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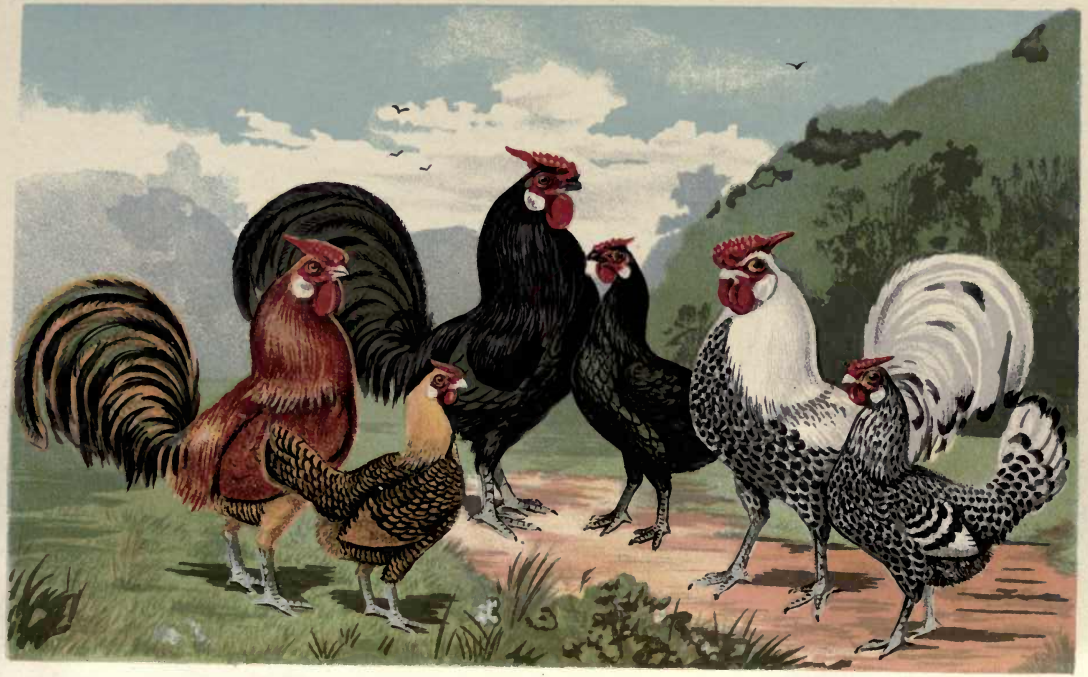

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THE

PRACTICAL

POULTRY KEEPER

A Complete and Standard Guide

TO THE

MANAGEMENT OF POULTRY

WHETHER FOR

DOMESTIC USE, THE MARKETS, OR EXHIBITION

By L. WRIGHT

SIXTIETH THOUSAND, REVISED, WITH COLOURED PLATES

NEW YORK
ORANGE JUDD COMPANY
751, BROADWAY
1894

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PREFACE

TO THE TWENTIETH EDITION.

In offering the First Edition of this Work to the public, the then unknown author of it stated as its object, the provision of such practical details, simply and practically set forth, as might be "put into the hands of a person totally *ignorant* of poultry-keeping, with the reasonable certainty that its instructions, if followed, would command success." He did not think, and does not now think, that such a Work then existed; and accordingly ventured to hope that such an attempt might be well received.

The exhaustion of nineteen editions, in about twelve years, is sufficient proof that, upon the whole, THE PRACTICAL POULTRY KEEPER has answered its intended purpose. No book on the same subject has probably ever had such a wide circulation: the people for whom it was written have both understood and welcomed it, in a way no one feels more than the writer of these lines.

But the lapse of so long a period has at length brought about the necessity for extensive revision. Minor corrections, it is true, have been made from time to time, in points of detail. But the last ten years have seen great changes in the poultry world, which such corrections can no longer

represent. New breeds have been introduced, and the standards of many older breeds have become seriously different from what they were; a vast amount of additional experience on many points has been accumulated; and therefore the Twentieth has seemed to both the Author and the Publishers a good opportunity for the preparation and issue of what almost amounts to a New Edition.

No change has been made for the mere sake of change; and the first few pages, and many other pages, will be found elsewhere pretty much in the old familiar form. But whole chapters have been added, and other whole chapters practically re-written, on farm and table poultry, artificial incubation, and the descriptions of the various breeds of fowls. In all these, and in other points, the text has been brought up to the knowledge and progress of the present day, the old stereotype plates being entirely cancelled. Coloured plates representing the principal breeds, from the pencil of Mr. J. W. Ludlow, have also been substituted for the earlier illustrations.

THE PRACTICAL POULTRY KEEPER thus presents itself in its Twentieth Edition in what is practically a new dress. The Author trusts it will be found "practical" as ever, while as sound and trustworthy as many years of additional experience can make it; and so commits it again to a public, not a few of whom have become almost personal friends.

August, 1885.

CONTENTS.

SECTION I.

SECTION II.

SECTION III.

THE DIFFERENT BREEDS OF POULTRY:—

SECTION IV.

TURKEYS, ORNAMENTAL POULTRY, AND WATER-FOWL:—

LIST OF ILLUSTRATIONS.

COLOURED PLATES.

ENGRAVINGS.

THE

GENERAL MANAGEMENT OF POULTRY,

WITH A VIEW TO PROFIT.

CHAPTER I.

HOUSES, RUNS, AND APPLIANCES NECESSARY TO KEEPING POULTRY WITH SUCCESS.

Fowls should not be kept unless proper and regular attention can be given to them; and we would strongly urge that this needful attention should be *personal*. Our own experience has taught us that domestics are rarely to be relied upon in many matters essential both to economy and the well-being of the stock; and, if any objection be made on the score of dignity, we could not only point to high-born ladies who do not think it beneath them to attend to their own fowls, but can aver that even the most menial offices may be performed in any properly-constructed fowl-house without so much as soiling the fingers. If there be children in the family old enough to undertake such matters, they will be both pleased and benefited by attending to what will soon become their pets; if not, the owner must either attend to them himself, or take such oversight as shall be *effectual* in securing not only proper care of his birds, but of his own meal and grain. If he be unable or unwilling to do at least as much as this, he had far better not engage in poultry-keeping at all. For the pages

of this section are not intended simply to be read and approved, but the directions given are such as are proper for the circumstances therein referred to, and are the price to be paid for health and eggs. For instance: when it is said that the roosting-house should be cleansed daily, it is meant that it *should be done.* When it is said that fowls in confinement should have daily fresh vegetable food, it is intended to convey that such food *must* be *regularly given;* and so on. Let the reader deal fairly by us and by his poultry; so will the latter deal fairly by him.

The first essential requisite to success is a thoroughly good house for the birds to roost and lay in. This does not necessarily imply a large one or a costly: we once knew a young man who kept fowls most profitably, with only a house of his own construction not more than three feet square, and a run of the same width, under twelve feet long. It means simply that the fowl-house must combine two absolute essentials—be both perfectly weatherproof and well ventilated.

With regard to the first point, it is not only necessary to keep out the rain but also the *wind*—a matter very seldom attended to as it ought to be, but which has great influence on the health and laying of the inmates. The cheapest material is wood, of which an inch thick will answer very well in any ordinary English climate; but, if so built, the boards must either be tongued together, or all the cracks between them carefully caulked by driving in string with a blunt chisel. Care should also be taken that the door fits well, admitting no air except under the bottom; and, in short, every precaution be taken to prevent draught. The hole by which the fowls enter, even when its loose trap-door is closed, should admit enough air to supply the inmates; and the object is to have but this *one* source of supply, and to keep the fowls out of all direct draught from it.

For the roof, tiles alone are not sufficient, and, if they

are used, there should be either boarding or ceiling under them; otherwise all the heat will escape through the numerous interstices, and in winter it will be impossible to keep the house warm; the same almost exactly may be said of galvanised iron. Planks alone make a good roofing. They may either be laid horizontally, one plank overlapping the other, and the whole well tarred two or three times first of all, and every autumn afterwards; or perpendicularly, fitting close edge to edge, and tarred, then covered with large sheets of brown paper, which should receive two coats of tar more. This last makes a very smooth, weatherproof, and durable roofing, which throws off the water well. Another good roof is board covered with patent felt, which should be tarred once a year. And still another very good roofing, effective yet light, is the well-known "Willesden paper."

In the north of England a house built of wood is all the better for some sort of lining. Matting is often used, and answers perfectly for warmth, but unfortunately makes a capital harbour for vermin. If it is employed, it should only be slightly affixed to the walls, and at frequent intervals be removed and well beaten. Patent felt is the best material, the strong smell of tar repelling most insects from taking up their residence therein. Or the house may be built with a double wooden skin, inside and outside of the framework, with an air-space of two inches between. This is cheap, and easy to make, and gives a very warm house in a cold country.

If a tight brick shed offers, it will, of course, be secured for the poultry habitation. But let all dilapidations be well repaired.

Ventilation is scarcely ever provided for as it should be, and the want of it is a fruitful source of failure and disease. An ill-ventilated fowl-house *must* cause sickly inmates; and such will never repay the proprietor. This great desideratum must, however, as already observed, be secured without

exposing the fowls to any direct draught. The best plan is to have an opening at the highest point of the roof, surmounted by an opening of slats put together in the well-known fashion of Venetian blinds.

A south or south-east aspect is desirable, where it can be had; and to have the house at the back either of a fireplace or a stable is a great advantage in winter; but we have proved by long experience that both can be successfully dispensed with if only the two essentials are combined, of good ventilation with perfect shelter.

We do not approve of too large a house. For half-a-dozen fowls, a very good size is five feet square, and sloping from six to eight feet high. The nests may then be placed on the ground at the back, where any eggs can be readily seen; and one perch will roost all the birds. This perch, unless the breed kept is small, had better not be more than eighteen inches from the ground, and should be about three inches in diameter. A rough pole with the bark on answers best: the claws cling to it nicely, and bark is not so hard as planed wood. By far the greater number of perches are much too high and small; the one fault causing heavy fowls to lame themselves in flying down, and the other producing deformed breast-bones in the chickens. The air at the top of any room or house is, moreover, much more impure than that nearer the floor.

Some prefer a movable perch fixed on trestles. In large houses they are useful, but in a smaller they are needless. If the perch be placed at the height indicated, and a little in advance of the front edge of the nests, placed at the back, no hen-ladder will be required; and the floor being left quite clear, will be cleaned with the greatest ease, while the fowls will feel no draught from the door.

Besides the house for roosting and laying, a shed is necessary, to which the birds may resort in rainy weather. Should the house, indeed, be very large, and have a good window,

this is not absolutely needed; otherwise it must be provided, and is better separate in any case. If this shed be fenced in with wire, so that the fowls may be strictly confined during wet weather, so much the better; for, next to bad air, wet is by far the most fruitful source, not only of barrenness, but of illness and death, in the poultry-yard. If the space available be very limited—say five or six feet by twelve or sixteen—the whole should be roofed over; when the house will occupy one end of the space, and the rest will form a covered "run." But in this case the shed should be so arranged that *sun-light* may reach the birds during some part of the day. They not only enjoy it, but without it, although adult fowls may be kept for a time in tolerable health, they droop sooner or later, and it is almost impossible to rear healthy chickens.

Should the range be wider, a shed from six to twenty feet long and four to eight wide may be reared against the wall. Next the fowl-house will still, for obvious reasons, be the most convenient arrangement, and it is also best wired in, as before recommended. The whole roof should be in one, to look neat, and should project about a foot beyond the enclosed space, to throw the water well off. To save the roof drippings from splashing in, a gutter-shoot will of course be provided, and the front should be boarded up for a foot from the ground. The floor of this shed ought to be raised a few inches above the usual ground level outside: if by a stratum of clinkers or brickbats, all the better. All this being carried out properly, the covered "run" ought at all times to be perfectly dry.

The best flooring for the fowl-house is concrete, made of strong, fresh-slaked hydraulic lime and pounded "clinkers," put down hot, well trodden once a day for a week, and finally smoothed. The process is troublesome, but the result is a floor which is not only very clean in itself, but easily kept so. Trodden earth will also answer very well. The floor of the shed may be the same, but on the whole, it is preferable there

to leave the natural loose earth, which the fowls delight to scratch in.

Cleanliness *must* be attended to. In the house it is easily secured by laying a board underneath the perch, which can be scraped clean every morning in a moment, and the air the fowls breathe thus kept perfectly pure. Or the droppings may

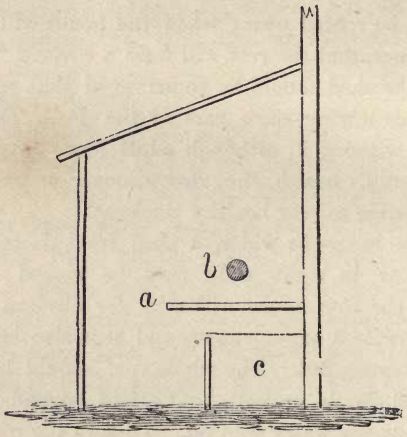


Fig. 1.

a Broad shelf, eighteen inches high.
b Perch, four inches above.
c Nests, open at top and in front.

be taken up daily with a small hoe and a housemaid's common dustpan, after which a handful of ashes or sand lightly sprinkled will make the house all it should be.

There is another most excellent plan for preserving cleanliness in the roosting-house, shown in Fig. 1. A broad shelf (*a*) is fixed at the back of the house, and the perch placed four or five inches above it, a foot from the wall. The nests are conveniently placed on the ground underneath, and need no top, whilst they are perfectly protected from defilement and are also well shaded, to the great delight of the hen. The

shelf is scraped clean every morning with the greatest ease and comfort, on account of its convenient height, and slightly sanded afterwards; whilst the floor of the house is never polluted at all by the roosting birds. The broad shelf has yet another recommendation in the perfect protection it affords from upward draughts of air.

The covered "run" should be raked over two or three times a week, and *dug* over whenever it looks sodden or gives any offensive smell. Even this is not sufficient. Three or four times a year, two or three inches deep—in fact, the whole polluted soil—must be removed, and replaced by fresh earth, gravel, or ashes, as the case may be.

Under the shed must be constantly kept a heap of dry dust or sifted ashes, for the fowls to roll in and cleanse themselves in their own peculiar manner, which should be renewed as often as it becomes damp or foul from use.

If chickens be a part of the intended plan, a separate compartment should be provided for the sitting hens; but this will be further treated of in a subsequent chapter.

Many will wish to know what space is necessary. The "run" for the fowls should certainly be as large as can be afforded; an extensive range is not only better for their health, but saves both trouble and food, as they will to some extent forage for themselves. Very few, however, can command this; and poultry may be kept almost anywhere by bearing in mind the one important point, that the smaller the space in which they are confined, the greater and more constant attention must be bestowed upon the cleanliness of their domain. They decline rapidly in health and produce if kept on foul ground. If daily attention be given to this matter, a covered shed ten or twelve feet long by six feet wide may be made to suffice for half-a-dozen fowls without any open run at all. By employing a layer of dry earth as a deodoriser, which was turned over every day and renewed once a week, the National Poultry

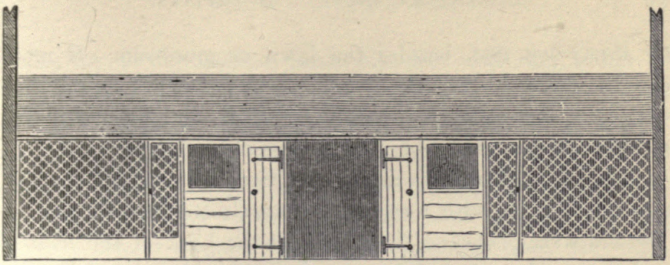
Company kept for several years such a family in each pen of their large establishment at Bromley. These pens did not exceed the size mentioned, yet the adult fowls at least were in the highest health and condition; and the company managed, with birds thus confined, to take many prizes at first-class shows.

Poultry-keeping is, therefore, within the reach of all. The great thing is purity, which *must* be secured, either by space, or, in default of that, by care. Hardy fowls will sometimes thrive in spite of draughts, exposure, and scanty food; but the strongest birds speedily succumb to bad management in this particular, which is perhaps the most frequent cause of failure.

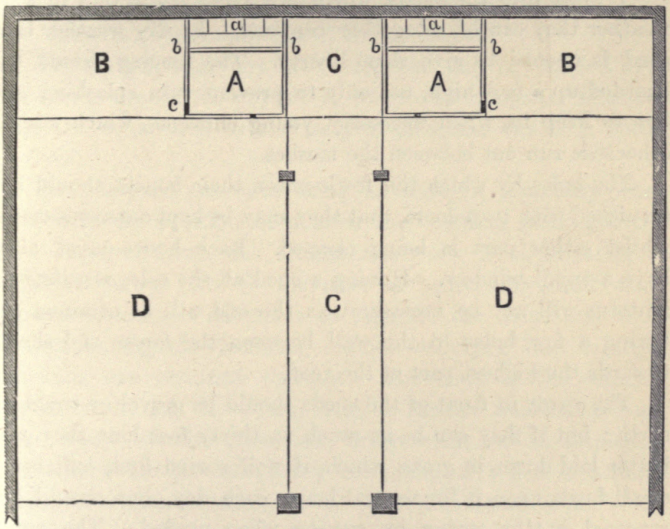
It should also be remarked that poultry thus confined will require a different diet to those kept more at liberty; but this will be more fully explained in a succeeding chapter.

If the run be on the limited scale described, dry earth is decidedly the best deodoriser. It is, however, seldom at the command of those who have little space to spare, and sifted ashes an inch deep, spread over the floor of the whole shed, will answer very well. The ashes should be raked every other morning, and renewed at least every fortnight, or oftener if possible. Of course, the number of fowls must be limited: they should not exceed five or six, and, unless a second shed of the same size can be allowed, the rearing of chickens should not be attempted.

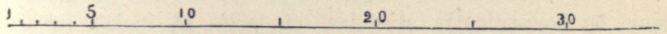
To those who can give up a portion of their garden, the following plan of a poultry-yard can be confidently recommended. It represents what was our own yard for years, and from experience we can pronounce it not only convenient, simple, and cheap, but, with the addition of a lawn on which the chickens may be cooped, sufficient for rearing in very fair perfection almost any variety of either ordinary or "fancy" fowls. The space required in all is only twenty-five



ELEVATION



PLAN



SCALE

Fig. 2.

A A Roosting and laying houses.
B B Fenced-in covered runs.
C C Shed and run for sitting hens.
D D Grass runs.

a a Nests.
b b Perches.
c c Holes for fowls to enter.

by thirty-five feet, besides the lawn or grass-run. If more can be afforded, give it, by all means; but we found this, with very moderate care, amply sufficient, and believe it will meet the requirements of a large class of readers.

The plan, it will be seen, comprises two distinct houses, sheds, and runs, with a separate compartment for sitting hens. The nests are placed on the ground at the back of the houses, and the perches, as before recommended, a foot in advance of them, and eighteen inches high. The holes by which the fowls enter open into the sheds, which are wired in, so that in wet weather they can be altogether confined. In dry weather the shed is opened to give them liberty. The fencing should be boarded up a foot high, not only to prevent rain splashing in, but to keep in, when necessary, young chickens, which would otherwise run out between the meshes.

The holes by which the fowls enter their houses should be furnished with trap-doors, that they may be kept out at pleasure whilst either part is being cleaned. Each house must also have a small window. Having a shed at the side, ventilating lanterns will not be necessary, as the end will be attained by boring a few holes in the wall between the house and shed, towards the highest part of the roof.

The yards in front of the sheds should be gravel or trodden earth; but if they can be as much as thirty feet long they are better laid down in grass, which, if well rooted first, will bear small fowls upon it for several hours each day, but should be renewed in the spring by sowing when needed. The runs should be enclosed with wire netting, two inches mesh, which may be conveniently stretched on poles $1\frac{1}{2}$ inches square, driven two feet into the ground, and placed five feet apart. Between the runs, however, the divisions should be boarded up a couple of feet high, to prevent fighting or restlessness. The height of the fence depends on the breed chosen. Cochins or Brahmas are easily retained within bounds by netting a yard

high; for moderate-sized fowls six feet will do; whilst to confine Game, Hamburghs, or Bantams, a fence eight or nine feet will be found necessary. The netting should be simply stretched from post to post, without a rail at the top, as the inmates are then far less likely to attempt flying over.

We do not like to see fowls with their outer wings cut. If their erratic propensities are troublesome, open one wing, and cut only the first or flight feathers, usually ten in number. This will effectually prevent the birds from flying, and as the primary quills are always tucked under the others when not in use, there is no external sign of the operation.

The compartment for the sitting hen may be boarded in at the front or not; for ourselves, we prefer it open. Her run may also be covered over or not, at pleasure, but it is better covered.

Such a yard possesses many advantages, especially when used with the addition of a lawn for breeding fancy poultry. Two separate runs are almost necessary if the rearing of chickens forms part of the plan of proceeding; and many persons consider it advisable to separate the cocks and hens, except during the breeding season, believing that stronger chickens are obtained thereby. The need of the separate compartment for the sitting hens is further insisted on hereafter, but it has also other uses, being, when not so employed, convenient for the temporary reception of a pen of strange birds, for which there may be no other accommodation.

Each run will accommodate from six to ten fowls, according to their size and habits.

For those who purpose to engage more largely in prize poultry-breeding, more extensive designs will be given hereafter; but enough has now been said to enable the intending poultry-keeper to select from the different plans here indicated the one best adapted to his particular situation, or, mayhap, to contrive a better one of his own. We have pointed out the

essentials; and these being provided for, operations can be commenced, and it becomes necessary to determine upon the plan of proceeding. This, then, will be treated in the next chapter.

CHAPTER II.

THE SYSTEM OF OPERATIONS, AND SELECTION OF STOCK.

When poultry are kept as a branch of domestic economics, it will be obvious that the system to be pursued should vary according to the extent of accommodation which can be afforded, and to the object sought. Both these considerations should be well weighed before operations are commenced; and the plan then determined upon as best adapted to the circumstances should, as long as those circumstances remain the same, be consistently carried out and adhered to.

It very frequently happens that a regular supply of eggs is the sole object in view: and that neither the time, trouble, nor space required to rear chickens with success can well be spared. If, for instance, a covered shed fenced in with wire, as described in the last chapter, with a small house at the end for roosting and laying in, be the sole accommodation for the fowls, to attempt *rearing* them would be folly;* and yet they may be *kept* so as to yield a good return upon their cost and maintenance. The proper plan in such a case will be to purchase in the spring a number of hens proportioned to the size of the run, and none exceeding a year old. A cock is useless, as hens lay very nearly as well without one; and where eggs only are wanted, this is balanced by his food, and his room is saved. All these birds, if in good health and condition, will either be already laying, or will commence almost immediately; and if

* It is not meant to be denied that chickens *can* be reared in such circumstances, and that in good health and to a fair size. We have ourselves done so. But it does not *pay*, and we do not intend to do it again.

well housed, as in the last chapter, and properly fed, will ensure a constant supply of eggs until the autumnal moulting season. Whenever a hen shows any desire to sit, the propensity must of course be checked, not by the barbarous expedient of half drowning the poor bird in cold water—a process generally as ineffectual as it is cruel—but by placing her under a coop on the hard ground, with water, but rather scanty food, keeping her in summer, however, sheltered from the sun. A few days of such confinement will take away all desire to sit from almost any hens but Cochins, which should not be kept under the circumstances we are considering; and in about a fortnight the fowl, if not older than we have recommended, will begin to lay again. It is still better to keep only non-sitting breeds.

To buy only young and healthy birds is very important. An experienced hand can tell an old fowl at a glance, but it is rather difficult to impart this knowledge to a beginner, for no one sign is infallible, at least to an uninitiated interpreter. In general, however, it may be said that the legs of the young hen look delicate and smooth, her comb and wattles soft and fresh, and her general outline, even in good condition (unless fattened for the table), rather light and graceful; whilst an old one will have rather hard, horny looking shanks, her comb and wattles look somewhat harder, drier, and more "scurfy," and her figure is well filled out. But any of these indications may be deceptive, and the only advice we can give the reader is to use his own powers of observation, and try and catch the "old look." He will soon do so, and need no further description.

Directly these hens stop laying in the autumn, and before they have lost condition by moulting, they should, unless they have proved *very* satisfactory, be either killed or sold off, and replaced by pullets hatched in March or April, which will have moulted early. These, again, still supposing proper food and good housing, will begin producing eggs by November at

furthest, and continue, more or less, till the February or March following. They may then either be disposed of and replaced as before, which we should ourselves prefer, as they are just in prime condition for the table; or, as they will not stop laying very long, the best of them may be retained till the autumn, when all but very excellent layers must be got rid of; such are generally worth keeping for another year. For if fowls be kept for eggs, it is essential to success that *every autumn* the stock be thus replenished with pullets hatched early in the spring.* By *no other* means can eggs at this season be relied upon, and the poultry-keeper must remember that it is the *winter which determines* whether he shall gain or lose by his stock; in summer, if only kept moderately clean, hens will pay for themselves treated almost anyhow.

The stock to be selected, if a pure strain be chosen, are, for confinement, Houdans, Leghorns, or one of the Spanish varieties; either, in favourable circumstances, will give a plentiful supply of eggs, and give no trouble on the score of sitting propensities. The Spanish breeds lay five or six very large eggs a week in spring and summer, but are not very hardy or free-laying breeds for winter, and must have a warm aspect and perfect shelter from wind, if the supply is to be kept up. Leghorns lay about the same, or perhaps better, but their eggs are small; on the other hand, they are hardy. Houdans are hardy, and many lay capitally; others do not.

With eggs still the object, but more space, Hamburghs may be kept. They are fairly hardy on a good range, and produce then more eggs in a year, on an average, than any breed, but small; in fact they lay nearly all the year, except when moulting. In confinement they do not, as a rule, answer so well, black or silver-spangled standing it best, and sometimes

* That is, if the greatest amount of profit be the object sought. The question of "pets," and the pleasure to be derived from them, we are not considering.

doing well. More than four or five Hamburghs should not be put in a shed, and they must be kept *scrupulously* clean; with these conditions they may thrive, but few breeds suffer so much from filth or over-crowding.

When chickens are to be reared, Brahmas may be strongly recommended. As layers, when not spoilt they stand high; are very tame, and bear confinement well; and the tendency to sit does not occur often enough to be troublesome, as in the case of Cochins. Plymouth Rocks are also good. But the best of this class of fowls is the Langshan, which has white skin and meat, is a capital layer, and very hardy.

When there is a good wide range of any kind, a few Game hens may be found profitable, the black-breasted red variety being best. Some of the hens are as prolific as any breed, and eat very little in proportion; but they cannot be kept in close confinement on account of their fighting propensities.

For ourselves, we prefer pure breeds, or first crosses; for after all is said on the superiority of mongrel fowls, how many "barn-door" fowls will lay as many eggs as a Minorca or a Hamburgh? Still, the cost of a good stock will stand in the way with many, and has to be taken into consideration; and to those who cannot afford "fancy" poultry, it may therefore be said, once for all, that on the whole, equal success may be attained with *good* ordinary or "barn-door" fowls. Care must be taken in the selection. They should be young, fair-sized, sprightly-looking birds, with plump, full breasts, rather short legs, and nice tight-looking plumage. They ought also to be chosen from a country yard, where their *parents* have been well fed. If such be obtained, they will repay the purchaser, and are handsomer and better every way than *inferior* birds of the "fancy" class. Of course this remark does not apply to mere faults of colour. Fowls are often to be met with at a moderate price, which from some irregularity of feather are quite disqualified as show birds, but which possess in perfection

all the other merits of the breed to which they belong. Let such be secured and prized by all means; but let it be also remembered and believed that nothing pays so wretchedly as to begin "poultry-fancying" with inferior stock, and that really fine fowls which never had a grandfather are any day preferable to "degenerate decendants from a line of kings."

It has been already remarked that the Cochin breeds are excellent layers in winter, but that their invincible propensity to sit, which occurs every two months, or even less, is a fatal objection to their being kept by those who do not desire the care of young broods. If, however, the system adopted depend npon home-reared chickens to replenish the stock, one or two Cochin hens may be kept with advantage in cases where the other fowls are of non-sitting varieties. The frequency of their desire to incubate now becomes a recommendation, as the owner can depend upon "a broody hen" at almost any season which may suit his views; and if always parted with at the age of two years, they will not fail to maintain their deserved character as good winter layers. Their own eggs, of course, should not be given them if the chickens be for market, unless running with a Dorking, Houdan, or Crèvecœur cock, either of which crosses produce a gigantic table-fowl of very fair edible qualities. For *home* use, however, Cochins are not to be despised when killed anywhere under nine months old; they carry an immense quantity of solid meat; and if this be more on the leg than could be desired, it must be also remembered that the said leg, though certainly not equal to breast or wing, is more tender than that of most other breeds.

On the whole, if a good stock can be afforded, and a good number of chickens yearly are to be reared, we should, for domestic use, recommend Langshans, Plymouth Rocks, or Light Brahmas. If there be a double run, as described in Chapter I., the finest birds may be kept pure, and their eggs and progeny, when possible, sold at "fancy" prices; whilst the hens

which show faults of colour may be kept in the other run with a large coloured Dorking or Houdan cock. From this cross table-fowls may be obtained which "look like young turkeys," and being hardy are easily reared. The flesh may not be equal to that of the Game fowl- -in delicious flavour "the prince of all breeds"—but it nearly equals the Dorking, with greater size and freedom from that delicate constitution which often renders the latter an unprofitable fowl.

Dorkings, notwithstanding, are not to be despised, and will do well if they have a fair-sized run, well gravelled and free from wet, with a good dry shed to shelter in. If the supply of table poultry be a main point, no breed, except perhaps Houdans, will compare with this, the favourite fowl of the London market. When of good stock, they may be got up to an amazing size, and the quality of the meat is excellent. They are also most exemplary mothers, and in moderate weather produce a very fair quantity of eggs; but are not very good winter layers, even when hatched early. In this respect they are excelled by the French Houdans, which lay very freely, and are also most hardy fowls, whilst in size and quality of flesh they rival the Dorking, whose blood, though perhaps generations back, we believe them to share, as evidenced by the general form and the peculiar fifth toe. Houdans are pre-eminently a breed for the farmer; their extreme hardiness, quick growth, and excellent laying, making a fowl with nearly all the merits and but few of the faults of the fine old English breed.

On the whole, therefore, of the pure breeds, where chickens for table are wanted, we should pronounce Houdans to be the *farmer's*, and Brahmas, Plymouth Rocks, or Langshans the *family* fowl, crossing the table chickens from the latter with Dorking or not, according as there were one or two runs to keep them in. If a few eggs daily be the object, our own choice would be four or five black or silver-spangled Hamburghs, provided

there be a good run, and they be kept scrupulously clean and well sheltered from driving wind or rain. If the space be very limited we would select four or five red-faced Spanish, or, as they are now called, Minorcas, or the allied Andalusians; they lay at least as well as their celebrated white-faced cousins, while they are far hardier in winter, and stand confinement well. In default of either of these, however, and if all be beyond the means of the speculator, we would undertake to show a satisfactory balance-sheet with any good, lively, ordinary fowls.

Let us, however, repeat again—for nothing is so important—whatever be the breed selected, there must be *every autumn* a proportion, at least, *regularly replaced* by young birds hatched in the spring of the same year. This is the great secret of success, as far as system is concerned; and if it be neglected, during winter an empty egg-basket will eat up all the summer's profits, and testify dismally to the improvidence of the owner.

CHAPTER III.

THE FEEDING AND GENERAL MANAGEMENT OF ADULT FOWLS.

A JUDICIOUS system of feeding is very essential to the well-being of poultry, and has, of course, more *direct* influence upon the profit or loss than any of the circumstances—though equally important—which we have hitherto enumerated. We shall, therefore, endeavour to give the subject full and practical consideration.

The object is to give the quantity and quality of food which will produce the greatest amount of flesh and eggs; and if it be attained, the domestic fowl is unquestionably the most profitable of all live stock. But the problem is rather a nice one, for there is no "mistake on the right side" here. A *fat* hen is not only subject to many diseases, but ceases to lay, or

nearly so, and becomes a mere drag on the concern; while a pampered male bird is lazy and useless at best, and very probably, when the proprietor most requires his services, may be attacked by apoplexy and drop down dead.

That fowls cannot be remunerative if starved need scarcely be proved. *Ex nihilo nihil fit;* and the almost daily production of an article so rich in nitrogen as an egg—the very essence of animal nourishment—must demand an ample and regular supply of adequate food. We say no more upon this point, knowing that the common mistake of nearly all amateur poultry-keepers is upon the other side—that of over-feeding.

The usual plan, where fowls are regularly fed at all, appears to be to give them at each meal as much barley or oats as they will eat; and this being done, the owner prides himself upon his liberality, and insists that *his* at least are properly fed. Yet both in quantity and quality is he mistaken. Grain will do for the regular meals of fowls which live on a farm, or have any other extensive range where they can provide other food for themselves, have abundant exercise, and their digestive organs are kept in vigorous action. But poultry kept in confinement on such a diet rarely thrive. Their plumage, after a while, begins to fall off, their bowels become affected, and they lose greatly in condition; and though in summer their eggs may possibly repay the food expended, it will be almost impossible to obtain any in winter, when they are most valuable.

Even those who profess to correct such errors are not always safe guides. We remember a work which stood high both in character and price, and was in many respects really valuable, in which, just after a caution against over-feeding, the editor gives five pounds of barley-meal, ten pounds of potatoes, seven pounds of oats, three pounds of rice boiled, and three pounds of scalded bran, as a week's allowance for five hens and a cock—"of the larger kinds," it is true. Now, at the lowest ordinary prices the cost of such a scale would

amount to at least £4 4s. in the course of twelve months; and taking eggs at the high average of a penny each all the year through, every one of the five hens must lay at least 200 eggs to repay the mere cost of their subsistence. When we say that 150 eggs per annum is as much as can be obtained from nine hens out of ten, it will be seen at once that poultry could not be made profitable did they consume so enormously; and, in point of fact, we had the curiosity to try this dietary upon six fowls "of the larger kinds," and found it rather more than double what was amply sufficient.

The fact is, all fixed scales are delusive. Not only would Cochins or Crêvecœurs eat twice as much as many other sorts, but different fowls of the same breed often have very different measures of capacity, and even the same hen will eat nearly twice as much when in active laying as when her egg-organs are unproductive.

The one simple rule with adult fowls is, to give them as much as they will eat *eagerly*, and no more; directly they begin to feed with apparent indifference, pick over it, or cease to *run* when the food is thrown at a little distance, the supply should be stopped. In a state of nature they have to seek far and wide for the scanty morsels which form their subsistence; and the Creator never intended that they, any more than human beings, should eat till they can literally eat no more. It follows that food should never be left on the ground. If such a slovenly practice be permitted, much of what is eaten will be wasted, and a great deal will never be eaten at all; for fowls are dainty in their way, and unless at starvation point always refuse sour or sodden food.

The number of meals per day best consistent with real economy will vary from two to three, according to the size of the run. If it be of moderate extent, so that they can in any degree forage for themselves, two are quite sufficient, at least in summer, and should be given early in the morning and the

last thing before the birds go to roost. In any case these will be the principal meals; but when the birds are kept in confinement they will require, in addition, a *scanty* feed at midday.

The first feeding should consist of *soft food* of some kind. The birds have passed a whole night since they were last fed; and it is important, especially in cold weather, that a fresh supply should as soon as possible be got into the *system*, and not merely into the crop. Now, if grain be given, it has to be ground in the gizzard before it is digested; and on a cold winter's morning the delay is anything but beneficial. But, for the very same reason, at the evening meal grain forms the best food which can be supplied; it is digested slowly, and during the long cold nights affords support and warmth to the fowls.

A great deal depends upon this system of feeding, which, we are aware, is opposed to the practice of many, who give grain for the breakfast, and meal, if at all, at night. We believe such a system to be usually adopted from indolence; it is easier to throw down dry grain in a winter's morning than to properly prepare a feed of meal, which is accordingly given at night instead. Fowls so treated, however, are much more subject to roup and other diseases caused by inclement weather than those fed upon the system we recommend—a system not only in accordance with theory and our own experience, but with that of the most successful breeders. Let the sceptical reader make one simple experiment. Give the fowls a feed of meal, say at five o'clock in the evening; at twelve visit the roosts and feel the crops of the birds. All will be empty; the gizzard has nothing to act upon, and the food speedily disappears, leaving with an empty stomach, to cope with the long cold hours before dawn, the most hungry and incessant feeder of all God's creatures; but if the last feed has been grain, the crop will still be found partially full, and the birds will awake in the morning hearty, strengthened, and refreshed.

With respect to the morning meal of pultaceous food, when only a few fowls are kept, to supply eggs for a moderate family, this may be provided almost for nothing by boiling daily the potato peelings till soft, and mashing them up with enough sharps, slightly scalded, to make a tolerably stiff and dry paste. There will be sufficient of this if the fowls kept do not exceed one for each member of the household; and as the peelings cost nothing, and the sharps very little, one-half the food is provided at a merely nominal expense, while no better could be given. A little salt should always be added, and in winter a slight seasoning of pepper will tend to keep the hens in good health and laying. This food may be mixed boiling hot over night, and covered with a cloth, or be put in the oven; in either case it will remain warm till morning—the condition in which it should always be given in cold weather.

If a tolerable stock of poultry be kept, such a source of supply will be obviously inadequate; and in purchasing the food there is much variety to choose from. Small or "pig" potatoes may be occasionally bought at a low price and similarly treated, though experience proves that much of regular potato diet is not suitable, leading after a while to few eggs and derangement of the digestive system; or barley-meal may be mixed with hot water; or an equal mixture of barley-meal and "sharps," or of Indian meal and sharps: either of these make a capital food. Bran in place of the sharps sometimes seems to do very well, but has an awkward habit of every now and then causing inflammation of the bowels. In some places a cart-load of swede or other turnips, or mangel-wurtzel, may be purchased; and when boiled and mashed with meal or "sharps," we believe forms the *very best* soft food a fowl can have, especially for Dorkings; but they cannot everywhere be obtained at a cheap rate, and the buyer must study the local market.

A change of food at times is necessary, and in making

it the poultry-keeper should be guided by the season. When the weather is warm, and the production of eggs abundant, the food should abound in nitrogenous or flesh-forming material, and not contain too much starch or oil, both of which, being carbonaceous, have warmth-giving and fattening properties; but when the cold weather approaches, and the eggs even of good winter layers are fewer than in summer, less of nitrogenous and more of carbonaceous food will be needed. The following table has been often copied since its first publication by Mr. Tegetmeier, but its practical usefulness is so obvious that we make no apology for giving it here, with some modification to

There is in every 100 lbs. of	Flesh-forming Food.	Warmth-giving Food.		Bone-making Food.	Husk or Fibre.	Water.
	Gluten, &c.	Fat or Oil.	Starch, &c.	Mineral Substance.		
Oats	15	6	47	2	20	10
Oatmeal.....	18	6	63	2	2	9
Middlings or fine Sharps	18	6	53	5	4	14
Wheat	12	3	70	2	1	12
Barley.....	12	1	56	4	14	13
Indian Corn ...	11	8	65	1	5	10
Rice.....	7	A trace.	80	A trace.	—	13
Beans & Peas..	24	2	48	2	10	14
Milk	4½	3	5	1	—	86½

make the proportion of warmth-giving to flesh-forming ingredients more plain, and with the analyses corrected up to date.

To show the practical use of this table, it may be observed that whilst "sharps" or "middlings," from its flesh-forming material, is one of the best summer ingredients, in winter it may be advantageous for some fowls to change it for a portion of Indian meal. It is, however, necessary to avoid giving much maize to large fowls, either as meal or corn, or the effect will be a useless and prejudicial fattening from the large quantity of oil it contains; it is best mixed with sharps or

bean-meal, and is then, for the lighter breeds, an economical and useful food. Potatoes, also, from the large proportion of starch contained in them, are not good in quantity as a regular diet for poultry; but mixed with bran or sharps will be found useful occasionally, as above noted.

The smaller and lighter breeds may have more of fattening foods than the larger ones; but Asiatics particularly are so liable to internal fat, that it is safest never to give them maize at all in any form, and very little of potatoes.

In mixing soft food there is one general rule always to be observed: it must be mixed rather *dry*, so that it will break if thrown upon the ground. There should never be enough water to cause the food to glisten in the light, or to make a sticky porridgy mass, which clings round the beaks of the fowls, and gives them infinite annoyance, besides often causing diarrhœa.

If the weather be dry, and the birds are fed in a hard gravelled yard, the food is just as well, or better, thrown on the ground. If they are fed in the shed, however, it is best to use a dish of metal or earthenware, which should have straight sides, as in Fig. 3. Such a trough or dish must, however, be protected, or the fowls may walk upon it, and waste a large portion. This is best prevented by having a loose curved cover made of tin and wire, as shown in Fig. 4, which, when placed on the ground over the dish, will effectually prevent the fowls having anything to do with the food except to eat it, which they are quite at liberty to do through the perpendicular wires two and a half inches apart. On the whole, however, the best vessel for poultry-food is that shown in Fig. 5. The spreading bottom prevents the vessel from being overturned, and the straight sides and the top make it impossible to scratch food out. Such a vessel needs no cover, and also makes a good and simple water-pan.

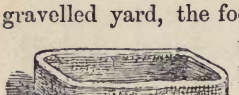


Fig 3.

Where the fowls have a field to run in they will require no further feeding till their evening meal of grain. Taking it altogether, no grain is more useful or economical than barley, and in summer this may be occasionally changed with oats; in winter, for the reasons already given, Indian corn may be given to some breeds every second or third day with advantage. Buckwheat is, chemically, almost identical in composition with barley, but it certainly has a stimulating effect on the production of eggs, and it is a pity it cannot be more frequently obtained at a cheap rate. We would never omit purchasing a sack of this grain when possible, and have a strong opinion that the enormous production of eggs and fowls in France is to some extent connected with the almost universal use of buckwheat by French poultry-keepers.* Wheat was formerly too dear to be employed, unless damaged; and if the damage be great it had better not be meddled with; but of late years it has been one of the cheapest of all grains, and when sound or little injured is a most valuable food, both for chickens and fowls. "Sweepings" sometimes contain poisonous substances; are generally dearer, weight for weight, than sound grain; and should never be seen in a poultry-yard.

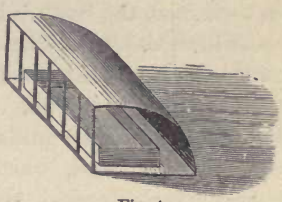


Fig. 4.

Fig. 5.

The midday meal of penned-up fowls should be a very scanty one—a mere sprinkle of grain; and even this is worse than useless unless the other meals are sparingly given, as directed.

The regular and substantial diet is now provided for, but

* It is a curious fact that buckwheat *used* to be largely grown in what are now the chief poultry-breeding counties of Surrey and Sussex.

will not alone keep the fowls in good health and laying. They are omnivorous in their natural state, and require some portion of *animal* food. On a wide range they will provide this for themselves, and in such an establishment as figures at page 9, the scraps of the dinner-table will be quite sufficient; but if the number kept be large, with only limited accommodation, it will be necessary to buy every week a few pennyworth of bullocks' liver, which may be boiled, chopped fine, and mixed in their food, the broth being used instead of water in mixing; these little tit-bits will be eagerly picked out and enjoyed. A very little is all that is necessary, and need not be given more than three times a week. When fowls are much over-fed with this kind of food the quills of the feathers become more or less charged with blood, which the birds in time perceive, and almost invariably pluck at each other's plumage till they leave the skin quite bare. It is also necessary to give a caution against the use of greaves. When fowls are habitually fed upon this article their feathers speedily become disarranged and fall off, and when killed the flavour, to any ordinary palate, is disagreeable.

