. A bird is said to be reachy when it stands very erect with its neck stretched out, and makes almost a line perpendicular with its legs. Training in the show-pen by teaching the bird to stretch upwards for a dainty morsel will induce this habit, though no amount of training will convert a thick, cloddy bird into a slim, reachy one.

Roach-back.—A faulty spine in a bird, a hunchback, often a defect from birth, though sometimes caused by injury—a serious defect both from an exhibition point and for breeding purposes. Such birds are only fit for table purposes, as, where congenital, it is sure to be transmitted to its progeny.

Rooster.—An American term for a cock or cockerel. Its origin is probably due to a puritanical delicacy. It is a misnomer, as hens roost as well as cocks. Other names occasionally used for a male bird are "stag" and "tom bird." Cf. "Tom cat."

Rose-comb.—A broad solid comb almost flat on the top and covered with small regular nodules. A "well-worked" comb has a great number of these, and they are certainly much more ornamental than a plain flat comb. It should be square and broad on the front, and not indented as though it had been pressed down by the thumb when in a plastic state. It is broadest in front, and narrows toward the back and terminates in a spike. (See under "Leader.")

Rosy-winged.—A term applied to a Pile Game or

Pile Leghorn pullet or hen when the salmon colour, as on the breast, has found its way to the wing-bow. It is a remnant of the "foxy"-coloured feathers in the female ancestor, red being the hardest colour to obliterate.

Rust.—Another name for "foxy." A patch of ruddy-brown on the wings of the hen in the "black-red" breeds. Also applied to the black feathers tipped or laced with red often seen on the breast and thighs of the males of the black-red type, and most commonly seen in cockerels which are "pullet-bred."

Saddle.—The posterior part of the back reaching to the tail in a cock. (No. 8, Fig. 15.) It corresponds to the "cushion" in the hen. The word also applies to the dark mark in the centre of a duck's upper beak, which must not extend to the base of the bill, the side edges, or to the "bean" or black mark at its tip. Seen most plainly in the beak of a Rouen or Cayuga duck.

Saddle-hackles.—(No. 9, Fig. 15.) See "Hackles." A distinguishing mark of a cock's plumage, and in some breeds one of the earliest signs for distinguishing the sex.

Sappiness.—A term used to describe the colour of a bird's plumage when the "sap" in the growing feathers shows on the surface a different colour from the adult plumage, *e.g.* a white fowl often shows a creamy or yellow tinge when part of the way through its moult. The term is also loosely used to describe the yellow tinge in a white bird's plumage *after* the feathers have matured. This latter is due to remnants of yellow pigment in the blood, and shows that the fowl is not a pure white or albino, or it could not have become tanned.

Secondaries.—The quill feathers of the wing which are visible when the wing is closed. (No. 17, Fig. 15.) See "Diamond" and "Wing-bay." A common failing in all buff-coloured breeds is noticeable in the secondary feathers when they show an edging of white. It is a grave fault, not only because it is at once apparent to the eye as a blemish, but because it is extremely difficult to breed out. Such birds are of no use to breed exhibition specimens. A faulty colour in fluff, or flights, or under-colour may at times escape a judge's

observation, but faults in the secondaries are apparent to all.

Self-colour.—A uniform tint over the feather or the bird. This is almost as difficult to obtain in a buff-coloured bird, or even in a white one, as the barring or lacing, etc., on other varieties.

Shaft.—The stem or quill of a feather.

Shafty, Shaftiness.—A term used to denote the fact that the shaft of the feather is too visible to the eye through being of a lighter shade than the web of the feather. The fault is most commonly seen in the plumage of the Brown Leghorn hen, and is very prevalent in those of a soft shade of colour. Even in good specimens it is seen on the centre of the wing, and in poor ones it extends to the whole of the wing and back. It is also a marked defect in buff-coloured birds, and here again is most noticeable in the lighter-coloured ones. It gives a patchy, uneven appearance to the plumage, especially on the breast. It denotes in all specimens a lack of colouring pigment, and on examination it will usually be found that the quill loses in its colour the nearer it gets to the root. A good buff shaft is a great indication of a reserve of pigment, and is a valuable asset for breeding purposes. (See also p. 384.)