There is yet another most important article of diet, without which it is absolutely *impossible* to keep fowls in health. We refer to an ample and daily supply of green or fresh vegetable food. It is not perhaps too much to say, that the omission of this is the proximate cause of nearly half the deaths where fowls are kept in confinement; whilst with it, our other directions having been observed, they may be kept in health for a long time in a pen only a few feet square. It was to provide this that, wherever they are large enough, we recommended the open yards, when possible, to be laid down in grass—the very best green food for poultry; and a run of even an hour daily on such a grass plot, supposing the shed to be dry and clean, will keep them in vigorous health. But if a shed only be available, fresh vegetables must be thrown in

daily. Anything will do. A good plan is to mince up cabbage-leaves or other refuse vegetables, and mix pretty freely with the soft food; or the whole leaves may be thrown down for the fowls to devour; or a few turnips may be minced up daily, and scattered like grain, or simply cut in two and thrown into the run; or, if it can be got, a large sod of fresh-cut turf thrown to the fowls will be better than all. But something they *must* have every day, or nearly so, otherwise their bowels sooner or later become disordered, their feathers look dirty, their combs lose that beautiful bright red colour which will always accompany really good health and condition, and testifies pleasantly to abundance of eggs.

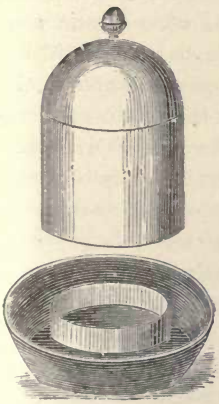


Fig. 6.

The water-vessel must be filled fresh every day at least, and so arranged that the birds cannot scratch dirt into it or make it foul. The ordinary poultry-fountain is too well known to need description, but a better form, made in two parts, is shown in Fig. 6. The advantages of such a construction are that the interior can be examined, and the vessel well sluiced out to remove the green slime which always collects by degrees, and is very prejudicial to health. Some experienced breeders prefer shallow pans; but if these be adopted they must be filled frequently. When the water has to be placed in a shed filled with loose earth, to which the fowls are confined, a piece of board or other protection should be so placed as to protect it from dirt being scratched into it.

Grown-up fowls must never be left without water. During a frost, therefore, the fountain should be emptied every night, or there will be trouble next morning. Care must always be taken, also, that *snow* is not allowed to fall into the drinking vessel.

The reason has puzzled wiser heads than ours, but it is a *fact* that any real quantity of snow-water seems to reduce both fowls and birds to mere skeletons.

It is well in winter to add to the water a few drops of a solution of sulphate of iron (green vitrol), just enough to give a slight mineral taste. This will in a great measure guard against roup, and act as a bracing tonic generally. The rusty appearance the water will assume is quite immaterial, but may be avoided by adding a few drops of sulphuric acid. The best plan, perhaps, is to keep a large bottle of the celebrated "Douglas * mixture," respecting which we can speak with unqualified approval, as a most valuable addition to the drink in cold weather of both fowls and chickens. It consists of half a pound of sulphate of iron and one ounce of sulphuric acid dissolved in two gallons of water; and is to be added in the proportion of two table-spoonfuls to each pint of water in the fountain. Whilst the fowls are moulting, the above mixture, or a little sulphate of iron, should always be used; it will assist them greatly through this, the most critical period of the whole year. With this aid, and a little pepper on their food, with perhaps a little extra meat, there will rarely be any lost. With hardy kinds and good shelter such precautions are scarcely necessary; but they cost little, and have their effect also on the early re-commencement of laying.

In addition to their regular food it will be needful that the fowls have a supply of *lime*, in some shape or other, to form the shells of their eggs. Old mortar pounded is excellent; so are oyster-shells well burnt in the fire and pulverised; of the latter they are very fond, and it is an excellent plan to keep a "tree-saucer" full of it in their yard. If this matter has been neglected, and soft shell-less eggs have resulted, the

* So called because published in the *Field* newspaper by Mr. John Douglas, then superintending the Wolseley Aviaries.

quickest way of getting matters right again is to add a little lime to the drinking water, or pound up some oyster-shells raw.

One thing more, which must on no account be forgotten. This is, some proportion of sharp grit or gravel, or other hard substances. Such small stones constitute *hen's teeth*, and without them the gizzard cannot perform its office of grinding up the food. We have seen fowls ailing from apparently this simple neglect alone.

We may conclude this chapter with a few further remarks respecting general management.

With regard to the nests, they may be of any form, but are best upon the ground. A long box may be employed, divided by partitions into separate compartments; or separate laying-boxes may be used, which is preferable, as more easily cleaned. Some like baskets, made flat on one side, and hung to a nail in the wall; these should be of wire, and then cannot harbour vermin—the great plague of fowls. The straw should be broken and beaten till it is quite soft, and changed as often as there is any foul or musty smell. If the nests are offensive, the hens will often drop their eggs, quite perfect, upon the ground rather than resort to them.

Cleanliness in the house and run has already been insisted upon, and is only again alluded to on account of the value of the manure. This, collected daily, should be put in any convenient receptacle where it can be kept dry, and either used in the garden, if there is one, or sold. It pays best to use it where possible. It should always be mixed with dry earth, soot, or fine dry ashes, before using, being very strong, and is especially valuable for all plants of the cabbage kind; it is also excellent for growing strawberries, or indeed almost anything if sufficiently diluted. If there be no possibility of so using it, it is worth at least four shillings per cwt. to sell, and is greatly valued by such nurserymen and gardeners as know its value; but there is sometimes difficulty in finding

those who do, and getting a fair price. There has been much dispute about this, and we have known the stored or half-dry manure sold as high as eight shillings per cwt., and as low as one shilling and sixpence; but all such uncertainty should be set at rest by the analysis of the late Dr. Voelcker, which will be found at p. 61. At four shillings per cwt. we consider the night-manure equal to more than one-fourth of the profit from the fowls.

Where a considerable number of fowls are killed annually, the feathers also become of value, and may be preserved. They are very easily dressed at home. Strip the plumage from the quills of the larger feathers, and mix with the small ones, putting the whole loosely in paper bags, which should be hung up in the kitchen, or some other warm place, for a few days to dry. Then let the bags be baked three or four times, for half an hour each time, in a cool oven, drying for two days between each baking, and the process will be completed. Less trouble than this will do, and is often made to suffice; but the feathers are inferior in crispness to those so treated, and may occasionally become offensive.

Eggs should be collected regularly, if possible twice every day; and if any chickens are to be reared from the home stock, the owner or attendant should learn to recognise the egg of each particular hen. There is no difficulty in this, even with a considerable number—nearly every egg, to the accustomed eye, has a well-marked individual character; and if there be any hens of value, it may save much disappointment in the character of the brood to know the parentage of those selected for hatching.

Before concluding, it may be expected that something definite should be said respecting the actual profit of what may be called *domestic* poultry-keeping. It is extremely difficult to make any such statement, so much depends upon the price of food, upon the management, selection of stock, and value of

eggs. But in general we have found the average cost of fowls, when properly fed, to be about 1d. per week each for smaller sorts, and not exceeding 1½d. per week for the larger breeds; when the cost is more we should suspect waste. A good *ordinary* hen ought to lay 120 eggs in a year, and if good laying breeds are selected, such as we have named in Chapter II., there ought to be an average of fully 150, not reckoning the cock. Of course, good management is supposed, and a regular renewal of *young* stock, as already insisted upon. For domestic purposes eggs ought to be valued at the price of new-laid, and from these data each can make his own calculation.

Finally, let the whole undertaking—large or small—be conducted as a real matter of business. If more than three or four hens are kept, buy the food wholesale and in the best market; let the grain be purchased a sack at a time—potatoes by the cart-load or hundred-weight, and so on. Let a fair and strict *account* be kept of the whole concern. The scraps of the house may be thrown in, and the cost of the original stock, and of their habitation, may be kept separate, and reckoned as capital invested; but let everything afterwards for which *cash* is paid be rigorously set down, and on the other side, with equal strictness, let every egg or chicken eaten or sold be also valued and recorded. This is of great importance. The young beginner may perhaps manage his laying-stock well, but succeed badly with his chickens (though not, we hope, if he be a reader of this book), or *vice versa;* and it is no small matter in poultry-keeping, as in any other mercantile concern, to be able to see from recorded facts *where* has been the profit or where the loss. The discovery will lead to reflection; and the waste, neglect, or other defective management being amended, the hitherto faulty department may also contribute its quota to the general weal.

CHAPTER IV.

INCUBATION.

MUCH disappointment in the hatching and rearing of young broods would be prevented were more care taken that the eggs selected for setting were of good quality—not only likely to be fertile, but the produce of strong and hardy birds. This remark applies to common barn-door poultry quite as much as to the pure breeds. A friend once complained to us that out of a dozen eggs only four or five had hatched; and on inquiry we found that the sitting had been procured from an inn-yard, where, to our own knowledge, only one cock was running with about twenty hens, from which, of course, no better result could be expected. When the eggs have to be procured from elsewhere, therefore, whatever be the class of fowls required, it should first of all be ascertained that there is at least one cock to every six or eight hens, and that he is a strong and lively bird; and next, that the fowls be not only of the kind desired, but that they are well fed and taken care of. From scraggy, half-starved birds it is impossible to rear a large brood, as the greater number even of those hatched will die in infancy. It only remains to ensure that the eggs be *fresh*, and a successful hatching may be anticipated.

With regard to this latter point, eggs have been known to hatch when two months old, or even more; but we would never ourselves set, from choice, any egg which had been laid more than a fortnight; and after a month, or less, it is useless trouble. Fresh eggs, if all be well, hatch out in good time, and the chicks are strong and lively; the stale ones always hatch last, being perhaps as much as two days later than new laid, and the chickens are often too weak to break the shell. We have also invariably noticed, when compelled to take a portion of stale eggs to make up a sitting, that even when such eggs have hatched, the subsequent deaths have principally

occurred in this portion of the brood; but that if none of the eggs were more than four or five days old, they not only hatched nearly every one, and within an hour or two of each other, but the losses in an ordinary season were very few.

There is, however, one partial exception to this statement, which is only generally true in reference to breeding at the *natural seasons*. Nature does not, however, intend fowls to breed in winter; and during that season and very early spring, the male birds especially are far less vigorous. This is partly shown in sterile eggs, which need no comment. But growth in the egg and final hatching out are as much tests of *comparative* strength as anything in the future lives of the chickens; and hence many eggs which begin to develop have not strength to finish, or if they do, may not have muscular strength for what is really the great exertion of final hatching.

When the eggs are from the home stock, their quality should, of course, be above suspicion. It is scarcely necessary to say, that in order to ensure this, every egg before storing should have legibly written upon it in pencil the date on which it was laid. Eggs intended for setting are best kept in bran, the large end downward, and should never be exposed to concussion. Another very good plan is to have a large board pierced with a number of round holes in regular rows to receive the eggs.

Hundreds of years ago it was thought that the sex of eggs could be distinguished by the shape—the cocks being produced from those of elongated shape, and hens from the short or round. Others have pretended to discern the future sex from the position of the air-bubble at the large end. These and every other nostrum have, hundreds of times, been proved to be erroneous. There is not a breeder of prize poultry in England who would not gladly give twenty pounds for the coveted knowledge, and thenceforth breed no more cockerels

than he really wanted; but the secret has never been discovered yet, and it is even impossible to tell before the egg has been sat upon for a short time, whether it has been fecundated.

We have, in a previous chapter, already mentioned that the sitting hens ought to have a separate shed and run provided for them, in order that the other hens may not occupy their nests during absence, or they themselves go back to the wrong ones, as they will often do if allowed to sit in the fowl-house. An extensive run is neither necessary nor desirable, as it only entices the birds to wander, whereas in a limited space they will go back to their nests as soon as their wants are satisfied. A shed five feet square, with a run the same width for ten feet out in front, is quite sufficient for a hen.

If the hen must be set on the ordinary nest in the fowl-house, or when several have to be set in the same house, it is best to take each one off at a regular time every morning, and after seeing to her wants and due return, to shut her in so that she cannot be annoyed. She should be lifted by taking hold under the wings, gently raising them first to see that no eggs are enclosed. This is the usual plan, and the only practicable one in very large establishments. But it takes time to see all the hens safely back and shut in again, and when we possessed a rather large yard for some years, we preferred to allot half a dozen separate pens for as many separate hens; these were taken off as usual, but were left to find their own way back again.

A single hatching run should, if possible, be in sight of the other fowls, as it will keep the sitter from becoming strange to her companions, and prevent an otherwise inevitable fight on her restoration, to the possible damage of the brood. We used ourselves, as stated in the first chapter, a shed five feet wide and five deep, *open* in front to a small gravel or grass run. Under the shed must be, besides the nest, a good-

sized shallow box of sand, dry earth, or fine coal ashes, for the hen to cleanse herself in, which she specially needs at this time; and food and water must be *always* ready for her. With these precautions the hen may, without very much risk, be left entirely to herself. There are, however, some birds which, if not removed, would starve upon their nests sooner than leave them; and therefore, if the hen has not been off for two or three days, we would under any circumstances find time to daily remove the poor thing for her own preservation. To feed upon the nest is a cruel practice, which has crippled many a fowl for life, and cannot be too strongly condemned.

Of all mothers, we prefer small Dorkings, Cochins, or Brahmas. Their abundant "fluff" and feathering is of inestimable advantage to the young chicks, and their tame and gentle disposition makes them submit to any amount of handling or management with great docility. Cochins certainly appear clumsy with their feet, but we have seldom found more chickens actually trodden upon by them than with any other breed. Many complain that they leave their chickens too soon, but we have not found it so ourselves, except with very early broods. With regard to Brahmas as mothers, they have a peculiarity we never observed in any other fowl, and have never seen noticed in any work on poultry—they actually appear to *look behind them* when moving, lest they should tread upon their little ones. Dorkings are exemplary mothers, and go with their chickens a long time, which recommends them strongly for very early broods. And lastly, a Game hen has qualities which often make her most valuable. She is not only exemplary in her care, and a super-excellent forager for her young brood, but will defend them to the last gasp, and render a good account of the most determined cat that ever existed. But whatever be the hen chosen, she should be well feathered, and tolerably tame. Some people have said that only

mature hens should be allowed to sit, and that pullets are not to be trusted; but our own experience and that of very many large breeders does not confirm this. We have constantly set pullets, and never had any more reason to complain of them than of older birds.

The nests may be arranged under the shed any way so that no one can see into them, with the one proviso that they be actually *upon the ground.* Chicks thus obtained always show more constitution than those hatched on a wooden bottom at a higher level. This holds good even at all times of the year. We are aware that eminent authorities who recommend ground-nests in summer prefer a warm, wooden box in winter, for the sake of the hen; but she will rarely suffer. The heat of her body while sitting is so great that a cool situation seems grateful to her—at least, a hen set on the ground rarely forsakes her nest, which is otherwise no uncommon case. We knew of a hen which, during the month of January, made her nest upon the top of a rock in one of the highest and most exposed situations in the Peak of Derbyshire, and brought a large brood of strong chickens into the yard. It is only necessary the birds should be protected from wind and rain, in order to avoid rheumatism; and this is most effectually done by employing for the nest a tight wooden box, like Fig. 7, open at the bottom, and also in front, with the exception of a strip three inches high to contain the straw. Let one of these be so placed in the back corner of the shed, touching the side, the front being turned to the back wall, and about nine inches from it; and the hen will be in the strictest privacy, will be both perfectly sheltered and kept cool, and will never mistake her own nest for the one which may be placed in the other corner.

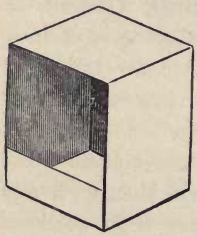


Fig. 7.

A damp situation is best for the sitting shed, and will

ensure good hatching in hot weather, when perhaps all the neighbours are complaining that their chicks are dead in the shells. Attempting to keep the nest and eggs *dry* has ruined many a brood. It is not so in nature; every morning the hen leaves her nest, and has to seek her precarious meal through the long wet grass, which drenches her as if she had been ducked in a pond. With this saturated breast she returns, and the eggs are duly moistened. But if the nest be dry, the hen be kept dry, and the weather happen to be hot and dry also, the moisture within the egg itself becomes dried to the consistency of glue, and the poor little chick, being unable to *move round* within the shell, cannot fracture it, and perishes. Such a mishap will not happen if the ground under the nest be damp and cool. All that is necessary in such a case is to scrape a slight hollow in the bare earth, place the nest-box, already described, over it, and put in a moderate quantity of straw, well broken; or, still better, some fresh-cut damp grass may be put in first, and the straw over. Shape the straw also into a very *slight* hollow, and the nest is made; but care must be taken to well fill up the corners of the box, or the eggs may be rolled into them and get addled. Some prefer to put in first a fresh turf, and this is a very good plan. Always make up a hatching-nest with perfectly fresh and clean materials.

Should an egg be broken in the nest (and the nest should be examined every two or three days, when the hen is absent, to ascertain), the eggs must be removed, and clean straw substituted, and every sound egg at all soiled by the broken one be washed with a sponge and warm water, gently but quickly drying after with a cloth. The hen, if very dirty, should also have her breast cleansed, and the whole be replaced *immediately*, that the eggs may not be chilled. A moderate hatch may still be expected, though the number of chicks is always more or less reduced by an accident of this kind. If, however, the

cleansing be neglected for more than a couple of days after a breakage, or less at the latter period of incubation, probably not a single chick will be obtained; whether from the pores of the shell being stopped by the viscid matter, or from the noxious smell of the putrefying egg, it is not very material to inquire.

Every egg should also be marked quite round with ink or pencil, so that if any be subsequently laid in the nest they may be at once detected and removed. Hens will sometimes lay several eggs after beginning to sit.

In ordinary winters the hen should be set as in summer, giving her, however, rather more straw. Only in severe frost should she be brought into the house; and in that case, or whenever the weather be very dry, it will be necessary during the last half of the hatching period to sprinkle the eggs freely with tepid water once a day, removing the hen for the purpose, and replacing her at once. Of course this is *always* necessary to success, in dry weather at least, when the hen is set in a box at a distance from the ground, as is the case in large sitting-houses. But, where it can be had, we much prefer the natural moisture of a damp soil, which may often be supplemented by pouring warm water on the ground freely, round the nest, several times a week. The application of water must therefore depend upon the weather and common sense. In damp springs none is needed; in dry times, more or less according to circumstances.

When the number of eggs set yearly is considerable, it is worth while to withdraw the unfertile ones at an early period. About the eighth day let the hen be removed by candle-light, and each egg be held between the eye and the light. If the egg be fertile, it will appear opaque, or dark all over, except, perhaps, a small portion towards the top; but if it be unimpregnated, it will be still translucent, the light passing through it almost as if new laid (Fig. 8). After some experience, and by using one of the various "egg-testers" sold for the

purpose, which more completely stop the light, the eggs can be distinguished at an earlier period, and a practised hand can tell the unfertile eggs even at the fourth day. Should the number withdrawn be considerable, four batches set the same day may be given to three hens, or even two, and the remainder given fresh eggs; and if not, the fertile eggs will get more heat, and the brood come out all the stronger. The sterile eggs are also worth saving, as they are *quite good* enough for cooking purposes, and quite as fresh even for boiling as nine-tenths of the Irish eggs constantly used for that purpose.

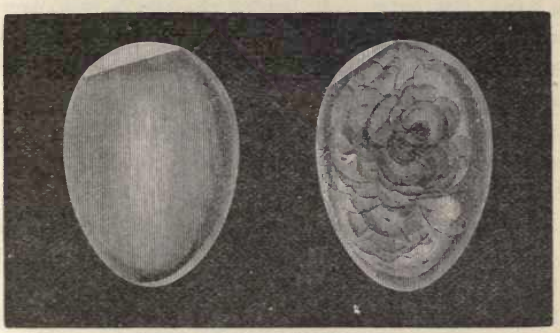


Fig. 8.—Sterile and Fertile Eggs.

It is a common mistake to set too many eggs. In summer, a large hen may have thirteen, or a Cochin fifteen of her own but in early spring eleven are quite enough. We have not only to consider how many chickens the hen can hatch, but how many she can *cover* when they are partly grown. If a hen be set in January, she should not have more than seven or eight eggs, or the poor little things, as soon as they begin to get large, will have no shelter, and soon die off. It is far better to hatch only six and rear five, or may be all, to health and vigour, than to hatch ten and only probably rear three puny little creatures, good for nothing but to make broth. For April and May broods, such a limitation is not needed;

but even then eleven or twelve chickens are quite as many as a large, well-feathered hen can properly nourish, and the eggs should only be one or two in excess of that number.

A good hen will not remain more than half an hour away from her nest, unless she has been deprived of a dust-bath, and so become infested with lice, which sometimes cause hens thus neglected to forsake their eggs altogether. When a hen at the proper time shows no disposition to return, she should be quietly driven and coaxed towards her nest; if she be caught, and replaced by hand, she is often so frightened and excited as to break the eggs. A longer absence is not, however, necessarily fatal to the brood; and it is no use, and only makes matters worse, to be over-fidgety. People who know the most always fuss the least. We would rather a hen went back in twenty minutes; but if she stayed half an hour we should let her, and trust that all would probably be right. We have had hens repeatedly absent more than an hour, which still hatched seven or eight chicks; and on one occasion a hen sitting in the fowl-house returned to the wrong nest, and was absent from her own more than five hours. We of course considered all chances of hatching at an end; but as the hen had been sitting a fortnight, concluded to let her finish her time, and she hatched five chickens. We have heard of a few hatching even after *nine* hours' absence, and therefore would never, on account of such an occurrence, abandon valuable eggs without a trial.

The chickens break the shell at the end of the twenty-first day, on an average; but if the eggs are new-laid it will often lessen the time by as much as five or six hours, while stale eggs are always more or less behind. Small breeds generally hatch a day or two earlier.

If the eggs were fresh, and proper care has been taken to preserve moisture during incubation, no assistance is ever needed at the actual hatching.

When there are chicks alive which cannot break the shell, they may sometimes be saved by careful extrication, keeping the egg in warm water at 100° the while, all but the point of the beak. These cases usually arise from want of moisture, and it is *some* preventive to "test" the egg twenty-four hours before hatching by immersion in a pail of water at 106°. The "live" ones float and bob about after a few minutes in a curious manner; but they must be watched patiently, for sometimes they wait a while; the dead ones should be rejected. The soaking seems to do the eggs good; but it is not advisable for absolute novices to fuss too much with these expedients, which are not really needed in the vast majority of cases.

With good eggs, a good hen, and good management, all will go right, and there will be in due time a goodly number of strong and healthy chickens, to the mutual delight of the hen and of her owner. And with the treatment of the young brood we will begin another chapter.

CHAPTER V.

THE REARING AND FATTENING OF CHICKENS.

For nearly twenty-four hours after hatching chickens require no food at all; and though we do not think it best to leave them quite so long as this without it, we should let them remain for at least twelve hours undisturbed. We say undisturbed, because it is a very common practice to take those first hatched away from the hen, and put them in a basket by the fire till the whole brood is out. When the eggs have varied much in age this course must be adopted; for some chickens will be perhaps a whole day or more behind the others, and the hen, if she felt the little things moving beneath her, would not stay long enough to hatch the rest. But we have explained in the last chapter that this should not be, and that

if the eggs are all fresh, the chicks will appear within a few hours of each other. In that case they are much better *left with their mother;* the heat of her body appears to strengthen and nourish them in a far better manner than any other warmth, and they are happy and contented, instead of moving restlessly about, as they always do whilst away from her.

Our own plan is to set the eggs in the evening, when the chicks will break the shell in the evening also, or perhaps the afternoon. Then at night let the state of the brood be *once* only examined, all egg-shells removed from the nest, and the hen, if she be tame enough to receive it, given food and water. Let her afterwards be so shut in that she cannot leave her nest, and all may be left safely till the morning. By that time the chicks will be strong and lively, quite ready for their first meal; and unless some of the eggs are known to be very stale, any not hatched then are little likely to hatch at all. If this be so, the chicks may be removed and put in flannel by the fire, and another day patiently waited, to see if any more will appear. We should not do so, however, if a fair number had hatched well; for they never thrive so well away from the hen, and it is scarcely worth while to injure the healthy portion of the brood for the sake of one or two which very probably may not live after all.

The first meal should be given *on the nest*, and the best material for it is an equal mixture of hard-boiled yolk of egg and stale bread-crumbs, the latter slightly moistened with milk. Let the hen be allowed to partake of this also—she needs it; and then give her besides as much barley as she will eat, and offer her water, which she will drink greedily. To satisfy the hen *at first* saves much restlessness and trouble with her afterwards.

There is a stupid practice adopted by many, of removing the little horny scale which appears on every chicken's beak, with the idea of enabling them to peck better, and then putting

food or pepper-corns down their throats, and dipping their bills in water to make them drink. It is a mistake to say that if this does no good it can do no harm: the little beaks are very soft and tender, and are often injured by such barbarous treatment. *Leave them alone.* If they do not eat or drink—and chickens seldom drink the first day—it only shows they do not wish to; for to fill an empty stomach is the first and universal instinct of all living things.

The brood having been fed, the next step will depend upon

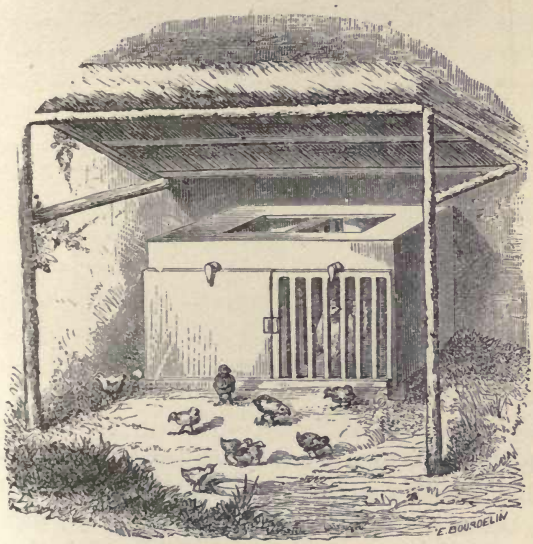


Fig. 9.—Coop under Shed.

circumstances. If, as we recommend, the chickens were hatched the night before, or be well upon their legs, and the weather be fine, they may be at once moved out, and the hen cooped where her little ones can get the sun. If it be winter, or settled wet weather, the hen must, if possible, be kept on

her nest this day also, and when removed be cooped in a dry shed or outhouse.

The best arrangement, where there is convenience for it, is that shown in Fig. 9. A shed six feet square is reared against the wall, with a southern exposure, and the coop placed under it. The coop here shown is made on a plan described by M. Jacque, and consists of two compartments, separated by a partition of bars; one compartment being closed in front, the

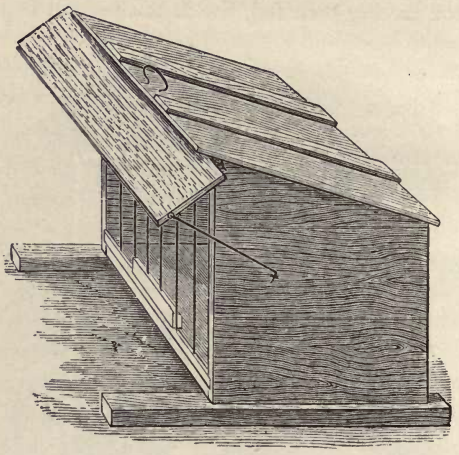


Fig. 10.—Shelter-coop.

other fronted with bars like the partition. Each set of bars has a sliding one to serve as a door. It is best to have no bottom, but to put it on loose dry earth or ashes, an inch or two deep, renewed daily. Each half of the coop is about two feet six inches square, and may or may not be lighted from the top by a small pane of glass. The advantage of such a coop and shed is, that except in very severe weather, no further shelter is required even at night. During the day the hen is kept in the outer compartment, the chickens having liberty, and the food and water being placed outside; whilst at night

she is put in the inner portion of the coop, and a piece of canvas or sacking hung over the bars of the outer half. If the top be netted over, a little food and the water vessel may be placed in the outer compartment at night, and the chicks will be able to run out and feed early in the morning, being prevented by the canvas from going out into the cold air. It will be only needful to remove the coop every two days for a few minutes, to take away the tainted earth and replace it with fresh.

But a simpler coop will do well under a shed; and when a shed is not at command, the very best coop for chickens we are acquainted with is one we made and described years ago, the chief feature of which is a *raised inside floor*. The coop is shown in Fig. 10, and the floor in Fig. 11. The best size is two feet square, for which twelve-feet planks, nine inches wide, will cut all the lengths without waste; besides this will be needed some inch-square stuff to serve as framing at each corner, and along top and bottom of the front. To these pieces the boards are nailed, and we have made three coops complete in an afternoon. Each side takes two boards two feet long, and a half board cut diagonally; the back two boards. The top requires three boards, one-fifth of twelve feet, with slats cut from the same length over the joins; and the fifth piece is used in front as shown. The front may be either wires inserted into the top and bottom rails, as shown, or be made of laths nailed on.

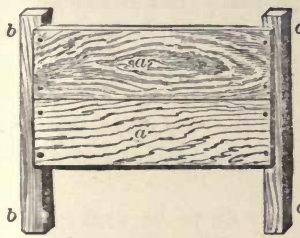


Fig. 11.—Floor of Coop.

The roof, when nailed on, projects an inch and a half all round the coop; but besides this there is a loose shelter-board hinged to the front of the roof so as to be capable of detachment. This is easily done by driving two small staples into

the under side of the roof, into which lock small hooks driven into the edge of the board. In a coop thus sheltered chickens may be left out in any weather, as we have proved for years. Much depends upon a dry floor, however, and this can only be secured by an *inside* raised floor. Fig. 11 shows the construction. The boards *a a* are nailed on the pieces of quartering, *b b*, *c c*, so as *not to reach the edges*, as shown. They are cut such a size also, that the coop fits down on the quartering *outside* the floor, loosely, all round, the quartering being also sloped off so as not to retain wet under even the edges of the coop. Such a floor will be quite dry in any weather. Or the floor may stand up inside the coop, on the ground. But it is better as drawn, because the long ends of the quartering in front, shown in both figures, are convenient for laying another board upon, on which the food and water can be placed. Or this feeding-board may be hinged to the bottom of the coop, and fastened up at night against the front, to keep all in until attended to in the morning.

The ordinary basket coop is only fit to be used under a shed, or in perfectly fine weather, when it is convenient to place on a lawn. Some straw, weighted by a stone or other covering, should however be placed on the top, to give shelter from the mid-day sun.

Chickens should always, if possible, be cooped near grass. No single circumstance is so conducive to health, size, and vigour, supposing them to be decently well cared for, as even a small grass run such as that provided in Fig. 2. Absolute cleanliness is also essential, even more than for grown fowls; and the reason why difficulty is often experienced in rearing large numbers is, that the ground becomes so tainted with their excrements. The coop should, therefore, either be moved to a fresh place every day, or the dry earth under be carefully renewed. The detached wooden bottom just described should be covered every morning and evening half

an inch deep with perfectly dry earth, or fine sifted ashes. The ashes are renewed every evening in five minutes, and form a nice warm bed for the chicks, clean and sweet, and much better than straw.

Cats sometimes make sad inroads on the broods. If this nuisance be great, it is well to confine the coveted prey while young within a wire-covered run. And the best way of forming such a run is to stretch some inch-mesh wire-netting, two feet wide, upon a light wooden frame, so as to form wire

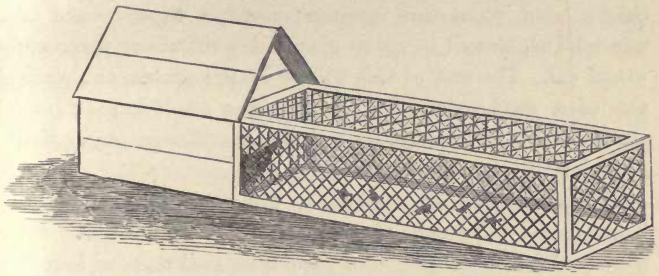


Fig. 12.

hurdles two feet wide and about six feet long. These are easily lashed together with string to form a run, and may be covered by similar hurdles (Fig. 12). In such a run all animal depredations may be defied, until the chicks are a fortnight old; it also saves a world of trouble and anxiety, and prevents the brood wandering and getting over tired. But after that age the chicks suffer, unless the run can be made much more extensive than here shown.

With regard to feeding, if the question be asked what is the *best* food for chickens, irrespective of price, the answer must decidedly be oatmeal. After the first meal of bread-crumbs and egg no food is equal to it, if *coarsely* ground, mixed with a little bread-crumb and finely-cut fresh grass, and only moistened so much as to remain crumbly. The price of oat-

meal is, however, so high as to forbid its use in general, except for valuable broods; but we should still advise it for the first week, in order to lay a good foundation. It may be moistened either with water or milk, but in the latter case only sufficient must be mixed for each feeding, as it will turn sour within an hour in the sun, and in that condition is very injurious to the chickens. Spratt's well-known food is also most excellent for rearing chickens upon.

For the first three or four days the yolk of an egg boiled hard may be chopped up small, and daily given to each dozen chicks; and when this is discontinued, a little cooked meat, minced fine, should be given once a day till about three to four weeks old. The cost of this will be inappreciable, as a piece the size of a good walnut is sufficient for a whole brood; and the chickens will have more constitution and fledge better than if no animal food is supplied.

Food must be given very often. For the first month every two hours is not too much, though less will do; from one to two months old, every three hours; and after that three or four times a day will be sufficient. To feed *very often*, giving just enough *fresh* food to be entirely eaten each time, and with occasional *changes*, to keep the appetite and digestion vigorous and keen, is the one great secret of getting fine birds. If the meals are fewer, and food be left, it gets sour, the chicks do not like it, and will not take so much as they ought to have.

After the first week the oatmeal can be changed for cheaper food. We can well recommend any of the following, and it is best to change from one to another, say about every fortnight. An equal mixture of "sharps" and barley-meal, or "sharps" and buckwheat-meal, or *fine* bran and Indian meal; or of bran, oatmeal, and Indian meal. The last our own chickens liked much, and as the cheap bran balances the oatmeal, it is not a dear food, and the chicks will grow upon it rapidly. Rice is poor food, except for Bantams, which it is

desired to keep small; but boiled rather dry, a little dripping or suet stirred in, and the greasy pellets rolled in "sharps," makes an occasional change which is greedily relished. Boiled rice is also good, as used by the French, for fattening birds for the market, as it tends to white flesh.

The above will form the staple food, but after a day or two some grain should be given in addition. Groats chopped up with a knife are excellent; so is crushed wheat or bruised oats or dari. Chickens seem to prefer grits to anything, but it is not equal to meal as a permanent diet. A little of either one or the other should, however, be given once or twice a day, and in particular should form the last meal at night, for the reasons given on page 21.

Bread sopped in water is the worst possible food for chickens, causing weakness and general diarrhœa. With milk it is better, but not equal to meal.

Green food is even more necessary to chickens than to adult fowls. Whilst very young it is best to cut grass into very small morsels for them with a pair of scissors, and mix liberally in the food; afterwards they will crop it for themselves if allowed. Should there be no grass plot available, cabbage or lettuce-leaves must be regularly given—minced small at first, but thrown down whole as soon as the beaks of the chickens are strong enough to enable them to help themselves.

In winter or very early spring the chickens must, in addition to the above feeding, have more stimulating diet. Some under-done meat should be continued regularly, and it is often advisable to give also, once a day at least, some stale bread soaked in ale. They should also be fed about eight or nine o'clock, by candle-light, and early in the morning. In no other way can Dorkings or Spanish be successfully reared at this inclement season, though the hardier breeds will often get along very well with the ordinary feeding. Ale and meat,

with liberal feeding otherwise, will rear chickens at the coldest seasons; and the extra cost is more than met by the extra prices then obtained in the market. But shelter they *must* have; and those who have not at command a large outhouse or shed to shelter them while tender, should not attempt to raise winter or early spring chickens—if they do, the result will only be disappointment and loss. It may however be as well to state that there is no place so bad as a greenhouse, which will not answer the purpose at all. The experiment has often been tried, and early chickens so "protected" simply die off like flies. Some *loose dry* material under foot in the shed, and free run out, are what they require.

This much will suffice for the solid food of the chickens; but there is a further very important question as to what should be allowed them in the way of drink. The usual plan till lately has been to let them have water by them *ad libitum*, the fresher and cooler the better; and we have shared this general practice with others. There have, however, always been exceptions to this rule amongst country rearers, especially some who have inherited traditions of Game-fowl rearing; and during the last few years there have been on several occasions lengthy discussions in the poultry papers as to whether it is not better, for about the first four weeks, to withhold water altogether, where the chickens are fed chiefly on soft food, except so far as fluid may be contained in the latter.

A careful and exhaustive analysis of all that we have been able to meet with on both sides of this question, has led us to the conclusion that the preponderance of experience is most decidedly upon the side of withholding water. It is to be remarked that by far the greater part of what has been said on this side, consists of actual evidence as to extremely good results from this mode of treatment, and in many cases of very great improvement in results after its adoption. On the other side, a very large proportion of what

has been said against it consisted of mere declamation against the supposed "cruelty" of it. It need not be pointed out that this kind of argument amounts to very little, or to nothing at all. It is quite obvious, to begin with, that there can be no *real* "cruelty" in any course of treatment which rears more chickens, if the fact be so. And when appeal is made to "Nature," and we begin to think about it, it would seem that Nature herself is, if anything, rather on the side of the dry method. The young of all small birds, at least, are reared without water. The fowl itself is believed to be an Indian bird of the jungles; and in such localities it is certain that even the old birds can only drink at long intervals, and that days must elapse, often, before young and tender broods can thus indulge. How much less can water be really required where a large portion of the food itself is mixed with fluid, which is the case in our artificial rearing?

At all events, there is a large body of evidence, collected quite recently, to the effect that a large amount of the diarrhœa and other bowel complaints of young chickens is due to unlimited supplies of fluid in addition to soft food; and that many have left this off with the most marked advantage. Some have deprived the chickens of drink entirely for the first month; others have allowed one fair drink in the morning after breakfast (preventing any excess), and then taken it away, giving the hen drink separately. The chickens in most seasons get some drink from the dew upon the grass, and in these small quantities it is probably less injurious to them. They can be seen drinking in this manner; and the fact suggests that some little should depend upon the season. Where they are hatched very late, and the weather is hot and dry, a rigid regimen should not be insisted upon, especially if fed chiefly upon grain, though even then we are convinced that "water by measure" will be the best plan. But in spring, where soft food is given largely, we are fully convinced that any drink in addition,

beyond one after breakfast, and possibly a few sips, and no more, at night, will be found far the best regimen.

The only actual evidence we have seen of any evil from this course, has been when the writers have adopted it with chickens a few days or more old. This is natural: such changes should not be made with young things of any kind. Those once accustomed to drink *ad libitum* can only suffer by deprivation; and if any change is made, it should be very gradually, and not carried to the extreme. The very worst effects of all are produced by allowing young birds to drink to repletion after prolonged thirst. But it has been noticed that chickens reared on the dry system are much less prone to this in after life.

At the age of four months the chickens, if of the larger breeds, should be grown enough for the table; and if they have been well fed, and come of good stock, they will be. For home use we say let them be eaten as they are—they will be quite fat enough; and fattening is a rather delicate process, success in which it takes some experience to acquire. For market, however, a fatted fowl is more valuable; and the birds should be penned up for a further fortnight or three weeks, which ought to add one to two pounds to their weight. For a limited number of chickens it will be sufficient to provide a small number of simply-constructed pens. Each compartment should measure about nine by eighteen inches, by about eighteen inches high; and the bottom should not consist of board, but be formed of bars two inches wide placed two inches apart, the top corners being rounded off. The partitions, top and back, are board, as the birds should not see each other. These pens ought to be placed about two inches from the ground, in a darkish, but not cold or draughty place, and a shallow tray be introduced underneath, filled with fresh dry earth every day, to catch the droppings. This is the best and least troublesome method of keeping the birds clean and in good health. As fast as each occupant of a pen is withdrawn

for execution its pen should be whitewashed all over inside, and allowed to get perfectly dry before another is introduced. This will usually prevent much trouble from insect vermin; but if a bird appears restless from that cause, some powdered sulphur, rubbed well into the roots of the feathers, will give immediate relief.

In front of each compartment should be a ledge three inches wide, on which to place the food and water-tins. The latter must be replenished once, the former three times a day; and after each meal the pens must be darkened for *half* the time until the next, by hanging a cloth over the front. This cloth is best tacked along at the top, when it can be conveniently hung over or folded back as required. The two hours' darkness ensures quiet and thorough digestion; but it is not desirable, as some do, to keep the birds thus the whole time till the next meal. If the chickens are fasted for a few hours when first penned, they will start with, and keep up, a good appetite.

The best food for fattening is buckwheat meal, when it can be obtained; and it is to the use of this grain the French owe, in a great measure, the splendid fowls they send to market. If it cannot be procured, the best ordinary substitute is an equal mixture of Indian and barley-meal; at the prices since 1882, however, wheat has been one of the cheapest and best of foods, and as whole meal is one of the best for putting on flesh. Each bird should have as much as it will eat straight off, but no food left to become sour. The meal may be mixed with skim-milk if available. A little minced green food should be given daily, to keep the bowels in proper order.

In three weeks the process ought to be completed. It must be borne in mind that *fat* only is added by thus penning a chicken; the lean or flesh must be made before, and unless the chicken has attained the proper standard in this respect, it is useless even to attempt to fatten it. Hence the importance

of high feeding from the very shell. The secret of rearing chickens profitably is, to get them ready for the table at the *earliest possible period*, and not to let them live a *single day after*. Every such day is a dead loss, for they cannot be *kept* fat; once up to the mark, if not killed they get feverish and begin to waste away again. To make poultry profitable, even on a small scale, everything must go upon system; and that system is, to kill the chickens the very day they are ready for it.

What may be called *even* feeding from the shell is of the greatest importance, as the want of it is the cause of a most common defect. If an ordinary English fowl badly fed is examined, there will be found to be *hardly any meat on the back;* indeed, many people have an idea there never is any meat there! Now the effect of even several weeks' good feeding upon a thin chicken is to deposit either flesh or fat *in places*, but not to produce that even clothing with meat *all over*, which is the perfection of chicken-rearing. Moreover, fat so deposited is gross and disagreeable, whereas, even feeding rather deposits it infiltrated amongst the muscle, giving tenderness and juiciness to the whole, as is seen on a larger scale in well-marbled beef. So well understood is this in France, that it is usual, as Mr. T. Christy has again and again pointed out, to expose the poultry there with the *backs uppermost*, the exact contrary of English practice, though the representations of this gentleman have lately caused some imitation of French practice at the better West-End shops. If the back is well and evenly covered with flesh, the breast *must* carry as much meat as the build of the fowl admits of; but the converse is by no means the case. Whether or not better knowledge shall lead to a general reform in the matter of shop display, this method of judging cannot be too widely known by purchasers; and the raiser should never be satisfied till he can produce chickens with the back nicely covered to a smooth surface. This is to be done by an ample supply of

good food constantly changed, including wheat and boiled rice (the latter tends to make white flesh); and the French prefer to "finish off" with buckwheat and milk.