Shank.—The scaly part of the leg. (No. 20, Fig. 15.) The condition of the shank as regards its smoothness and softness is an important factor in determining a bird's age, especially the finer scales which cover the back of the leg upon which the birds rest while at roost. The colour of the shank is a point of importance, and varies with the breed, all the varieties of which have the same colour of shank though they may differ in the colour of the plumage, *e. g.* Brahmas, Cochins, and all the different varieties of Wyandottes and Rocks, which have Asiatic blood in them, have yellow legs, which vary in shade from orange to lemon, the darker-plumaged birds having, as a rule, a more intense shade, *e. g.* black birds frequently have a dusky yellow, and white ones a pale shade, which in the albinos, or absolutely white specimens, is often reduced to a pale primrose shade. Leghorns of whatever variety should have yellow shanks. To my mind the deeper and brighter the colour the smarter and more beautiful the

bird looks. It is a difficult matter to obtain a pure white plumage with an orange-coloured shank. The yellow pigment diffuses itself over the body and a yellow tinge finds its way into the feathers, especially on the neck. Dark or bronze-yellow legs often become a sound yellow as the birds advance in age, and in all specimens are lighter in shade after the first adult moult. The brightness of colour is preserved by allowing the birds to wander in wet grass. On dry, sandy, or chalky soils the colour often fades. In these cases frequent sponging with water and the addition to the water of a little glycerine helps to preserve it. *Other colours* of shank are black, slate, white, black and white mottled, blue, lead, olive, willow, etc. White-legged fowls are, in England, the most esteemed for table purposes, *e.g.* Dorkings, Faverolles, etc., while the yellow shank is the American fancy. Birds with black legs usually become slate-coloured, and dark slate becomes pale slate with adult age. The worst enemy to beauty and brilliance of leg-colour is a disease called elephantiasis, or scaly leg. For the treatment and prevention of this see Chapter on "Diseases."

Sheen.—That which shines. The beetle-green-coloured brightness seen on the plumage of a black fowl, as on a Black Orpington or Langshan. This bright sheen is largely a matter of condition, and is dull when the bird is not in first-class health.

Sickles.—The top curved feathers of a cock's tail. The lesser sickles are those which fall below and between the true sickles and the other curved flowing feathers, which are called the tail coverts. (Nos. 10 and 11, Fig. 15.)

Side-sprigs or Side-spikes,—a fleshy growth at the side of a single-combed bird, usually found on the back of the comb, the portion farthest removed from the beak. These are often an indication of a Rose-combed ancestor. They form a "serious defect," and to cut them off is to "trim" a bird, and is a serious offence. (See Single-comb.)

Single-comb.—A comb which viewed from the front is narrow, having its spikes in line behind each other. These spikes, or serrations, should be broader at their base than the apex, *i.e.* wedge-shaped. (See

"Pencilled Spikes.") The comb consists of a base or blade, and the spikes or serrations. The blade, which grows from the head, should be thicker at its foundation where attached to the head than in the upper portion. It should be of about equal depth to the spikes or serrations, and the spikes should when viewed from the side form part of a circle, the middle spike being taller than those in front or behind, and both the front and the hinder parts should be without serrations or rough nodules, either on the front or the side—the latter are called "side-spikes," and are most objectionable and difficult to get rid of. A cock with side-spikes is certain to reproduce them in his offspring. In male birds the comb should be erect. In the females it is sometimes erect and neat, as in the case of Rocks, Orpingtons, etc., or falling gracefully to one side, as in the Mediterranean breeds, such as Minorcas, Andalusians, and Leghorns. An average number of serrations is six, one less being better than one more.

Smutty.—Indistinct in colour. Applied chiefly to "barred" birds where the barring runs into the ground-colour and presents a blotchy appearance.

Spangled.—A spangled feather is one that is broadly-tipped with a colour of a different shade from the ground-colour, and seen to greatest perfection in the Spangled Hamburgh and the Redcap. It is sometimes of a circular shape, and at other times crescentic. (See "Mooney.")

Spangling.—The marking produced by each feather having a large spot of some colour differing from the ground-colour. In the Polish fowl, which is a "laced" breed, the heavier lacing at the end of a feather is called "spangling."

Splashed.—Less regular spangling—when the darker colour is not on each feather, *e.g.* Spangled Old English Game and Jubilee Orpingtons.

Sport, Melanic Sport.—An unexpected offspring. A reversion to a distant ancestor. A new variety. A discontinuous variation.

Spur.—The sharp offensive weapon. A hard horny substance with a sharp point, growing on the shanks of a cock, and sometimes on a hen. In young birds it has a rounded point and is loose. At an older stage it

seems fixed to the shank. It is not a true test of age. The lighter breeds develop them much earlier than the heavier breeds, and in individuals of the same breed, some grow them much more quickly than others. I have known even pullets under a year old with sharp spurs, while hens of several years have had hardly a sign of any, and the same is true of cockerels.

Squirrel-tail.—A tail projecting in front of a perpendicular line, over the back. A bad specimen carries it so as almost to touch the head, like a squirrel. But in popular parlance a tail carried quite erect is called squirrel-tailed, though more correctly it should be called a high tail, and even before approaching this it is called "gay" in tail. A "squirrel"-tail is a great defect or blemish, and in most breeds is sufficient to debar its owner from winning a prize, however perfect it may be in other respects. It is most frequently met with in the Mediterranean breeds, such as Leghorns and Minorcas.

Stag.—A young Game cock. (See "Rooster.")

Standard of Perfection.—The description, issued by the Poultry Club, or by Specialist Clubs, of any particular variety or breed of fowls, in all its various points. Values are given to the various points, and the total number is 100. These points vary in value from 1 to 30 or more, according to the estimate put upon them by the leading breeders, and are usually assessed according to the difficulty of obtaining them. The standards of most modern varieties vary from time to time, as when a given point has been fixed and rendered fairly easy to obtain its value is lowered, and increased value is given to a point in danger of being minimized. The Fancier therefore should always have at hand a copy of the latest edition of the Poultry Club standards, or of the Club which fosters any particular variety or breed. As explained under the term "Ideal," the complete standard is rarely, if ever, attained.

Steppings.—A term applied to the beetle-green spangles on the ends of the secondary feathers of the Spangled Hamburghs.

Strain.—A race of fowls which, having been bred by one breeder or his successors for a number of years, has acquired certain characteristics which can be depended

upon to breed true to those characteristics, and to reproduce its progeny like itself. This prepotency is acquired by "line-breeding," and the introduction of alien blood may in a single generation destroy the care and labour of years.

Strawberry-comb.—A name sometimes given to the comb of the Malay, which is more correctly called a walnut-comb, from its resemblance to half of a walnut-shell.

Surface-colour.—The colour of a fowl's body, or of certain feathers, exposed to view, without turning up the feathers to examine the fluffy portion. (See "Under-colour.")

Symmetry.—Perfection in the proportions of the various points of a fowl; *e. g.* a small fowl with a very large comb or lobe out of proportion to its size, or a specimen with longer shanks and thighs than is typical of its race, is not symmetrical. Symmetry must not be confounded with the carriage or style of a bird.

Tail coverts.—The soft, glossy, curved feathers at the side of the tail and below the sickle feathers. (No. 11, Fig. 15.)

Tail feathers.—Sometimes called the true tail feathers (No. 12), are the straight and stiff feathers of the tail only, which grow inside the sickles and tail coverts of the cock. These are sometimes carried close together like a closed fan, and make what is called a *whip-tail*. When spread open and wider at the bottom than at the top, like the letter A, it is called a *fan-tail*.

Thigh.—The part of the leg above the shank; called the "leg" or drumstick in a cooked fowl.

Thumb-marked.—A term applied to the single-comb of a cock when it has a hollow depression on the one side, and a protuberance on the other, as though it had been pressed in with the thumb. A grave blemish in a Minorca or Leghorn, or other single-combed breed. It is usually an indication of a weak base, and is most frequently met with in large, overgrown, beefy combs, though sometimes caused even in smaller combs through a forced growth when young, *e. g.* through remaining too long a time under a broody hen, or in an over-heated rearer, or overcrowded poultry-house. The comb then falls over to one side instead of maintaining

an upright growth from the first, and when at length it grows erect it leaves a "thumb-mark" on the side to which it has fallen over. If taken in time it may be cured by a little manipulation and the use of a comb-guard to press it into shape.