If extra weight and fat is wanted, the birds may be *crammed* during the last ten days of the fattening period, but not before. The meal is to be rolled up the thickness of a finger, and then cut into pellets an inch and a half long. Each morsel must be dipped in water before it is put into the bird's throat, when there will be no difficulty in swallowing. The quantity given can only be learnt by experience.

For home use, however, nothing can equal a chicken never fattened at all, but just taken out of the yard. If well fed there will be plenty of good *meat*, and the *fat* of a fowl is to most persons no particular delicacy. In any case, however, let the chicken be fasted twelve hours before it is killed.

In raising poultry for the market, whatever crosses may be employed, great judgment in selecting the birds is required to produce a really good table fowl. Though not quite everything, a good and well-developed breast is the chief object to aim at; and it may be well to point out in what a good breast consists; for this does not always seem well understood, embracing as it does at least three distinct qualities.

1. A good breast must be *deep*, especially in front. On this depends the breadth of the slices cut from it. Internally, this quality depends upon depth of the keel of the breast-bone; externally, it is marked by the fowl appearing, when looked at sideways, as deep through the body at the shoulders as behind. This is true, although the contour may be widely different. For instance, in the ideal contour of a Dorking, the equal depth at shoulders is seen at once, in the general resemblance of the body to a parallelogram. No such square form can be seen in a Game fowl, whose breast shows a beautiful curve. But it will be seen that a well-shaped Game fowl's body is much like a fir-cone in figure, the thick end representing the

shoulders; hence the greatest depth is still through the shoulders and breast. The same is true of the pheasant, and *of every good table fowl;* and an application of this simple rule will show the serious deficiency of many Langshans upheld as the "true type" by some injudicious writers.

2. The breast must be *broad.* On this depends the number of slices it will yield. Internally, this depends upon the width of the flat parts of the breast-bone. Externally, it is seen on looking at the front of the fowl. The true type of the Brahma, when it is not bred to Cochin models, most often fails here. The breast is deep, and often long; but it is apt to be narrow. Hence the need of carefully choosing birds selected as a cross.

3. The breast must be *long.* On this depends the length of the slices cut from it. Here the Cochins are very apt to fail; very few Langshans we have seen had this fault; it has been lately more and more common in Cochin-bred Brahmas. Some turkeys are *particularly* bad or short in breast, a fact showing that careful selection has the matter in perfect control.

Stock of the varieties chosen always can be found, except perhaps amongst Cochins, sufficiently free from the faults here pointed out; and by thus using judgment, a good table model can be secured. The ideal model is seen in the breast of a well-reared pheasant; and next to that, perhaps, in that of a fine Dorking or old-fashioned Game fowl.

There are various modes of killing—all of them very effectual in practised hands. One is to give the birds a very sharp blow with a small but heavy stick behind the neck, about the second joint from the head, which will, if properly done, sever the spine and cause death very speedily. Another is to clasp the bird's head in the hand, and give the body a sharp swing round by it—a process which also kills by parting the vertebræ. M. Soyer recommends that the joints be *pulled* apart, which can be effected by seizing the head in the right hand placing the thumb just at the back of the skull, and

giving a smart jerk of the hand, the other, of course, holding the neck of the fowl. And lastly, there is the knife, which we consider, after all, the most merciful plan, as it causes no more pain than that occasioned by the momentary operation itself. We do not advocate cutting the throat; but having first hung up the bird by the legs, thrust a long, narrow, and sharp-pointed knife, like a long penknife, which is made for the purpose, through the back part of the roof of the mouth up into the brain. Death will be almost instantaneous, which is too seldom the case when dislocation is employed. The fowls, it is true, often kick and struggle a good deal for some time; but as they will do this equally after actual decapitation, this must be due to muscular contraction rather than any form of actual life.

The fowl having been properly bred, properly fed, and killed, the next question is that of dressing for market; and here again English custom stands much in need of improvement, and is against the true interest both of producer and consumer, since it tends to make poor fowls look as nearly as possible like good ones. It is usual to smash down the keel of the breast-bone with a round roller or handle of the knife, making the breast *look* broad and plump, which is then exposed upwards to tempt the purchaser. It will be obvious, however, that this process cannot make meat; and the splinters effectually prevent the carver from getting a nice even slice, even from a good fowl. So inveterate is this custom among poulterers, that even a good raiser may find it impolitic to run counter to it all at once—it is never wise to be too rash in *any* reform. But every purchaser of a fowl should, for his or her own sake, insist on an unbroken breast; and if even the clubs and gentry of London were to refuse any poultry that has been mutilated, reform will gradually spread. It is here especially that the recent additions to poultry shows of classes for dead fowls may do great good; for at all such

classes broken-down breasts are "disqualified," and thus the eyes of the public are educated to judge of the specimens in an unmutilated state. From this point of view, good classes of dead poultry are even more valuable than those of live birds.

Breaking the breast-bone is, moreover, quite unnecessary, for art can do as much which is quite legitimate, in regard to this very point. Mr. Christy, who has devoted great attention to the subject, and several times gone to the expense of bringing over French fowls, and even French operators, has pointed out how these latter obtain the same object.

The fowl being plucked, the hairs carefully singed off with lighted paper, and the gut washed (not drawn), the dresser places his knee against the back, and forcibly compresses the body held by the ribs and breast. Sufficient padding must be used to prevent bruising of the back, if the ordinary clothing is insufficient. This forces the back and upper ribs towards the breast, the ribs bending or giving way in the middle; and it will be readily understood that the process, carrying with it the contents of the body, forces up the meat at the sides of the breast. The breast is thus also made to look flatter than it was; but it is done by *really bringing more meat there*, where the carver wants to get as many slices as he can, and is therefore a gain to all parties. The body would spring back again if allowed, but it is not allowed. The hocks are at once tied together with a piece of string over the breast, the pinions drawn through them, and the bird then placed on a shaping-board, modelled to receive it. In reality this is like a long trough, in which many fowls are closely packed side by side. Wet cloths are then laid on the back, and the fowl is pressed again. More cloths are then applied, cold water is poured over all, and the fowl is kept so twenty-four hours or more, till it is set quite stiff in the shape desired. Another plan adopted is to place the bird on its back upon cloths, and press the breast firmly down with the flat of the right hand, which

causes the ribs to give way, and squeezes up the meat in virtually the same manner. In some localities the pressed birds are sewn up tightly in wet cloths after being pressed together as described, the design and effect in both cases being the same.

Dead poultry are almost always exhibited "trussed, but not drawn," and should be prepared with absolute simplicity, but with the utmost neatness. Such tricks as gilding the comb and legs (which we have actually seen done) only entail defeat. Success rather depends, if the judge knows his business, upon a breast and back really covered with meat, evenly laid on; a nice, delicate, well-finished skin; and not too great a size of bone compared with the size of the fowl. The "trussing" cannot be too simple; as much as will keep the hocks back, and the wings in shape, is all that should be attempted; and this is easily accomplished if the bird has been moulded into shape, and allowed to "set" cold in the French manner. Actual trussing *for the spit* is not the business of the raiser, since it involves piercing the skin and flesh, and such wounds promote decomposition. This process should, therefore, be deferred till the fowl is on the eve of consumption; moreover, the precise method differs in different localities, and according to whether the bird is to be roasted or boiled.

Fowls are easiest plucked at once, whilst still warm, and after carefully singeing the hairs off with a piece of lighted paper, should be scalded by dipping them for just *one instant* in boiling water. This process will make any decent fowl look plump and nice, and poor ones, of course, ought not to be killed for market purposes.

With respect to old fowls, in the market they are an abomination; but at home it is sometimes needful to use them. If so, let them be *boiled.* Unless very aged, they will then be tolerable eating. Another plan which has been tried with success is to wrap them in vine or other large leaves, and bury them for twelve or more hours in good earth before cooking.

CHAPTER VI.

POULTRY ON THE FARM.

THE contents of the previous pages will have made it abundantly clear, that in first return of gross profit over and above their food, poultry are far superior to any other class of live stock. If there were no drawbacks to this, large poultry-farms could not fail to be highly profitable; but there is one tremendous drawback, which prospectuses of such undertakings always omit to state. It is, that the profit has to be collected in a vast number of very small sums, from a great number of small animals, which yet cannot be dealt with in one large flock like sheep. Hence the liability to many small losses and wastes; while the realisation of the products demands such detailed oversight, and so many separate acts, that the cost of accommodation and labour and marketing is relatively very large.

These facts account not only for the general want of success in poultry-farming as such, but for the general neglect of poultry in England *as part of the stock on the farm.* Left pretty much to themselves, the returns have not been duly collected, nor even a profitable stock secured. In France, where most of the land is cut up into extremely small occupations, the labour of looking after the small number of fowls it will carry with the other stock is never felt or counted. On the larger English farms, it must be provided for and paid for, if it is given at all; this is grudged, or any due return disbelieved in, and so it is not given, but just a few fowls kept to supply the family with eggs, and no more thought about them. They are of quite uncertain age, some of them very old, and many very bad layers. What kind of stock *would* pay under such circumstances? But it has been proved over and over again, that poultry upon a farm will pay uncommonly well if judiciously managed, and their numbers calculated according to what the farm is.

First of all, let it be remembered that while poultry require an acre for every hundred head if for their own exclusive use, a dozen head per acre can be run upon land without in any way interfering with other stock. The manure dropped by this number fully returns all the grass eaten, while it is absorbed quickly enough to keep the land fresh, so that other grazing is not interfered with, as it would be by a greater number.

Secondly, supposing other matters merely balance, the manure of the fowls dropped at night in the houses represents a profit of one shilling per head per annum for large cross-breeds, and sixpence to ninepence for smaller birds. We found that Brahmas dropped considerably over 56 lbs. per annum under their perches. After keeping a few weeks in casks, this was reduced to about half; and samples of both—fresh and moist from the night before, and thus kept—were analysed and valued by the late Dr. Voelcker. The actual samples were from Dorkings, and were sent by Mr. O. E. Cresswell. The following was the analysis:—

	Fresh Manure.	Partially dried Manure.
Moisture	61.63	41.06
* Organic Matter and Ammonia Salts	20.19	38.19
Tribasic Phosphate of Lime (Bone Phosphate)	2.97	5.13
Magnesia, Alkaline Salts, &c.	2.63	3.13
Insoluble Siliceous Matter (Sand)	12.58	12.49
	100.00	100.00
* Containing Nitrogen	1.71	3.79
Equal to Ammonia	2.09	4.59

Dr. Voelcker accordingly valued the moist manure at £2 per ton, and the stored sample at £4 4s. per ton. Most of the sand was probably scraped up from the floor of the house. As regards its application, Dr. Voelcker recommended that for most farm crops, a mixture should be kept of two parts burnt

gypsum and one part mineral superphosphate; and that one part of this should be mixed with three parts of fresh chicken manure. Kept under cover and turned over once or twice, and finally passed through a sieve, this treatment would absorb the surplus moisture, and reduce the whole to a fairly dry and friable condition, in which it should be used at the rate of 8 to 10 cwt. per acre. It may also be mixed with soot, or dry earth and burnt ashes, but should not be mixed with lime.

Hence it will be seen, that a dozen of fowls per acre, with a very little gypsum and phosphate, will give a farmer the greater part of the manure he requires. And Dr. Voelcker specially reports upon the manure as "a much more concentrated fertiliser than *the best descriptions* of ordinary farmyard manure, which seldom yields more than $\frac{3}{4}$ per cent. of ammonia," whilst stored chicken manure by the analysis yields $4\frac{1}{2}$ per cent., and even the moist, fresh-dropped sample over 2 per cent. Let it be once understood what heavy money payments may be thus saved on artificial manures,* and the labour of proper superintendence will no longer be grudged to the poultry.

Thirdly, attention must be given to *improvement of the stock* in laying properties. It will be seen in Chapter XI. that *any* property may be developed greatly in a few generations by careful breeding; and it will also be seen why the utmost

* A practical farmer wrote to the *Live Stock Journal* as follows on this point:—"There is still the most important item to mention—so far as farmers are concerned—the manure. I have this year fully tested its value both for corn and root crops. I dressed a ten-acre field of oats in four two-and-a-half-acre lots, alternately with artificial top-dressing at £9 per ton, and poultry manure, in equal quantities, and if there was any difference it was in favour of the poultry manure. The result was about the same with swedes and turnips: 8 cwt. of poultry manure proving much better than 6 cwt. of artificial manure, costing per ton £7 10s. This year my artificial manure bill *amounts to less than one-third of what it was in* 1876, and my thirty acres of swedes and turnips are better than I have had them for years."

fecundity must not, and cannot, be expected from the stock bred by fanciers. These breed for the points of the show-pen, which have their own use in preserving the distinctive races; but in seeking these chiefly, laying properties are apt to take a second place. Still the fecundity is there, and capable of development like any other property. Probably a hen which lays less than a hundred eggs per annum hardly pays; but it has been proved, over and over again, that an average of one hundred and fifty per annum can be obtained by those who will breed for it, and the process is as simple as possible.

The first thing, on most farms, will be a rigorous weeding out of all the old stock. Mr. Fowler has left it on record that in one case where this was done, and a "general slaughter" made, the change to young fowls alone made a difference of £20 per annum, without any special selection of birds. But selection is desirable. Laying breeds may be selected,* or, if there is a prejudice against "pure breeds," there is a very simple plan which every farmer will understand in a moment, and which has been repeatedly tried with good results. Watch the neighbouring market, and find out who brings in *a good lot of eggs in winter*. Buy his eggs, and set them; and a fairly good laying stock will be ensured to start with. Next, cockerels of the laying breeds can be purchased to cross on these. Then the best layers only of these birds should be bred from for the laying stock, and a few cockerels also kept from these best layers to cross with the pullets so bred. It is as simple as A B C; but in this way the average can be infallibly raised; exactly in the same way as cows can readily

* The most successful direct cross we ever heard of in actual fact was the produce of two Light Brahma hens with a Black Hamburgh cock. From six of these chickens and one of the Light Brahmas were produced, from Jan. 1st to Dec. 31st, 1879, a few more than 1,500 eggs! This is considerably over 200 each, and is the highest number from half-a-dozen fowls we ever heard of. The Brahmas were themselves good layers.

be bred to give 60 per cent. more milk than most farmers are content with.

Where eggs are the chief thing—and we believe they pay best—a different stamp of fowl must be kept from what would be a good stock for chickens. On the latter head nothing need be added to what has been before said; broadly speaking, fowls will be selected which tend to *lay on flesh* when well fed. Fine laying breeds, on the other hand, always tend to a *spare* habit of body, and are weedy by comparison, even in the same breed: the best *laying* Houdans or Brahmas are more weedy-looking than the best table fowls. Good layers also generally tend to large combs. But the one rule is, breed from the best only, and the stock will improve. A cross of a good laying pure breed, for three years, on a fine dunghill breed, selected by the "winter egg test" just mentioned, will have become seven-eighths pure, while the dunghill foundation will ensure hardiness; and by thus using crosses of Minorcas, Andalusians, Leghorns, or Black Hamburghs, a splendid laying strain may be built up in a few years.

Fourthly, the selective breeding here spoken of, and which lies at the very foundation of all profit, involves separation of the fowls into distinct flocks, and a somewhat close personal oversight. This, therefore, is also a crucial point. The fowls must be *made a business* if they are to be *made to pay.*

After examining the state of affairs on various farms, we are convinced that on many it will be far the best to keep enough fowls to occupy a man's *whole time* in looking after them, with just a little general superintendence from the owner, his wife, or daughter. This will need about 1,000 head; and we have already seen that this means about £40 to £50 per annum from the night-manure alone. Female labour is not adapted for this, since there will be heavy weights to carry, and long tramps over heavy ground, while the work must be done in all weathers. The fowls want special attendance,

and can afford to pay for it, provided only the man be made to feel that his employer takes real interest in the results. He must understand that the master both means and expects to *make money* out of his charges, and then he will probably do as near his best as he is constitutionally capable of; for the right sort of man must be found for this business. We have a vivid recollection of *some* agricultural labourers we have met with, whose doings—or want of doing—would have given Job himself much exercise of spirit. Scolding is no use with them; they haven't it *in* them to do any good where they have to think now and then. To give them a fair chance, the poultry ought to have one of the smartest men on the farm, and if he is "smart" in the Lancashire sense they will pay his wages. It will sometimes happen that this sort of work, with its variety and sense of responsibility, will just suit a man or intelligent big lad who does not shine in the steadier, dull routine, but rather shirks work in that on account of its monotony. Variety will sometimes *make* a man like that, and get value out of him when nothing else will.

In the chicken-yard, if many chickens are reared, the help of a labourer's wife will be useful, and may be required; here the labour is both lighter and nearer home.

To arrange for a labourer engaged in other things, "just to give an eye to the fowls," never answers. We have seen it tried often, and it never has done so. On such a system, the fewer fowls are kept the less the owner will lose by them; and there is no more to be said about it. Rather than attempt such a half-system as this, it will be far better to go on in more the old style, with a comparatively limited number, in the farm-yard. Even here, by killing all the old fowls at once, and thereafter killing them before they get old, with judicious selection, and more systematic looking after the eggs—all which may be carried out by a wife or daughter without difficulty —*some* profit may be got out of the fowls, instead of the certain

loss which they are on many farms. But we are here more especially considering the cases in which it is determined to make them a part of the regular business of the establishment.

The needful separation will generally be easily managed on a farm. Fowls have a strong sense of locality, and in the main will keep to their own field; and as a rule the simplest plan will be to put the hedges and fences in fair repair, and then let each field have its own small flock. The house can go anywhere convenient—probably in a corner, where the fencing is good. Some practical men prefer movable houses on wheels, the locality of which is moved occasionally; and one or two of these should always be used on arable farms, as they can be moved out to the stubbles after harvest. One farmer we knew made a hard concrete floor for each house, and kept it in one place; this is least trouble as regards the manure. On many farms there are buildings here and there, opening out to different parts of the farm, which can be utilised. The great thing is, in the cheapest but some effectual way to break up the system of letting all mix indiscriminately in the farmyard.

The fowls will, be it remembered, absolutely benefit the land. In some cases it may be well to keep them off shallow-sown seeds for a fortnight; but as a rule, if the seed is properly drilled, and the fowls duly fed, they will not touch it, but confine their ravages to insects and larvæ. They may crop a little green food; but even this may be almost prevented by letting a strip of grass grow around their house, and in any case the damage will be infinitesimal, unless the farm, or that part of it, is what we should call "over-stocked" with them. A dozen per acre are enough kept in this way; and the largest field must have no more than fifty in one flock, unless in any case a flock of fifty is kept solely upon, say, half an acre or less, for breeding. Generally a few yards of netting used judiciously here and there, to eke out other fencing, will keep the flocks separate.

The houses may be of any cheap and handy form ; but that shown in Fig. 13 was given us by a practical man as the cheapest he had tried of several. The main feature is the triangular section. It is constructed either of match-board, or rough slabs with the joints covered by caulking-pieces ; and is put together with the very least labour possible, by simply nailing the boards to timbers lying on the ground and to a ridge-

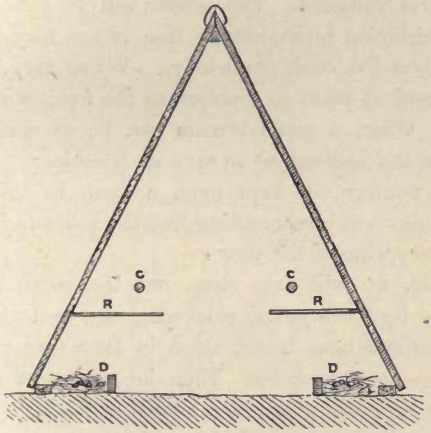


Fig. 13.—Cheap Poultry-houses for the Farm.

pole at the top. The width is seven feet, and the height about eight feet. At a height of twenty inches from the ground a shelf, R, is fixed at each side, hinged to the walls ; and over these are the perches, C C. The nests, D D, are made under the shelf with bricks, or anyhow, and are got at by raising the shelf. In this plan we get strength ; a good slope to throw the rain off; floor-space where wanted ; height in the middle for the attendant ; and the shelf gives freedom from draught. The ridge should be covered by a strip of felt, or an inverted metal gutter ; the last is easily arranged so as to give space all along the ridge for ventilation. A house twelve feet long roosts fifty birds, and the cost was given us as £3 to £3 10s.

Separate shed accommodation, or dusting-places, are scarcely ever wanted in the fields, as the fowls get both under hedge-rows, or in other natural places.

The fowls kept for laying only will only need feeding twice a day, and should therefore, for obvious reasons, be kept in the most distant locations; while the more substantial accommodation nearer home will be devoted to the breeding-pens and the rearing of chickens. The labour will be lessened by the fact that the laying birds, having free range, may be fed, and indeed are best fed, with grain only. Water may be provided at any convenient point in each lot, as the fowls will soon learn the place. Often a small stream can be so managed, or a drain so cut and utilised, as to save all trouble.

Where poultry are kept upon a farm in this way, the attendant's day will be something like the following, taking, for example, the spring of the year :—

Up early, he will first clean out the coops or artificial mothers and feed the young chickens; also feed the breeding-pens, if confined near home, since in that case they require rather more careful *régime*. Then he will start on his first round, with sufficient grain in a couple of buckets slung on a yoke for carriage. At each house he will scatter his corn widely for each flock, and give a brief glance over; and in some cases he may scrape up the night's manure at the same visit, leaving each house clean and trim as he goes. In other cases, however, such delay would bring the other flocks crowding round him; and it will generally be better to feed all first, taking the houses on the return journey; at the same time collecting all eggs already laid, noticing what hens are on the nest, or if any appear sickly. There will have to be a covered barrel at each house to store the manure.

By the time all this is gone over, if necessary dividing the houses, so as to clean each half every two days only, the chickens will want another feed, after which there will be the

cleaning of the houses and belongings of the breeding-pens. Indeed, any fair number of chickens will furnish ample occupation all day for any spare time. A mid-day collection of eggs is desirable where practicable, but will not always be so. Towards evening another round must be taken to feed the laying stock, at the same time gathering the rest of the day's eggs; the chickens having their last feed afterwards, the very last thing, and being then made snug for the night.

All through some watch must be kept, in order to have a good idea towards the end of the season as to which are the best layers, with a view to draft these, so far as wanted, into next year's breeding-pens. It will be seen that the only possible way of getting all this done is to do it systematically.

Kept in this manner, poultry have never failed to "pay" upon a farm. The only rent chargeable to them, as they actually benefit the land, is interest upon houses, fence, and utensils; where corn is grown they get the tailings at the lowest possible cost; and the manure finds its full value. Eggs will in the main pay best; but a proportionate number of birds will of course be sent to market from the surplus cockerels, and the slaughter in the yearly renewal of the stock. The conditions laid down are not hard ones, nor difficult to understand. But more than the dozen fowls per acre should not be attempted, and cannot be, without leaving the ground of "poultry on the farm," for the far more doubtful speculation of "poultry-farming," the result of which may be a very different matter.

The case of vermin and thieves we have not felt called upon to consider. In some places one or the other literally make the profitable keeping of poultry upon a farm *impossible*. We have known it to be so, and for such cases are unable to suggest any remedy.

CHAPTER VII.

ARTIFICIAL HATCHING.

THE artificial hatching of chickens, as is well known, has been practised as quite an ordinary thing in Egypt for thousands of years, and with the most complete success; yet, strange to say, is only a very modern experiment in Europe.

To give a history of all, or even of the principal attempts that have been made to hatch chickens by heat artificially applied, would far exceed our limits, and would be of no practical use. It will be enough to say that Reaumur was the first who really took the matter up in earnest. His method was to place the eggs in wooden casks, or other vessels, and then to surround the whole with fresh dung in a state of fermentation, which was renewed as often as necessary. For obvious reasons this system is never likely to be popular; but it is mentioned by Mr. Geyelin as still employed with success in France, and it has also been followed in America.

Since Reaumur's time, more or less elaborate machines have been constructed by Cantelo, Minasi, Vallée, Carbonnier, and others in France; and by Brindley, Schröder, and others in England. We refer here merely to the old school. All were costly machines, and all were more or less successful in hatching with skilled management, but none were *generally* successful. We believe M. Vallée to have been the first to employ a self-acting valve to regulate the temperature; and Mr. Schröder was, we believe, the first to provide free ventilation from the centre of the egg-drawer, and, above all, a *cold-water tank under the eggs* to provide a moist atmosphere, a point further experience has shown to be of capital importance, though actual tanks of water are no longer employed.

After Mr. Schröder's machine many others were brought forward, and in the United States Mr. Graves and Mr. Halsted

constructed elaborate incubators. The principal object with all inventors was to ensure an equable temperature, but few of the ingenious contrivances employed really secured this, and adequate attention was not, as is now known, paid to the *proper amount* of dampness, or to purity of the atmosphere. All the machines at times hatched remarkably well, but not one could be *depended on* to hatch well; and the first incubator

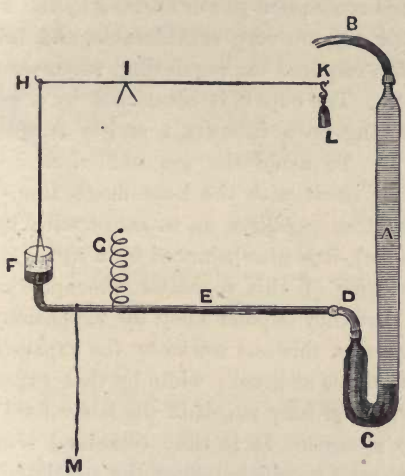


Fig. 14.—Boyle's Regulator.

which really did uniform good work in intelligent hands was that invented by Mr. Henry Boyle. This greater uniformity was due to the delicacy of its (patent) heat regulator, shown in Fig. 14.

A C is a glass syphon-gauge, connected at B with the heating water, heated air, or other medium it is desired to regulate. The water, A, extends to nearly the bottom of the longer leg of the syphon, pressing near the bottom upon the mercury, C. This is connected by a short piece of vulcanised india-rubber tube, D, with the nearly horizontal small glass tube, E, which

expands at the further end into the larger cup or bowl, F. The mercury extends from the point where the expanding water acts upon it to the bowl or cup, F; and it will be readily understood that as the water expands, and presses on the mercury in the large syphon-gauge, it forces a portion along the much smaller tube, E, and causes the fluid to rise in the cup, F. The tube, E, being some ten or twelve inches in length, the leverage and consequent power exerted by the weight of the mercury in this cup are very considerable, and fully adequate to any operation required for regulating, whatever may be the heating power. The cup F is connected by a wire with the lever, H K, moving on a fulcrum, I, and is carefully balanced by a weight, L. To avoid the too sudden movement which would otherwise occur with the least fluctuation of heat (for this regulator is so sensitive as to move with less than the tenth of a degree), it is also balanced by a spring, G.

The superiority of this regulator over previous mercury regulators is, that they depend upon the expansion of mercury under heat, whereas this one works by the expansion of water, which is many times as great; while by that expansion acting upon mercury, the greater *weight* of the latter fluid as a motive power is also secured. It is this, combined with the long leverage of the tube E, which makes the regulator so delicate. It may be connected with the source of heat by a wire, chain, or thread, M, in any desired manner.

The incubator itself is arranged as follows:—The eggs are laid in oval holes in a plate, N (Fig. 15). A cold-water tank underneath supplies some moisture; and more is given by wetting portions of cotton-wool, which are placed in small holders, O, up the centre of the egg-plate. Air is admitted pretty freely *under* the egg-plate, which thus keeps the under-surface cooler than the top, escaping by openings above. The rows of eggs thus placed are ranged immediately under *arches* in the heating-tank P, connected by a pipe, Q, with the boiler. The eggs, as soon

as chipped, are hatched out in the receptacle or hatching-box, R, on top of the heating-cistern, which is supplied with damp sawdust and cotton-wool to keep up the necessary moisture.

With people who understood it, this incubator hatched remarkably well; but it was complicated and costly, and, moreover, the egg-plate sliding under the arches in the heating tank was often found to break eggs at an alarming rate. The bottom of the eggs being kept cool, the top temperature found most successful was about 106°.

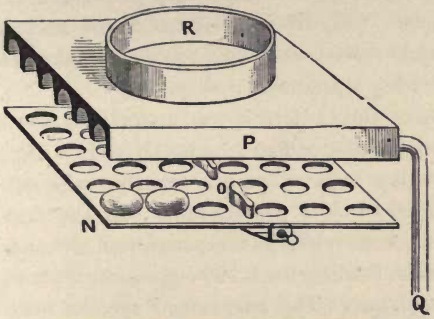


Fig. 15.—Egg-tray in Boyle's Incubator.

In 1877 the practice of artificial hatching was revolutionised by what was termed a "Hydro-Incubator," exhibited by Mr. T. Christy, at a Dairy Show held at the Agricultural Hall, London. This machine was modelled upon one used for some little time previously with success in France, made by Messrs. Roullier and Arnoult, and it consisted in the main of a large hot-water tank over the egg-drawer, of peculiar construction, from which a few gallons of water were drawn off twice in every twenty-four hours, to be replaced by boiling water; thus keeping up the temperature. The attendant was not, however, able to explain the construction of the tank, or the reason for the mode of working; and the consequence was that not one single individual acquainted with the subject—we were

certainly no exception—thought such a machine of the least use for practical purposes. That when so many had devoted money, pains, and complicated apparatus to keep up a regular supply of heat, a machine should succeed which depended altogether upon a re-supply of boiling water every twelve hours, appeared to all simply ridiculous. The following year, however, a competition of incubators took place at a poultry-show at Hemel Hempstead, at which this incubator far outstripped all competitors; and the success then obtained, so far from being accidental or temporary, was much surpassed on later occasions. "Hydro-Incubators" were sold literally by hundreds, and solved the long-sought problem by making artificial hatching a practical reality.

It was some time before it was understood how it was that this success had attended so apparently rude a machine. The whole secret lay in two points mainly, wherein the new machine differed from it predecessors. In the first place, the hot-water tank was *very large* compared with all other apparatus previously made, holding for a 100-egg machine about twenty or twenty-four gallons. The enormous "specific heat" of water makes a large body of it like this very much more "steady" in temperature than tanks of less content. But much more than this, the construction of the tank was found to be peculiar; and this was in fact the great excellence of the invention of Messrs. Roullier and Arnoult. If we take a Florence flask of water containing a few particles of bran, and apply a lamp to the *bottom*, we shall see how the heated water rises and circulates, and the whole becomes very hot in a very short time. But if we apply a hot plate to the surface of the water in an open glass vessel, there is scarcely any movement, and it is a long time ere the heat reaches the lower portion of the fluid. This time may be increased still further by horizontal *septa* or partitions, which compel the hot water to take a roundabout course. Now, the tank in the hydro-incubator

was not only large, but furnished with such partitions; and the boiling water was always supplied *at the top.* The consequence of these arrangements is, that the heat percolates very slowly downwards, and while the water drawn off (from three to six gallons) is generally about 146°, and replaced by water at 212°, the temperature of the *bottom* layer, which acts upon the eggs, only varies in a small degree, and that in a regular manner within certain limits, which appears actually beneficial to the eggs. The heat was also given to the eggs from above, but this had been done in many previous machines.

The all-important character of these points was at first by no means apparent even to the manufacturers. For some time attention was confined to minor improvements in the original "hot-water" form of machine. The first of these was the freer supply of ventilation. Gradually also was arrived at the proper area of damp earth underneath the eggs to provide the proper amount of moisture; these machines using, in place of cold tanks, earth baked to kill all life, and moistened with water on each occasion when the eggs were attended to. Still later it was found, that during the first eight or ten days the eggs did well in a close atmosphere with little ventilation, whilst later on they absolutely needed fresh air; that, as the embryos grew, the eggs themselves did far more in imparting heat to the machine; and that to be putting in cold eggs amongst others far advanced was most injurious to the total results. Hence it was found preferable to provide two drawers, one smaller than the other, in which these different conditions could be preserved.

Incubators worked by hot water are now made by several manufacturers, nearly all being modelled more or less closely on the French machines of Messrs. Roullier and Arnoult. By packing the tank and drawers all round with a good thickness of sawdust or other material to retain the heat, somewhat smaller tanks than at first have been made practicable, but

still very large compared with those formerly employed, while the horizontal partitions are more or less essential. These incubators are made as small as for three dozen eggs, one of which size can be obtained for about thirty shillings; but the experience of many persons has proved that the size for ninety or a hundred eggs is the most generally useful one, and on the whole gives most satisfactory results. Such a machine now contains about fifteen to twenty gallons of water, and the following is the mode of operation with it:—The machine should have a place free from strong, cold draughts, if possible. When fixed it must be filled up entirely with *boiling* water, which is left in for twelve hours, and must then be *entirely* drawn off by tipping the machine forward and opening a tap at the bottom of the tank (this tap in ordinary work is not used at all). The machine is then filled up with boiling water the second time. This process is absolutely essential to thoroughly "charge" the whole machine and its packings with the necessary heat. Twelve hours after the second filling the thermometer should be put in, and as soon as it falls to 106° (which will not be till rather later) the eggs may be placed in the drawer on flannel. In very frosty weather the flannel may be doubled with advantage. Also at the same time wet the earth-trays, and draw off from two (in warm) to three (in cold weather) gallons of water by the *working* tap, replaced by boiling water. The supply of heat must now be attended to every twelve hours, and about the same hour. At each visit the water drawn off will probably be from 136° to 140°, and must always be tested by the thermometer, as this figure is the guide for the quantity of boiling water to put in. But the heat of the drawers, which is also examined, is another guide. As a rule, if the room be about 60°, from two and a half to three gallons may be required, which may rise to six gallons in cold weather in a cold room. The heat added in this way is very slowly and equably percolating downwards all

the time, so that the drawer varies very little when the quantities are chosen with judgment, while any little excess or defect on a single occasion has comparatively mild effects. If the machine is filled with eggs at once, the ventilators should be kept nearly closed for the first nine days, half opened on the tenth day, rather more the next day, and thenceforth the drawer freely ventilated. If two incubators or a divided drawer are used, the eggs are kept in the close situation at first, and then moved to the ventilated one. Particular attention must be paid to the supply of moisture beneath, and to the removal of any bad egg, and each time the machine is visited the eggs must be withdrawn, turned, and exposed to the cool air for from fifteen to twenty minutes. The eggs should be turned in *opposite directions* on succeeding days.

As hatching proceeds, it will be found that less and less hot water is required, owing to the "vital" heat developing in the eggs themselves. This must be carefully attended to. On the other hand, fresh cold eggs would lower the temperature; and therefore fresh eggs added after a start should be first warmed for a minute or two in water heated to about 105°. In a very dry room a loose pan of damp earth under the incubator is an advantage, or shallow tins may be placed in the egg-drawer itself to supply more moisture. The heat should be kept from 103° to 106° as nearly as possible. The temperature of the drawer should be noted *at a glance* when the drawer is opened, as it will rapidly fall when exposed to the air. Eggs should always be tested for fertility at an early date, as bad eggs in a drawer are a great drawback to the whole batch; and any fetid smell should at once lead to a rigorous examination, and the sprinkling on the earth-trays of a few drops of Condy's fluid. Every two or three days, when turning the eggs, the outside ones should be moved to the middle, or the front ones to the back, and *vice versâ*. When hatching time arrives, the chicks should be removed about

every twelve hours, and not oftener; and if many are to be taken out, the "vital heat" thus abstracted must be compensated by more hot water than would otherwise be used. All these points are simple enough, and easily remembered when their reason is once clearly seen; but in their observance lies the main secret of success with hot-water incubators.

Simple as this system was, however, the provision of gallons of boiling water every twelve hours was found such a

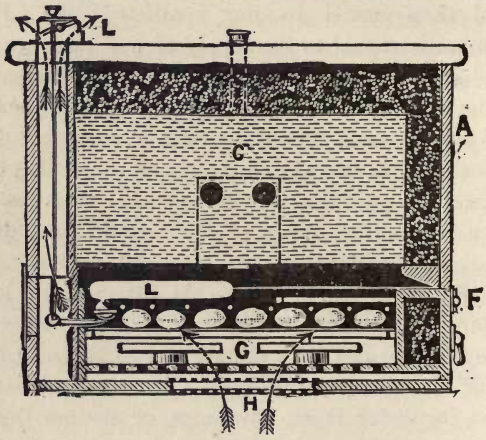


Fig. 16.—Tomlinson's Incubator.

tax on most householders, that there was a demand on all hands for supplementary apparatus. The first and most natural step was to supply special boilers heated by paraffin oil, or Fletcher's well-known gas-furnaces; and these are still considerably used. The further step was, however, soon taken of carrying circulating pipes from a small boiler into the tank of the machine, and this is now the favourite and usual method of working hydro-incubators. Instead of withdrawing from three to six gallons of water, to be replaced by boiling every twelve hours, at the same periods the lamp under the boiler is lit for a short time, so as to convey more heat into the tank,

the water in which is never renewed, beyond filling up now and then the trifling loss from evaporation. Finally, however, manufacturers and the public have returned to the old system of employing the constant heat of a lamp. The first really successful machine on this principle was the "Patent Automatic Incubator," brought out in 1880 by Mr. Henry Tomlinson, the well-known Cochin breeder of Birmingham,

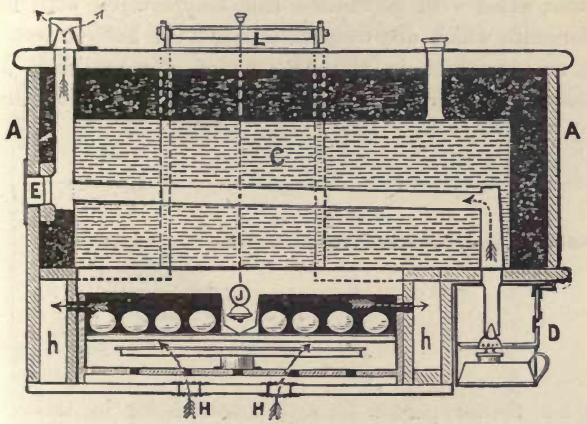


Fig. 17.—Tomlinson's Incubator.

and like all *efficient* machines, employs an automatic regulator, the latter being in its proper place—the egg-drawer. But an all-important lesson had now been learnt, Mr. Tomlinson having experimented with a water machine of the "Reliance" make, and he therefore still employed a large body of water, which "holds the heat so well and steadily, that if the lamp should accidentally be put out for twelve or fourteen hours, the working of the machine would not be dangerously affected."

Such was, in fact, the grand secret, which can only be ignored by a machine that possesses a *perfect* regulator. With large tanks, any passable regulators work well and easily, and the rest is a question of common sense and practical

management. The Tomlinson incubator is shown in section in Figs. 16 and 17. A is the case, enclosing packing shaded black, and projecting at one side over the lamp D; C the water tank, also projecting over the lamp, and traversed by two or more hot-air flues; E is a door for cleaning the flues without interfering with the machine; F is the front of egg-drawer, with the thermometer-scale showing outside; G is the egg-drawer, fitted with perforated zinc tray covered with flannel, underneath which are evaporating-pans for holding wet sand; H H are openings in the bottoms of the machine, doubly covered with perforated zinc, for admitting air to the drawer;

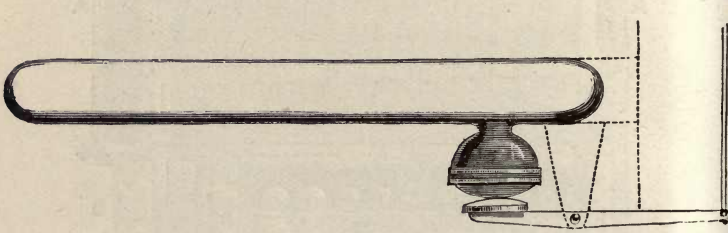


Fig. 18.—Tomlinson's Regulator.

the air thence passes through small holes in the wooden bottom of the drawer, and thence over the moist sand, passing out through holes in the sides of the drawer into chambers *h h*, communicating with a vertical flue at the back, surmounted by the controlling regulator-valve L. The regulator itself is also lettered L in Fig. 16; but the valve is so set as to allow a certain minimum amount of ventilation at all times.

The regulation of this machine depends upon the expansion of air, and is shown in Fig. 18. The glass tube shown in the figure is sealed at both ends, and has on the under side a cup-shaped opening, which is closed by a diaphragm or membrane of india-rubber tied tightly round its lip; but before this is done the temperature is brought to about 90° Fahr., and a little water put in the tube, which runs down to the cup and

keeps the joint air-tight. When the air expands, the diaphragm swells out and presses down the button at the end of the lever shown, and so lifts the valve connected with the egg-drawer, and allows hot air to escape. On the other hand, if the

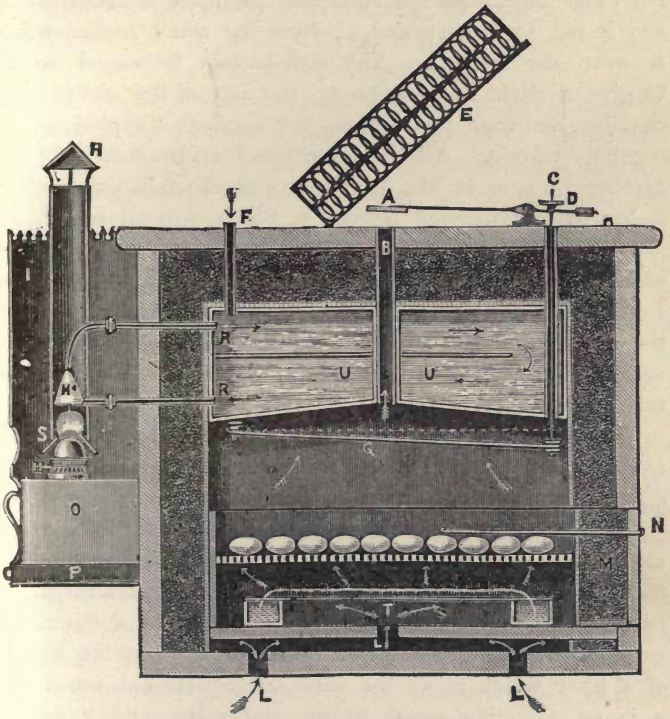


Fig. 19.—Christy's Thermostatic Incubator.

heat falls, the india-rubber bulges in, and the button rises and drags down the valve, which is never *quite* closed, but always allows a little air to escape. This regulator is liable to be affected by a high barometer, which checks the expansion; but with a sufficiently large tank it acts efficiently.

Messrs. Christy and Co. have since 1883 brought out their patent "thermostatic" incubator, which also works by the constant heat of a small lamp under a circulating boiler outside the machine. It is shown in section in Fig. 19. The hot water tank, with the horizontal partition, is shown at U, and is fed by pipes R and R′, from the small conical boiler H over the lamp S. The tank-bottom is sloped so as to give a slight dome-shape to the top of the air or egg-chamber, and from this ascends the air-shaft B capped by the regulator-valve A. All the air enters from the bottom by the apertures L L, as in Mr. Tomlinson's machine, in doing which it has to pass through canvas, T, which dips all round into evaporating pans or troughs of water, and is kept constantly moist. Thence it passes through perforated zinc to the eggs. In this way the air is kept in free circulation, stagnation in the centre of the door being quite prevented, and it is unnecessary to change the places of the eggs, or do more than turn and cool them.