Tick.—A tiny speck of colour, often found in the fluff or feathers of white and buff-plumaged fowls.

Top-knot.—Same as crest. A characteristic of the Polish fowl, the Houdan, etc.

Tri-coloured.—A term sometimes applied to a fowl with three shades of the same colour when it should be uniform; *e.g.* a light-coloured Buff Orpington cock with darker neck- and saddle-hackles and a still darker or red wing-bow.

Trio.—A cock or cockerel and two hens or pullets. This number is frequently advertised and sold as forming a small breeding-pen.

Type, Typical.—Literally that which combines best the characteristics of a group. In reference to fowls it has especial regard to the *shape* of the body and the symmetry of its various parts. In straining after the possession of certain coveted points, and more especially colour, type is often lost sight of; *e.g.* in recent years the rage for evenness of colour in the Buff Orpington was so great that birds as tall as Langshans were awarded premier honours!! In the opinion of the most competent judges "type" should never be lost sight of. It is type more than any other character which differentiates one breed from another.

Under-colour.—The colour of the fluffy part of a fowl's feathers not seen when the bird is at rest, but only when the plumage is lifted. It, together with the colour of the shaft of the feather, is of the greatest importance in determining the value of the bird for breeding purposes, being the surest indication of the amount of colouring pigment in the system.

Variety.—A definite division of a breed, known by its distinctive colouring, *e.g.* a Black Leghorn is one "variety" of the numerous members of the Leghorn breed.

Vulture hocks.—Stiff projecting quill feathers at the hock-joint. The feathers must be both *stiff* and projecting to be condemned. It was formerly a com-

mon failing in the Brahma, but is not now so frequently seen. The feathers of a Brahma's hock should be as profuse as possible, both on the hock *and underneath* it, but, if possible, without the stiff feathers.

Washiness.—Used to denote lack of colour, and especially of surface colour. Faded, pale.

Waster.—A bird fit only for food, and not for breeding purposes.

Wattles.—The fleshy depending structure, under the throat, hanging from either side of the lower beak. It is more developed in the male birds. As will be gathered from the illustrations, they should be much more pendulous in some breeds than others. They are long and open in the Mediterranean breeds, and short in the Asiatics, as, *e. g.*, in the Brahma.

Web.—The web of a feather is the flat or plume portion on either side of the shaft. The web of the foot, the flat skin between the toes; this is small in fowls but much larger in aquatic birds. The web of the wing is the skin which is seen when the wing is open, a triangular piece which joins the wing and the body.

Wheaten.—The colour of the female in Black-breasted Red Game, or the Faverolles hen (see coloured plate). A rich, somewhat uneven brown, as seen in a field of ripe growing wheat.

Whip-tail.—A finely-drawn-out tail, as in Modern Game. The term is applied also to other breeds when the tail is long and neat, the feathers folding over each other instead of being spread out.

Whiskers.—The feathers growing from the sides of the face in the Faverolles. Also called "muffling."

Willow.—A greenish-yellow of various shades, like the bark of a willow-plant. The colour is esteemed in the Black-red Game, but is a blemish in fowls that should have pure yellow legs, as Leghorns.

Wing-bar.—The centre portion of the wing, covered by the wing-coverts. (No. 14, Fig. 15.) In many breeds and varieties this "bar" is of a distinct colour from other parts of the wing. (Cf. Illustration of Brown Leghorn cock, Dark Brahma cock, or the Faverolles cock.) The "bar" should be perfectly even and clear, not ragged, and is a mark of great beauty.

Wing-bay, or Diamond.—The end of the wing formed by the lower end of the secondary flight feathers. (No. 17, Fig. 15.) In the illustrations this diamond shows best on the coloured plate of the Faverolles cock or in the plate of Leghorns. The end of the diamond is frequently hidden by the saddle-hackle feathers. I recommend the amateur to fix in his memory the order of Bow, Bar, Bay, as constant reference is made to these separate parts of the wing.

Wing-bow.—The upper or shoulder portion of the wing. (No. 13, Fig. 15.) The portion rounded like a bow.

Wing-butts.—The corners or end of the wing. The end of the primary feathers.

Wing-coverts.—The broad feathers covering the roots of the secondary quill feathers.