The regulator Q is a thermostatic bar, similar in principle to the balance of a "compensated" watch. If two strips of different metal are riveted together, one of which expands with heat more than the other, the one which expands most must curl the other more or less, that it may find room for its expansion at the circumference of a larger or outer circle. With heat, therefore, the free end of the bar Q curls downwards somewhat, and thus pulls down the end, D, of a lever which raises the valve, A, and lets out warm air. C is an adjusting screw to set the valve, and F merely a wire-cage to protect the regulator from injury. N is the thermometer, O the lamp reservoir, and P a sliding shelf, which pushes up the lamp towards the boiler and chimney.

In these machines the lamps should be trimmed every twelve hours, always turning the eggs *first*, before this is done, to keep them from the smell as much as possible. The open

pipe F (which is advisable to prevent explosion in all lamp incubators, and is also necessary for the insertion of a thermometer into the tank) should be filled up with warm water every other day, and about the same number of times the evaporating pans will need refilling, for which luke-warm water should be used. Otherwise the general management will be much the same as before described.

While, however, the great desideratum of uniform temperature may be secured with many forms of regulators by using a large water tank, it will be obvious that the same result might also be secured by a more perfect regulator. This has been attained by Mr. Hearson in his regulator, which depends for efficiency upon the fixed boiling point of a fluid. Just as water boils at 212°, so sulphuric ether boils and expands into vapour at 94°. Other liquids boil at higher temperatures, and as a mixture generally boils at a heat intermediate between that of its two components, it is easy to prepare a slightly modified ether which shall boil (at ordinary barometrical pressures) at 98° or 99°, the *lowest* admissible incubator temperature. Mr. Hearson's regulator consists of a few drops of such volatile fluid enclosed between two flat brass plates, soldered together all round their edges into a closed flattish capsule. Then, directly the heat of 98° is exceeded, the two plates "bulge" under the ether vapour which is formed; and hence we have a very powerful force, which acts *instantly* on a given temperature being attained. The incubator is shown in section in Fig. 20. A A is the tank of water, much smaller than in preceding machines, traversed by the flue, L W, from the lamp, T. The flue really returns through the tank, so that the outlet, W, is on the same side as T; but this cannot be shown with clearness. B is the concave egg-tray of perforated zinc, supported in a drawer floored with open strips of wood, K. The concavity brings the outer eggs rather nearer the heat, and obviates the necessity for moving about the eggs

except in turning them. Air enters, as in the preceding machines, through the hole, D, in the bottom of the incubator, having to pass through canvas soaking in the water-troughs, C C, whence it passes, impregnated with moisture, to the drawer, escaping by the ventilating holes E E. The whole is surrounded as usual by packing. N is a thermometer.

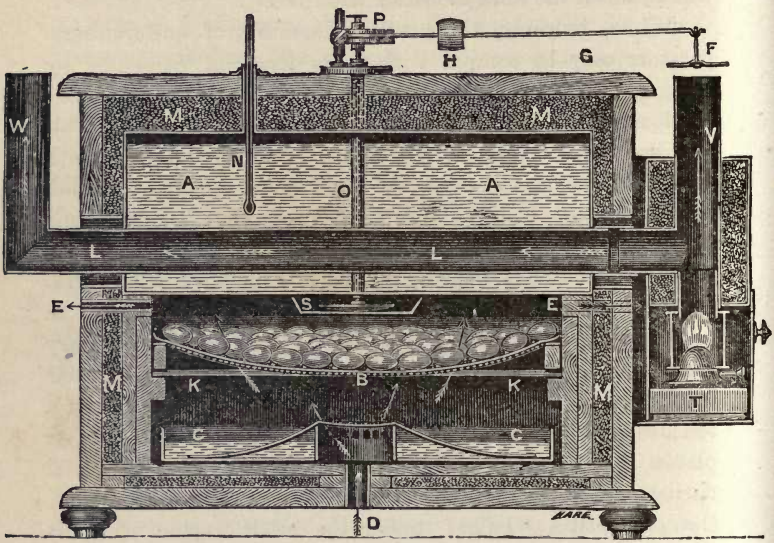


Fig. 20.—Hearson's Incubator.

The regulation is easily understood. The lamp, T, has a vertical flue, V, above it, as well as the heating-flue, L; and if this be opened, of course nearly all the heat escapes by preference vertically, instead of passing through the tank. The flue V is closed by a flap-valve, F, at the end of a lever, G. Near the pivot end of the lever at P is attached a stiff lifting-wire, which passes through a tube, O, in the centre of the tank; and the bottom of this wire rests on the capsule, which is simply laid on a small rigid table at S. As the capsule bulges,

therefore, it lifts P and F. If the machine were started thus, the heat would therefore rise to 98°, and at this point the valve F would open. But the sliding weight H allows *more pressure* to be put upon the capsule, which has the effect of *raising* the boiling-point (the boiling-point of water rises about $1\frac{3}{4}$° for every inch pressure of the barometer). In this way, therefore, the boiling-point may be set anywhere from 98° to 107°, and will afterwards, whatever the variations in outside temperature, keep the heat regular within about two degrees. The only exception would be in any unusually high situation, which, owing to the less barometrical pressure, would require an ether prepared accordingly; and in several instances this has been found to be the case, but a special capsule has at once removed the difficulty. From numerous sources we learn that the incubator thus designed and regulated has hatched with almost unvarying regularity and success.

Such are the most successful incubators lately constructed, and only a few general remarks need be added. In artificial hatching, it is of great importance that the eggs be *fresh*. The earlier incubators rarely hatched any eggs laid more than three days before putting in the machine. The modern ones here described have often reported successful hatches of eggs laid a fortnight before, and which have also travelled by rail; and no greater proof can be given of the advance attained. But every pains should be taken to give the machine a fair chance in this respect; and one modern discovery should receive special attention, though of importance to all poultry-keepers. The risks of "travelled" eggs, and their uncertainty of result, are well known. But it has been recently established by careful experiments, often repeated, that if after a journey one-half the eggs be "set" at once under a hen, while the rest are kept still and free from jar for twenty-four hours, *on an average those kept hatch much the best.* It appears that even the undeveloped germ, by virtue of the principle of life implanted in it, has

some strange power of *resting*, or recovering through rest injuries of this kind.

Eggs of water-fowl are on the average easier to hatch than those of fowls, but require a very free supply of moisture.

The practical details of management have been sufficiently treated in describing the hydro-incubators.

Of late there has been, owing to high breeding, a marked decline in the average fertility of eggs from "fancy" stock. Hence the eggs of cross-bred fowls hatch much more readily than others, as a rule, and an incubator may often be used with great success on a farm where poultry are bred for market, when less successful with the fancier. Recent reports have, however, gone to show that the most approved makes of incubators have fully equalled hens in average performance, in winter and early spring considerably surpassing them, when in intelligent hands.

Artificial hatching is in fact no longer a matter of theory, or of interest to a few amateurs, but is now carried on by hundreds with constant and unvarying success. At the same time, there are still many persons who never seem able to succeed in it; and this can only be set down to some personal inability to grasp the principles and details of the process.

CHAPTER VIII.

REARING CHICKENS ARTIFICIALLY.

THE artificial rearing of chickens must be regarded as a question entirely distinct from the artificial hatching of them, and may often become advisable, or even necessary, when they have been hatched under a hen. The mother may die just when her care becomes most necessary; or she may be a valuable hen, whose eggs are much wanted, and whom it is not advisable to subject to the wear and tear of a young brood. And lastly, some persons consider that it is absolutely *better*

to bring up chickens by hand, even when they have been naturally hatched; believing that under the shelter provided, and not being forced to accompany the hen in her rambles, a greater portion are reared, that they grow faster, and make ultimately finer fowls.

All this is quite independent of the immense numbers of chickens now hatched annually in incubators, for which artificial rearing is almost indispensable.

For chickens hatched towards the end of April, or later, the very simplest form of artificial mother may be made to answer, since in such weather their own animal heat alone is sufficient. Many an odd brood has been reared through May by rigging up a mother out of a piece of sheep-skin mat, tacked round the edges only to a board about nine inches wide and fifteen inches long, so as to fall a little slack by its own weight when turned with the wool downwards. If this board is nailed on two end pieces cut so that it may slope from about four inches high in front to about two inches behind, the back being filled in with another strip of wood two inches high, it will do very well, if set upon dry earth or ashes, renewed perfectly clean every night and morning. Occasionally, however, a chick will entangle and hang itself in the wool; and a better way of making the covering is to sew a number of flannel strips about two and a half inches long and three-quarters of an inch wide by one end to a piece of canvas. They cannot get entangled with these, and, moreover, the flannel strips are more easily cleaned, which is done by turning the inside up and well shaking clean dry earth into it every day, afterwards shaking it free.

But only late chickens can be reared in this simple way. For earlier ones some heat is required, and the first great stimulus to artificial rearing in this country was given by an apparatus brought out, about 1873, by Mrs. Frank Cheshire, a section of which is shown in Fig. 21.

This mother was heated by a zinc tank, shown at A B, about one inch deep, and hermetically closed, with the exception of one aperture for filling and for safety. It was fixed on the top of the mother in rather a sloping position, like a roof, and along the lower edge ran a flue, shown at E, the flue being surrounded by water, and heated by a small lamp. The lamp consisted of a simple tube coming horizontally from a vessel of benzine, up which was passed a wick, which was lighted at the end. Under the slightly sloping tank was made to slide from the front a framework of wood, roofed

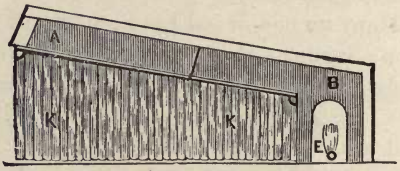


Fig. 21.—Mrs. Cheshire's Artificial Mother.

with strong canvas, on which are sewn numerous flannel strips, K, about three-quarters of an inch wide, as already described. The whole rested on a board covered with dry earth, which was removed every morning, and the flannel part of the apparatus reversed and deodorised, by dry earth being shaken into it and out again, at similar periods.

With this apparatus was used a small temporary mother, consisting of the canvas top and flannel strips only, placed in one end of a tray or small box floored with dry earth or ashes, and covered by an india-rubber bag filled with warm water, and wrapped in flannel. In this the newly-hatched chickens were placed the first day, to familiarise them with the habit of running in and out from under the flannel; and on first placing them in the larger mother, a small park of wirework was fixed in front to keep them from wandering too far until they had got to know their way about. Beyond that, very little trouble was necessary.

We reared all our chickens with this apparatus the whole of one season, with no failure or difficulty; and several breeders of our acquaintance were fully as successful. But during a second season, when pressure of work made it necessary to turn over all management to a servant, there

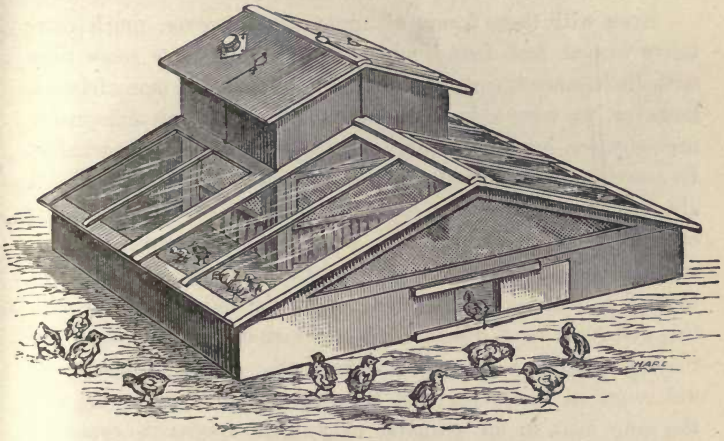


Fig. 22.—Hydro-Mother.

was considerable mortality, and very few chickens really did well. This experience also we found to be extensively shared by others. We gradually traced most of these comparative failures chiefly to two causes, the first being sheer neglect to attend to the necessary daily deodorisation of the apparatus, and the second too high a temperature. When care was taken as regards these points the earlier success was repeated.

It is, however, very difficult to prevent the Cheshire form of apparatus from becoming too hot for health, and the close sides confine the air to an extent only controllable by constant watchfulness. Of late, therefore, it has been practically superseded, either by apparatus worked on the "Hydro" plan, already described in its application to incubators, or by

somewhat similar forms with a deep tank heated by a small lamp. We give a figure of Mr. Christy's "Hydro" form of rearer, to be periodically filled with hot water; and on the whole this is the most convenient plan for many people.* The greater volume of water, kept stagnant, enables a more moderate heat to be kept up with facility.

Even with these forms of apparatus, however, much mortality was at first found, which was discussed for some time with little amendment. By the kind assistance of many friends, however, we were able to make something like an exhaustive investigation into the matter, and the results were remarkable. In searching for the best returns, we gradually found we almost always came at the same time upon the *lowest temperatures* employed. We found that a heat under the mother which seemed only nicely warm to the hand, and was in fact only that of a hen, was simply murder to the chickens; and with this discovery most difficulties were cleared away, and artificial rearing became a general success. One cause of the great difference in result between the heat of a hen's breast and the same heat in an artificial mother, it appeared, consisted in the closed sides of most mothers as at first constructed. The heated and foul air *escapes on all sides* from under a hen, whereas in all the early machines it was confined by closed ends of board. It will, accordingly, be seen that the apparatus figured above, as in most others now constructed, is *open upon three sides* for the passage of chickens and the admission of air.

We also found that cramp and weakness in the feet—the usual precursors of loss under this method of rearing—were general where there had been too much confinement and coddling, often combined with too little earth on the floor. The chickens which had *free run in any weather* did better

* The inconvenience of providing hot water for renewal is not felt to nearly the same extent as with an incubator, the temperature required being much lower, and much less quantity being therefore required.

than those kept under cover, and very often liberty would restore even many of those which had developed the unlucky symptoms.

After these explanations, the secret of successful rearing under machines may readily be summed up in a few sentences. In the first place, the heat must be carefully kept down to a point *much less than any one would believe*, who has not either learnt by experience, or is not content to accept it on our authority. When the mother is packed with chickens, the heat rapidly accumulates. A temperature of 75° Fahr. under the bottom of the tank will be found quite sufficient in any weather but the severest frost, and in warm weather the mild temperature of 70° is sufficient, the water still acting beneficially by *keeping* that degree up during the night. At least half an inch of *clean* earth must be placed on the floor every night; and every day dry earth must be well shaken into the flannel strips, and left exposed to the air for an hour or two. It is, in fact, much the best plan, and good economy, to use one mother for the night and another for the day. A touch of paraffin here and there will be very useful in keeping away vermin.

For the first day under the nursery or hand mother, for which a hot-water bag is very convenient, a little more heat may be allowed; but it should not exceed 80°, and the chickens should after that be transferred to the larger apparatus. If that has glass covers to a small yard, as shown in Fig. 22, these must be removed in all dry weather, and *always* kept freely raised for ventilation. After the first day or two, the chickens must not be confined, but allowed to run out freely—in fact, an open front to the park then answers better than a small door. It will also be found that a series of small mothers answer much better than very large ones, as a number of chickens foul the air underneath to an injurious extent. The expense of these need not be great, since, after a very few weeks, no artificial heat whatever is required, and the mere covering apparatus will be sufficient.

The feeding will not differ from that already given. Hard-boiled eggs chopped up, and *very coarse* oatmeal moistened with milk or water, is best to commence with, as the chickens will begin to peck much more readily at such tiny morsels than at anything in the shape of sop. Groats chopped up small are also very useful in teaching them to feed. This is, in fact, the only difficulty, and is best got over by tapping on the floor with the end of the finger, at the same time clucking like a hen. But very few chickens give any trouble in this way, and the art of feeding is one which, once learnt, is fortunately never forgotten. Let not animal or green food be neglected, or the chickens will never be superior specimens; and let grain be added by degrees, but still letting the chief diet, till at least three months old, consist of soft food. This, however, has been fully treated of already, and we will only add a caution that the young birds be never *neglected*. Remember that chicks with a hen, if at liberty, can almost always procure *some* food—enough to maintain life at least—if their regular meal be forgotten, whilst those reared in this manner are *entirely* dependent upon their owner's care, and one forgotten meal, even if not fatal at the time, frequently lays the foundation of mortal disease, by leaving the poor little things with no strength to endure any inclemency of the weather.

Finally, it ought to be mentioned that it never answers to rear chickens *partially* upon this system. If they are allowed to get used to the hen's call, they fret and pine for days, and some of them never recover. Or if there are hens with their broods in the same run, they will run to them and get pecked, and fret in the same way. But if either hatched in an incubator, or taken from the nest before the hen has called them to food, they thrive at least as well as with the natural parent, and grow up tame and familiar to a degree almost beyond belief, knowing, as they do, no other friend but the hand which feeds them.

CHAPTER IX.

DISEASES OF POULTRY.

If healthy fowls are kept clean, and well sheltered from wind and wet; are not overfed, and have a due proportion of both soft and green food, with a never-failing supply of *clean* water and gravel, they will remain free from disease, unless infected by strangers. When a fowl becomes ill, the best cure in nearly every case is *to kill it* before it is too bad to be eaten. Only in the case of valuable birds, which people are naturally unwilling to sacrifice, do we recommend much attempt at a cure, and even then only when the disease is so defined and evident that the treatment is sure. As this work is intended to be strictly practical, it is only for such well-defined complaints we shall prescribe.

Besides actual diseases, there are certain *natural* ailments, as they may be called, to which all fowls may be subject, and which demand treatment.

Apoplexy occurs from over-feeding, and can seldom be treated in time to be of service. If the fowl, however, although insensible, do not appear actually dead, the wing may be lifted, and a large vein which will be seen underneath freely opened, after which hold the bird's head under a cold water tap for a few minutes. It is just possible that it may recover; if so, feed sparingly on soft food only for a few days. In over-fed hens this disease usually occurs during the exertion of laying; if, therefore, a laying hen be found dead upon the nest, let the owner at once examine the remainder, and should they appear in too high condition, reduce their allowance of food accordingly.

Bad Fledging.—Chickens often droop and suffer much whilst their feathers are growing, especially in cold, wet weather; and the breeds which feather most rapidly suffer

most. This is probably one reason why Cochins and Brahmas, which fledge late and slowly, are so hardy. As soon as a brood appears drooping whilst the feathers grow, if it has not been done before, begin *at once* giving them a little meat every day, and some bread sopped in ale. A few drops of Parrish's chemical food added to the water with which their food is mixed is very beneficial. Keep them out of the wet, above all things, and they will generally come round. This crisis seldom lasts more than a week or ten days; the chicks either die off or recover their health and vigour.

Bad Moulting.—Old fowls sometimes suffer much at this season, especially if the precautions recommended in Chapter III. have been overlooked. These precautions contain the only effectual treatment. Give stimulating food, warm, every morning, and well peppered, with meat and ale every day, and keep under cover in wet weather. Add also iron, in the form of "Douglas Mixture," to the drinking water, The birds, if not sunk too low, will then usually pull through. Fowls should not, however, be kept until old, except in the case of pets or valuable stock birds.

Canker.—It is uncertain whether or not this malignant disease, marked by ulcers about the head, is a modification of the specific roup *virus* or not. Very often it is combined with roup, the birds being attacked with ulcers about the eyes, nostrils, comb, or face, or in the inside of the mouth or throat, besides the usual roup symptoms. On the other hand, in some cases the latter are not present, while the diseased formation may nearly fill up the throat and strangle the bird. This complaint broke out with such virulence in 1876 as to be called "the new disease," and has never since been absent from England. So deadly is it, that many advise wholesale slaughter and disinfection; but many cases have, beyond doubt, yielded to treatment.

The fowls attacked should at once be placed apart in a

hospital, free from draught, and a slight aperient given of from one-third to half a tea-spoonful of Epsom salts. Meantime obtain at once from the nearest chemist a bottle of ordinary chlorate of potass and perchloride of iron mixture—every chemist makes it up, and any will do—and also a bottle of the following dressing:—

Carbolic Acid - - - -	1 drachm.
Sulphurous Acid - - -	3 „
Tinct. Perchloride of Iron - -	½ oz.
Glycerine - - - -	½ oz.

With a camel-hair or sable pencil touch all the parts which show sores, morning and evening, with this latter dressing; and six hours after the salts, begin to give one-quarter ordinary adult doses* of the chlorate and iron mixture, feeding meantime on the *best* soft food, unpeppered, but mixed with warm brandy-and-water: an occasional egg-and-brandy between two fowls is also of much service. Great care must be taken in anointing the throat; and occasionally a bird may be so irritated by a drop "going the wrong way" as to choke and die. These cases cannot be helped, some such dressing being absolutely necessary; but for bantams and chickens the lotion may be diluted with one-third water. If the mouth and throat appear healing, while there are sores outside which make no progress, these may be treated with lunar caustic as an alternative. When the worst symptoms are alleviated, after treatment must be guided by circumstances, according as there may be diarrhœa or the reverse; or roup may remain and have to be prescribed for. It is also probable that any improvements in diphtheric practice, as prescribed by any competent medical authority, might be attended with success in this disease.

A treatment occasionally successful has been the

* These and other quantities refer to fowls of good size and vigour. Smaller fowls and bantams may have from two-thirds down to one-third of the quantity.

immediate application to every spot attacked of lunar caustic; but on the whole cures have been rare with this. More success has been reported from the application of an American coal-tar preparation called Cresolene,* ten drops to a pint, applied as a lotion, especially to the inside of the mouth and throat; but as this is difficult to procure, experience is not sufficient to pronounce positively. Another preparation introduced by Mr. Christy of Fenchurch Street, the tincture of Papaine, so far as it has been tried, appears to exert a most marvellous effect upon the diseased secretion. Any outbreak in a yard may too probably give ample opportunity for the trial of each and all of these remedies.

Consumption is denoted by cough combined with gradual wasting and ill-health, though sometimes the appetite is good. *Liver Disease* presents somewhat similar symptoms, but there is seldom any cough, and the failure of the appetite is the first and most marked symptom, with moping and listlessness. Both are practically incurable; but when cases occur the owner should consider whether his stock is tainted, or if his yard does not present such unsanitary conditions—particularly *damp ground*—as need prompt treatment.

Crop-bound.—Fowls sometimes so distend their crops that nothing can pass out to the gizzard, and death ensues unless relieved. Careless feeding after hunger is the usual cause. In most cases persistent and gentle kneading about of the crop with the fingers, and occasionally pouring a tea-spoonful of water down the throat, and after leaving the bird a couple of hours, repeating the process, will be effectual. If not, there is no remedy but to make a perpendicular cut rather more than an inch long in the upper part of the crop, remove all the contents with a tea-spoon, wash it out thoroughly, and then join *each skin separately* with three or four horsehair single stitches or ties, making the outer set come between the inner

* Not to be confounded with an English preparation termed Kresyline.

ones, not over them. Feed in small quantities on sopped bread for a few days, giving no water for twenty-four hours. There is no danger about the operation, and apparently not much pain.

Diarrhœa may in mild cases be checked by a diet of rather dry barley-meal, or a few meals of well-boiled rice sprinkled with chalk; it is well, however, to give also six drops of camphorated spirit thrice daily on a pill of soft food, giving no green food beyond finely-cut grass. If this fails, give a bolus made of five grains chalk, five grains rhubarb, three grains cayenne pepper, and half a grain of opium, one in the morning, and another in the evening; or three to twelve drops (according to size) of chlorodyne every four hours will almost always stop it.

Diphtheria, or Diphtheric Roup.—See *Canker*.

Gapes is a fatal disease of chickens, due to the presence in the windpipe of a number of small worms, which finally kill by either wasting or actual suffocation. A solitary case may sometimes be cured by camphor in the water and a small pellet twice a day, removing the actual worms by introducing a feather stripped nearly to the top, or a loop of horsehair, into the trachea, and turning it round during withdrawal, which usually brings one or more worms with it; or fumigation over the fumes of carbolic acid poured on a hot brick, till the chicken is nearly dead, will also kill the worms. A general attack, however, demands other treatment, and fortunately it has been discovered that in some mysterious way the disease is connected with a large insect often found on the heads of newly-hatched chickens. These are destroyed by anointing the heads of the chickens while only a day or two old with the following ointment:—Mercurial ointment 1 oz., lard 1 oz., powdered sulphur ½ oz., crude petroleum ½ oz. The ointment is to be warmed to semi-fluidity, and in that state gently rubbed in. If the chicks even of a yard previously infested are thus treated, it has been proved over and over again that there will

be no gapes amongst them. Infusing garlic in the water, and adding it (chopped up) to the food, are also beneficial; and M. Megnin's cure for pheasants consists in dosing each bird with 7½ grains of yellow gentian and 7½ grains of assafœtida.

Leg Weakness.—Highly-fed chickens which grow fast, bred from prize stock, are most subject to this, which simply arises from outgrowing their strength, and must be met accordingly by mineral tonics. Parrish's chemical food, which combines phosphates and iron, will be the best medicine.

The above affection must not be confounded with *cramp* from cold and wet, which also makes the birds unable to walk, or even stand. In this case the treatment is warmth, feeding meanwhile on meal mixed with ale, and always given warm; rubbing the limbs daily with a liniment composed of two parts linseed oil to one of turpentine. Sometimes bathing the feet and flexing them in hottish water is of service, and in chickens quarter-grain doses of opium have sometimes done much good. Under this regimen the bird will soon recover, unless the attack has been long unperceived and neglected.

Nervous Debility is not uncommon in fowls much exhibited. Many are barbarously over-shown; but far short of this there may be much suffering, which is manifested without any actual disease, much as in human beings. Perfect quiet at home, with a daily raw egg, and half a tea-spoonful twice daily after meals of Parrish's food and pancreatic emulsion, have marvellous effect if the fowls are not too far gone.

Pip is no disease, and demands no treatment, being only analogous to a "foul tongue" in human beings. Cure the roup, or bad digestion, or whatever else be the real evil, and the thickening of the tongue will disappear too.

Roup is caused by wet or very cold winds, if it ever does arise spontaneously; many think it purely contagious. It is certainly quite distinct from mere catarrh, though the symptoms resemble these to a certain extent. The leading

features are a high state of fever, with an *offensive smelling* discharge from nostrils or eyes, or both, or sometimes hanging about in froth, but more often tending, after a few days, to become thick. Any fowl attacked should be at once secluded, and everything it has used be disinfected with carbolic acid for the sake of the rest. The fowl must be kept in a moderately warm and dry place, and given at first half a tea-spoonful of Epsom salts, washing the head and organs affected with Labarraque's solution of chlorinated soda, diluted with twice its bulk of water, twice or thrice a day all through the attack. The food should be slightly seasoned with cayenne. A few hours after the oil, give a copaiba capsule, and continue these every twelve hours till the discharge yields, giving a second dose of salts on the third day. After recovery the fowl should be quarantined for a few days, and be given a last wash with the chlorinated soda before being returned to its companions. If copaiba capsules cannot be readily procured, nearly all the advertised "roup pills" are more or less beneficial, or the following is a good prescription:—Cayenne pepper, 20 grains; copper sulphate, 10 grains; copaiba, 1 fluid drachm. To be made into twenty pills, one to be given morning and evening.

Scaly Legs.—This unsightly incrustation of the shanks is chiefly confined to feather-legged breeds, and is due to a small insect. It can be cured by scrubbing every morning with strong carbolic soap, and anointing at night with sulphur ointment, or Foster's ointment sold for the purpose.

Soft Eggs are generally caused by over-feeding the hens, and the remedy is then self-evident. It may, however, occur from want of lime, which must of course be supplied, the best form being calcined and pounded oyster-shells. Sometimes it is occasioned by fright, from being driven about, but in that case will right itself in a day or two, with quiet and rest. If *perfect* eggs are habitually dropped on the ground, the proprietor

should see whether the nests do not need purifying. This leads us to

Insect Vermin, which can only be troublesome from gross neglect, either of the fowls, or of their habitations. In the one case, the remedy is a dust-bath, mixed with powered coke or a little sulphur; in the other, an energetic lime-washing of the houses and sheds, with the free use of carbolic acid spray or disinfecting carbolic powder,will get rid of the annoyance.

It will be seen that by far the greater proportion of poultry diseases arise either from cold and wet, or neglect in preserving cleanliness—often both combined. It should be noted also, that the first general symptom of *nearly* all such diseases is diarrhœa, which we have observed usually manifests itself even in roup, before any discharge from the nostrils is perceptible. At *this stage* much evil may be warded off. Whenever a fowl hangs its wings, and looks drooping, let it be seen at once whether it appears purged, and if so, give immediately, in a table-spoonful of warm water, a tea-spoonful of strong brandy saturated with camphor. Repeat this next morning, and in many cases the disease, whatever it is, will be checked; care being of course taken to give the invalid warmth and good shelter.

For actual diseases, it is well in all large establishments to have a weather-tight and well-ventilated house kept as a hospital, in which healthy fowls should *never be placed.* Roup, in particular, is so contagious, that even a recovered bird should be kept by itself for a few days before being restored to its companions.

We could easily fill a long chapter with further prescriptions, but we believe that the above are all that can be usefully given in a work of this kind.

THE BREEDING AND EXHIBITION OF PRIZE POULTRY.

CHAPTER X.

YARDS AND ACCOMMODATION ADAPTED FOR BREEDING PRIZE POULTRY.

WHETHER the breeding of poultry with a view to exhibition can be made profitable or otherwise, is a much vexed question amongst amateurs. For ourselves, we believe that the answer must depend partly upon the means of the fancier; still more upon the experience and knowledge he brings to bear upon the subject; and not a little upon the breed to which his fancy inclines him. We are acquainted with breeders who never could make the produce of their yards *quite* meet the current expenses; and we also know at least half-a-dozen, of high standing at all the principal shows, whose yards yield them a clear profit varying from £20 to £200 per annum. It is, therefore, most certainly *possible* to make even the "fancy" for poultry remunerative. But first of all it is necessary to consider the question of accommodation.

The plan of a poultry-yard given at page 9, with the addition of a lawn or separate grass-run, on which young chickens may be cooped separately, is very well adapted for rearing some breeds upon a small scale. The two runs may be used to separate the sexes during autumn if preferred, or to keep the chickens apart from the old fowls, whilst the run for the sitting hens will, after its proper design has been fulfilled, be very convenient for the reception of one or two single cocks, or any other casual purpose. To ensure success, the most exquisite cleanliness must be observed, and at the beginning of every year the grass in the runs should be carefully renewed, if necessary, by liberal sowing, of course keeping the fowls off it till thoroughly rooted again. At this season the confinement

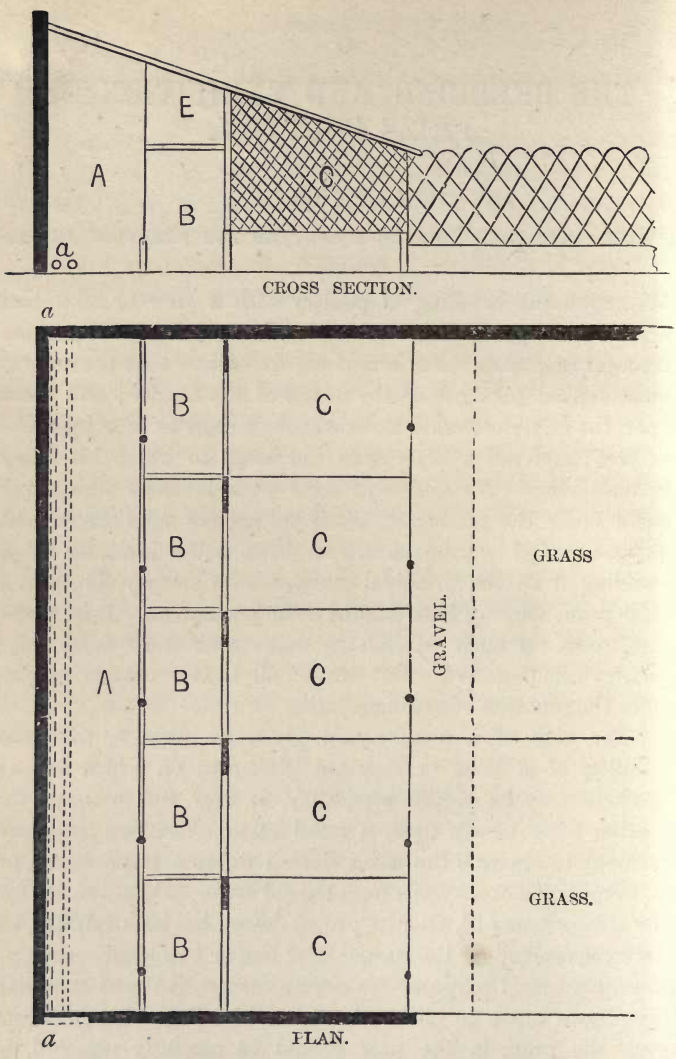


Fig. 23.—Mr. Lane's Yard.

thus involved will not be injurious, provided green food be supplied in the sheds, in lieu of the grass to which the birds have been accustomed. With such precautions, forty or fifty chickens may be reared annually, and from such a number there should be little difficulty, if the parents were selected with judgment, in finding several pens fit for exhibition.

But more extensive accommodation will be necessary if high and extensive repute in any particular breed be desired, with the capability—which alone makes such reputation remunerative—of being able to supply a demand for eggs and stock. In that case provision has to be made for keeping not only *separate strains*, in order that the proprietor may be able to cross and breed from the produce of his own yards, but there will be a much larger number of cockerels than can be needed, and as they are much too valuable for the table, they also have to be accommodated apart from the other fowls, until disposed of. We give two plans, each excellently adapted to secure these objects, though of very different arrangement; and which may easily be modified to meet any possible case.

The first (Fig. 23) represents the poultry-yard of the late Mr. H. Lane, of Bristol, so well known during his life as a breeder and exhibitor of Spanish. It will be found peculiarly adapted for the rearing of either Spanish or any other delicate breed; protection from inclement weather, as well as convenience of access and superintendence, having been specially studied.

In this design A is a covered passage which runs along the back of all, and by a door which opens into each, allows of ready access to any house in any weather. One end of this passage may open into some part of the dwelling-house if desired. The passage should have a skylight at top, and must also be freely ventilated at the *roof;* to secure this object by having it open at either end would cause draught, and destroy the peculiar excellence of the arrangement. The

houses, B, for roosting and laying in are 7½ feet by 4 feet, and the side facing the passage is only built or boarded up about 2 feet, the remainder being simply netted; hence the birds have a free supply of the purest air at night, whilst quite protected from the external atmosphere; and can be all inspected at roost without the least disturbance—a convenience of no small value. The nests should be reached from the passage by a trap-door, and there is then no necessity ever to enter the roosting-house at all except to clean it.

A small trap-door as usual, which should be always closed at night, communicates between the house and the covered run or yards, C, which are 7½ feet by 9 feet. They are boarded or built up for 2 feet 6 inches, the remainder netted, except the partition between them and the houses, which is, of course, quite close. Both houses and runs must be covered with some deodoriser, and Mr. Lane preferred the powdery refuse from lime works, which costs about 1d. per bushel, and which he put down about 2 inches deep. It always kept perfectly dry, and is a great preventive of vermin; whilst if the droppings are taken up every morning, it will require renewal very rarely. In front of all is a grass-run, which should extend as far as possible, and on which the fowls are let out in turn in fine weather.

An additional storey, E, may or may not be constructed over the roosting-house, and in case of emergency, by sprinkling the eggs, may be made to accommodate sitting hens, but is not to be preferred for that purpose, for reasons given in Chapter IV. Every poultry-keeper, however, knows the great utility of such pens on various occasions which continually arise, and they will be found excellent accommodation for sick or injured fowls, or for training birds previous to exhibition.

In Mr. Lane's establishment hot-water pipes (*a a*) were laid along the back of the passage floor, by which the temperature is at all seasons kept nearly uniform. This may or may not

be adopted; and it will also be obvious that the whole arrangement is capable of enlargement to any desired extent.

Fig. 24 represents the far more extensive establishment of Sir Henry Thompson, the most recently-erected poultry-yard upon anything like a similar scale to be found in the United Kingdom * This yard occupied about two and a half acres of ground, situated at the south of the garden and greenhouse, on sand and gravel soil. Entering from the north, between the man's cottage and the stables, we come first to the chicken nursery and yard, with a row of exhibition pens for selection and training of show specimens. Proceeding past this, on one side are a number of separate small houses and runs for single cockerels, while on the left, under large elms, are several shaded grass-runs, in which detached houses are placed as required. Past the cockerel houses are pretty large grass-runs or paddocks, which communicate in almost any way required with the divisions of the main house to the north of them. This main poultry-house adjoins the attendant's cottage, and communicates with it by a long corridor running along the back of all. It is divided into houses 12½ feet wide, with runs in front 60 feet long. The one next the house, and which gets a little warmth from the incubator room, has the shed glass-fronted, and is used as an early chicken-nursery, and the next one is divided into three for single cocks. Each two runs have the command in turn of one of the large paddocks of grass nearly a quarter of an acre each; and there are other runs with detached houses outside the place, used as required.

The whole of this yard (erected from the owner's own designs and drawings) is exceedingly well arranged and adapted to its purpose. It will not fail to be noted that the corridor, at the back of the breeding-yard, resembles so far Mr. Lane's

* Sir Henry Thompson retired from the fancy just as these pages were preparing for press.

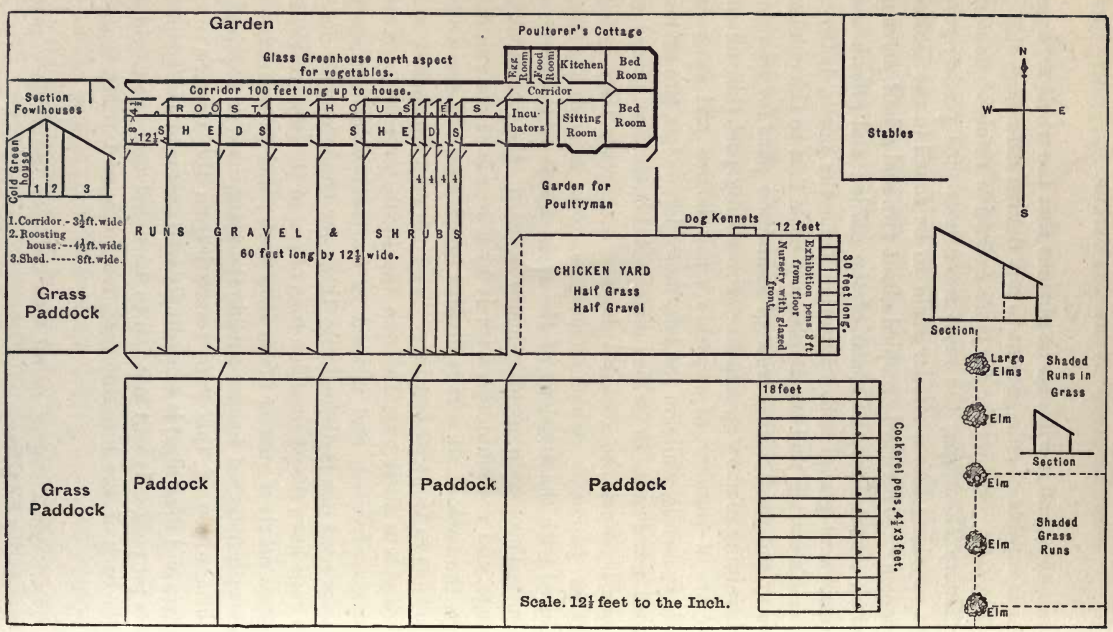


Fig. 24.—Sir H. Thompson's Yard.

plan, and the obvious advantages of this arrangement have recommended it in many yards of widely different size. In the house and yards planned by us for our own use at Crouch End, London, we built the houses in a *double* range, 75 feet long, with one common corridor up the middle to serve for both, and found this an exceedingly convenient arrangement. In all cases where the corridor plan is adopted, it is best to only fence up the passage half way, netting the rest, so that from the corridor all can be seen at roost.

Prize poultry may also be reared most successfully, and with very little trouble or expense in accommodation, in a park or on a farm. All old frequenters of shows must have observed the remarkable *constitution* formerly exhibited by Lady Holmesdale's poultry; and we paid, by invitation, a visit to Linton Park, specially to learn the management which produced such excellent results, and to enjoy a chat with Mr. J. Martin, the well-known superintendent, during its existence, of the Linton poultry-yard. We found the system most simple, and to all who have equal space at command, the least expensive that can possibly be. Stone houses with gravelled yards there certainly were, but these were unoccupied by a single one of the Dorkings for which the Viscountess had obtained so wide a reputation, and Mr. Martin kept practically the whole of the stock at perfect liberty in the park. Portable wooden houses were employed, mounted on small wheels, and without a bottom, which were placed in sufficiently distant localities to avoid any danger of the birds mixing, and moved a little every two or three days. Open windows were provided, so that the fowls always breathed the pure air of heaven with much more freedom than most breeders would allow to such delicate varieties as Spanish and Dorking; yet Mr. Martin found both breeds become *hardy* under such treatment, and that many of the Spanish fowls preferred to roost on the trees, even through the winter. The

hens were set in single detached coops, roofed on top, and closed at back and sides, placed in any secluded spots amongst the trees. Under this management the chickens were reared with the greatest ease, the gloss on the plumage was exquisite, its closeness approaching that of the Game fowl, whilst the birds, never too fat for the highest health, were always surprisingly heavy in the scales.

A similar plan may be pursued on a farm; a number of wooden portable houses being provided, and placed in separate fields, in which families may be kept. Such a system will be an actual benefit to the soil, as already pointed out in a previous chapter; and the only drawback is the facility it affords to the felonious abstraction of valuable eggs and stock. Still, even with this objection, we must pronounce such a *natural* method of rearing far the best where it can be adopted, which is, however, in few instances; for farmers are only seldom poultry-fanciers, and usually look upon even ordinary fowls as an unprofitable drain upon their purses.

The intending prize-winner must, of course, adapt the plan of his yard to his own circumstances and situation. We have given ample materials to furnish a design of any possible character. The one necessity in this class of poultry-keeping is some facility for what may be called separation or selection, combined, of course, with a healthy run for the chickens whilst young, and the essentials mentioned in the first chapter. If these can be secured, any plan, with care and attention, and good breeding stock, will ensure a fair measure of success.

CHAPTER XI.

ON THE SCIENTIFIC PRINCIPLES OF BREEDING.

To obtain any marked success in poultry exhibition, it is very necessary that the scientific theory of breeding for any specific object should be thoroughly understood—at least, if anything like eminence be expected; and still more so if the fancier

desires by his own exertions to render any special service by the addition of new varieties or the improvement of the old. Fair success in a single breed is not difficult to obtain; but he is a poor poultry-breeder who is content to let his favourite variety remain exactly as he found it, without at least some attempt to improve it either in beauty or in economic value; and any such attempt, to be successful, must be directed by an intelligent mind, which sees definitely before it the result to be attained.

The elements of success are so few and simple, and a thorough knowledge of them so quickly acquired and so easily applied, that we shall devote a few pages to this part of the subject before entering upon the more practical portion of this section.