Work, Full of Work.—Applied to a Rose comb when full of fine caruncles or protruding points on its surface.

Wry-tail.—A tail carried awry to the right or left side of the spine and not straight in a line with the body. When carried in this way permanently it is usually due to a deformed spine. It is sometimes only a trick the bird has learnt through being confined in a small show-pen, and birds are to be noticed sometimes carrying it alternately on either side. A free range often effects a cure. But a wry-tail cannot be cured without a surgical operation, and this in an exhibition bird would be a fraud. The attempt is often made to cure by the use of the lancet both this defect and also high or squirrel-tail, and when done by a skilled hand is, unfortunately, difficult to detect. Either defect is certain to reappear in the progeny, and when high-tailed stock are bred from low-tailed parents the owner should look out to discover the imposition.

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mating Black-red with White Cochin bantam hen, 240

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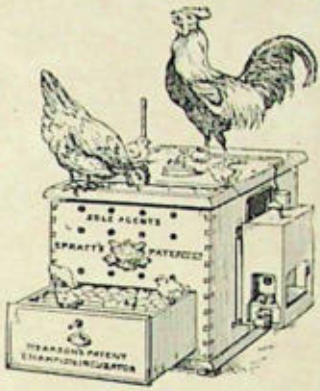
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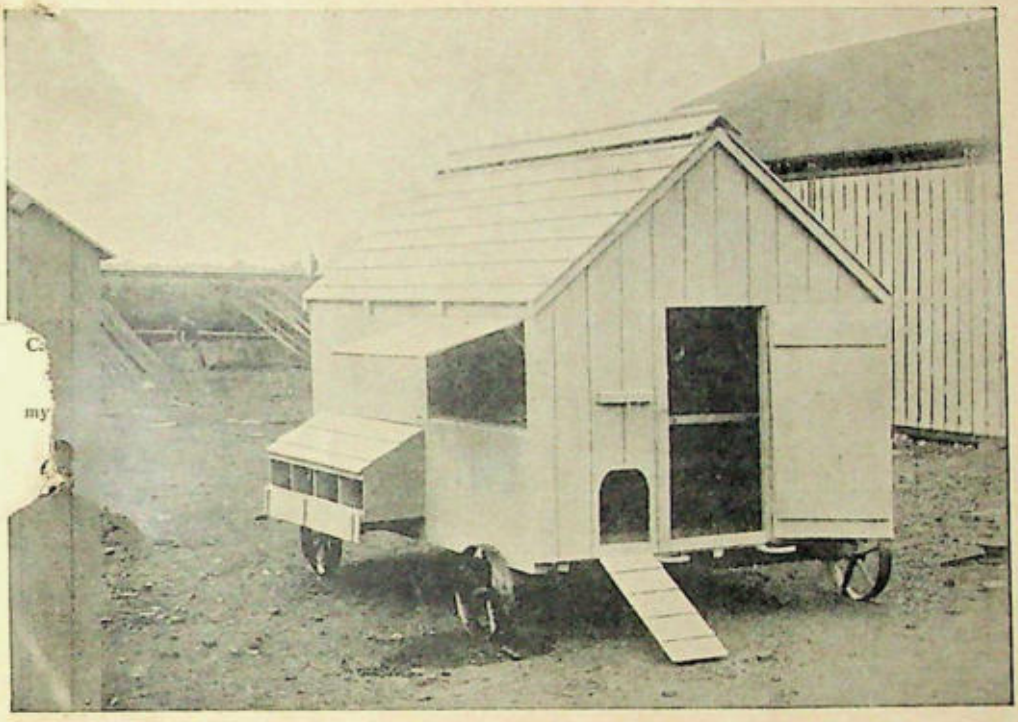
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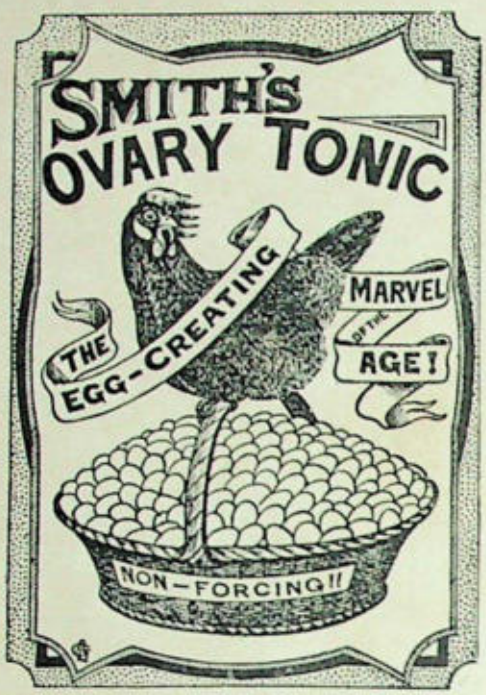