The greatest misapprehension appears to exist amongst all but the most educated poultry-fanciers respecting the origin of different breeds. People seem to imagine that they have come down to us, or at least a number of them, in unbroken descent from far-back ages; and this belief has given rise to innumerable discussions concerning the purity or otherwise of different varieties, which might have been spared had the disputants comprehended the real nature of the case. We cannot do better here than give some able remarks which appeared some time since in the *Field*, and which deserve to be well studied, for they contain the first principles of the whole science of breeding:—

"Such questions as the following are constantly asked:—'Are the Brahmas a pure breed? are Black Hamburghs a pure breed?' &c. &c. These queries obviously owe their origin to a confusion of the distinction that exists between different animals and between different varieties of the same animal. Let us illustrate our meaning by an example.

"A hare is a pure-bred animal, because it is totally distinct from all other animals, or, as naturalists say, it constitutes a distinct species. It does not breed with other animals, for the

so-called leporines are only large rabbits; and if it did, the offspring would be a hybrid or mule, and almost certainly sterile, or incapable of breeding. In the same manner the common wild rabbit is a pure breed. This animal possesses the capability of being domesticated, and under the new circumstances in which it is placed, it varies in size, form, and colour from the original stock. By careful selection of these variations, and by breeding from those individuals which show most strongly the points or qualities desired, certain varieties, or, as they are termed, 'breeds' of rabbits, are produced and perpetuated. Thus we have the lop-eared breed, the Angora breed, the Chinchilla breed, &c. &c., characterised by alterations in the length of the ears, in the colour of the fur, in the size of the animals, and so on. It is obvious that by care more new varieties may be produced and perpetuated. Thus, by mating silver greys of different depths of colour, white animals with black extremities are often produced, and these have been perpetuated by mating them together. The breed so produced is known as the Himalayan variety, and, as it reproduces its like, is as pure and distinct a breed as any other that can be named.

"But, in the strictest scientific sense of the word, no particular variety of rabbit can be said to be a pure breed, as, like all the others, it is descended from the wild original. In the same manner we may deny applicability of the term pure breed to the varieties of any domesticated animal, even if, as in the case of the dog or sheep, we do not know the original from which they descended.

"All that can be asserted of the so-called purest-bred variety is that it has been reared for a number of years or generations without a cross with any other variety. But it should be remembered that every variety has been reared by careful artificial selection, either from the original stock or from other varieties.

"In the strict sense of the word, then, there is no such thing as an absolutely pure breed—the term is only comparatively true. We may term the Spanish fowl of pure breed, because it has existed a long period, and obviously could not be improved by crossing with any other known variety; in fact, its origin as a variety is not known. But many of our domesticated birds have a much more recent origin. Where were Game Bantams fifty years ago? The variety did not exist. They have been made by two modes: breeding Game to reduce the size, and then crossing the small Game fowl so obtained with Bantams. Yet Game Bantams, as at present shown, have quite as good a title to a pure breed as any other variety. In fact, every variety may be called a pure breed that reproduces its own likeness true to form and colour.

"The statement that Brahmas, Black Hamburghs, Dorkings, &c., are pure breeds is meaningless, if it is intended to imply anything more than that they will reproduce their like, which a mongrel cross between two distinct varieties cannot be depended on doing. There is no doubt but that many of our varieties have been improved by crossing with others. The cross of the bulldog thrown in and bred out again has given stamina to the greyhound; and although generally denied, there is no doubt but that the Cochin has in many cases been employed to give size to the Dorking. In the same manner new permanent varieties of pigeons are often produced, generally coming to us from Germany, in which country the fanciers are much more experimental than in England, where they adhere to the old breeds with a true John Bull tenacity."

Applying the above scientific and lucid remarks to the subject under discussion, it is now considered by most who have studied the matter that every variety of the domestic fowl has originated in a wild bird still existing—the common Jungle Fowl of India, known to naturalists as the *Gallus Bankiva* of

Temminck, or *Gallus ferrugineus* of Gmelin.* To describe this bird minutely is unnecessary; it will be enough to say that, except in the tail of the cock being more depressed, it resembles very closely the variety known as Black-breasted Red Game. The assertion that all our modern breeds should be derived from one fowl may seem at first sight a large demand on our credulity; but such a fact is not more wonderful than that a cart horse should have descended from the same original stock as the Arabian, or that an Italian greyhound and a Newfoundland should have common progenitors, about which no natu ralist has the slightest doubt.

The process is simple, and easily understood, Even in the wild state the original breed will show some amount of variation in colour, form, and size; whilst in domestication the tendency to change, as every one knows, is very much increased. By breeding from birds which show any marked feature, stock is obtained of which a portion will possess that feature in an increased degree; and by again selecting the best specimens, the special points sought may be developed to almost any degree required.

A good example of such a process of development may be seen in the "white face" so conspicuous in the Spanish breed. White *ears* will be observed occasionally in all fowls; even in such breeds as Cochins or Brahmas, where white ear-lobes are considered almost fatal blemishes, they continually occur, and by selecting only white-eared specimens to breed from, such ears might be speedily fixed in any variety as one of the characteristics. A large pendent white ear-lobe once firmly established, traces of the white *face* will now and then be found, and

* Personally the author does not share that opinion. In his judgment there are characters in various races not derived from the *G. Bankiva*, and still found in other wild races. He, therefore, believes the ancestor must be sought further back, and that the *G. Bankiva* is only one of its offshoots. But the belief in one original source remains unaffected.

by a similar method is capable of development and fixture; whilst any colour of plumage or of leg may be obtained and established in the same way. The original amount of character required is very slight; a single hen-tailed cock will be enough to give that characteristic to a whole breed; and the amount of white face which often troubles the breeder in Leghorns and Black Hamburghs would be quite enough to lay the foundation of new white-faced varieties.

Any peculiarity of *constitution*, such as constant laying, or frequent incubation, may be developed and perpetuated in a similar manner, all that is necessary being care and time.

That such has been the method employed in the formation of the more distinct races of our poultry, is proved by the fact that *a continuance of the same careful selection is needful to perpetuate them in perfection.* If the very best examples of a breed are selected as the starting point, and the produce is bred from indiscriminately for many generations, the distinctive points, whatever they are, rapidly decline, and there is also a more or less gradual but sure return to the primitive wild type, in size and even colour of the plumage. The purest black or white originally rapidly becomes first marked with, and ultimately changed into, the original red or brown, whilst the other features simultaneously disappear.

If, however, the process of artificial selection be carried too far, and with reference only to one prominent point, any breed is almost sure to suffer in the other qualities which have been neglected. This has been the case with the very breed already mentioned—the white-faced Spanish. We know from old fanciers that this breed was formerly considered hardy, and even in the winter rarely failed to afford a constant supply of its unequalled large white eggs. But of late years attention has been so exclusively directed to the "white face," that whilst this feature has been developed and perfected to a degree

never before known, the breed has become one of the most delicate of all, and the laying qualities of at least some strains have greatly fallen off.

It would be difficult to avoid such evil results if it were not for a valuable compensating principle, which admits of *crossing*. That principle is, that any desired point possessed in perfection by a foreign breed may be introduced by crossing into a strain it is desired to improve, and every other characteristic of the cross be, by selection, afterwards bred out again. Or one or more of these additional characteristics may be also retained, and thus a *new variety* be established, as many have been within the last few years.

A thorough understanding of both the foregoing principles is so important that we shall endeavour to illustrate each by examples.

Without foundation by long-continued *selection* no strain can be depended upon to breed similar specimens to the parents. For instance—the coloured Dorking is a breed which assumes within certain limits almost any variety of colour, and occasionally, amongst others, that now known as "silver-grey." By breeding from these birds, and selecting from the progeny only the silver-greys, that colour has been established, like any other might be, as a permanent variety, which breeds true to feather with very little variation. Now a pen of birds precisely similar in colour and appearance might, possibly, be produced from ordinary coloured Dorkings, and shown as silver-greys; and the most severe test might fail to discover any apparent difference between them and the purest-bred pen in the same show. But breeding would show the distinction instantly: whilst one pen would breed true to itself, and produce silver-grey chickens, the *accidental* pen would chiefly produce ordinary Dorkings, with very few silver-greys amongst them; and though in time, by continuing to select these, a pure strain would ultimately be established, for immediate purposes the

pen, as silvers, would be worthless. We cite this as a case which to our knowledge did actually occur many years ago, to the great disappointment of the purchaser. Conversely, even well-established silver-grey Dorkings, if bred from indiscriminately, would, by degrees, lose their distinctive colour, and go back to the ordinary stock from which they first sprang.

The coloured Dorking also exhibits very plainly the operation of *crossing*. It was originally the produce of a cross between the original white Dorking and the large coloured Surrey fowl, as is proved by the fact that whilst the white Dorking—long established—invariably bred the fifth toe as its distinguishing characteristic, the coloured variety was for many years most uncertain in that respect, as noted in all the older poultry books. Still, the fifth toe was introduced, along with the shape and aptitude to fatten; and by careful selection the colour and size of the Surrey fowl have been retained, whilst the tendency to only one toe behind, introduced by the cross, has been effectually eradicated, and the coloured Dorking now breeds in this particular as true as the white.

In the same way, when a race of Game fowls had been reduced in size, strength, and ferocity, by long inter-breeding through fear of injuring the strain, a cross of the large, strong, and ferocious Malay at once restored the defective points, whilst all evidences of it were removed in three or four generations.

Perhaps, however, the most "artfully-contrived" bird, and the best example of both principles combined, is to be found in the well-known laced Bantams of Sir John Sebright. This breed was founded by *crossing* the old Nankin Bantam with Polish fowls whose markings had a well-defined laced character. Lacing was thus imported into the Bantam breed, and by careful *selection* was developed and rendered perfect, whilst by the same process the Polish crest was effectually banished. This much being already accomplished, a hen-tailed Bantam cock accidentally met with struck Sir John's fancy, and added

that peculiarity to the strain, which has now been for many years firmly established, and breeds as true as any, though so extremely artificial in its original "construction."

Still further with regard to this curious breed. By degrees, owing to the breeding together of the Gold and Silver varieties, the Silvers gradually acquired a yellowish creamy tint, and pure white could not be found anywhere for many years. But about the year 1875 there appeared from Scottish sources, all of a sudden, Silvers of the most startling purity; and although the details have never been published, it has been ascertained that the breed, complex and artificial as it is, had been almost entirely *remade*.

But, it may be said, if these principles are correct, it would follow that the power of the breeder is almost unlimited. And practically it is so: there are within certain limits hardly any bounds to what may be effected by the scientific experimentalist, if we only give him time. That so little has been done is mainly because the principles themselves have been so little understood, and most fanciers have been content to go on with the established varieties as they are, without any attempt to modify or improve them. There is another reason in the utter want of attention in this country to anything but colour of plumage and other "fancy" characteristics; and we cannot but think that our poultry shows have to some extent, by the character of the judging, hindered the improvement of many breeds. It will be readily admitted in theory that a breed of fowls becomes more and more valuable as its capacity of producing eggs is increased, and the quantity and quality of its flesh are improved, with a small amount of bone and offal in proportion. But, if we except the Dorking, which certainly is judged to some extent as a table fowl, all this seems totally lost sight of both by breeders and judges, and attention is fixed exclusively upon colour, comb, face, and other equally fancy "points."

We cannot but deeply regret this. We have shown how readily beauty and utility might be both secured; and we do earnestly hope that even these pages may have some effect in stirring up our poultry-fanciers to the improvement in real value, without by any means neglecting the beauty, of their favourite breeds. The French have taught us a lesson of some value in this respect. Within a comparatively recent period they have produced, by crossing and selection, four new varieties, which, although inferior in some points to others of older standing, are all eminently valuable as table fowls; and which in one particular are superior to any English variety, not even excepting the Dorking—we mean the very small proportion of bone and offal. This is really useful and scientific breeding, brought to bear upon one definite object. Its accomplishment is probably connected with the character of the judging at French poultry shows, which takes table quality largely into consideration, whereas in England the awards are almost entirely governed by colour and markings. It must be granted that a great deal of French judging is erratic, and indeed due to gross personal favouritism: and it may be freely admitted that more deference to fixed standards, as in England, is highly desirable. Nevertheless, this has not hindered French breeders from producing Crêves, La Flèche, and other breeds of perfectly fixed and definite character; and this shows that both utility and what we know in England as exhibition quality, *can* both be secured, if points are not pushed to extremes. For instance, taking the Crêve, which is a crested fowl; the English tendency is to demand a crest *as large as possible*, and give that point far the greatest weight in judging. The French, on the other hand, while they look for a good and typical crest, are satisfied with that, and lay more stress upon a fine and well-shaped body. Of two fowls in competition, therefore, in France the finest *fowl* would win; in England the finest *crest* on a perhaps much less

fine fowl. It does not need pointing out which is the sensible plan.

The many shows of *dead* poultry also tend to keep up table quality in France. Of late, classes for trussed fowls have begun to appear at English shows; and if they increase and good prizes are offered, it may be hoped this will have some effect. Agricultural societies, in particular, might be expected in their exhibitions to promote the improvement of poultry regarded as *useful* stock; and we would commend this view of the matter to them especially.

CHAPTER XII.

THE PRACTICAL SELECTION AND CARE OF BREEDING STOCK, AND THE REARING OF CHICKENS FOR EXHIBITION.

We have in the last chapter treated of the more theoretical principles which the breeder may employ in the accomplishment of any desired end; we have now to consider those practical points which the poultry-keeper must keep in mind if he desires to attain success in competition.

It is quite certain that there is nothing so unprofitable as to commence "poultry-fancying" with inferior fowls; and as there are always numbers of unscrupulous individuals who endeavour to impose upon the unwary, special caution is needed in the purchase of the original stock. If the reader be inexperienced, he should, if it be possible, secure the assistance of some friend upon whose judgment he can thoroughly rely; failing this, he should endeavour, not only by studying the descriptions, but by frequenting good shows, and seeing and comparing the live birds themselves, to become acquainted with at least the main points of the breed to which his preference inclines. To buy of unknown advertisers is always a great risk, and it will generally be found more economical in the long run to apply, in the first place, to known and eminent exhibitors, whose character stands

too high to admit the suspicion of any wilful deception. Such breeders, it is true, will generally demand high prices for really good stock; but then the stock *will* be good, which is by far the most important point. Birds may also be purchased at shows; and good specimens may often be picked up at a very moderate price, especially out of the large "selling-classes"* at the Crystal Palace or Birmingham. A beginner should, however, if posible, get some experienced friend to help in such selections, and even then he cannot always escape loss; for some very old birds will look uncommonly fresh and young, or a hen may be sold for some vice. We knew of an uncommonly cheap purchase of a fine Dorking hen, apparently worth many times her price; and it was only found after purchase that she was an inveterate egg-eater, and unfit for that reason to be in any breeding-yard.

The old system of exhibiting a cock and two hens together has for years been discarded; and it is therefore unnecessary to purchase both sexes of the same family. But to have them from one yard is rather an advantage than otherwise, as freshly-crossed birds often breed very erratically. Indeed, as Mr. Darwin has shown, fresh crossing has a direct *tendency* to cause reversion to the type of far-back ancestors.

At the very outset the question occurs, What is the best age to breed from? and we have no hesitation in replying that, according to the testimony of nearly all the best authorities, it is better the ages of the cock and hens should vary. It seems also generally admitted that the strongest and best chickens are produced from a cockerel nearly a year old mated with hens twelve months older; but, unfortunately, the chickens of such parents invariably have a large proportion of cocks, and most breeders therefore prefer a two-year-old cock with well-grown

* Selling-classes are classes in which prizes are given for fowls entered for sale at prices not exceeding fixed moderate sums, generally 30s. or 40s. per pair.

pullets not less than nine months in age. Such a cock is, however, very often, not fertile extremely early in the season: hence breeders depend upon cockerels for *early* chickens. It must not be supposed that either rule is imperative, or that good chickens are not to be expected from birds all hatched about the same time. In this case, however, it is advisable that all the fowls should be fully twelve months old; if younger, the chickens are usually backward in fledging. Fowls are often available for breeding up to the age of four years, but are seldom of much value afterwards.

To avoid any fraternal relationship is most important; but the older works have laid far too much stress upon the necessity of continually introducing what they call "fresh blood." It is certainly most destructive to breed continuously from members of the same family, and to go on promiscuously interbreeding in one yard is still worse; but if there be a number of separate runs, in which separate families can be reared, operations may be carried on for many successive years without a cross from any other yard. It is the more necessary to explain this, because when any strain has been brought to high excellence, the introduction of a bird from another is a very serious thing, and we have personally known, in more than one instance, to ruin the produce of a whole year.

The plan to be adopted is to note down most carefully the parentage of every brood, and to keep the chickens from one family identified until they are required. The breeding-yards for next year are then to be made up from the best specimens, taking care not only that the cocks and hens are not closely related *inter se*, but that two yards, if possible, are thus made up without any direct fraternal relationship between them. Unrelated chickens will thus be secured for next year also; and so the system can be carried on. It is also a good plan, where it can be adopted, to put a promising young cockerel out to "walk" at a farm, or in some brother fancier's yard, and

bring him back in a year or two, when the relationship between him and the pullets of the year will be too remote to be of very much consequence.

If a bird is occasionally introduced from another strain—and it certainly is advisable now and then, especially in the case of Dorkings—we can only say that the most extreme care must be taken to ensure he is of good pedigree, as well as a good specimen in outward appearance of the breed to which he belongs.

Long experience has ascertained that the male bird has most influence upon the colour of the progeny, and also upon the comb, and what may be called the "fancy points," of any breed generally; whilst the form, size, and useful qualities are principally derived from the hen. Now it cannot be denied that it is desirable to secure absolutely perfect birds in all respects of both sexes if possible; but alas! every amateur knows too well the great scarcity of such, and the above fact therefore becomes of great importance in selecting a breeding-pen. For instance, a cock may have been hatched late in the year, and therefore be decidedly under the proper standard in point of size, and inferior for a show pen; but if his colour, plumage, comb, and other points—whatever they may be—are perfect, and he be active and lively, he may make a first-class bird for breeding, when mated with good hens. A hen, again, if of large size and good shape, is not to be hastily condemned for a faulty feather or two, or even for a defective comb, if not too glaringly apparent—though the last fault is a serious one in either sex. But a very bad-coloured or faulty-combed cock, however excellent in point of size, or a very small or ill-shaped hen, however exquisite in regard to colour, will invariably produce chickens of a very indifferent order.

It is also to be observed, with regard to the crossing of a breed, that the cockerels in the progeny will more or less resemble the father, whilst the pullets follow the mother. A

knowledge of this fact will save much time in "breeding back" to the original strain, and much disappointment in the effect of the cross. For instance, if it be desired to increase size, a cross with a *hen* of foreign breed should be employed, and the same if it be sought to introduce a more prominent breast, or any other peculiarity of shape; but if it is the plumage which is to be modified, it is the *male* bird who should be thrown in. In breeding the cross out again, or in retaining any new characteristic, so as to form a fresh variety, the same rule must be kept in mind.

We believe that much disappointment and uncertainty in the results of crossing has been owing to a neglect or ignorance of this simple principle, and breeding from either sex indifferently. If this be done, the result will often be disappointing, and in every case the time consumed will be greater than is necessary; but if scientifically conducted, we believe crossing would improve many of our older breeds in size, hardihood, and utility, without in any measure detracting from those qualities for which they are valued.

The care and preservation in good condition of valuable fowls is an important point. With regard to mere health, nothing can be added to what has already been treated of in the preceding section. But it frequently happens that, on account of the high price, only a single pen of three first-class birds can be afforded; and if such a family be penned up by itself, the frequent attentions of the cock will soon render the hens unfit for exhibition, or even cause temporary paralysis or sterility. To avoid this, a couple more of ordinary hens should be added, taking care that the eggs be of a different colour, or otherwise easily distinguished from those of the breeding-pen itself. The plumage and health of the hens or pullets will then be preserved, without injuring the character of the progeny. The same precaution must be observed in spring if hens are absent from the run on account of broodiness;

and some cocks require far more than others. We should, however, prefer mating the cock with four good hens of his own breed, a plan more really economical, as the cost of the cock, in proportion to the number of eggs for sitting, is thereby reduced.

The number of hens, if good size and vigour are desired, should not exceed four in the large breeds. Many breeders allow six; but the finest fowls of the larger kinds are bred from the proportion we have stated. Houdans and some others require more.

It is desirable, also, as much as possible, to save the hens from the wear and tear of chickens, which often injure the plumage greatly. It will not answer to prevent them sitting altogether; we have already remarked that such a procedure often causes them to suffer in moulting, which should not be risked. Neither do we altogether approve of the plan followed by many, of allowing them to hatch, and then giving the chickens to other hens. This may be done, if necessary, but a better system, where there is convenience for it, is to set a valuable hen upon duck eggs. The ducklings will not only resort to the hen to be brooded much less frequently than chickens, but will be far earlier independent of her care, and leave her in much better condition than if she had hatched her own eggs.

With regard to hatching, it is desirable with the hardier breeds to get the eggs under the hen as soon after January as a sitter can be obtained, in order that the brood may have all the year to grow in, and be ready for the earlier shows. At this season, however, the limitation as to number, mentioned in Chapter IV., must be strictly enforced, and no hen given more than seven or eight eggs, six chickens being as many as are desirable, in order that they may be well covered by the hen when partly grown, which is their most critical period as exhibition fowls. Spanish, Dorkings, or other delicate breeds, should not be hatched till April or May, unless unusually good

shelter is at command. Incubators and artificial mothers are great helps at this season, enabling the fancier to use any eggs he may be fortunate enough to get.

For early eggs the breeding birds ought to be put together early in December, and it is ruinous to exhibit them afterwards. Mating should be decided upon carefully, and then not altered if possible; for many cocks turn very sulky if separated from mates they have really become attached to. Brood cocks at this early season often require attention. Gallant birds very often do not eat nearly their share while with the hens, and such would become very poor. They should be constantly felt whilst on the perch, and if at all poor should have extra food *by themselves*. Attention to this point has a great deal to do with the fertility of early eggs.

As eggs are often purchased for hatching, it is necessary to allude to the frequent disappointments experienced in this respect, and which are far too frequently attributed, in no measured terms, to fraud on the part of the seller. Now we certainly cannot deny that such fraud is occasionally practised. We knew of one case where the fact was put beyond a doubt by examination, proving that the eggs purchased from a well-known exhibitor were actually *boiled;* but we are quite sure that the great majority of breeders would scorn such proceedings. It should be remembered, in the first place, that highly-bred birds are seldom so prolific as more ordinary stock, and are generally rather too fat for full health and vigour. Too many eggs—the full dozen—are likewise very often set at seasons when the hen cannot give them heat enough; so that all get chilled in turn, and disappointment ensues. Bad packing also causes its share of failures; and, lastly, eggs are sometimes kept a week or fortnight after receipt before setting, which is always, but especially after a railway journey, most injurious. We can only recommend—1. That a hen be ready for the eggs before they are ordered. 2. That they be

procured from a breeder of known honour and probity. 3. That especial directions be given that they are well packed. 4. That they be "rested" about twenty-four hours after arrival, but then placed with no more delay under the hen. And 5. That in cold weather the eggs be divided, so as not to exceed the number stated under each hen.

Eggs are best packed in small baskets, with the top tied down. If in boxes, the cover should be tied down or *screwed*, not nailed on any account, or every egg will be endangered. The best packing is to wrap every egg rather loosely in a piece of paper, and then very carefully in a separate wisp of soft hay; and, finally, to imbed the eggs thus guarded, and not too tightly, in a basket with more soft hay, *with the large end down*. Chaff or bran is too solid. Eggs so packed will go hundreds of miles without injury.

The chickens being hatched, let the utmost care be taken of them in every way. The object in this branch of poultry-breeding is not, as in the last section, to get a profitable amount of meat with the least possible expenditure in food; but, the birds being presumably good in quality, to get them by *any* means to the greatest possible size. For although size is never the first point considered, except perhaps in the case of Dorkings, it not unfrequently gives the casting-vote between two contending pens, and is itself a most desirable point in nearly every fowl. Game and Bantams may be excepted.

The best stock food is undoubtedly oatmeal and old wheat, and for valuable chickens it should be used liberally. With respect to this part of the treatment, however, we will give at length the remarks of one of the most successful breeders of Brahmas (the largest variety of fowl known), whose birds have in point of size been usually all that could be desired, and who has most kindly described for this work the system which has had such satisfactory results. The same feeding is applicable in every case where size is a point of merit.

"If the chickens are early hatched, I coop the hen in a warm sheltered place, free from all intrusion, and should the weather be very severe, keep them within doors; the floor, however, must be gravel. Till about a fortnight old I feed them on sops made with boiled milk, and sweetened with coarse sugar, mixing it for the first two or three days equally with yolk of egg boiled hard and chopped fine. The egg is, however, too "binding" to be continued longer. The first thing in the morning they have warmed milk to drink; there is nothing equal to this for bringing them on in cold weather. If the chicks are weakly, yolk of egg beaten up and given to *drink* is the most strengthening thing I know. In water they are of course unlimited, and they also have plenty of fresh grass cut small. I also throw them, two or three times a day, a handful of coarse raw oatmeal.

"I feed like this, on soft food, raw oatmeal, &c., with milk every morning, for about a fortnight, after which they have boiled oatmeal porridge made so stiff that it will crumble when cool. They grow amazingly fast on this food, and are very fond of it. I also give them boiled rice occasionally, and frequently throw them groats, giving them also a little fresh cooked meat at dinner-time, cut up fine. Of course they are fed every night after dark, usually about ten o'clock. There is at first a little difficulty in getting them out to feed at night; but they soon learn the time, and will run out eagerly for their 'stirabout,' which, if made thick enough, they prefer to any other food. The mode of preparation is to boil a saucepan full of water, and throw in it as much oatmeal as will take it all up. Then continue stirring till it is a stiff crumbly mass, after which turn it out upon a large plate, and keep stirring it about with the spoon till cool enough to be eaten.

"At ten weeks old all the waste birds should be picked out to make more room for the others, and the cockerels separated from the pullets. The main food will still consist of the

porridge, with small tail wheat, good heavy oats, and *plenty* of green food. Good potatoes boiled and mashed are also excellent food for a change.

"A little camphor put in their drinking water will help very much to keep them in health."

We have little to add to the above remarks. We do not ourselves approve of giving bread sops so long, and feel sure, after trial, that chickens get on better by substituting oatmeal after the first day or two, or indeed from the day they break the shell. In cold weather also a little sulphate of iron, or "Douglas mixture," should always be added to the water, and a little bread soaked in ale will be found beneficial. The warm milk is excellent, and is much better than the plan recommended by many of giving custard; the latter is too pampering, and after it chickens will sometimes refuse plain wholesome food. For weakly chickens, however, it is most strengthening to mix up a raw egg with their oatmeal. Above all, unless they have a good run on grass, the supply of green food must be unlimited. Spratt's well-known Poultry Meal is an admirable addition to the dietary, and "Spratt" and good oatmeal mixed, scalded with boiling water, is perhaps the best staple food of all, where the lowest cost is not a consideration.

Feed often—every two hours, if possible, from daybreak, and let the food be always fresh, nothing being ever allowed to remain. When a month old, gradually reduce the number of meals till it comes down at three months to four times a day. If this is neglected, appetite will fall off. Also, leave off milk with the warm weather.

With such treatment and good shelter, if the stock be good and the number has been judiciously limited, the hen will not fail to bring a fair proportion through the most inclement season, and they will be sure to reach a good standard in point of size, having the best time of the year before them when they really *begin to grow.*

It is necessary to give one more caution. Do not let prize chickens roost too soon—never before they are at least three months old; and then see that the perches are large enough, and not round on the top, but like the flat side of an oval. If they leave the hen before the proper age for roosting, let them have every night a good bed of nice clean dry ashes. We never allowed our own chickens while with the hen to bed upon straw; ashes are much cleaner, and if supplied an inch deep are warmer also. To this plan we attribute a very small proportion of losses, even in very severe weather. When larger, straw makes a very good bedding; but it must be shaken up with a fork every night, and renewed and the floor cleaned every three days.

If a good field or other grass-run be at command, the chickens will of course have it, and it will go a long way in supplying all other defective arrangements. But to our own knowledge some of the finest and largest fowls we have ever seen have been reared in a gravelled yard, not more than eighteen feet square. In such circumstances, besides the most scrupulous cleanliness and good feeding in other respects, there must be green food *ad libitum*—really fine chickens *cannot* be reared without it, their plumage in particular being of a very inferior appearance, and quite devoid of that beautiful "bloom" which is now indispensable to success in the show-pen.

But with proper care, and attention to the above plain directions, there should be no lack in due season of good fine birds. As they grow, and get through their first moult, they will be anxiously scanned; and let the best have especial care, taking out for the table all which are manifestly not up to the mark, that the rest may have more attention.

This is a point in which all beginners fail, without exception. They weed out and kill just a few of the worst. But the rest do not look so *very* bad, and there is hope that they may improve; and so they are kept on, crowding the yard so

that there is neither fresh ground nor fresh air for what good birds there may be. Now, the beginner may make up his mind that only his *very best* fowls will have the slightest chance; and that to keep all these birds alive destroys what chance he has, besides "spoiling his eye." If he knows enough to really select the best *quarter* of those he has reared past chickenhood, he may be absolutely certain he has retained more than all really worth keeping; and these few will grow into finer birds for such severe weeding, to which the experienced breeder with limited space always subjects his yard.

Where grass-run is unlimited this does not much matter, and chickens may be kept without much detriment till full-grown, for table use. But the owner of a limited yard, who wants to make and maintain a reputation, cannot afford this. The matter is very simply illustrated. Let us suppose he can manage to rear—that is, rear really well for the show-pen—two dozen full-grown chickens, and no more, besides what adult stock he must hold over for next season's operations. The novice will probably hatch about forty, and after losing half-a-dozen, weed out barely a dozen of the worst. He cannot expect much from the rest for the first year or two. But the experienced breeder, even with better-matched stock, would act differently. He would hatch at least sixty, and very likely eighty birds, killing a fair proportion as soon as their very first feathers, at a fortnight old, told him they would be no good; and then at a still early period he would kill half the remainder. Keeping only the pick, he can hatch more. Later on, when his breeding has become more certain, he can be less severe; but experienced breeders always weed out much earlier and more severely than novices can find it in their hearts to do.

We have already said that the sexes should be separated. This is highly essential in the larger varieties to good size, as too early a call on nature degenerates the breed. There will thus be secured also greater vigour and fertility during the breeding season.

CHAPTER XIII.

THE PREPARATION OF FOWLS FOR EXHIBITION, AND VARIOUS MATTERS CONNECTED WITH SHOWS.

CHICKENS are rarely fit for exhibition until at least six months old, or even more. If the cockerels and pullets have been separated, as recommended in the last chapter, there will rarely have been any eggs laid before this time; and stimulating food should now be partially discontinued to retard their production as long as possible, bearing in mind that the commencement of laying almost, if not quite, *stops the growth*, which it is desirable to prolong as far as possible for exhibition birds. In this respect the fancier and the ordinary poultry-keeper proceed upon contrary principles, the one endeavouring to get his pullets into laying order as soon as he can, the other using every expedient to procure a precisely opposite result.

If the chickens have been from the very shell properly and systematically fed, they will, by the time they are fit for showing, be in quite as good condition as they ought to be. By giving them two or three times a day as much soft food as they will eat, they may easily be got up to any degree of obesity; and such a system of feeding is necessary to success under some few judges, who seem ignorant of the proper condition of a really healthy fowl; but we must most emphatically raise our voice against the practice. We have known a splendid pen of Dorkings, far superior in *real* size, as measured by the framework of the fowl, passed by contemptuously because inferior in mere dead weight to a pen which it would have been hopeless to breed from. This is much less common now than formerly; and the most eminent judges now generally refuse to award prizes to pens which they consider over-fattened, and thereby do all they can to check the system; but at Birmingham it is still rampant in the duck and turkey classes, which are often gorged just before judging takes place.

What we consider—and our opinion is corroborated by the best judges—to be really "good condition," is such an amount of flesh as can be carried consistently with perfect health and fecundity, combined with clean, well-ordered plumage. It is in the last particular that a good grass-run is so advantageous; fowls always look clean and nice when so kept, and rarely require much further preparation beyond washing the feet and legs.

With a good number of such birds to choose from, there should be little difficulty in finding pens, even for Birmingham or the Palace. Formerly two hens and pullets used to be shown together, and even with the cock as a third. In those days there was much trouble in "matching" a pen, since the two hens had to be very nearly alike, and out of a dozen individual good ones there might only be one pair that would "go well" together. Single hens, and generally single birds, are now the rule, and only individual excellence is therefore required. This makes more careful scrutiny possible, and raises the standard of individual excellence. But let not the birds be judged *too* severely. Let the owner remember that few are absolutely perfect; and that whilst he, well knowing every fault, may see most plainly the blemishes in his own pen, impartial judges often have to weigh other blemishes against these, and he may thus win after all. Glaring faults cannot of course be passed over; but fair general excellence will often win the day against a pen far superior in some respects, if accompanied by some decided blemish.

The pens should be selected and the birds put together where pairs are shown, at least ten days before the show prepared for, in order that the fowls may get thoroughly used to each other. Neglect of this precaution may cause much fighting and destruction of plumage in the exhibition pen, or on the road thither, and not unfrequently loses a prize. They should also be confined for a few days in pens—if possible,

a little larger than show-pens—to become used to the confinement and get tame. A wild and frightened fowl never shows well.

For the following observations on preparation for exhibition we are indebted to Mr. F. Wragg, the well-known superintendent of the poultry-yard of Lady Gwydyr, who formerly exhibited for Mr. R. W. Boyle. When it is remembered that the fowls of the latter had always to undergo a sea-voyage from Ireland, in addition to the ordinary railway journey, previous to exhibition, the beautiful "bloom" and condition in which they invariably appeared will cause his remarks to be appreciated by amateurs :—

"The system I pursue previous to sending to shows is as follows :—About a week beforehand I select the pen I intend to send, seeing, of course, that they match well, and carefully wash their heads and legs. I then have a nice dry room pretty thickly covered with clean straw, in which I put them, scattering a few handfuls of wheat amongst it. They scratch the straw about searching for the grains, and thus clean themselves beautifully without further trouble. The birds being kept up by themselves get so used to each other they never quarrel, either on the journey or in the pen. They have to drink clean water with a little sulphate of iron dissolved, which causes a bright red colour in the ears and comb, and makes them look well and sprightly.

"They are fed on oatmeal and Indian meal well boiled together, with a small quantity of salt just to season it ; when properly done it is like a thick jelly. Twice, however, during the week, not more, they have rice, which is prepared by adding 1 lb. to a pint of water, and boiling till the water is absorbed, then adding as much milk as it will take up without getting thin, with a handful of coarse brown sugar ; keep stirring the whole till done, and then put in a bowl to cool. Of this they are very fond, and it keeps them from purging. I also give them plenty of fresh green food.

"In their hamper I put, of course, plenty of clean soft straw. I also tie on one side of it, near the top, a fresh-pulled cabbage, and on the other side a good piece of the bottom side of a loaf, of which they will eat away all the soft part. Before starting I give each bird half a table-spoonful of port wine, which makes them sleep a good part of the journey. Of course, if I go with my birds, as I generally do, I see that they, as well as myself, have 'refreshment on the road.'

"With regard to what you have remarked about showing birds fat, I never do so. As you truly observe, many birds are ruined by it. Good, healthy condition, with a nice gloss on the feathers, is what I aim at in exhibiting, and the treatment I have described is what I have found best calculated to attain it."

Little can be added to these directions from so high an authority. For light-coloured fowls, however, or which have much white in their plumage, the cleansing process above described will often be found insufficient. In such cases the birds must be carefully *washed* with soap and water before sending off, and good or bad washing may make all the difference between winning and losing.

A large tub or pan must be provided, and half filled with warm water. The very first step is to clean thoroughly the feet and legs, which always are of a colour to need this in light-coloured fowls; and if they are dirty, the water in which they are washed should be thrown away and clean substituted; a hardish brush will generally be useful in scrubbing the shanks. The head is washed next, using a soft nail-brush on the comb if needful; after that the first step is to thoroughly *soak* the plumage by the use of a sponge. Then it is to be *thoroughly* washed with a sponge and good yellow soap, the great point being to ensure that it really is quite clean, and rubbing freely almost every way, except up or nearly up the feather, which must be avoided. Being sure the fowl is quite clean,

the next great point is to be sure, by change of waters, that every particle of soap is washed out of the plumage. If any is left in, the feathers will clog or look ragged; but if all is got out, the bird being partially dried with a towel first, is afterwards left in a lined basket in front of a good fire to dry gradually. Some dry almost in the hand, turning the fowl round and round occasionally on straw. It is a good plan to give the last rinse with *cold* water, to prevent catching cold, and also to prevent any debilitating effect from the hot water used in washing. It must always be done if the bird appears faint, as it sometimes will. Many people think that the addition of an ounce of borax and a spoonful of honey to the last tub of water makes the plumage "web" better in drying, and look more lustrous. We were never able to satisfy ourselves that it made much, if any, difference.

Some people never seem able to wash fowls well; but it may be said in brief, that *thorough* washing and *thorough* rinsing are the only secrets. For white fowls it is well to use a very little "blue" in the last water, to heighten the apparent purity of the white. If overdone this will defeat itself, and look ridiculous; a very little suffices. The object is to make the white look bright and free from yellow; not to make it look blue. Really yellow plumage cannot, however, be whitened in this way. Of course the sun has much influence on this point, and living shade has much to do with exhibiting white fowls. But breeding has even more, and there are strains which appear far yellower, even when shaded, than others allowed full liberty in the sun.

If they have had an extensive run on country grass, however, the whitest fowls scarcely ever need washing, except as regards their feet and legs, giving also attention to the comb and wattles, if necessary. It is the poor dwellers in towns who have to take such precautions, and have so much to contend against. Yet, in spite of all this, we often see town

breeders beating the very best country yards; and the fact proves that care and good system are of even more importance than any mere natural advantages.

Many exhibitors recommend the giving of linseed for a week before exhibition. Its use is to impart lustre to the plumage, which it does by increasing the secretion of oil. The fowls generally refuse the dry seed, and the best method of administration is to stew some into a sort of jelly, and add it to the ordinary soft food. A preferable plan, however, and one which agrees better with the health of the fowls, is to let the evening repast of grain for the last fortnight consist of buckwheat and hempseed in equal portions, which will be equally effective, and is greedily devoured by the birds, adding also to the colour of the combs and wattles.

In regard to that beautiful bright red of the comb and wattles so desirable, this *cannot* be given to a fowl which is not naturally in high health. But when a bird is healthy, the scrubbing helps to bring it out; and if finally a very little fresh butter is rubbed in, and then wiped as thoroughly off as possible with a damp cloth, about the best is made of it. A greasy-looking comb is disgusting, and soon becomes dull in colour. We have seen the head sponged with strong vinegar, and this does brighten the comb for a while; but many birds become dark afterwards, and the other is the most certain treatment.

Much difference of opinion exists as to the best form of hamper, but general experience approves most of a round shape, of a size to give just ample room to the fowls which have to be shown. Square corners are apt to catch the tails and cause damage. For Spanish or other large-combed breeds it is best to have no cover, simply stitching a strong piece of canvas over the top; but for most fowls a wicker top is best, as affording more protection. It is of some consequence to committees that these covers should be flat, in order that the baskets may be compactly stowed away in the exhibition-hall.

Many shows now allow two or more pens to be sent in one hamper, which saves considerably in carriage. In such cases, the usual shape is an oblong with rounded ends, and a partition in the middle. When fowls are thus sent, the greatest care should be taken that the labels are so attached that there may be no chance of mistake about the proper pens. At almost every show there are errors of this sort, to the inevitable loss of the exhibitor, who cannot expect busy officials to remedy the results of his own carelessness.

In cold weather let the hamper be well lined with canvas, or straw stitched to the wicker-work. And if occupied by geese, let special care be taken that their bills cannot reach either the string fastenings or the direction-labels. They have a peculiar fancy for breakfasting upon those articles; and even fowls will occasionally contract the same vicious habit.

All has now been done that can be done, and the rest must be left to the decision of the judges. As a rule, these are at least impartial; but some are known to have certain invincible prejudices, which prevent them from judging certain classes in accordance with the general rules as understood by the majority. This is to be regretted, as it hinders the good understanding which always ought to exist between judges and exhibitors. The object of both ought to be identical—the promotion of the highest standard obtainable in the different breeds; but it is necessary to this that the breeder should know definitely and authoritatively *what* he is to seek after. There are certain canons of excellence which are now generally recognised by breeders, and by most judges;* and no individual judge has any right to depart from these without, at least, sufficient public notice, or until public discussion in the periodical press devoted to such matters has

* Very complete scales of points, founded on actual analysis of modern judging, have been published by the author in "The Illustrated Book of Poultry."

ratified the change. In the meantime, it is our opinion that exhibitors have decidedly a right to know beforehand *who are to judge* their birds; and this is now conceded at all the best shows. To call upon them to send their best stock to a show, where, it may be, the judge's known prejudices on certain points give them no chance of a prize, is evidently unfair.

But we are leaving the fowls, and must return to them, though we have little more to add. Whether they require any special treatment on their return will chiefly depend upon the system of feeding which has been pursued during the period of exhibition. If, as is the case still at some small shows, the pernicious plan of feeding on whole barley *ad libitum* has been retained, the birds may be more or less feverish and disturbed, and will need a corrective. But such feeding cannot be too strongly condemned. It saves trouble, certainly; but if a committee are not willing to take so much pains as will keep the birds in perfect health, they have no right to gather them together. The proper feeding is either barley-meal or oatmeal or Spratt's Food in the morning, mixed rather dry, and given before the public are admitted, with grain only in the evening; and, in each case, only as much as the fowls will eat at once, without leaving any in the pens. Only these two meals should be given, as the birds have no exercise, and do not require more; besides which, the natural excitement of the show is best counteracted by a rather spare diet. Water should be given in tins, and only in limited quantity—not left *ad libitum*—till the birds have had time to slake their first thirst after the journey. Barley ought only to be used sparingly, as it is too hard to be properly digested in a show-pen.

Fowls fed as here recommended will be returned in as good condition as they were sent, and require no attention at all beyond seeing that they do not get too much water and green food at first. But if they return from a "barley-fed" show, or the system on which they have been fed is unknown, or, in any

case, if they appear either feverish or "overdone," give each a rather scanty meal of stale bread-crumbs soaked in warm ale; let them have two or three sips *only* of rather tepid water; and then administer a third of a tea-spoonful of Epsom salts to each bird. This will probably be at night. Next day feed them on meal only in moderation, see that they cannot drink to excess, and give them half a cabbage-leaf each, or a large sod of grass, but no other green food; afterwards let them return to their usual diet. It is in all cases safest not to let them have much grain, and to put them on an allowance of water, for the day after their return.

If these recommendations be attended to, there will be little injury from exhibition, and the same birds may be shown again and again to a fair extent without suffering. We knew of fowls which had won as many as *fifty* prizes; and, indeed, first-class exhibition birds are almost always shown pretty frequently. They want care and attentive examination after each competition to see that they are not losing health; if it appears so, whatever other engagements may have been made, let them have rest till completely recovered; otherwise, property worth scores of pounds may be sacrificed for "just one more cup," to the owner's lasting regret.

FEATHERS OF FANCY FOWLS.

No. 1 is a *Striped* Feather.
„ 2 a *Laced* Feather.
„ 3, 4 are *Spangled* Feathers.
„ 5 a *Pencilled* Hamburgh Feather.
No. 6 a pencilled Brahma Feather (from breast).
„ 7 ditto from cushion.
„ 8 ditto from wing.

THE DIFFERENT BREEDS OF POULTRY.

CHAPTER XIV.

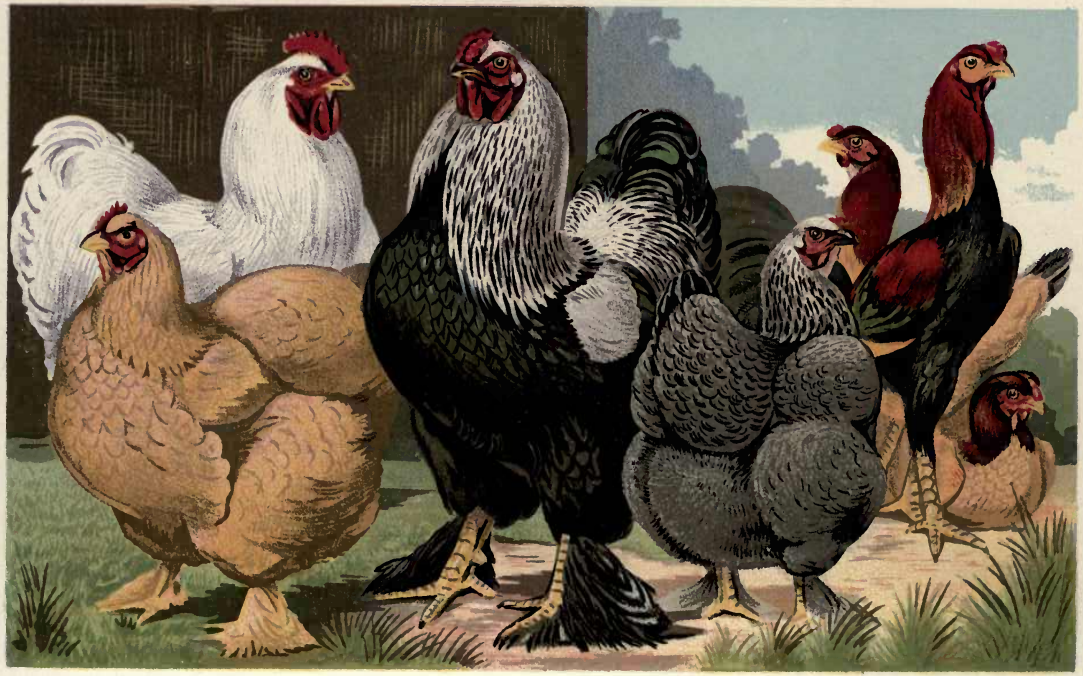
COCHINS. LANGSHANS.

The Cochin breed, as now known, appears to have been imported into this country about the year 1847, those so-called exhibited by Her Majesty in 1843 having been not only destitute of feathers on the shanks, but entirely different in form and general character. No other breed of poultry has ever attracted equal attention, or maintained such high prices for such a length of time; and the celebrated "poultry mania," which was mainly caused by its introduction, will always be remembered as one of the most remarkable phenomena of modern times. To account in some measure for this, it should be remembered that no similar fowls had ever been known in Europe; and when, therefore, Cochins were first exhibited, it was natural that their gigantic size, gentle disposition, prolificacy, and the ease with which they could be kept in confinement, should rapidly make them favourites with the public. But the extent to which the passion for them would grow no one certainly could have foreseen. A hundred guineas was repeatedly paid for a single cock, and was not at all an uncommon price for a pen of really fine birds; and although these prices have been equalled quite recently by other breeds, it must be remembered that in those early days there was not nearly the same number of poultry shows to win prizes at, which now adds to the actual money value. Men became almost mad for Cochins, and spent small fortunes in procuring them; and all England, from north to south, seemed given over to a universal "hen fever," as it was humorously termed. Their advocates would have it that the birds had no faults. They were to furnish eggs for breakfast, fowls for the table, and

better morals than even Dr. Watts' hymns for the children, who were from them "to learn kind and gentle manners," and thenceforward to live in peace.

Such a state of things, of course, could not last, and the breed is now perhaps as unjustly depreciated by many as it was then exalted; for Cochins still have real merits, and on many accounts deserve the attention of the poultry-keeper. They might have stood much higher, as many of the early birds had very good breasts; but unfortunately early fanciers adopted the contrary model, and so spoilt the breed as a table-fowl.

As now bred for the show-pen, the breed presents the following characteristics:—The cock ought not to weigh less than 10 or 11 lbs., and a very fine one will reach 13 lbs.; the hens from 8 to 9 or 10 lbs. The larger the better, if form and general make be good. The neck is rather short, the hackle flowing widely at the bottom over a very short and broad back, which should rise at once into a broad saddle in the cock, and an ample "cushion" in the hen, whose tail is nearly buried in it; there should appear almost no actual back at all. The body is correspondingly short, but very deep down to the setting on of the thighs; the legs being as short as possible, and set widely apart. The breast should be as broad and full as possible consistent with these requirements, but must necessarily appear high and little developed, and this want of breast is the greatest defect in the Cochin formation from a table point of view. The shanks are to be heavily feathered down the outside to the ends of the outer and middle toes, the thighs well furnished with soft downy fluff, standing out in a sort of globular mass, and the hocks well covered by soft curling feathers. The fashion in hocks has varied much. When this book was first written, any sign of vulture-hocks (stiff feathers projecting from the hock) was rigidly disqualified at all shows. This led to fraudulent plucking; and to avoid this some approach to vulture-hock was gradually allowed; later on a



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COCHINS. DARK BRAHMAS. MALAYS.

rage for heavy feather at any price came in, and for several years it is to be regretted that vulture-hocks have predominated. We say it is to be regretted; since long and wide experience has convinced us that with vulture-hock is usually combined a tendency to coarse skin and want of breast. The tail should be as small and low as possible, with very little quill in it compared with other breeds.

The head of a Cochin should be neat and small; the comb single, very moderate in size, evenly serrated, and fine in texture. Ear-lobes red. Red or dark eyes are best; yellow eyes generally go with buffs, and are a little more apt than red to become blind. In blacks the eyes are dark.

The general character of the Cochin is "lumpy," the small wings being deeply tucked in between the cushion or saddle above, and fluff below.

Whites must be pure in every feather, a sandy or red tinge being a great fault. The shanks yellow; a greenish tint was once common, but rarely occurs now, and would be a great fault.

Buffs are of various shades, from very pale, to quite a dark cinnamon colour. The hen should be as nearly alike as possible all over, except that the hackle is a more golden tint always. The cock's breast and under parts match the hen; his hackle and saddle are richer, with a clearer gold or red-orange character. His wing should be even and rich all over, not grizzled with lighter feathers; there may be a little black in the tail, but the less the better; and the inner flights are often more or less black, which is better than white. White in the tails is a great blemish. Buffs tend to breed rather lighter; and the cock should, therefore, always be chosen of perfectly sound colour on the wings, and if possible a few shades deeper than the hens which really match him. On the other hand, a very much darker cock, or one with very dark wing, usually breeds spotty or rusty chickens. The legs yellow, or with a reddish tinge.

Partridge Cochins differ greatly in the sexes. The cocks have black breasts and under parts, while the hackles and saddle-feathers are rich orange-red, striped with black; wings red and bay, with a bright green-black bar across the middle; tail black. The hens have also orange striped hackle, the rest of the plumage being dark-brown (ranging to black) "pencillings," on a light-brown ground. (See Pencilled Feathers, Nos. 6, 7, 8.) Legs, a dusky yellow. Very dark partridges were once called grouse, but the name has disappeared.

Cuckoo Cochins are a peculiar bluish-grey mottle all over; each feather crossed by bands of light and dark blue-grey. They are seldom of good shape.

Black Cochins nearly disappeared for many years, for want of stock, and the attempt to breed black fowls with yellow legs, which was unnatural.

LANGSHANS.—In and after 1871, however, fresh importations of black Cochin-like birds were made, under their native name of Langshans, direct from North China. These birds had black legs, with a crimson tinge, and were many of them much longer on the leg, and with fuller tails than the modern Cochin model, though greatly resembling some of the early importations. A portion were gladly used by black Cochin breeders, and worked a great improvement in the worn-out black stock, changing also the fashion in them to the natural colour of black legs. But many of the birds (not all) had the deep breast which the modern fancy Cochin so lacked; and Langshan breeders strenuously resisted this amalgamation. Any identity of race was even denied, with much more warmth than truth or knowledge; but the strong feeling on this point undoubtedly did good, in causing the maintenance, from the best specimens, of a full-breasted type of bird. An exact type is not fixed, and perhaps never may be; but in general the Langshan may be described as having a moderate length of leg, *scantily* feathered, a well-furnished tail carried rather high,

little fluff, a full and prominent breast, and a rather agile than lumpy outline. The aim should be to preserve a close and hard and glossy, rather than soft and downy plumage, which latter is always accompanied by a coarser skin. Thus, in the Langshan has been added to our list of breeds a fresh and hardy branch of the same great race, which may be bred to a better model in every table point, as well as being white in skin, as black fowls naturally are. So long as the chief points of utility are studied, it is to be hoped others may not be too rigidly defined. It is much to be regretted that some Langshan advocates, and professed Langshan judges, have on their side given preference to a gawky, weedy style of bird, which can only hinder every desirable object, and in its way is as misguided as the breastless ideal of the early Cochin breeders. We hope, however, that better judgment will in the end prevail; otherwise the result must be, as it was with the early Cochins, to spoil for table purposes what might have been a good fowl.

The *merits* of Cochins have already been hinted at. The chickens, though they feather slowly, are hardier than most other breeds, and will thrive where others would perish; they grow fast, and may be killed when twelve weeks old. The fowls will do well in very confined spaces, are very tame and easily domesticated, and seldom quarrel. They cannot fly, and a fence two feet high will effectually keep them within bounds. As sitters and mothers the hens are unsurpassed; though they are, unless cooped, apt to leave their chickens and lay again too soon for very early broods. Lastly, they are prolific layers, especially in winter, when eggs are most scarce.

Their *defects* are equally marked. The flesh is inferior to that of other breeds, though tolerably good when eaten young; there is, however, always a great absence of breast, which excludes the fowl from the market, and confines it to the family table. The leg, which contains most meat, is, however, providentially not so tough as in other breeds. The want of

breast is best overcome by crossing with the Dorking, the result being a very heavy and fairly proportioned table fowl which lays well, and is easily reared, but is still rather coares. The hen, excellent layer though she is, has also an irresistible inclination to sit after every dozen or score of eggs; and this is apt to be very troublesome, except where a regular and constant succession of chickens is desired, when it becomes a convenience, as broods can be hatched with the greatest regularity. Finally, this breed is peculiarly subject to a prejudicial fattening, which, if not guarded against by the avoidance of too much or too fattening food, will check laying, and even cause death.

Cochins are subject to an affection called white comb, consisting of an eruption on the comb and wattles much resembling powdered chalk, and which, if not dealt with in time, extends all over the body, causing the feathers to fall off. The causes are want of cleanliness, and of green food, chiefly the latter. This must, of course, be supplied, with an occasional dose of six grains of jalap to purge the bird; and the comb anointed with an ointment composed of four parts of cocoanut oil, two of powdered turmeric, and one of sulphur.

On the whole, this breed is little valued as a market fowl unless crossed with the Dorking or Crèvecœur; neither will it be found profitable where eggs are the sole consideration, and the hens cannot be allowed to indulge in their sitting propensities.

The Langshan is free from many of the above defects. Its meat is very fair, and there is a good breast if the model is good; it is fully as hardy, and on the average a better layer, while it does not sit so often. The foolish prejudice of English cooks in regard to black legs is against it, as it is against some of the best French fowls, but there are signs of this dying away.

The Langshan, having longer wings and a lighter make, requires a higher fence than will confine modern Cochins with perfect safety.

CHAPTER XV.

BRAHMAS.

It is unnecessary to say much about the origin of Brahmas. Exhaustive investigation has shown beyond doubt that the fowl, as imported into America, had an Indian and not Chinese origin, as alleged by Mr. Burnham for reasons of his own. Burnham states that he got even his own birds from Dr. Kerr; and Dr. Kerr *himself* stated that these came from Calcutta, though it suited Burnham to change this into Shanghai. On the other hand, there are too many marks of the same great race as the preceding about them for there to be any mistake on that score. That they are closely allied to Cochins is as certain as that there are many well-established differences both in make and disposition. Whether the Cochin, however, was modified by the Malay and other Indian breeds (which are strongly marked by the pea-comb) into the Brahma, or whether the more active Brahma was further quieted down and domesticated by the Chinese into the Cochin, cannot now be determined. The one thing certain is, that the fowl immediately sprang originally from the comparatively coarse and unformed "Chittagong" fowl still found about the Brahmapootra river, and which some think was a kind of amalgamation of Cochin, Malay, and Dorking. However this may be, some very fine specimens appear to have reached America in at least two importations, one to Dr. Kerr and another to a Mr. Cornish; and either from Mr. Cornish's alone, or from both, the Brahma has undoubtedly been bred, somewhat modified by selection, as with all our other races of fowls.

Ever since this magnificent breed was introduced, it has steadily become more and more popular, and is now one of the most favourite varieties. To prosper thus in the total absence of any poultry "mania," a breed must have real and substantial merits. Such Brahmas unquestionably have.

Their most marked peculiarity is in the comb, which is totally different from that of any other variety, except one or two which also hail from India or the Indian archipelago. It resembles *three* combs pressed into one. In a first-class cock, the effect is such as would be produced were a little comb, about a quarter of an inch in height, laid close to each side of his own proper comb, twice as high, the centre one being thus higher than the others. Each division of the comb ought to be straight and even, irregular or twisted combs being serious faults in a show-pen. In the hens, the comb is very small, but the triple character should be equally evident, and the formation is quite plain even when the chicks first break the shell. The comb should not rise high behind.

When first introduced, single-combed Brahmas were occasionally shown, but are now scarcely ever seen, and never take prizes.

The neck of a Brahma cock should be if possible fuller in hackle than a Cochin's, and flow well over very wide and flat shoulders. The saddle rises more, till it merges into a nearly upright tail spread more or less out laterally like a fan, and with more feather than a Cochin's. The breast is deep and full, coming down low—another point of difference. There is less fluff, and the whole plumage is close rather than loose, while the make and general habits are sprightly and active. Generally speaking, the Brahma is *square* rather than lumpy; otherwise there is a great deal of general resemblance, and the same remarks as to leg-feather and vulture-hocks apply. The size is about the same, but the highest weights recorded have been in Brahmas, several cocks having been weighed which scaled from $17\frac{1}{2}$ to $18\frac{1}{4}$ lbs.

There are two varieties of Brahmas exhibited, known as Dark and Light. The original birds were midway between them, but the breeds are now quite distinct, and are never crossed.

Light Brahmas are mainly white all over the body; but the cock's hackle should be sharply striped with black, and the saddle-feathers less so. The tail and inner flights are black. The leg-feather also has usually more or less black or grey in it. All over the plumage, though white on the surface, it will appear grey under, when the feathers are parted, giving an idea as if the grey or black was *in* the plumage and the white surface *on* it. In the hen, the hackle and spot where it falls between the shoulders are marked with black like the cock, but her cushion is white. Tail and inner flights and leg-feather as in the cock.

The great difficulty in breeding Light Brahmas is to get sufficient of the black marking, without getting black marks or splashes in undesirable places. There is a constant tendency to produce spotted backs in particular, the black, which seems to saturate the feather, having a tendency to break out on the surface. As a rule, pullets are best bred from hens with rather too dark hackles, and a cock sharply but slightly under-marked; cockerels from the reverse. Some birds have been shown evidently crossed with white Cochins; but the result is loose feather and fluff, and mossy hackles. It is to be regretted that some judges have given prizes to this model.

In Dark Brahma cocks the head is silvery white, running into a silvery-white hackle sharply striped with black. The breast, under parts, and fluff are dense black for exhibition. At one time the breast might be mottled with small white spots, and this marking is most valuable for pullet-breeding; but fashion is now against it, as it also is against any white margin to the feathers of the fluff, which is also valuable for breeding pullets. The back is white, with a little black marking between the shoulders; saddle-feathers silvery white, striped with black; tail coverts more and more filled up with dense green black as they approach the tail, which is glossy green-black. The shoulders of the wings are silvery white, with

more or less of black run through it; secondaries white on outer web, and partially black on inner web; the coverts form a glossy green-black bar across the wing. Clearness of the white, and sharpness and density of black, are the chief points; and straw-colour, or any stain of brown or red, are great blemishes. At one time some brown was valued for breeding dark pullets, but careful breeding has now got rid of it or its necessity.

The pullets or hens also have silvery hackles, thickly striped in the middle with black. The rest of the plumage is a ground of lightish iron-grey, marked or pencilled over with what may range from darker grey to glossy black. (See plate of Feathers, Nos. 6, 7, 8). It is particularly necessary in a show-bird that the breast should be pencilled over as closely and almost as darkly as the back, and this is now general, though when this work was first written it was the rare exception. The leg-feather should be pencilled like the body, and also the fluff, if possible.

It is curious to observe that there have been considerable changes of fashion in the colour and marking of Dark Brahmas. In the cock, the change has already been alluded to. In the hens, there were formerly two schools of breeders only, one following Mr. Boyle, which sought a pure steel-grey colour; the other led by Mr. Lacy, which bred for a brown ground, though far more pale than in Partridge Cochins. Gradually the latter school lost ground, and it was recognised that the colour should be pure grey. Still later there came in a rage for very broad and dense *black* bands on a slightly brownish ground, the effect being very rich, though most of the birds shown thus were poor in size and shape, and never ought to have been encouraged for that reason alone. It seems now generally admitted that the proper colour for all Brahmas is *pure* white, black, or grey, and the hens are now sought of a nice medium colour, the pencilling as dark as it is possible to get it, and moderately fine, on a dirty grey ground.

For breeding cocks, perfectly black-breasted ones are essential. The whole under parts must be dense in colour, and the hackles pure in colour, straw-colour being both a great fault and strongly hereditary. The pullets or hens must have sharply-striped rather than very dark hackles, and the darker they are in reason the better. For pullet-breeding, the hens or pullets must have good *dark* hackles, every breast-feather (and the rest too) be thoroughly well pencilled, "filled up" over the feather, and free from any streakiness. But the cock must be particularly selected as known to be *bred* from such a hen as this. Such cocks very often have a small white spot on the end of each breast-feather, and a slight white edging to the fluff; such are generally valuable, and often breed the best-marked birds, but they *must* have good broad black stripes in their neck and saddle-hackles. If well descended as above, however, good black-breasted exhibition cocks may also be found to breed good pullets;* but the hackles are essential.

The ear-lobes are red, and should fall below the wattles in both breeds. And it is a great matter, so far as appearance goes, that the head and beak be short and not long, and with a

* A striking example of this may be mentioned in a cockerel, bred by ourselves, which won the Crystal Palace and Birmingham cups in 1874, and was perfectly black-breasted. Claimed at the latter show by Messrs. Newnham and Manby, this bird was the progenitor of a large number of pullets, perhaps the finest as a lot ever bred by one individual, and whose blood is to be found, we believe, in all the winning strains of pullets down even to the present day. The same was the case with Mrs. Hurt's noble strain, from which half the blood of the above bird was derived. On the other hand, the excellence of the same mixture of blood as regards exhibition cockerels may be judged not only from the specimen referred to, but from the fact that another cockerel of nearly the same breeding, purchased from the produce of a sitting of eggs sold by us, was the chief progenitor of Mr. Lingwood's celebrated strain of cockerels, for years pre-eminent at the leading shows.

gentle though lively expression. The legs are yellow in the Light breed and in Dark cocks, slightly dusky yellow in the Dark hens.

The economic merits of Brahmas are very high. When not spoilt by breeding for exhibition, the pullets and hens are capital layers, several instances being recorded in the earlier days, and we ourselves having had two instances, of hens which have laid over 200 eggs in a year. This, however, is very unusual. They do not sit so often as Cochins when pure bred, usually laying from twenty-five to forty eggs first. Both fowls and chickens are hardy, and grow very fast, being early ready for table. The pure race is also white or pinky, not yellow in skin, and white in flesh; in fact, the race when unspoilt compares almost exactly in the same way as the Langshan with the modern Cochin, including the point of a deep breast. Brahmas bear confinement quite as well as Cochins, being, however, far more sprightly, and less liable on that account to prejudicial internal fattening.

Unfortunately, the extreme care in breeding for marking during late years has very much impaired the laying qualities of many exhibition strains, and also their constitution. It is still more to be regretted, that an ignorant imitation of the Cochin model has impaired to some extent the table qualities, the loose lumpy plumage bringing coarse skin and coarse flesh, and the want of breast losing one of the characteristic points of the fowl. There are breeders and judges who adhere to the old model, and it cannot be too much insisted upon. At the best, however, the flesh, though superior to that of the Cochin, is much inferior after six months to that of the Dorking, and the pure breed is not, therefore, a good market fowl. A cross with Houdan, Crève, or Dorking produces, however, magnificent birds, hardy as hardy can be, of most rapid growth, and carrying immense quantities of meat. Such crosses should always have the attention of the market raiser who does not succeed with pure Dorkings.

CHAPTER XVI.

MALAYS.

The Malay was the first introduced of the gigantic Asiatic breeds, and in stature exceeds that of any yet known. The cock weighs, or should weigh, from nine to eleven pounds, and when fully grown should stand two feet six inches high. But the general size of this breed has of late greatly deteriorated.

In form and make Malays are as different from Cochins as can well be. They are exceedingly long in the neck and legs, and the carriage is so upright that the back forms a steep incline. The wings are carried high, and project very much at the shoulders. Towards the tail, on the contrary, the body becomes narrow—the conformation being thus exactly opposite to that of the Shanghai. The tail is small, and that of the cock droops. The back is convex in profile, unlike that of most other breeds, so that the back of the neck, the back, and the tail, form a series of three nearly similar convex curves, inclined at an angle. These curves and the projecting shoulders are the most characteristic points; and when these are good, prizes usually go to the fowls which are longest in shank and thigh, in which some are enormous.

The plumage is very close, firm, and glossy, more so than that of any other breed, and giving to the bird a peculiar lustre when viewed in the light. The feathers are also unusually *narrow*. Off the point of the prominent breast-bone the plumage generally disappears from friction. The colours vary very much. Pure white is very beautiful, but the most usual is that well known under the title of black-breasted red game. The legs are yellow, but quite naked, and remarkably large in the pattern of the scales.

The head and beak are long, the latter being rather hooked. Comb a sort of lump, covered with small prominences like

warts. There is a manifest tendency to produce pea-combs when small in size, pointing clearly to a possible influence on the Brahma, and to relationship with India Game fowls. The wattles and deaf-ears are small, the eyes yellow or white, with very prominent eyebrows overhanging the eye, making the top of the head very broad, and giving a sour or cruel expression, which is added to by the naked and snaky appearance of the head and throat. This is not belied by the real character of the breed, which is most ferocious, even more so than Game fowls, though inferior to the latter in real courage.

Malays are subject to an evil habit of eating each other's feathers, a propensity which often occurs in close confinement, and can only be cured by turning them on to a grass-run of tolerable extent, and giving plenty of lettuce, with an occasional purgative.

The chickens are delicate, but the adult birds are hardy enough. They appear especially adapted to courts and alleys, and may not unfrequently be seen in such localities in London.

The principal merit of Malays is as table fowls. Skinny as they appear, the breast, wings, and merrythought together carry more meat than those of most other breeds; and, when under a year old, of very good quality and flavour. They also make good crosses with several breeds. Mated with the Dorking they produce splendid fowls for the table, which also lay well; and with the Spanish, though both parents are long-legged, the result is usually a moderately-legged bird of peculiar beauty in the plumage, good for the table, and, if a hen, a good sitter and mother. They have also been extensively crossed with the English Game fowl, in order to increase the strength, size, ferocity, and hardness of feather.

The great drawback of Malays is their abominably quarrelsome disposition, which becomes worse the more they are con-

fined. The hens are also inferior as layers to most other breeds; and on these accounts the pure strain is not adapted to general use, though useful in giving weight and good "wings" to other varieties of fowl.

CHAPTER XVII.

GAME.

This is the celebrated race of fowls, bred from time immemorial for the purposes of the cock-pit, and in which courage was so developed by the severe selection of combat, that a breed was finally obtained which did not know how to yield. Happily cock-fighting in Europe is now a thing of the past, except amongst a very few who carry on their cruel sport upon the sly; but it is very interesting to notice that this cessation of the old purpose for which it was bred has worked gradually a very great change in the shape and formation of the Game fowl.

The modern exhibition race is very different in many respects from the old fighting race. The old fowl was moderately short on the leg, not very long in the neck, not particularly short in feather, and with a rather large fanned and spreading tail, carried tolerably high. All these points have been changed.

As now bred for exhibition, the head and beak of the cock should be rather long, but strong at the base of the bill; eyes rather prominent, and the red skin smooth and fine, giving a snaky look to the head. The ears must be red. Neck rather long, with hackles as short as possible, very little spreading on the shoulders, if at all. Back to be flat and wide between shoulders, narrowing regularly to the tail; and breast correspondingly broad and full, and stern narrow, the whole body rather resembling in shape a short fir-cone with the point for

the stern, which must be carried well above the hocks, not let down between them. Saddle hackles close and short; tail narrow and rather short in the sickle feathers, which should be rather together, or a whip-tail as it is called, each one just about clearing its neighbour, but not spread more, very moderately raised. Wings strong and not too long, carried "free," with points covering the thighs. Legs and thighs are now desired *long*, the shins neither very flat (flat-shinned) nor very convex, but medium convexity. Shanks cleanly scaled, and set on firmly. Spurs low, feet flat, with toes well spread out down on the ground, the hind toe particularly coming well out flat; for it to spring high, and drop to the ground behind, is being "duck-footed." The whole body when felt or "handled" to feel as hard as a board nearly. The hen is of the same make in proportion. The lowering brow and prominent shoulders of the Malay must be particularly avoided.

The four principal colours now seen at exhibitions are known as Black-breasted Reds, Brown-breasted Reds, Duckwings, and Piles.

In the Black-red cocks the colour is as follows:—The hackles of the head and neck are bright orange-red, the saddle-hackles being about the same colour; the back, wing-bow, and shoulder coverts rich crimson or claret, shading off into orange on the saddle. The breast, thighs, and under parts dense black, the wing-bar and tail black with steel-blue reflections. The secondaries of the wings clear bay, with a black spot on the ends. The most difficult point is to get the bright colour without any brown or rust among the black of the under parts. Darker and duller reds are much more free from this fault, but not so much valued in the show-pen. The hen has a golden hackle striped with black; the breast salmon-red or reddish-fawn, shading off to ashy-grey on the thighs; back, wings, and upper feathers of tail brown, covered over with small partridge marking, free from coarse pencilling. The difficulty

here is to keep free from red or foxy colour, or patches, especially on the wings. The legs in both sexes are willow or olive; eyes, bright red.

There is a sub-breed much used in breeding Black-red game, called Wheaten game. The colour is confined to the hens, and consists mainly in a lighter breast—very pale fawn or cream-colour, and the rest of the body a reddish fawn, resembling the skin of red wheat. This colour is bred by the lighter-coloured cocks, and hence is used to breed brighter colours when the cockerels are getting too dark. But with long careful breeding among the Black-reds themselves these variations have become less, and the Wheaten is gradually dying out.

In Brown-reds, the modern cocks are now sought with lemon-coloured hackles striped with black; back and shoulder coverts also lemon with a black centre; breast, each feather laced with gold or lemon on a black ground, and the shaft of the feather also showing gold. Another colour is similar, but the marking is darkish orange rather than lemon. Formerly the lacing on the breast was dispensed with. In hens, the hackle should be black edged with bright lemon, and the rest a bright greenish-black, laced with lemon on the breast only. Hens without lacing—all black except the hackles—formerly were fashionable, and are sometimes shown still; but the lacing is preferred. The legs should be extremely dark willow, almost black; the eyes very dark brown, almost black; the faces a very dark purple or gipsy colour, red faces being almost disqualification in practice. There is a sort of strong *dark blood*, in fact, running through the whole bird.

Duckwings are very handsome birds. The cock's face is bright red, head white, hackle verging more to a straw colour lower down; saddle hackles straw or yellowish; back, wing-bow, and shoulder-coverts rich gold or light orange; bright steel-blue bar across the wing; breast and under parts black The hen's head is silvery grey; hackle silver grey striped with

black; breast salmon, shading off to grey on thighs; rest of plumage generally, a silvery grey, evenly pencilled over with darker grey, total effect being a beautiful silvery or frosted kind of grey. The legs of both sexes are willow; eyes bright red.

This breed—at present at least—is occasionally bred with the Black-red, putting one of the brightest-coloured Black-red cocks to Duckwing hens. Occasionally also a Duckwing cock is put to a Wheaten hen. The Black-red cross used to be employed very frequently, and the result was more crimson or claret-colour in the backs of the cocks than is tolerated now. At present the best breeders consider once in half-a-dozen years quite enough for a Black-red cross, which is chiefly used for hardness of feather; and the probability is that ultimately it will be entirely abandoned, and the birds bred true.

There has, in fact, always been a true breed, called "Silver" Duckwings, which were never crossed. In this pretty variety the cock's hackles and light parts are clear white, free from straw, and the breast a purer or brighter black; the hen resembles the usual Duckwing, except for rather a purer or more silvery colour. There is no doubt the ordinary Duckwings arose from crossing this breed with the Black-reds; and as the Duckwings are bred more and more without Black-red aid, the tendency will be, as it has been, to return to the pristine purity of colour, or rather freedom from colour, and predominance of pure black, white, and grey shades.

Pile game may briefly be described as in general Black-reds, with *white* substituted for *black*, but the red colours as before. It is well known that black and white are convertible colours, so that many black Cochins were originally bred from whites, and white Minorcas have been bred from blacks. Hence the Pile cock has the same colour on his wing, but a *white* bar; and hackles that would be slightly marked with black are marked with white instead, though this is disliked just as

black is in the Black-red hackle. Generally a very little black or coloured ticking runs through the white, and is not objected to. Yellow legs are the colour for Piles; and light willow are also shown, but not liked so well. Once white legs were fashionable, but are now most unpopular of all, which is rather a pity, as the white-legged strains (also known in Black-reds) were the finest in flesh of all the Game varieties.

Piles have to be occasionally crossed from the Black-red to keep up the colour; but all the Black-red chickens from such a cross should be destroyed, as they are of little value, and corrupt the Black-red blood, which it is so important to nearly all other varieties should be kept pure.

There are many other varieties seen occasionally, but not often, and chiefly kept alive by clandestine cock-fighters. A breed called Henny Game is peculiar for the cock being feathered like the hen in tail and hackles. It is large, and rather solidly built. Whites, blacks, blacks with brassy (or yellow-marked) wings, and Silver Birchens (the cock like the Silver Duckwing, the hen a dark dirty grey) are still occasionally shown, but very rarely.

INDIAN GAME have very recently become rather popular. They are often called Aseels, and are perhaps the most stubborn fighters of any poultry now known, so that it is very difficult to keep even two hens together. In many general points these birds somewhat resemble the Malay, but have regular pea-combs. They are also much shorter on the leg, have more rounded and less sharp shoulders, and are altogether more symmetrical, the whole formation evidently packing the greatest possible amount of hard muscle, which stands out in masses or knots, into the smallest space. The apparent weight of these birds for their size is enormous. The plumage is particularly dense and glossy.

Game cocks are generally "dubbed," or have the comb and wattles cut off close to the head with shears, at about six

months old—the right age is when these appendages have ceased to grow. Of late an agitation has commenced against the practice, and the Society for Preventing Cruelty to Animals has obtained convictions against it as cruelty. It is not improbable that, as the fowls are bred for generations purely for the show-pen, without any reference to fighting, the necessity for dubbing may gradually die out. But at present, all who actually breed the fowls consider it necessary; and it is indeed almost impossible to keep them without it, unless every cockerel can be kept separate, which is difficult, owing to their great flying capabilities. If they do meet, as a Game cock is so built that he strikes with his spur wherever he holds with his beak, the result to an undubbed bird is either death or terrible suffering, as has been proved over and over again, even from a very few seconds' encounter; whereas dubbed ones can generally be separated before much injury is done. In these circumstances, hot abuse of the practice by those who know nothing about the matter shows more zeal than discretion. The time may however come, from the reason stated, when dubbing may no longer be necessary.

The Game fowl is not devoid of solid economic merits. While some varieties are poor layers, others—and especially Black-reds—often lay remarkably well, though the eggs are rather small. As sitters and mothers, no fowls equal them. They will not stand much interference, except from persons quite familiar; but neither do they need it, and they will defend their broods against any foe. And for fineness of flesh and delicacy of flavour they are unrivalled, while there is far more meat on them than would be thought, owing to the large and *broad* breast. They will not fatten, being too active in temperament; but if well fed, and eaten just as they are, they resemble a pheasant more than anything else, while they do not require very much food. For these reasons they are often crossed with Dorkings (both ways), and some of the finest quality

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DUCKWING GAME.
PILE GAME.

GREY DORKINGS.

BLACK-RED GAME.

of table-fowls ever seen have resulted from this cross, though "all round" it is hardly as remunerative as others. The modern long-legged Game fowl is far less valuable as a table-fowl or table cross than the older-fashioned, more squat form of bird; and so far the change in style is to be regretted.

On the other hand, both fowls and eggs are rather small, and it need hardly be said that so pugnacious a breed is not adapted for confinement. It will suit some farmers and many country gentlemen, but, on the whole, is not a breed for domestic purposes, or except as a cross for those whose object is to supply the market with table-birds.

CHAPTER XVIII.

DORKINGS.

THIS is a pre-eminently English breed of fowls, and is, as it always will be, a general favourite, especially with lady fanciers. The general predilection of the fair sex for Dorkings may be easily accounted for, not only by the great beauty of all the varieties, but even more, perhaps, by their unrivalled qualities as table-birds—a point in which ladies may be easily supposed to feel a peculiar interest.

The varieties of Dorkings usually recognised are the Grey or Coloured, Silver-grey, and White. We believe the White to be the original breed, from which the Coloured varieties were produced by crossing with the old Sussex or some other large-coloured fowl. That such was the case is almost proved by the fact, that some years ago nothing was more uncertain than the appearance of the fifth toe in Coloured chickens, even of the best strains. Such uncertainty in any important point is always an indication of mixed blood; and that it was so in this case is shown by the result of long and careful breeding, which has now rendered the fifth toe permanent, and finally established the variety.

In no breed is size, form, and weight so much regarded in judging the merits of a pen. The body should be deep and full, the breast being protuberant and plump, especially in the cock, whose breast, as viewed sideways, ought to form a right angle with the lower part of his body. Both back and breast must be broad, the latter showing no approach to hollowness, and the entire general make full and plump, but neat and compact. Hence a good bird should weigh more than it appears to do. A cock which weighed less than 10 lbs., or a hen under 8½ lbs., would stand a poor chance at a first-class show; and cocks have been shown weighing over 14 lbs. This refers to the Coloured variety. White Dorkings have degenerated, and are somewhat less.

The legs should be white, with perhaps a slight rosy tinge; and it is imperative that each foot exhibits behind the well-known double toe perfectly developed, but not running into monstrosities of any kind, as it is rather prone to do. An excessively large toe or a triple toe, or the fifth toe being some distance above the ordinary one, or the cock's spurs turning outward instead of inward, would be glaring faults in a show-bird.

The comb may, in Coloured birds, be either single or double, but all in one pen must match. The single comb of a cock should be large and perfectly erect. White Dorkings should have double or rose combs, broad in front at the beak, and ending in a raised point behind, with no hollow in the centre.

In the grey or Coloured variety the colour is not absolutely uniform, and formerly many colours were shown, the cock's breast being sometimes black and sometimes speckled, with more or less colour on his back and sides, and lighter or darker hackles. On the other hand, hens were shown of a kind of red speckle all over, and also a grey speckle, as well as darker. From such the birds were termed "grey" Dorkings, and they were not so large as those shown now. In or about

the year 1858, Mr. John Douglas, then in charge of the Duke of Newcastle's aviaries at Clumber, crossed the English breed with a cock from India. This bird was not a Cochin or Malay, as often alleged, but of distinctly Dorking type in everything but the fifth toe, and was probably the result of some Dorking cross in India on some Asiatic bird unknown. He was very large, and the progeny was on an average at least two pounds heavier than the old English stock, and much more uniform in plumage, the hens being very dark, verging in parts upon a brownish-black, with robin breasts, and the cocks more black-breasted. Few had not the fifth toe, and all soon came true in that respect; and this cross has now influenced all the exhibition stock, greatly increasing the size and hardiness of the fowls, without losing any important point, except, perhaps, in one exception: that is, that with the habitual dark colour has crept in a dark or sooty foot, and even leg. There is no evidence that this is due to the cross, for the cross with even Cochins does not tend to dark legs, though it often does to yellow ones; and the first results, when the cross was strongest, were not dark-legged; it is simply that very dark colour tends to produce dark legs in all fowls, and this is by no means inconsistent with white skin and meat. But dark legs do look out of place, to say the least, in a Dorking; and of late there has been a disposition in some quarters to lay more stress on the colour of the legs and feet, even at the expense of some size, and to return to more variety in plumage. That the Coloured Dorking ought to be judged as a table-fowl chiefly is undoubted, and acknowledged by all; but some judges lay more stress upon the colour of the legs, as against the greater size and dark plumage preferred by others.

In the Silver-grey Dorking, however, colour is imperative. This variety, there is not the slightest doubt, was at first a chance offshoot from the preceding, but has been perpetuated by careful breeding. The Silver-grey colour is as follows:—

cock's breast a pure and perfect black; tail and larger coverts also black, with metallic reflections; head, hackle, back, and saddle-feathers, pure silvery white; and the wing also white, showing up well a sharply-marked and brilliant bar of black across the middle. A single white feather in the tail would be fatal. Hen's breast salmon-red, shading into grey at the thighs; head and neck silvery white striped with black; back "silver grey," or fine dark grey pencilling upon light grey ground, the white of the quill showing as a slight streak down the centre of each feather; wings also grey, with no shade of red; tail dark grey, passing into black in the inside. The general appearance of both birds should be extremely clean and aristocratic.

The White birds should be what their name implies—a clear, pure, and perfect white. There is generally in the cock more or less tendency to straw or cream colour on the back and wings, and we would by no means disqualify a really first-class bird in all other points on account of it; but it is decidedly a fault. White Dorkings are usually much smaller than the Coloured, which we believe to have hindered the popularity of this truly exquisite variety. This defect might be easily remedied by crossing with the large Coloured Dorking, and then breeding back; and on a visit to Linton Park we once saw the experiment fairly commenced, with every prospect of success. A good White cock had been mated with some light-coloured hens, and out of the progeny there appeared six or seven pure white chickens, of very great merit. Two cockerels attracted our special attention; they were not six months old when we saw them, but they were fully up to the Coloured Dorking standard of size, and we have not the slightest doubt, when full grown, would weigh at least 12 lbs. each, whilst in colour they were quite equal to their parent. We commend this method of increasing the size to all White Dorking fanciers, as far superior to the cross with Game fowls, which has been

resorted to with the result of producing narrow, long-legged birds, with a tendency to narrow and even single combs. We have also known a cross with White Cochins tried; but the produce of such almost always loses the true Dorking character, and especially is apt to acquire a thick skin. It deserves remark, however, that when shown in a class with other colours, White Dorkings always appear smaller than they really are, and have repeatedly proved *heavier* than Silver-greys, which the judge has preferred solely on account of their *apparent* extra size.

Cuckoo-coloured Dorkings are sometimes shown, and have even had classes now and then, but are almost always small, and weedy in shape.

Dorkings degenerate from in-breeding more than most fowls, and therefore require more change in blood. If over-fed, they also suffer more than many from exhibition; but this fault and its effects are far less common now than formerly.

These fowls are peculiarly subject to what is called "bumble-foot," a tumour or abscess in the ball of the foot. It appears to be mysteriously connected with the fifth toe, according to a law discovered by Mr. Darwin, that "excess of structure is often accompanied by weakness of function." It can often be removed surgically, and the wound dressed with lunar caustic, without coming again: other cases are more obstinate and seem to resist all treatment. We think on the whole it is less general than formerly.

The great merit of Dorkings has already been hinted at, and consists in their unrivalled excellence as table-fowls. In this respect we never expect to see them surpassed. The meat is not only abundant and of good quality, surpassing any other English breed except Game, but is produced in greatest quantity in the choicest parts—breast, merrythought, and wings. Add to this, that no breed is so easily got into good condition for the table, and enough has been said to justify the popularity

of this beautiful English fowl. It should also be noted that the hen is a most exemplary sitter and mother; and, remaining longer with the chickens than most other varieties, is peculiarly suitable for hatching early broods.

The Dorking is not, however, a good layer, except when very young; and in winter is even decidedly bad in this respect. The chickens are also of delicate constitution when bred in confinement, and a few weeks of cold wet weather will sometimes carry off nearly a whole brood. But it is only right to say that when allowed unlimited range the breed appears hardy, and as easy to rear as any other, if not hatched too soon. At Linton Park, the chickens were all left with the hens at night, under coops entirely open in the front; and grew up in perfect health, whilst the old birds frequently roosted in the trees. It is in confinement or on wet soils that they suffer; and the only way of keeping them successfully in such circumstances is to pay the strictest attention to cleanliness and drainage, and to give them some *fresh turf* every day, in addition to other vegetable food. With these precautions, prize Dorkings have been reared in gravelled yards not containing more than 300 square feet.

In fine, the breed is most valuable for the market, or as a general fowl, on a wide and well-drained range. But we cannot recommend it to supply the table with eggs, or as a profitable fowl to be kept in a limited space.

CHAPTER XIX.

SPANISH, MINORCAS, ETC.

UNLIKE almost all other varieties, there really appears some reason for believing that this breed of fowls did originate, or at all events come to us, from Spain. It has, however, been long known and valued by amateurs in this country, and perhaps

no other is so generally popular. This is no doubt partly owing to their truly aristocratic and haughty appearance, but no less also their unrivalled large white eggs, which exceed in weight those of any other breed, except the lately introduced La Flèche, and are always sought after for the breakfast-table.

Of all the varieties of this breed now known, the white-faced Black Spanish is the only one for which a special class is reserved at all poultry exhibitions; all others having often to be shown in the class "for any other variety." Of this truly beautiful breed the following description has been given us, and subsequently carefully revised by the late Mr. H. Lane of Bristol, well known for his magnificent strain, and who during his career probably took more first prizes with his birds than any other breeder within a similar period :—

"The general carriage of Spanish fowls is of great importance. The cock especially should carry himself very stately and upright, the breast well projecting, and a tail standing well up, but not carried forward as in some birds. The sickle-feathers should be perfect and fully developed, and the whole plumage a dense jet black, with glossy reflections in the light. The hen should be equally dense in colour, but is much less glossy. Any white or speckled feathers, which now and then occur, are fatal faults.

"The legs should be blue or dark lead-colour; any approach to white is decidedly bad.* The legs in both sexes are long, but the fowl should be nevertheless plump and heavy. I consider a good cock for exhibition ought not to weigh under seven pounds: the hen a pound less; and I have had several excellent cocks which weighed eight pounds each. All Spanish fowls in really good condition are heavier than they appear to be.