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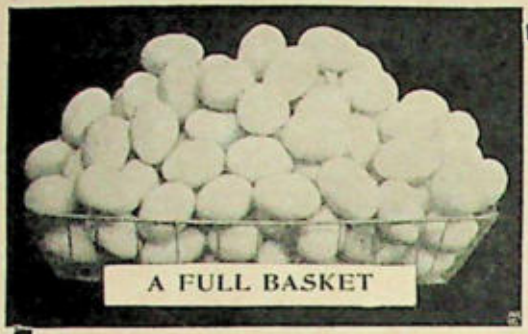
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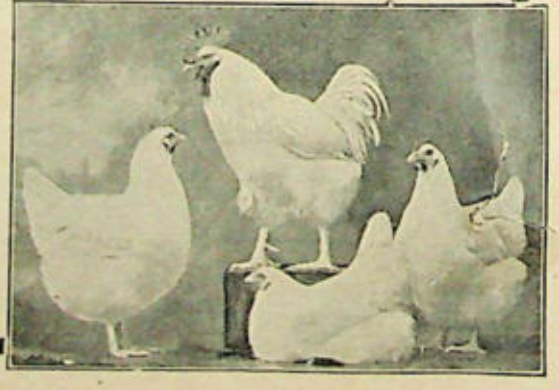
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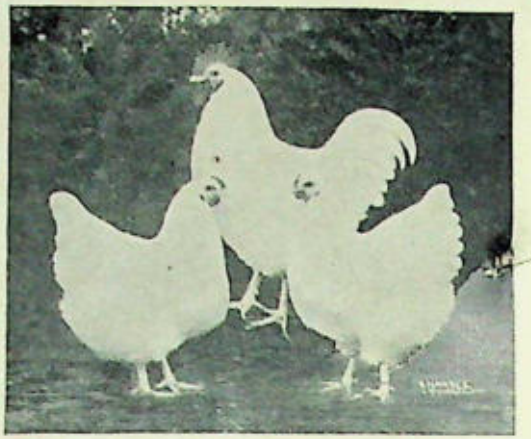
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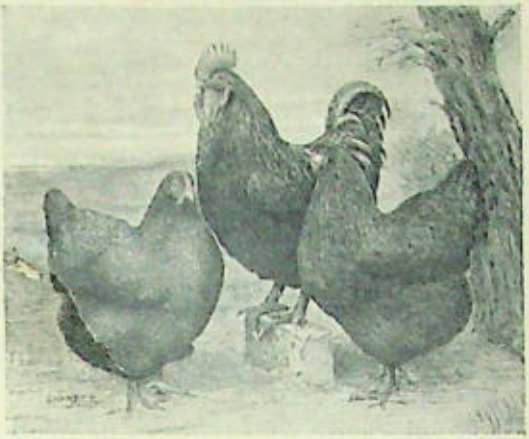
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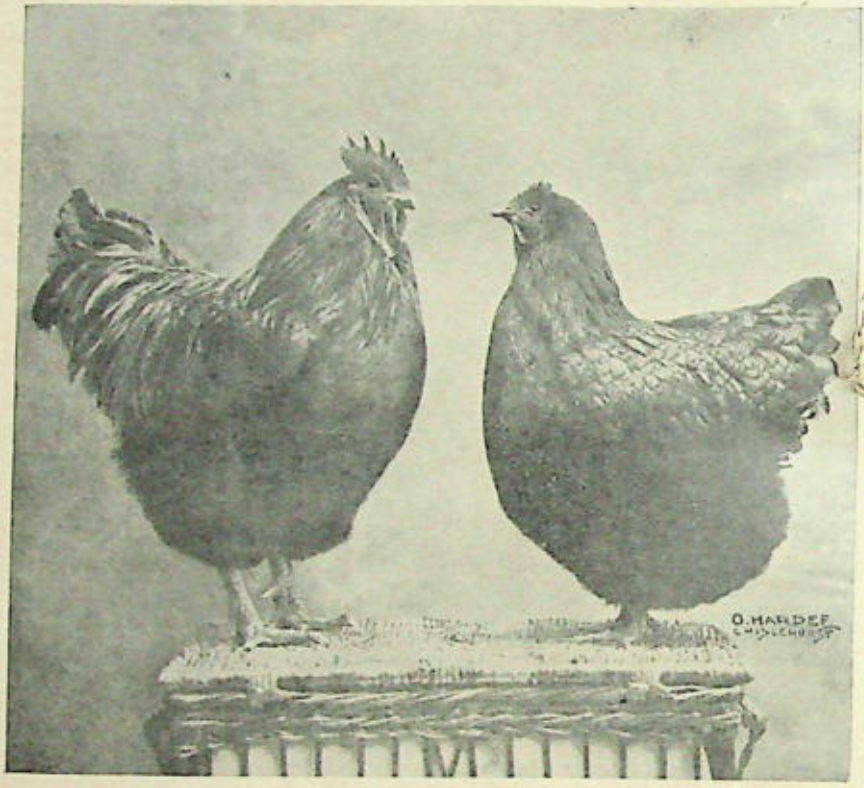
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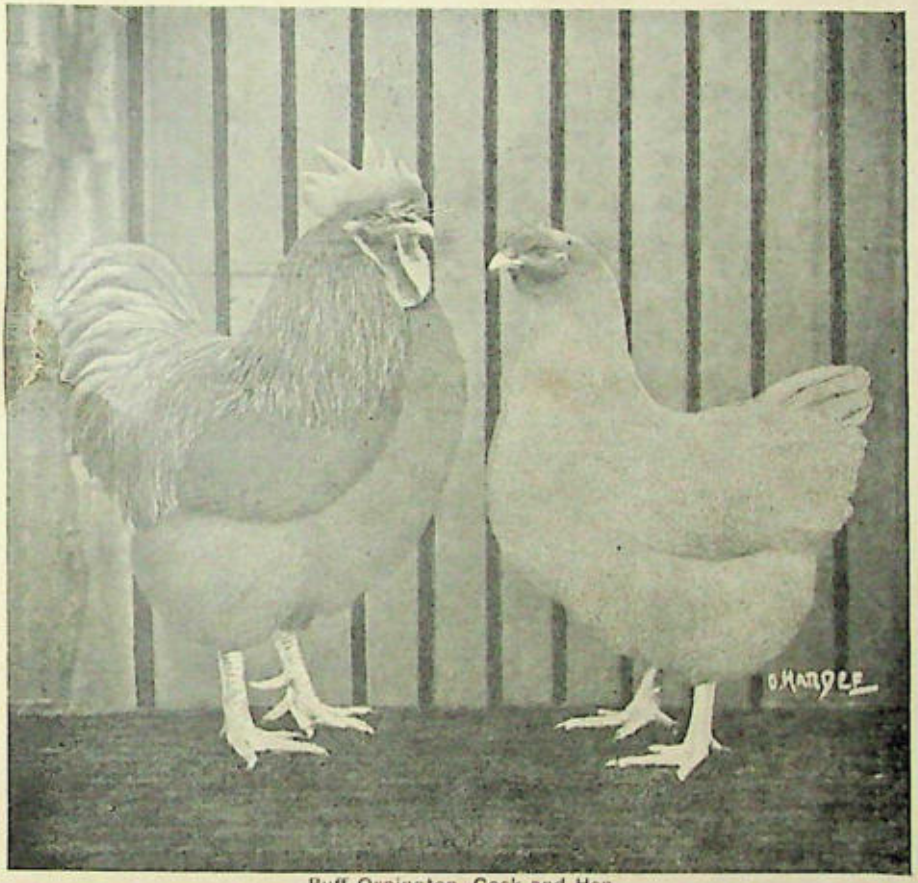
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