* It is singular that the old fanciers imperatively required these identical *bluish-white* legs in prize birds; and legs of too dark a tint were often put in *poultices* to make them light enough!

"The comb must be very large in both sexes, and of a bright vermilion colour. That of the hen should fall completely over on one side, but the cock's comb must be *perfectly* upright, the slightest approach to falling over being fatal to him at a good show. The indentations also should be regular and even, and the whole comb, though very large, quite free from any appearance of coarseness. Any sign of a twist in front is a great fault.

"The most important point, however, is the white face. This should extend as high as possible over the eye, and be as wide and deep as possible. At the top, it should be nearly arched in shape, approaching the bottom of the comb as nearly as possible, and reaching sideways to the ear-lobes and wattles, meeting also under the throat. In texture the face ought to be as fine and smooth as possible. The ears are large and pendulous, and should be as white as the face. Any fowl with red specks in the face has not the slightest chance.

"With regard to Spanish fowls as layers, the pullets will generally lay when six months old, and I seldom get less than five or six eggs a week from each. My house is warmed,* which has of course some influence on a breed so delicate; but with this artificial aid, I find my pullets lay throughout the winter, as above.

"The great thing with the chickens is to keep them out of the damp. They scarcely ever get roup; but if not kept dry die away rapidly no one knows how. They ought not, therefore, as a rule, to be hatched very early in the year, and one cock ought not to be allowed more than three hens, as the eggs are less fertile than those of most other breeds."

The following additional remarks on this fowl are compiled from information furnished us by various amateurs.

Spanish are judged most of all by the quantity and quality

* For plan and description of Mr. Lane's establishment, see Chap. X.

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GOLDEN-SPANGLED POLISH. SPANISH. WHITE-CRESTED BLACK POLISH.

of the "face." This may be very large, and yet rough and warty; this is disliked and is apt to close up the eyes. Most of the very largest-faced birds are apt to be rather rough, and the best are usually bred by crossing these with rather smaller, but smoother faces. The ear-lobes should be open and flat, with as little folding or duplicature as possible. The texture desired is like that of fine white kid, as free as possible from little black feathers or hairs. These are generally pulled out with tweezers, which improves the appearance much; and after much resistance, this practice has become universally recognised, and is no longer considered fraudulent; but almost as this edition goes to press there has set in a fresh reaction against it, and a few classes for "untrimmed Spanish" have been tried, so that the question is again to some extent an open one.

As in all other black fowls, coloured or even white feathers will occasionally happen. Such birds are hopeless to exhibit, and decidedly bad to breed from.

That the comb of the cock should be absolutely erect is most important; and as, owing to its great size, it is rather apt to fall over, many breeders, to secure this, place light wire frames, or "cages," over them, as soon as sufficiently developed to hold the wire in place; the combs are thus grown straight like cucumbers! But there will rarely be need for this if the breeding-stock be of good constitution. The hens selected for breeding should therefore be carefully chosen with good *thick* combs, which spring up with some arch before they fall over the side of the head. Hens with combs that fall dead over will rarely breed strong-combed cockerels. The comb of both sexes should, however, get thin at the edge, or it will appear heavy and clumsy.

Mr. Lane has alluded to the delicacy of the chickens. During feathering, which is in this breed a very slow process, they require special care and most generous diet, or few will

be reared. When full-grown, however, they are a tolerably hardy fowl altogether, but always suffer much in moulting, and during very cold or damp weather.

In no breed is purity of race of so much importance as in this; and in introducing a fresh cock it is especially needful to see that both his appearance and his pedigree are quite satisfactory. One of the most eminent breeders in England once informed us that all his chickens of the season had been ruined by the introduction of a fresh cock, whose face when purchased appeared perfectly white, but who had imported more or less stain into every chicken hatched from him. There can be no doubt, however, that too close interbreeding has greatly injured the Spanish fowl, and that both size, constitution, and prolificacy have been somewhat sacrificed to the white face alone. Such a result is to be regretted; and as it is now becoming generally acknowledged and deplored, we may hope that it is not yet too late to get back some of the size and hardihood of the Spanish fowl as formerly known.

It is well to observe that exposure to rough or cold winds will often bring out red in even good white faces. In such cases shelter by high walls, and shutting up for the last few days in a rather dimly-lighted shed, will generally put matters right; but this shutting-up business has been greatly overdone by many exhibitors. The face is also very apt to be attacked by a sort of scab or eruption, especially when the fowls are in high condition. The best preventive is to keep the fowls slightly thin (Spanish show much better in such condition), with the bowels gently open, giving if necessary a pinch of Epsom salts occasionally, and to bathe the faces gently several times a week with lukewarm milk and water, drying carefully after, and dusting on some powdered oxide of zinc to prevent moisture. Of course every sign of powder must be wiped off before exhibition. For scabs actually formed, sulphurous acid

is the best application, with an occasional aperient dose of the salts.

Chickens that rather slowly develop bluish faces usually turn out the best in the end; but few breeds are so uncertain as to the ultimate quality.

Birds of the same general character abound more or less all round the Mediterranean. The other varieties known to exhibitors and breeders are mentioned in order as follows :—

MINORCAS.—This breed resembles in comb, ears, shape, and colour of plumage, the white-faced breed, but considerably surpasses it in size; and, on an average, we consider the comb more largely developed; the legs are also shorter. A good cock ought to weigh from eight to nine pounds. It is the best layer of all the Spanish breeds, except, perhaps, the Andalusian, and the chickens are tolerably hardy. It is a great favourite in the West of England, and deserves to be more widely cultivated, as it far surpasses the preceding in everything except the white face. This is red, as in other fowls, round the eye, but with a large and pendulous white deaf-ear. Prizes are now often offered for special classes of Minorcas, which are much better known than they used to be.

We think it would be well worth while to try the effect of throwing a cross of this breed into its more aristocratic relative. The *hen* should be selected for the cross, of course—not only to avoid the risk of contaminating a whole strain by the experiment, but because it is chiefly size and constitution that are wanted, while the red face must be as speedily as possible "bred out" again. Let a fine Minorca hen, therefore, be put with a good white-faced cock, and her eggs carefully kept apart. When hatched, let one or two of the *pullets* only which show most size and constitution be again reserved, and mated with another good cock of a different family, and so on. We have never seen the experiment tried, but believe

a few years of this system would breed good white-faced birds, far superior in size and stamina to any of the existing strains.

There are also white Minorcas, which resemble the preceding in all except that the plumage is white, and very often the legs are white also. They are probably sports from the black, and have similar qualities.

ANDALUSIANS.—These must be considered truly useful and handsome fowls, being, according to general testimony, the hardiest of all the Spanish breeds. The plumage is slaty-blue, in many specimens slightly laced with a darker shade, but the neck hackles and tail feathers are almost glossy black, and harmonise very richly with the rest. Ears white and face red, as in the Minorca. Unlike other Spanish chickens, these are very hardy, and feather rapidly and well, which gives them a great advantage. This breed appears each year to increase the number of its admirers, and has for some years attained also a class of its own at many of the great shows. It is probably due to a cross of white and black, which in all poultry occasionally produces this slaty colour. Red, white, or black feathers are the most tiresome faults. It is an excellent layer.

ANCONAS.—Mottled all over, or what is called "cuckoo" colour, and look rather pretty. In all other points they resemble Minorcas, being, however, of a smaller size.

LEGHORNS.—These undoubtedly belong to the same great Mediterranean race, but will be treated of in the chapter upon American breeds.

Spanish fowls of any kind are very little subject to roup, at least in any marked or specific form, but suffer exceedingly from cold or wet. Severe frost especially often attacks the comb and wattles, and if the bird in this state be not attended to, it will be disfigured for life. The proper treatment is to rub the affected parts with snow or cold water, exactly as in the human subject, but not on any account to take the frost-bitten bird into a warm room until recovered. The fowls are

also very long over their moult, and need special care and nourishing food at this season.

They are also liable to a peculiar disease called "black rot." The symptoms are a blackening of the comb, swelling of the legs and feet, and general wasting of the system. It can only be cured in the earlier stages by frequent doses of salts, to keep up purging, at the same time giving freely strong ale or other stimulants, with warm and nourishing food.

Another singular disease occasionally occurring in this fowl has never, we believe, had any name given to it; but the symptom is the occurrence, in rapid succession, of bladders under the skin, which contain, however, nothing but air. We believe the cause to be debility: at least, nourishing and stimulating food, and pricking each vesicle as it rises, will generally effect a cure.

The merit of Spanish fowls is their production of large white eggs, which are laid in great abundance in moderate weather. They are also of fair quality as table-birds, though the meat is a little "short" and dry in flavour. But they cannot be called good winter layers, unless with the aid of artificial heat; and their delicacy of constitution is a great drawback to their otherwise many merits. We believe, however, that fanciers have this point much in their own hands. In spite of such a fault, wherever large eggs are valued or desired, the Spanish will always be regarded as a most useful and profitable fowl—the Minorca or Andalusian being the best regarded from this point.

Hampers for sending any variety of the Spanish race ought to be unusually well lined. Mr. Lane always lined his with flannel. If this precaution be neglected, a severe night on the journey may shrivel the birds and their chances up to nothing.

CHAPTER XX.

HAMBURGHS.

UNDER the name of Hamburghs are now collected several varieties of fowls, presenting the general characteristics of rather small size, brilliant rose combs, ending in a spike behind, projecting upwards, blue legs, and beautiful plumage. None of the Hamburghs ever show any disposition to sit, except very rarely in a state of great freedom; but lay nearly every day all through the year, except during the moulting season, whence they used to be called "Dutch every-day layers."

It is not our province to enter into the question of the origin of the different breeds of Hamburghs. There can be no doubt that the usual classification into simply spangled and pencilled is not sufficient to mark the distinct varieties that exist; but our duty is to take the classes as we find them, and describe them as they are now recognised at the leading shows; paying special attention to the plumage, as exactness of marking is of more importance in this than in almost any other breed. In so doing we are glad to acknowledge the assistance of Mr. Henry Beldon, who has bred these beautiful varieties more extensively, and takes more prizes with them, than any one else in the kingdom.

SILVER-PENCILLED.—The size of this exquisite breed is small, but the shape of both cock and hen peculiarly graceful and sprightly. Carriage of the cock very conceited, the tail being borne high, and carried in a graceful arch. The comb in this, as in all the other varieties, to be rather square in front, and well peaked behind, full of spikes, and free from hollow in the centre. Ear-lobe pure white, free from red edging. Legs small and blue.

The head, hackle, back, saddle, breast, and thighs of the cock should be white as driven snow. Tail black, glossed with green, the sickle and side feathers having a narrow white edging

the whole length, the more even and sharply defined the better. Wings principally white, but the lower wing-coverts are often a little marked with black, showing a narrow indistinct bar across the wing. The secondary quills have also a glossy black spot on the end of each feather, which gives the wing a black edging. The bar on the wings is not now sought as formerly, and a white wing is preferred, the bird being now in fact principally white, with a fine black and edged tail. Such birds are useless to breed pullets from, however, which needs more colour; and in fact cocks are often bred now from nearly white hens valueless for anything else.

The most frequent fault in the hen is a spotted hackle instead of a pure white. The rest of the body should have each feather distinctly marked, or "pencilled" across with bars of black, free from cloudiness, or, as it is called, "mossing." (See "Feathers," No. 5.) The tail feathers should be pencilled the same as the body; but to get the quill feathers of the wings so is rare, and a hen thus marked is unusually valuable. General form very neat, and appearance remarkably sprightly.

Pullets are bred from cocks too dark for exhibition, and sometimes from hen-tailed cocks, which are not uncommon. Only pullets usually bear showing, the marking usually getting grizzled with age; a hen which does preserve it well is unusually valuable for breeding.

GOLDEN-PENCILLED.—The form of this breed is the same as the preceding variety, and the black markings are generally similar, only grounded upon a rich golden bay colour instead of a pure white. The cock's tail should be black, the sickles and side feathers edged with bronze; but tails bronzed all over are often seen. The colour of the cock is always much darker than that of the hen, generally approaching a rich chestnut.

In all pencilled Hamburghs the value chiefly depends on the exactness and definition of the markings, which ought to

be a dense black, and the ground colour between quite clear. The silver is slightly the largest breed.

GOLDEN-SPANGLED.—Whilst the markings on pencilled Hamburghs consist of parallel bars across the feathers, the varieties we are now to consider vary fundamentally in having only one black mark at the end of each feather, forming the "spangle." This black marking varies in shape, and though only one variety is recognised in each colour at poultry exhibitions, it is quite certain that both in gold and silver there were two distinct breeds, distinguished by the shape of the spangle.

The best known of the two varieties, and the most often seen, was the breed long known in Lancashire under the name of "Mooneys," from the spangles being round, or moon-shaped. The ground colour of the pure Golden "Mooney" Hamburghs was a rich golden bay, each of the feathers having a large circle, or moon, of rich black, having a glossy green reflection. (See "Feathers," No. 4.) The hackle should be streaked with greenish black in the middle of the feathers, and edged with gold. Tail quite black, even in the hens. All the spangles should be large and regular in shape.

The cock of this breed was rather small, and was coarse in head with reddish deaf-ears, the latter point being common to the hens also. Many of the cocks were also hen-feathered, and such were once shown; but finally the judges discarded them, and then something else had to be done.

The second variety was known chiefly in Yorkshire as "Pheasant fowls," and differed greatly in the plumage. Instead of the spangles being round, as in the "Mooneys," they were crescent shaped (See "Feathers," No. 3), approaching the character of lacing; the marking was also seldom so sharp and definite, being often a little "mossed." In the cock the crescent spangles on the breast ran so much up the sides of the feathers as really to become almost a lacing. But the ears

were white, and the cocks had much smarter and neater combs.

At first Yorkshire cocks were shown for their smart heads, with Mooney hens. Then the cocks were bred between Yorkshire cocks and Mooney hens; and this lasted for many years. Two sets of birds were still required, pure Mooneys for the hens, and the cross for cocks; and this complicated system, common also to the next variety, disgusted hundreds of amateurs, who did not understand it, and vainly mated the birds as seen and purchased at shows. In fact, the breeds were confined to a mere handful of experts. Gradually, however, the mixed blood began to be used on the pullets to improve their red deaf-ears, and thus the strains slowly amalgamated, combining the good points of each; until pullets are found with all the Mooney marking and good heads, while the smart cockerels have all the marking needed for pullet-breeding. At last, therefore, breeding has become comparatively simple, it being sufficient to select hens or pullets large and good enough in marking, and with good heads, and then to mate them with a cock as deeply spangled as possible. If the birds "hit" well, the arrangement should be continued as long as they will breed; if not, another cock should be tried; and this is how Spangled Hamburghs are now usually bred, though a few still profess to breed Mooney pullets pure. Even in these, however, the white ears betray the foreign blood. The present Gold-spangled cock has a jet green-black tail, and is spangled as regularly as possible, especially in regard to two bars of spots across the wing. Some birds, almost *too* dark for exhibition, if good in head, breed excellent pullets.

SILVER-SPANGLED.—In this class two similar varieties existed. The Lancashire silver "Mooney," with large round spangles, resembled the golden, substituting a silvery white ground colour. The outside tail feathers in the hen, however, differed from the golden Mooney, being silvery white, with only

black moons at the tips. The moons on wing covert feathers in both sexes should form two black bars across the wings; the more regular these bars the more valuable the bird.

The Silver Pheasant-fowl of Yorkshire had smaller spangles, and not so round, without, however, running into the crescent form of the Golden Pheasant-fowl. The tail was white in both cock and hen, ending in black spangles. The cock's breast had also far less spangling than the Mooney breed.

The history of this variety resembles that of the preceding. At first hen-feathered Mooney cocks were shown; then Yorkshire Pheasant cocks; then followed the gradual amalgamation; and at present most breeders follow the simple method of putting the most perfect hens or pullets to promising dark and well-spangled cocks, as already described.

Many Spangled Hamburgh chickens are *pencilled* in their chicken feathers, the true spangling only appearing with the adult plumage. This goes to show the original unity—though, doubtless, very far back—of the spangled and pencilled races.

Black Hamburghs.—There is much doubt about the real origin of this fowl. Many think it was first produced by crossing Silver-spangled with Spanish; and the frequent signs of white round the eye, the smooth lobe, and the larger egg, are strong arguments for this; also many birds used to be seen with a sort of spangle of extra iridescence on the ends of the feathers. The greater size and darker legs are also quoted. But old fanciers affirm that the breed was known generations ago, and that *all green*, free from spangle, was the correct colour. Our own opinion is for the Spanish cross; but it has been long bred out in all but the whitish face, which still appears occasionally.

The combs of Black Hamburghs are larger even in proportion than in the other varieties, and the deaf-ears much larger and more kid-like in texture. The plumage is not so much black, as a magnificent green gloss. The best-coloured birds are

apt to show *purple* reflections, especially in the cock's hackles. These must be avoided for cockerel-breeding; on the other hand, these very birds often breed the most lustrous pullets, the purple being apparently a sort of excess in lustre.

REDCAPS.—There is occasionally met with in Lancashire and Yorkshire, under this name, a coarse, large sort of gold-spangled bird, very irregular and poor in marking, and with immense combs, often hanging over on one side. They may have been originally some kind of Hamburgh mongrel; and while of no exhibition value, are the best layers of the whole race.

Hamburghs are in many circumstances a profitable breed. Except the Gold-spangled, which are all poor layers, they are good layers when a good strain is secured. Each hen will lay from 180 to 220 eggs in a year, which certainly exceeds the production of any other fowl; and if these are generally small, the consumption of food is comparatively even more so. Though naturally loving a wide range, there is no real difficulty in keeping them in confinement if cleanliness be attended to. Perhaps the Silver-spangled and Black are best adapted for such circumstances. With a good egg-market near, the Redcap is one of the most profitable fowls a farmer can have. Except for *very* close confinement, or in damp situations (when they are peculiarly subject to roup, especially the two pencilled varieties), more profitable fowls cannot be had, while their varieties of barring, pencilling, and spangling are the very perfection of beauty in plumage.

The great difficulty in keeping them arises from their erratic propensities. Small and light, they fly like birds, and even a ten-feet fence will not retain them in a small run. They may, it is true, be kept in a shed; but, if so, the number must be very limited. Where six Brahmas would be kept, four Hamburghs are quite enough, and they must be kept dry and *scrupulously* clean. The pencilled birds are, as already

remarked, most certainly delicate, being very liable to roup if exposed to cold or wet; they should not, therefore, be hatched before May. The spangled are hardy, and lay larger eggs than the pencilled; but the latter lay rather the most in number. For profit, however, we should recommend the Black Hamburgh, on account of the large size of the eggs; and this variety, as seen in some strains, is certainly the most extraordinary egg-producer of all breeds known.

Hamburghs are too small to figure much on the table. They carry, however, from the smallness of the bones, rather more meat than might be expected, and what there is of it is of good quality and flavour.

CHAPTER XXI.

POLISH. SULTANS.

Under the title of Polands, or Polish fowls, should be collected all varieties which are distinguished by a well-developed crest, or tuft of feathers on the top of the head. This crest invariably proceeds from a remarkable swelling or projection at the top of the skull, which contains a large portion of the brain; and it is worthy of remark, that as the comparative size of this protuberance invariably corresponds with that of the crest springing from it, the best crested chickens can be selected even when first hatched. It is also remarkable that the feathers in the crest of the cock resemble those of his neck hackles, being long and pointed, whilst those of the hen are shorter and round; and this difference forms the first means of distinguishing the sexes.

The comb of all Polish fowls is likewise peculiar, being of what is called the two-horned character. This formation is most plainly seen in the Crêvecœurs, where the two horns are very conspicuous. In the breeds more specifically known as Polish the comb should be almost invisible, but what there in of it will always show a bifurcated formation.

Under the title of Polish fowls might perhaps be included the Crêvecœurs, Houdans, and Gueldres, if not La Flèche; but we shall for convenience of reference describe these crested fowls in a separate chapter on the French breeds, and confine ourselves here to the other tufted varieties, including the recently introduced Sultans.

WHITE-CRESTED BLACK.—This is the most generally known of all the varieties. The carriage of the cock, as in all Polands, is graceful and bold, with the neck thrown rather back, towards the tail; body short, round, and plump; legs rather short, and in colour either black or leaden blue. There should be almost no comb, but full wattles of a bright red; ear-lobes a pure white. Plumage black all over the body, with bright reflections on the hackle, saddle, and tail. Crest large, regular, and full, even in the centre, and each feather in a *perfect* bird we suppose of a pure white; but there are always a few black feathers in front, and no bird is therefore to be disqualified on that account, though the fewer the better. Weight from five to six pounds.

Hen very compact and plump in form. Plumage a deep rich black. Crest almost globular in shape, and in colour like the cock's. We never yet saw a bird in whose crest there were not a few black feathers in front, and we doubt if such were ever bred. Where they do not appear, the crests have always been "trimmed," and in no class does this practice so frequently call for the condemnation of the poultry judge. Weight of the hen four to five pounds. This variety is peculiarly delicate and subject to roup.

BLACK-CRESTED WHITE.—There is indisputable evidence that there once existed a breed of Black-crested White Polands; but, unfortunately, it is equally plain that the strain has been totally lost. The last seen appears to have been found by Mr. Brent, in 1854, at St. Omer, and if the breed still exists at all, we believe it will be found either in France or Ireland. Its

disappearance is the more to be regretted, as it seems to have been not only the most ornamental, but the largest and most valuable of all the Polish varieties. The hen described by Mr. Brent dwarfed even some Malay hens in the same yard.

We believe the *colour* of this variety may be recovered by breeding from such birds of the kind next mentioned as show any tendency to black in the crest, and carefully selecting the darkest-crested chickens. Mr. W. B. Tegetmeier did commence such an experiment, and succeeded perfectly in producing white chickens with black crests, though they always became more or less marked with white in subsequent moults. The attempt was therefore discontinued, though a few years' longer perseverance would undoubtedly have established the strain true to colour, in accordance with the principles laid down in Chapter XI. But the great comparative size, which all accounts agree belonged to the old breed, we are afraid is for ever lost.

White-crested White.—This breed, and those which follow, differ from the white-crested Black Polands not only in greater hardihood, but in having a well-developed beard under the chin, in lieu of wattles. They are large fine birds, and the crest is finer and more perfect than in most other colours. They are also among the best in point of laying. The plumage needs no description, being pure white throughout. This breed, though not extinct, is now very scarce and seldom seen.

Silver-spangled.—In this variety the ground colour of the plumage is a silvery white. Formerly birds were shown with moon-shaped black spangles, and this was once considered correct; but the last birds we ever saw at any show of this marking were in 1875, and for years past *laced* feathers have been the correct thing, except that the cock's back shows some approach to spangling occasionally. The sharper and blacker the lacing is the better. The cock's sickles still show a broad tip or sort of spangle at the end, as well as the edging, and the ground is apt to be grey in these feathers, which dark colour,

indeed, breeds better pullets. The spangling of his breast is very important for show purposes, many cocks being nearly black in the upper part.

The crests should be full and regular, not hollow in the middle, and the feathers here also are laced in hens and more tipped in the cocks. A few white feathers are apt to appear with age. The deaf-ears are small and white, wattles none, being replaced by a dark or spangled beard and whiskers. The size of this breed is very fair, the cocks weighing 6 to 7½ lbs., hens 4 to 5½ lbs.

GOLD-SPANGLED.— This breed resembles the preceding in black markings, only substituting rich golden ground for the white.

BUFF or CHAMOIS POLISH are a recent introduction. This breed resembles the golden-spangled in the colour of the ground, but the spangles present the anomaly of being *white* instead of black. They were first produced, there can be no doubt, by crossing the golden-spangled with white birds, just as Piles were produced from Black-red Game. At first these birds did not breed at all true, showing probably a recent cross; but of late some very fine importations have been made from the Paris shows, which may give this pretty marking a better chance. These foreign specimens have been larger and finer than any we have seen bred in England.

Blue, grey, and cuckoo or speckled Polish are also occasionally shown, but are evidently either accidental occurrences, or the result of cross-breeding, and cannot be recommended even to the fancier.

All the Polish breeds are rather liable to grow up "hump-backed," or "lob-sided" in the body. Of course either defect is a fatal disqualification.

SULTANS.—This breed was introduced by Miss E. Watts from Turkey. The birds are very ornamental, differing greatly in appearance from any of the varieties hitherto named. In size

they are rather small, the cocks weighing only from four to five pounds. They make most exquisite pets, being very tame, but at the same time brisk and lively; and their quaint little ways never fail to afford much amusement. They are well adapted to confinement.

The plumage is pure white, crest included, in which they therefore resemble the white Polish. They differ, however, very greatly in appearance. Their legs are very short, and feathered to the toes; the thighs being also abundantly furnished, and vulture-hocked. They are likewise amply muffed and whiskered round the throat, and the tail of the cock is remarkably full and flowing. The crest differs from that of most other Polish, being more erect, and not hiding the eyes. The comb consists of two spikes in front of the crest. The legs are whitish, and when first imported and shown had the fifth toe of the Dorking, but of late this feature is uncertain, and seems left an open question. At one time Sultans were even shown without beards, but in this case judging has returned again to the earlier standard.

There is a breed known as Ptarmigans, which is evidently a degenerate descendant from some former importation of Sultans.

Some special precautions are necessary in rearing Polish chickens. The prominence in the skull, which supports the crest, is never completely covered with bone, and is peculiarly sensitive to injury. On this account Cochins, or other large heavy hens, should never be employed as mothers. A Game hen will be the best. The young also fledge early and rapidly, and usually suffer severely in the process; they therefore require an ample allowance of the most stimulating food, such as worms, meat, and in bad weather bread steeped in ale. Above all, they *must* be kept dry.

Polish fowls have certainly solid merits. They improve in appearance, at least up to the third year. In a favourable

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FRENCH FOWLS.

CRÈVECŒURS. HOUDANS. LA FLÈCHE.

locality they are most prolific layers, never wanting to sit, and the flesh is remarkably good. They appear also peculiarly susceptible of attachment to their feeders. And lastly, they suffer remarkably little in appearance or condition from exhibition or confinement.

Their great fault is a peculiar tendency to cold and roup—the white-crested black variety being the most delicate of all. The dense crest becomes during a shower saturated with water, and the fowls are thus attacked in the most vital part. No birds are so affected by bad weather. In exposed or damp situations they will die off like rotting sheep, and it is hopeless to expect any return. They can only be kept successfully in warm, genial situations, on well-drained ground, with a chalk or sand sub-soil, and with ample shelter to which they can resort during showers. In such circumstances they will do well, and repay the owners by an ample supply of eggs. Closely confined in a dry shed they also do well, if only kept *rigidly* clean and free from vermin.

Mr. Hewitt cautions Polish breeders against attempting to seize their birds suddenly. The crest so obscures their vision that they are taken by surprise, and frequently so terrified as to die in the hand. They should, therefore, always be first spoken to, or otherwise made aware of their owner's approach.

CHAPTER XXII.

FRENCH BREEDS.

Several remarkable breeds of fowls have been introduced into England from France, which it will be convenient to describe in one chapter. They all deserve the careful attention of the mercantile poultry breeder, possessing as they do in a very high degree the important points of great weight and excellent quality of flesh, with a remarkably small proportion of bones and offal. These characteristics our neighbours have assidu-

ously cultivated with most marked success, and we cannot avoid remarking yet again on the results which might have been produced in this country had more attention been paid to them here, instead of laying almost exclusive stress upon colour and other fancy points.

Most of the French breeds have more or less crest, which naturally places this chapter next to that on the Polish fowls It is remarkable also that most of them agree in being non-sitters, or at least incubate but very rarely.

Crêvecœurs.—This breed has been the longest known in England. The full-grown cock will not unfrequently weigh 10 lbs., but $7\frac{1}{2}$ to 8 lbs. is a good average.

In form the Crêve is very full and compact, and the legs are exceedingly short, especially in the hens, which appear almost as if they were creeping about on the ground. In accordance with this conformation, their motions are very quiet and deliberate, and they appear the most contented in confinement of any fowls we know. They do not sit, or very rarely, and are tolerable layers of very large white eggs.

The comb is in the form of two well-developed horns, surmounted by a large black crest. Wattles full, and, like the comb, a bright darkish red. The throat is also furnished with ample whiskers and beard.

The plumage is black, but in some of the largest and finest French birds it is not unfrequently mixed with gold or straw on the hackle and saddle. Which is to be preferred will depend upon circumstances. Judges at exhibitions always insist upon a pure black all over; and if the object be to obtain prizes, such birds must of course be selected both for breeding and show purposes; at the same time we should fail in our duty were we not distinctly to record our opinion that the golden-plumaged French birds are often by far the largest and finest specimens. It should be remembered that the French have mainly brought these breeds to perfection

by seeking first the *useful* qualities, and it is beyond doubt that the rigid application to them of our artificial canons has seriously deteriorated the breed in practical value. A large globular crest seems the chief point in English judging, whereas the French were content with much more moderate development in this particular, and looked more to the body and general size and shape of that.

The merits of the Crêve consist in its edible qualities, early maturity, the facility with which it can be both kept and reared in confinement, and the fine large size of its eggs. The hen is, however, only a moderate layer, and the eggs are often sterile, while the breed is rather delicate in this country, being subject to roup, gapes, and throat diseases. This delicacy of constitution appears to improve somewhat as the fowls are acclimatised and less in-bred. Altogether, we do not recommend the Crêve as a good breed for general domestic purposes; but it is certainly a splendid fowl for either table or market, and as such, especially on a large scale, in favourable localities, will repay the breeder.

La Flèche.—In appearance this breed resembles the Spanish, from which we believe it to have been at least partly derived. It exceeds that breed, however in size, the cock often weighing from eight to even ten pounds. Both sexes have a large, long body, standing on long and powerful legs, and always weighing more than it appears, on account of the dense and close-fitting plumage. The legs are slate-colour, turning with age to a leaden grey. The plumage resembles that of the Spanish, being a dense black with green reflections.

The look of the head is peculiar, the comb being not only two-horned, much like the Crêvecœur, near the top of the head, but also appearing in the form of two little studs or points just in fronts of the nostrils. The head used to be, and still is in France, surmounted by a rudimentary black crest,

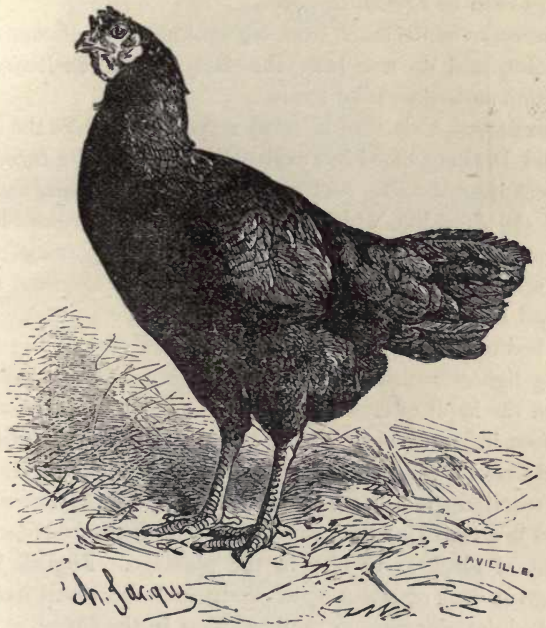
but English fanciers have sought to breed this out, and the presence of crest is considered a disqualification at English shows. On an average the French birds are somewhat taller than those now bred in England, most of these differences

French La Flèche Cockerel.

being observable on comparing M. Jacque's French portraits with Mr. Ludlow's coloured plate. The wattles are very long and pendulous, of a brillant red colour, like the comb. The ear-lobes are dead white, like the Spanish, and exceedingly developed, meeting under the neck in good specimens.

The appearance of the La Flèche fowl is very bold and

intelligent, and its habits active and lively; at the same time it appears very subject to roup in our climate. The hen is an excellent layer of very large white eggs, and does not sit. The flesh is excellent, and the fine white transparent skin makes a very favourable appearance on the table, which is only marred



French La Flèche Pullet.

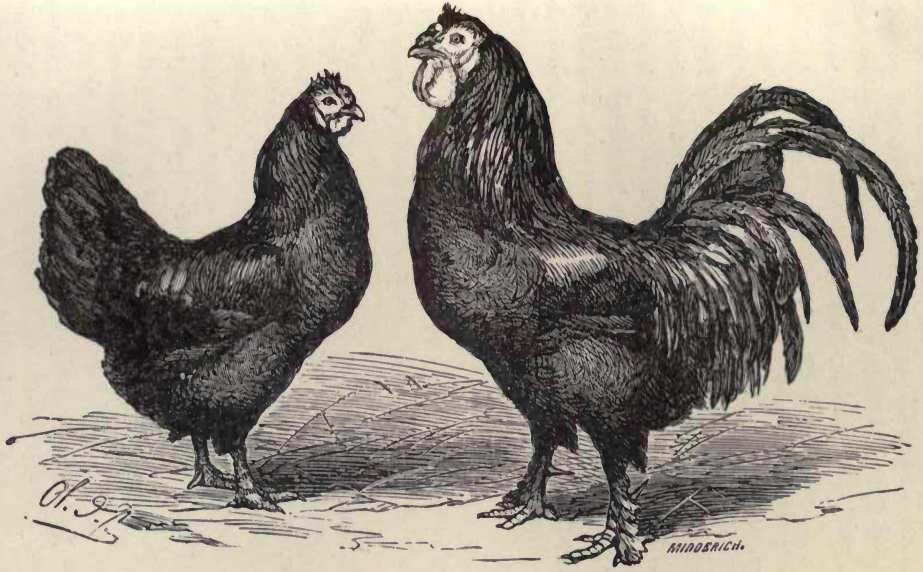
by the dark legs. The breed does not lay well in the winter, except in favourable circumstances. Altogether, it is decidedly less suitable than the preceding for domestic purposes, but still most valuable as a table-fowl. As an egg producer, it is as nearly as possible similar to the Spanish, not only in the size and number of the eggs, but the seasons and circumstances in which they may be expected. In juiciness and flavour the

flesh approaches nearer to that of the Game fowl than any other breed we know; but is more tender, while having less of what is called "gamey" flavour. This breed is chiefly used to produce the magnificent capons and poulardes so celebrated in the Paris market, and which sell for a guinea or thirty shillings each in French money.

The cocks suffer much from leg weakness and disease of the knee-joint, and do not bear the fatigue and excitement of exhibition so well as most fowls.

HOUDANS.—This fowl in many respects resembles the Dorking, and Dorking blood has evidently assisted in its formation. Houdans have the size, deep compact body, short legs, and fifth toe of the Dorking, which in form they closely resemble, but with much less offal and smaller bones. The plumage varies considerably, but is always some mixture of black and white, arranged in a sort of irregular splash or speckle all over. Some hens become nearly white as they grow older, the breed getting lighter with age. To avoid this, some breeders have been in the habit of crossing with the Crêve, and the result has been seen in young birds almost black, and with the plain two-horned Crêve comb instead of the peculiar comb of the Houdan; but a reaction speedily set in against this, and what seems now desired is a true Houdan comb, and somewhere about an equal amount of black and white in the plumage. English judges lay a great deal of stress upon crest; and the result has been a marked deterioration in prolificacy, as in the Crêve.

Some Houdans are very large—we have weighed a hen ten pounds, but this is rare. The wattles are pendent and well developed, although the breed is well whiskered. The comb is most peculiar and characteristic, resembling the two leaves of a book opened, with a sort of strawberry-looking lump in the centre; in the hen it is small. Crêve combs are now usually disqualified.



BREDAS OR GUELDRES.

Many of the first-imported Houdans lacked the fifth toe, and this feature might easily have been bred out. Unfortunately English breeders went the other way, and rather insisted on it, far more than the French did; with the result that bumble-foot is now often seen, as in Dorkings. The legs are in colour a sort of mottle of white, pink, and blue.

As to the merits of Houdans, the unspoilt stock is one of the most valuable breeds ever introduced into this country, and in general usefulness surpasses all the French varieties. Better table-fowls are none, the laying powers are great, the chickens fledge and grow faster than almost any breed, and the eggs are invariably prolific—indeed, the ardent Houdan cock requires more hens than any breed we know. There is also no hardier variety known. Such a strain is emphatically a farmer's fowl, wherever the eggs can be hatched by other breeds or an incubator. In breeding for crest, colour, and toes it is to be regretted much has been too often lost, and many exhibition strains are rather poor layers; so that for economic purposes it is generally better to procure stock, if possible, direct from France.

Bredas or Gueldres.—This fowl is of exceedingly well-proportioned shape, with a wide, full, prominent breast. The head carries a small topknot, and surmounts a rather short, thick neck. The comb is very peculiar, being hollowed or depressed in the centre, which gives to the head a most singular expression. Cheeks and ear-lobes red; wattles ditto, and in the cock very long and pendulous.

The thighs are well furnished and slightly hocked, and the shanks of the legs feathered to the toes, though not very heavily. The plumage varies; black, white, and cuckoo or mottled being most seen. The cuckoo-coloured are known exclusively by the name of "Gueldres," and the black bear chiefly the name of Bredas; but it is much to be desired that one name should be given to the whole class, with simply a

prefix to denote the colour. We prefer ourselves the black variety, the plumage of which is beautifully deep and rich in tone, with a bronze lustre; but Mr. F. Schröder, who thought highly of the breed, preferred the cuckoo or Gueldres fowl. This is quite a matter of fancy, all the colours being alike in economic qualities.

The flesh is excellent and tolerably plentiful, very large cocks weighing as much as eight or nine pounds. They are good layers, and the eggs are large; as in most other French breeds, the hens do not sit. The chickens are hardy, and the breed is decidedly useful and well adapted to the English climate.

La Bresse.—This fowl is hardy and large,* but we cannot consider it as a distinct or established breed. The birds are *all* colours without distinction, presenting exactly the appearance of very large and fine barn-door or cross-bred fowls; and we believe that it is, in fact, no breed, but a mixture of fine specimens of different races. We have, in fact, never seen any reason to modify this opinion, formed many years ago; and

* In a very hostile review of the first edition of this work, in the *Field*, of the poultry department in which Mr. Tegetmeier advertises himself as editor, our "gross ignorance of French fowls" was said to be proved by thus describing as "large" the La Bresse race. We made the statement originally after actually weighing a cock over 10lbs. as he ran in his pen; but it also happens that Mr. Tegetmeier has since given in his own revised edition of the "Poultry Book" a table of the average weights at the exhibition of dead poultry in Paris in 1864. These weights are given as follows:—

	La Bresse.		Houdan.		Crêvecœur.	
	lbs.	oz.	lbs.	oz.	lbs.	oz.
Unprepared	6	1½	5	4	4	11
Prepared for Cook	5	5½	4	3	3	14
Cooked	3	3¾	2	15¾	2	12½

The average was taken from five birds each, and shows that of all these three breeds the La Bresse were the heaviest. A reference by the editor to his own figures might, therefore, have otherwise directed the charge so recklessly brought against this work.

there is tolerable evidence that English Dorkings have several times been crossed on their own stock by the La Bresse farmers.

It will be seen that the French breeds are eminently table fowls; and it is worthy of remark that by breeding for edible qualities, without paying over-much attention to feather or other fancy points, our neighbours have succeeded in producing birds far superior to any English breed—we will not say in quality, so long as Game and Dorking are left us—but in smallness of bone and offal. We should hope that the lesson may not be lost upon our breeders, and that poultry committees may be led to afford somewhat more encouragement than they have hitherto done to the cultivation of size and general proportion, with a view to the table, as distinguished from mere artificial or fancy qualities.

Le Mans.—There appears nothing very distinctive about this race; indeed, French writers themselves describe it as a sub-variety of the Crêve, with rose or cup combs and little or no crest.

Courtes Pattes.—At the Paris Show of 1878 the reporter of the *Live Stock Journal* gave the first English description of these fowls. They are black, with single combs, and *extremely* short legs. They sit well, and were said to have been produced by the La Flèche breeders in order to hatch their non-sitting varieties. They were also said never to scratch in a garden. Some months later specimens were imported by Mr. Christy, but the last characteristic was found not to hold good, at least in English gardens. They are hardy, good layers, and good in flesh, but do not seem to breed very true in colour and some other points. The *extremely* short legs give them a quaint appearance, and are the most characteristic point.

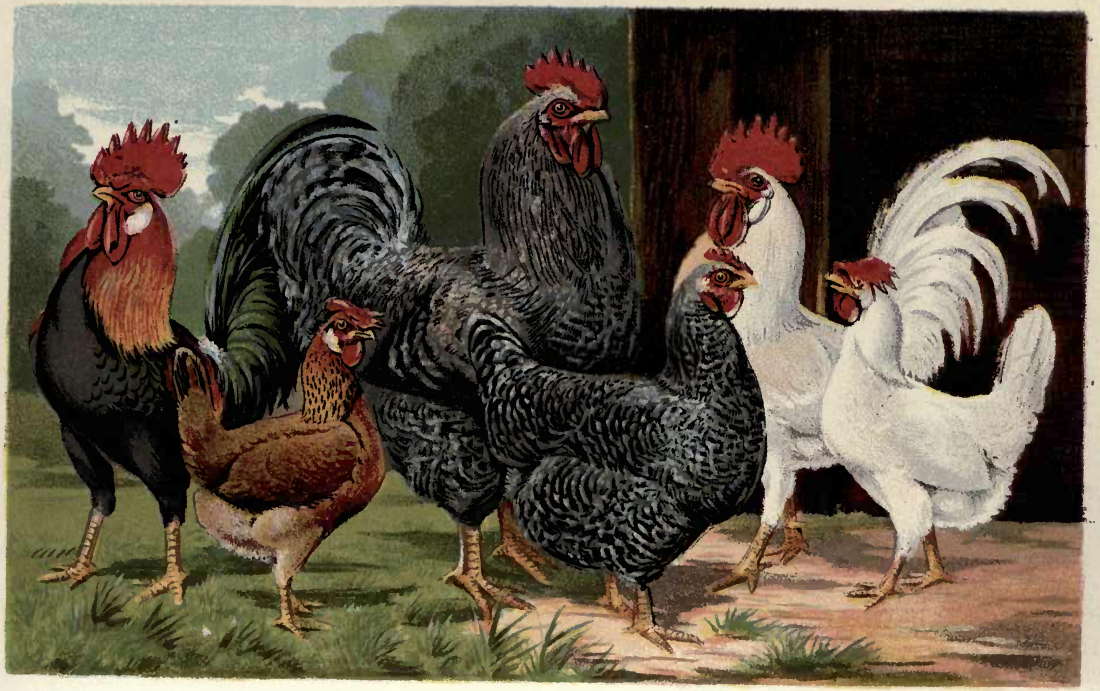
CHAPTER XXIII.

AMERICAN BREEDS.

WHATEVER its original source, it has already been recorded how the Brahma itself was introduced into this country from America; but this happening so long ago, and during the first burst of the poultry enthusiasm, that fine stock became as it were absorbed into the general catalogue, and is scarcely thought of as American now, though no other or really Eastern stock has, from that day to this, been ever added to the original strain, whatever that was. During more recent years, however, several other races have also been introduced, which are more generally spoken of as American fowls, and which, although greatly differing, can most conveniently be described in a chapter by themselves. They are all of the useful class.

DOMINIQUES.—This was the first of the series to reach this country, but has since been eclipsed by the superior size of the next to be described. The name represents the plumage; the "Cuckoo-colour," as we call it in England, viz., a dark blue grey banding on a light grey ground, being called "Dominique" marking in the States. This fowl was at one time very widely distributed, especially amongst the Southern States and in the West Indies. It has a rose comb like the Hamburgh, the blue cuckoo marking all over, and yellow legs, thus resembling, in all but comb and legs, the Scotch Grey to be hereafter described.

PLYMOUTH ROCKS.—In the poultry mania period, Dr. Bennett gave this name to a fowl he compounded out of *four* breeds crossed together, and which naturally became extinct soon after. Years afterwards the name was revived and given to a much finer breed, which has become very popular both in America and this country, where it now has large classes at shows. There is no doubt that it was produced by crossing the American Dominique, just described, with some breed of Cochins, probably the white. The comb is single and straight,



CASSELL & COMPANY, LIMITED, LITH., LONDON.

AMERICAN FOWLS.

BROWN LEGHORNS. PLYMOUTH ROCKS. WHITE LEGHORNS.

and the head fine like that of the Cochin; and the legs are bright yellow and smooth (*i.e.*, unfeathered). At first the shape much resembled that of the Cochins, breast being very deficient; but selection has remedied this, and the fowls now are sought to be bred of good table shape, and are often of very good model. The beak must be yellow. There are two schools of feather-marking, one preferring broad dark bands of almost black or blue-grey, the other breeding for much narrower bands of dark and light grey.

Founded notoriously upon a cross, the Plymouth Rock is, like all breeds so founded in their early years, very hardy, except that it has a mysterious tendency to weakness, gout, or some affection in the feet and legs, why it is hard to say. The colour was at first very uncertain, and the chief difficulty even yet is to avoid black, white, red, or yellow in the plumage, which must be the pure "cuckoo" grey. This is best effected by matching rather dark birds with somewhat lighter ones, rejecting cocks with coloured hackles or black sickles. The beak is also apt to breed dark, which some judges disqualify, to the great detriment of the breed, in our opinion. A good breast should be laid great stress upon, and the fowl judged mainly from the table point of view.

The Plymouth Rock is a first-rate market fowl, except that dealers dislike the yellow leg: in America, on the contrary, yellow legs are preferred—so do tastes differ! Some strains are thick and even yellow in the skin, and such should be avoided, as also should be a too leggy strain. From experiments made, it appears that Rocks make the most rapid and early growth of any chickens, except some strains of Dorking.

A white variety is occasionally seen.

LEGHORNS.—There are two generally known varieties of this fowl, the first to reach England being some whites sent to Mr. Tegetmeier; while a year or two afterwards the first brown Leghorns were sent over to ourselves.

The white Leghorn is a rather small edition of the white Minorca, but with bright yellow legs. It has the large single comb, red face, and white deaf-ears, is a non-sitter, and lays the same white egg, though much smaller, owing to its own smaller size. The first birds which arrived had rather coarse creamy or yellowish deaf-ears, rather than white, and very upright or even squirrel-tails; but English breeders have remedied both these faults.

The brown Leghorn is similar to the other in shape and size—perhaps rather more plump in body of the two—and exactly the same remarks apply to the ears and tails of the first specimens. The plumage of this variety is exactly the same as that of the Black-breasted Red Game.

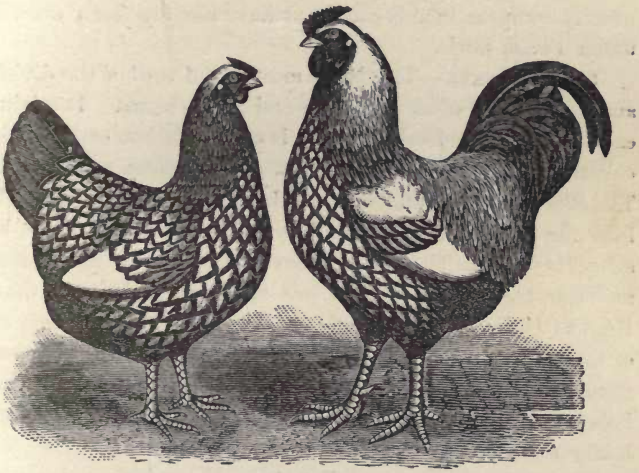
There is clear evidence that Leghorns did come from Italy in the first place, and direct importations have since been made from Italian ports. Black and cuckoo Leghorns have also appeared, and by crossing with Game, Duckwings and Piles were also produced. Pure buffs have been the last, and are becoming exceedingly popular; none of the others equal the original breeds.

Good strains of Leghorns, of either colour, are amongst the most amazing layers of all, many hens having been recorded to have laid over 200 eggs in a year.

Black Javas.—This is a large clean-legged black breed of fowls, long known in the States, but only lately introduced here. Its most peculiar point is the full, lustrous brown eye; in other respects it has much resemblance to a smooth-legged Langshan, and it is highly probable that the latter owed its origin to crossing between a fowl like this and the Chinese Shanghae. It is a fair layer, good in flesh, and a hardy useful fowl, much appreciated by those who have given it a trial.

Wyandottes.—These fowls have recently become very popular both in England and in America, and certainly are handsome. They seem to have been produced by crossing

Cochins with some laced breed, probably Polish ; and can only be described as large fowls with neat rose combs and smooth yellow legs, nicely laced all over on a white ground, in the Polish manner, as shown in the illustration. The peak of the comb points, however, slightly downward, rather than upward as in Hamburghs. They are hardy, excellent layers, especially



Wyandottes.

in winter, quick growers, and of good table quality, having deep breasts, a point to be carefully cultivated. So far, the lacing breeds very untrue, the greater part of the chickens looking like mongrels ; but this will gradually be remedied ; and a laced fowl of large size supplies a distinct gap in the poultry classes.

Since the introduction of the silver-laced Wyandottes, a gold-laced variety has been produced, bearing just the same relation to it as the gold to the silver-laced Sebright. An all-white variety is also bred, but loses the most distinctive point. and every pen we have seen has shown plain traces of the White Dorking.

CHAPTER XXIV.

THE VARIOUS CLASS.

UNDER this chapter we may collect several breeds which rarely have a class of their own, but usually compete together in a mixed class provided for such waifs and strays. Sultans usually compete in this class, but have already been described under Polish fowls.

SCOTCH GREYS.—This is the most useful fowl of the division, and in Scotland often fills large and good classes. It might be called the Scotch Dorking. It is of the cuckoo or Dominique colour, has single upright combs, and red faces and ear-lobes. The legs vary a little, from bluish, to mottled blue and white like the Houdan, and nearly white; and there have been advocates of all. The size is about that of the White Dorking, and the shape and carriage are more sprightly than that of English Dorkings, somewhat resembling the free and agile style of the Game fowl. The flesh is good, and the bird hardy and a good layer, usually becoming broody once in the season, and being then a good mother. It stands the Scottish climate better than most fowls.

The difficulty, as usual, is to keep the colour and marking good; black, white, and coloured feathers being apt to appear.

DUMPIES, OR CREEPERS.—This is also a Scotch breed; and has long been known under such names as Bakies, Go Laighs, &c., but is now getting rather uncommon. It has never been much valued in England. The principal characteristic is the extreme shortness of the shank, or leg bone, which should not exceed two inches from the hock joint to the ground. In other respects they most resemble Dorkings, lacking, however, the fifth toe, and being more hardy than that variety. The hens are fair layers of rather large eggs, and as mothers cannot be surpassed. The plumage is generally an irregular speckle, and it is difficult to get them any uniform colour.

The cock should weigh six or seven and the hen five or six pounds.

Dumpies certainly deserve to be better known. They have no particular faults, and, combining as they do very fair laying with great hardiness and first-class edible qualities, they must be considered decidedly profitable fowls. They also make splendid sitters for small and valuable eggs. Their general resemblance to Courtes Pattes (described on page 195) will not fail to be remarked.

SILKIES.—This fowl has a class at some shows. It possesses two distinct peculiarities. The webs of the feathers do not cling together as in other breeds, but hang loose as silky or woolly fibres, which makes the bird appear much larger than it really is, the actual weight of the cock being generally about three pounds, and of the hen about two pounds. The colour is usually pure white, but black and other colours are occasionally seen. The second peculiarity is the dark tint of the bones and skin, from which the name of "negro" fowls is derived. The skin is of a very dark violet colour, approaching to black, even the comb and wattles being a dark purple, and the face a livid blue. The bones are also covered with a nearly black membrane, which makes the fowl anything but pleasant to look at upon the table; but if the natural repugnance to this can be overcome, the meat itself is white and very good eating, indeed superior to that of many other breeds.

The comb should be rose, but is seldom very good in shape. There is also a crest on the top of the head standing rather up. The legs are feathered with silky feathers, and have five toes; they are black, or rather blue in colour. The leg-feathering is peculiarly apt to drop off in the show-pen, or after washing; and as it is one of the points in judging, this makes winning with Silkies very much a matter of speculation.

The chief value of the Silky fowl is as a mother to Bantam, or other small and delicate chickens, such as pheasants or

partridges. For such purposes they are unequalled, the loose long plumage affording the most perfect shelter possible; and another useful point is that a full nest of eggs will usually tempt the bird to sit within a few days at any time. They are, of course, peculiarly susceptible to cold or wet, and have little value than that stated, except from their singular and not unornamental appearance.

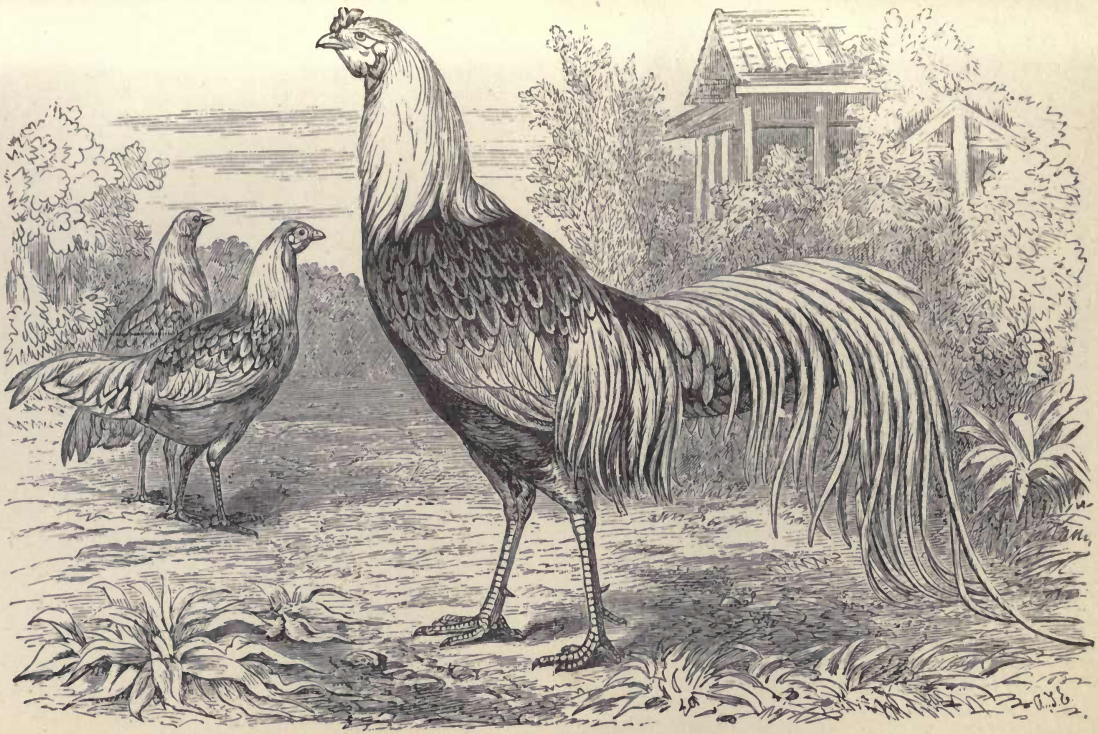
There is an occasional silky sport from the ordinary Cochin fowl. The plumage resembles that of the preceding variety; but in every other point the fowl is a true-bred Cochin. The loose feathering being no real protection from wet, this breed, like the other, is delicate in our climate.

Frizzled Fowls present a most remarkable appearance, every feather in good specimens being curved, or turned back from the body, so as to show a portion of the under side, like the curved feathers in the tail of a common drake. The colour of the plumage is generally white, and the comb double; but black and various colours are also seen.

Frizzled fowls are, as might be supposed, often delicate, and most uncertain layers, though we have met with strains which were stated to be hardy, and very good in the latter respect. They are very common in the Mauritius, where they are reckoned amongst the most useful poultry. As a rule, however, their peculiar plumage cannot and does not suit a damp climate.

We may add that, though "frizzled," the plumage should not be *ragged*, but every feather sound and neat. The handsomest of all are black.

Rumpless Fowls are of various colours, the only essential characteristic being the absolute want of a tail, or of any approach to one. It is, indeed, exceedingly difficult to breed any particular colour, as few persons have interest in the breed sufficient to persevere long enough for securing uniformity. The handsomest are white: black also looks well; but speckled are



YOKOHAMAS.

most common. The size also varies much, ranging from three to seven pounds each.

ORPINGTONS.—This name has been given to a breed established within the last few years by Mr. W. Cook, of Orpington, by crossing Minorcas, black Plymouth Rocks, and Langshans, the Langshan predominating. It most resembles the latter breed, but with rather short and smooth legs, and is a fair table fowl and excellent layer, but (naturally) tends to vary a great deal. During the agitation for stilty Langshans, there was need for some such fowl; but since opinion has settled that a Langshan should have only moderate shanks, the distinctiveness of the Orpington, save for its bare legs (which could soon be bred in Langshans), is less apparent.

YOKOHAMAS, PHŒNIX FOWLS.—There have very lately been introduced from Japan, through German importers, several very peculiar breeds, mostly known in England under the above names. The general character of the bodies and heads, and the colours, resembles that of Game fowls; Piles and Blackreds being the usual colours. The peculiar point is the *immense* length of the cock's hackles and streamers. Those called "Phœnix" have been longer in feather than others shown as Yokohamas; but we believe the whole class to be one race at the bottom, and it is to be hoped that some one name may be adopted. In Germany, for want of stock, many have had to be crossed with common Game fowls; and even so, tails three and four feet long have been produced; but sickles nearly seven feet long have been dropped by some of the importations, and at Tokio, in Japan, there are said to be feathers nearly 27 feet in length. The illustration is engraved from a painting made in Germany.

This breed is of course of purely ornamental value, and much care is required to keep the plumage in good order. Length of feather, if in decent order, will naturally be the chief point in judging.

It is much to be regretted that English fanciers have done nothing during modern times to manufacture new breeds by crossing. We have seen that both the French and Americans have done so with success; and there can be little doubt that many years ago the Coloured Dorking was made even in England, by crossing the White Dorking on the speckled farmyard fowl of Surrey. But nothing has been done since; and it still remains to produce a breed which shall combine the size of the gigantic races, the fine flesh of the French races, the early maturity of the Houdan and Dorking, and the prolificacy of the Mediterranean or Hamburgh tribes. It is true some of these qualities may be incompatible; but we think they are to be combined in a greater degree than in any single breed at present known.

CHAPTER XXV.

Bantams.

There is not the slightest reason for supposing that any of the diminutive fowls known as Bantams are descended from an original wild stock. They are in many cases the exact counterparts of ordinary domestic breeds, carefully dwarfed and perfected by the art of man; and even where this is not so, the process by which they were produced is occasionally on record. They are, in fact, more than any other class, "artificial fowls," and their attractiveness consists rather in their beauty than in any economic value.

Sebrights.—Cock not to exceed twenty, and hen sixteen ounces. For exhibition still less is preferable, but not for breeding. Carriage of the cock, the most conceited it is possible to conceive of; head thrown back till it touches the nearly upright tail; wings drooping halfway down the legs; motions restless and lively, always strutting about as if seeking for antagonists. The bird is, in fact, "game to the back-

bone," and will attack the largest fowl with the utmost impudence.

Plumage close and compact, and *every feather* laced with black all round the edge. The shoulder and tail coverts are the parts most likely to be faulty in this; but in first-class birds every single feather must be properly edged right up to the head. This part usually appears darker from the smaller size of the feathers; but the nearer the head is to the rest of the body in colour the better. The only exceptions allowable in the lacing are on the primary quills or flight-feathers of the wings, which should have a clear ground, and be only tipped with black. The tail feathers ought to be laced, and in the hen must be so; but in the cock this is rather rare. In his case a clear ground colour throughout, nicely tipped with black, may be allowed to pass instead.

The cock must be perfectly *hen-feathered* throughout, his tail not only square and straight, without sickles, but the neck and saddle-hackles resembling those of the hen. The late Mr. Hewitt, however, a most eminent authority on this breed, remarked to us that while this is imperative for exhibition, he always found such cocks nearly or quite sterile, probably in consequence of the long inter-breeding necessary to maintain such a point in perfection. He recommends, therefore, that a cock for breeding should show a slight approach to sickle-feathering, when the eggs will become productive.

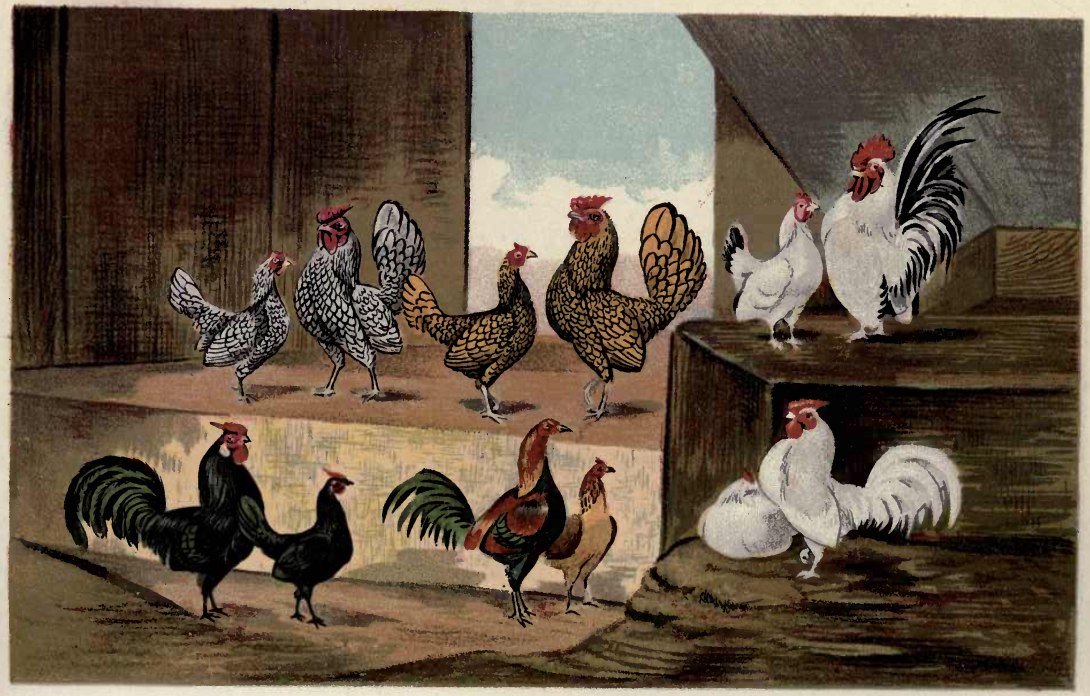
The comb should be a perfect rose, with a neat spike behind, pointing rather upwards, and free from any depression, and rather livid in colour. Face round the eye rather dark. Eye itself a sparkling dark red. The ear is supposed to be white, but Mr. Hewitt remarks that he never found it so without a great falling off in the lacing of the plumage, and a bluish tinge is as near an approach to it as can be safely obtained. Bill slate-coloured; legs blue and clean.

There are two varieties. In the gold-laced the ground colour is a rich golden yellow. In the silver-laced, a pure white. In both cases the ground must be perfectly clear and unsullied, varied only by the clear black line round each feather, which constitutes the lacing. (See plate of "Feathers," No. 2.)

These remarks apply to the original strain, and those on colour of comb, face, and ears, still apply to the Golds. For many years, however, breeders used to cross their Silver with Golden, and the result was that the silver ground became yellower and yellower, until the so-called "Silvers" hardly ever won in competition with good Golds. Just as matters came to this pass, an entirely new strain of Silvers of dazzling whiteness and dense black lacing burst upon the scene from Scotland, and carried all before them. How they were bred has never yet been divulged; but their combs were *bright* red, the ears fairly white, and though the hen-tail was good, the carriage of the cocks is far less strutting than that of the old strain. The superiority of this new Silver strain has now, unfortunately, in its turn all but extinguished the Golden Sebright.

BLACK.—This is one of the most popular Bantam classes. The plumage is a uniform black, with no trace of rust, or any other colour, and in the cock, with a bright lustre like that of the Spanish fowl. Tail of the cock full and well arched; legs short, dark blue or black in colour, and perfectly clean. Comb a bright red rose. Ear-lobes white; face red; in brief, the bird should resemble a miniature Black Hamburgh. Cock not to exceed twenty, hen eighteen ounces.

Black feather-legged Bantams have now and then been shown, but never established a footing. Fashion changes, however; and novelties being now much sought after, we are inclined to believe that a good feather-legged black breed would speedily became a favourite. We have seen them with the foot-feather as long as their bodies.



CASSELL & COMPANY, LIMITED, LITH. LONDON

BANTAMS.

SILVER SEBRIGHT.
BLACK.

GOLDEN SEBRIGHT.
BLACK-RED GAME.

JAPANESE.
WHITE.

WHITE.—Except that the legs are white and delicate, all other points are similar to the Black Bantam, changing the colour of the plumage from black to a spotless white. It should, however, be remembered that while the white ear-lobe is required by *most* judges, as in the black variety, there are some who prefer a *red*, and this latter we must express our own decided opinion is much the smartest looking, and harmonises better with the white plumage. The most usual fault is a yellowish colour in the cock's saddle. A single comb is, of course, fatal.

A very pretty feather-legged White Bantam is not unfrequently seen, and, though long neglected, appears to be coming into fashion again. They are usually rather too large, and attention will have to be paid to this particular if the breed is to become popular.

NANKIN.—This is one of the old breeds of Bantams, and at one time nearly disappeared, but attempts have been recently made to re-introduce it. The ground colour is a pale orange yellow, usually with a little pencilling on the hackle. The best tail, to our fancy, is a pure black, with the coverts slightly bronzed. The comb is rose; and the dark legs should be perfectly clean.

CUCKOO.—These Bantams should be miniature Scotch Greys. A strain also exists which, like these in other respects, has a rose comb.

PEKIN OR COCHIN BANTAMS.—This most remarkable of all Bantam breeds has only been introduced since 1860, the original progenitors having been stolen from the Summer Palace at Pekin during the Chinese war. They were first shown in 1863. They exactly resemble Buff Cochins in colour and form, possessing the feathered leg, abundant fluff, and all the other characteristics of the parent breed in full perfection, and presenting a most singular appearance. Unfortunately we fear the breed is now almost extinct. The importations

were very few, and several even of these died, the breed being delicate: and the owner of what was the chief stock for many years seemed to care more for having something which no one else had, than for saving the breed, which might have been done by spreading it amongst a few other hands. At best it was rather sterile. Good results were got by breeding Pekin cocks to some other breeds and breeding back; and it is much to be desired that this most characteristic of all the Bantam races should be preserved, if it is even yet possible to do so. We were glad to hear that one new importation was made in 1884.

JAPANESE.—Several strains of Bantams have been imported from Japan. All agree in being exceedingly short-legged, and most have very upright tails. Some are cuckoo colour and feather-legged; but what is usually known as *the* Japanese Bantam has short, clear legs, a white body, and a very upright or squirrel tail, the sickles, or rather scimitar feathers, being dense bronze black with a sharp white edging. The combs are single and upright.

We have seen Andalusian Bantams, and a fair approach to a Dark Brahma Bantam; and the field is open for any dwarf breed at any time.

GAME BANTAMS.—In Game Bantams the plumage is precisely similar to the corresponding varieties of the Game fowl, from which they were undoubtedly obtained by long interbreeding, and continually selecting the smallest specimens, occasionally, perhaps, crossing with a Bantam to expedite the process. The carriage and form must also be similar, and the drooping wing, so common in other Bantams, would infallibly disqualify a pen of Game.

In courage and "bottom" Game Bantams are not behind their larger relatives. In constitution they are the hardiest of all Bantam breeds.

Black-reds, Duckwings, Brown-reds, and Piles are all

shown. At one time the Black-reds were far the best, but the others are now fully equal to them; and in all the colours, the long legs and stylish carriage are now attained as fully as in the larger Game, there being no shortening in any respect.

Bantam chickens require a little more animal food than other fowls, and, for a week or two, rather extra care to keep them dry. After that they are reared as easily as other birds, and should indeed be rather *scantily* fed to keep down the size. Rice is often largely employed in their diet for the same purpose, and so is late hatching; but this tends to shorten the tails and other furnishing of the cocks. Most of the hens are good mothers, and are often employed to rear small game; and are not bad layers if the eggs were only larger. We believe them, however, to produce quite as much for their food as ordinary breeds. But their chief use is in the garden, where they eat many slugs and insects, with very little damage. On this account they may be usefully and profitably kept where a separate poultry-yard is found impracticable. We should prefer the Game variety, as being hardiest; and, being good foragers, five or six of these may be kept in a garden for almost nothing, requiring only a house two feet square to roost and lay in.

Bantam eggs are the very thing to tempt the appetite of an invalid, and are just nicely cooked by pouring boiling water over them upon the breakfast table.

TURKEYS, ORNAMENTAL POULTRY, AND WATER-FOWL.

CHAPTER XXVI.

TURKEYS. GUINEA-FOWL. PEA-FOWL.

TURKEYS.—The most opposite opinions have been expressed by different breeders as to whether or not the rearing of turkeys in England is profitable. The general judgment seems to be that they can barely be made to repay the cost of their food. In the Eastern Counties, however, they are largely reared with very satisfactory results, and we believe that where the balance-sheet is unsatisfactory, the cause will generally be found in heavy losses from want of care. The mortality in turkey chicks is very often tremendous, and quite sufficient to eat up any possible amount of profit; but there are persons who for years have reared almost every chick; and, under these circumstances, they will yield a very fair return.

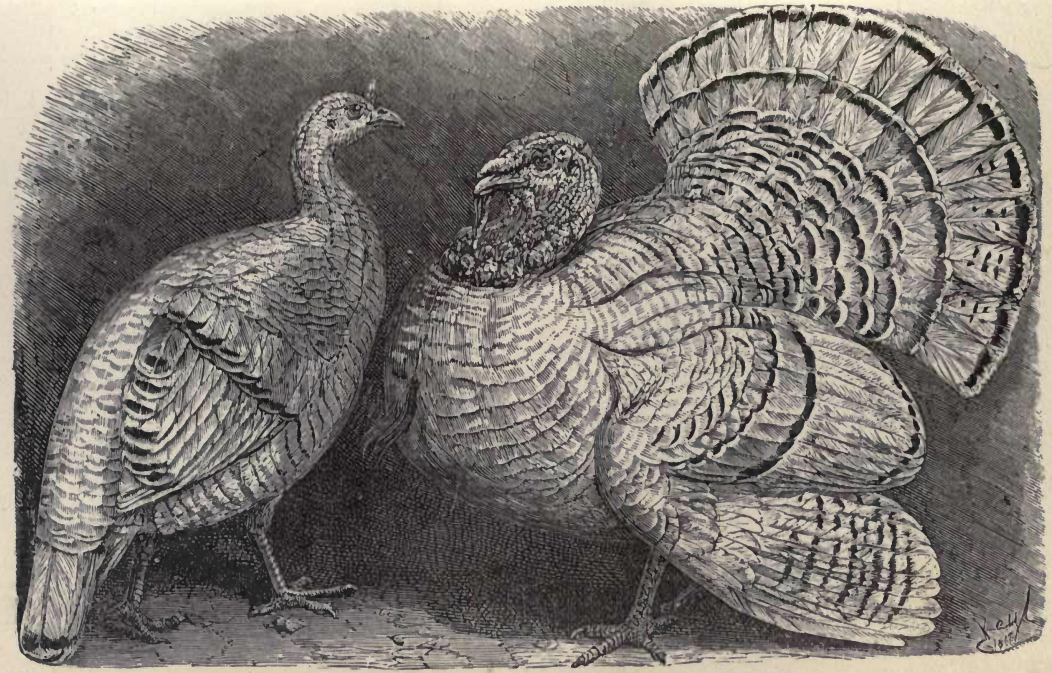
We have taken much pains to gather, from the best authorities, the essentials of such successful management; and wherever our directions shall be found to differ from others, the reader may rely with confidence that the treatment given is such as has been thoroughly tested and proved to give the best results.

The main point to remember is, that for about the first six weeks or two months the turkey chicks are *excessively* delicate as regards wet or cold. The very slightest shower, even in warm weather, will often carry off half of a large brood. When about two months old, however, the red naked protuberances about the neck and throat begin to appear, and as soon as these are fairly developed, or the birds "shoot the red," as it is called, the *chicks* become *poults*, and are soon hardier than most other fowls, braving any weather with impunity.

It is obvious that turkey breeding is only suitable for a dryish soil. It is also well worth while, and absolutely necessary to pecuniary success, to provide very ample shed-shelter for the young broods during the critical period, ordinary poultry accommodation being insufficient. Damp ground is so fatal that every care must be taken to provide a dry and clean bottom, dug out and raised with dry material if necessary; otherwise the building may be a mere shed of four bare walls, well roofed, and well lighted. With shelter of this kind there need hardly be a chick lost, except from accident.

It has been said that the number of hens to one turkey-cock may be unlimited; and one visit to the cock is certainly sufficient to render fertile all the eggs laid by a turkey-hen. The best breeders, however, find that as the number of hens allowed to one bird approaches a dozen, the chicks show falling off in constitution; and the number ought therefore to be limited to less than this—quite enough brood stock for even a large establishment. The turkey-cock may be used for breeding at two years old, and the hen at twelve months, but are not in their prime till a year older. They will be first-class breeding stock, as a rule, for at least two years later, and many cocks in particular will breed splendid chickens for considerably longer; and it is here that a very common mistake is made, even by the Norfolk breeders, who are apt to sell their larger and older birds, and breed from young stock, in order to save the keep of heavy birds through the winter and get a better price. Now repeated experiments have been made on this point, of which we will only quote one, recorded in America, where turkeys are reared far more systematically than in England.

In 1871 a raiser bred from an unusually large and strong gobbler, bred the preceding season, but weighing 25 lbs., and very fine yearling hens. All were from a very large strain, and gave a fine flock, several pairs weighing 35 lbs. at seven months old. The birds were kept over, and next year the cock weighed over



CAMBRIDGE TURKEYS.

30 lbs., and the hens 18 lbs.: there were that season *more pairs weighing* 40 *lbs.* than there had been 35 lbs. the year before; and they were hardier and reared with less trouble.

This rule is universal. The only thing to be said against it is, that a very heavy gobbler is sometimes too much for the hens. This, however, can be avoided, and is avoided in America, by shutting up the gobblers a while before breeding, and feeding rather sparingly, but on good food, so as to reduce their weight. The gobbler should be as large in frame as possible; but the best chicks, with such a father, come from hens 14 lbs. to 17 lbs. each. Special care should be selected to weed out birds which have a *short keel* or breast-bone, which is a great fault, and will reduce the price immensely, affecting the carver most seriously.

The turkey-hen generally lays about eighteen eggs—sometimes only ten or a dozen, and when each egg has been taken away when laid, it may be more. We once heard of ninety eggs being laid by a turkey-hen, but can scarcely credit such a statement. A very good plan is to give a turkey's first seven eggs to a common hen—quite as many as she can cover—when there will be generally just about enough laid subsequently to be hatched by the turkey herself. The best time to hatch the chicks out is in the months of May and June, or even July; and all eggs set should be marked, as the turkey often lays several after commencing incubation.

In a state of nature, the turkey-cock is constantly seeking to destroy both the eggs and chickens, which the female as sedulously endeavours to conceal from him. There is generally more or less of the same disposition when domesticated, and, when it appears, it must be carefully provided against; but the behaviour of very many cocks is quite unexceptionable; and as such a quiet disposition saves a great deal of trouble, it is always worth while to ascertain the character of the cock of the year in this respect. If he be friendly to the chicks

and sitting hens, he may be left at large; if otherwise, he must be kept away.

The turkey-hen is very prudish, but gives scarcely any trouble while sitting. She sits so constantly that it is needful to remove her daily from her nest to feed, or she would absolutely starve. Nevertheless, when absent she is apt to be forgetful, and, therefore, if allowed to range at liberty, care should be taken that she returns in time—twenty minutes. A better plan, however, is to let her have her liberty only in a confined run of grass. Besides her daily feed, a water vessel and some soft food should be always within her reach. No one must visit the hatching-house but the regular attendant, or the hens will get startled, and probably break many eggs, which easily happens from the great weight of the birds.

Many have alleged that the turkey sits thirty-one days. This is an error. The chicks break the shell from the twenty-sixth to the twenty-ninth day, scarcely ever later. The day but one before the hatching is expected, the hen should be plentifully fed, the nest cleaned of any dung or feathers during her absence, and an ample supply of food and water placed where she can reach it, as she *must not again be disturbed* till the chicks are out. In dry weather, if the nest be in a dry place, the eggs will have been daily sprinkled as described in Chapter IV. With these precautions, there will rarely fail to be a good hatch.

The egg-shells may be cleared away after hatching has proceeded some hours, but the chicks should *never be taken away from the hen,* and never be *forced to eat.* The latter practice is very general, as turkey chicks are very stupid, and do not seem to know how to peck. But a much better plan is to put two ordinary hen's eggs under the turkey, five or six days after she began to sit, which will then hatch about the same time as her own, and the little chickens will teach the young turkeys, quite soon enough, what they should do. Water

or milk may be given, however, by dipping the tip of the finger or a camel-hair pencil in the fluid, and applying it to the end of their beaks.

And now for the chicks. These are often fed on oatmeal, &c., like the young of other poultry; and it does not answer, as they have a strong tendency to diarrhœa. To meet this, experienced rearers feed for the first few days on little but *hard-boiled egg*, mixed with some kind of salad, and sometimes after the first day with milk-curd, which must, however, be squeezed very dry. The very best green food right through for young turkeys is *dandelion leaves*, chopped fine at first; and where they are regularly reared, it is well worth while to see there is a good supply, which is but too easy. When they have a choice, they always prefer this salad to all others, and its known tonic and biliary properties explain the reason. At all events, nothing more helps turkey chicks to thrive. If these cannot be had, chopped nettles or onions are the next best. After a week or so, barley-meal and bread-crumbs may be gradually added, till, at the end of three weeks, the egg is as gradually left off altogether. By degrees, also, some hard grain and boiled potato may be given, but avoiding too soft or new grain carefully. "Little and often" applies even more to feeding them than to other chickens.

There will be little trouble from the tendency to diarrhœa under this regimen; but far more trouble and care are needed against wet or damp. It must be constantly remembered that anything like a wetting is practically fatal. For the first two or three days they should be kept entirely under cover; after that the chicks may be let run on the grass, but not till the dew is quite gone, and always keeping the hen cooped under shelter, to ensure constant return to a dry bottom. In cold, windy weather, the coop must be well screened from that, and, if bitterly cold, the chicks kept in. When about three weeks old, the hen may have some liberty in fine, dry weather, but

never till the grass is dry, and always driving in before every shower, and keeping in whilst the herbage remains wet. This must be continued till nine or ten weeks old, when they will begin to "put out the red," as it is called, or to develop the singular red excrescences on the neck so characteristic of the turkey breed. This process will last some little time, and when completed the birds will be pretty fully fledged. They are now hardy, but must not be too suddenly exposed to rain or cold winds. Take some reasonable care of them for a while longer, and very soon they will have become the hardiest birds known in the poultry-yard, braving with impunity the fiercest storms, and even preferring, if permitted, to roost on high trees through the depth of winter. In fact, turkeys will rarely roost in a fowl-house; and a very high open shed should therefore be provided—the higher the better—the perches being placed as high as possible. They might be left to their natural inclination with perfect safety so far as their general health is concerned; but in very severe weather their feet, if roosting on exposed trees, are apt to become frost-bitten.

To attain great size, animal food and good feeding generally must be supplied from the first. By this means astonishing weights have been attained; we knew of a cock which weighed very nearly *forty pounds*, and a full-grown bird much less than thirty would stand little chance at a good show. We do not say that such weights are profitable—we believe the contrary—but we do contend that *good* feeding, leading to fair *good* size, is the only way to extract profit from poultry of any kind. It is especially the case with turkeys, because the large ones, if of good shape, are worth much more *per pound* by weight than the smaller ones.

The ordinary English turkey is of two kinds—the Norfolk (black all over) and the Cambridge. The latter is of all colours—the best, to our fancy, being a dark copper bronze; but fawn colour and pure white are often seen, as are also variegated

birds, which occasionally present a very magnificent appearance. The white variety is most delicate and difficult to rear of all, but the dark Cambridge takes most prizes, and usually attains the greatest size. In early editions of this work we expressed the hope that English stock might be improved by crossing with the much larger American *bronze turkey*, containing chiefly wild blood. This had not then been done; but long ere this repeated importations have been made of this noble strain, and the advantages have been even greater than we had expected. The average size of the Birmingham prize birds has not only been greatly increased, but the hardiness has been even more benefited; and there are now probably no prize English strains which are not at least half American blood. The magnificent plumage of the American breed is another point in its favour. The heaviest recorded American weight is 45 lbs.

The magnificent Honduras, or ocellated turkey, has unfortunately never been successfully domesticated. It breeds freely in confinement, but appears to require a tropical climate.

GUINEA-FOWL.—This bird, called also the *Gallina* and *Pintado*, mates in pairs, and an equal number of males and females must therefore be provided to prevent disappointment. There appear to be ten or twelve wild varieties, but only one has been domesticated in this country.

To commence breeding Guinea-fowls, it is needful to procure some eggs and set them under a common hen; for if old birds be purchased they will wander off for miles as soon as they are set at liberty, and never return; indeed, no fowl gives so much trouble from its wandering habits. If hatched in the poultry-yard, however, and regularly fed, they will remain; but must always have one meal regularly at night, or they will scarcely ever roost at home. Nothing, however, will persuade them to sleep in the fowl-house, and they usually roost in the lower branches of a tree.

The hen lays pretty freely from May or June to about August. She is a very shy bird, and if eggs are taken from her nest with her knowledge will forsake it altogether, and seek another, which she conceals with the most sedulous care. A few should therefore always be left, and the nest never be visited when she is in sight. It is best to give the earliest eggs to a common hen, as the Guinea-fowl herself frequently sits too late to rear a brood. If "broody" in due season, however, she rarely fails to hatch nearly all. Incubation is from twenty-six to twenty-nine or thirty days.

The chicks require food almost immediately—within, at most, ten hours after hatching—and should be fed and cared for in the same manner as young turkeys, though they may be allowed rather more liberty. It should be observed, however, that they require more *constant* feeding than any other chickens, a few hours' abstinence being fatal to them; and they need also rather more animal food to rear them successfully and keep them in good condition, especially in the winter. The chicks are very strong on their legs, and in fine weather may be allowed to wander with the hen when very young.

The male birds of this breed are quarrelsome, and very apt to beat other fowls.

The flesh of the Guinea-fowl is of exquisite flavour, much like that of the pheasant. The body nearly equals in size an ordinary Dorking, and is very plump and well-proportioned. Like all other finely-flavoured birds, they should never be overfed or crammed, as is sometimes done. Who would think of cramming a pheasant to make it more "fit for the table?"

PEA-FOWL.—The distinguishing characteristics of this well-known bird are the crest or aigrette on the top of the head, and the peculiar structure of the tail covert feathers. The true tail of the peacock is short and hidden, and what we call the "tail" is, strictly speaking, an excessive development of the tail-coverts, or side feathers, which occasionally have been

known to extend more than a yard and a half from their insertions.

The colour of the ordinary peacock is too well known to need description. White and pied varieties are also bred, but are, in our judgment, far less ornamental. This species, called by naturalists *Pavo cristatus*, has a crest consisting of about two dozen feathers, only webbed at the very tips.

There is another variety known as the Javan Pea-fowl, or *Pavo muticus*. This bird is larger than the common Pea-fowl, the male sometimes measuring more than seven feet from the bill to the end of the "tail." The naked space round the eye is also of a livid blue colour, and the feathers of the neck are laminated, or resembling scales. The most characteristic difference, however, is in the crest, which is much higher, and the feathers of which are webbed, though rather scantily, from the base, instead of being bare till near the tips. The bird also differs in only possessing his long and splendid ocellated train during the breeding season, at other times appearing with feathers not so long, and destitute of the well-known "eyes," but of a rich green with gold reflections, beautifully and regularly "barred," or "pencilled," on a very large scale, with whity-brown. This splendid bird is not very common.

A third variety has recently been described, called the "black-winged" Pea-fowl, in which the shoulders and most of the wing in the male bird are black. The hen is much lighter than the common breed, being generally of a cream colour, with a dark back. It appears a distinct race; but it must be admitted that all three varieties of Pea-fowl freely intermix with a fertile result, and so closely resemble each other in nearly all their characteristics, that a common origin is certain.

Pea-fowl are of a very wild disposition, and generally roost either on trees or on the very top ridge of a roof, to which they fly with ease. The hen lays in the greatest seclusion, and must always be allowed to select her own nest, usually deep in a

shrubbery. She lays generally from five to nine eggs, but sometimes considerably more. The time of incubation is about twenty-eight to thirty days. One cock should not have more than three or four hens.

It is no use setting Pea-fowl eggs under common hens, which forsake their chickens in about two months, long before the young Pea-chicks can endure the night air. The Pea-hen goes with her brood at least six months, and the chicks *need* this. They are fed and cared for as turkeys, so far as keeping them from rain is concerned; but must be let out on the grass always in dry weather, or they will not thrive. The food is also similar in general; but some worms or other insect food should be provided in addition, in default of which some raw meat cut fine is the best substitute.

Pea-fowl are tolerably familiar, and if regularly well fed will get very tame, and tap at the window when neglected. They are, however, ill-natured, and frequently beat and even kill other fowls, sometimes even attacking children. From this cause they are ill adapted to keep in a general poultry-yard, apart from their natural impatience of restraint. Young chickens in particular the cocks will often kill, and we believe even *eat* afterwards. Their proper place is on the lawn or in the park, where the splendid hues of the cocks show to great advantage, and their peculiar shrill scream is not too near to be disagreeable.

They cannot be considered, of course, under the head of profitable poultry, being always kept for ornament. The flesh of a year-old bird is, however, excellent, and carves to a great advantage on the table. Of the adult birds we have nothing to say, never having known any person who had attempted to eat one. They do not reach maturity until three years old.

CHAPTER XXVII.

PHEASANTS.

THESE birds scarcely come under the head of Poultry; but as they are often kept on account of their great beauty by amateurs as well as extensively reared for the gun, some notice of them will not be out of place.

Confined near a house, in an aviary open to view, pheasants will seldom lay, and scarcely ever sit. In such circumstances evergreen or other shrubs should be so arranged as to afford them some seclusion, which may induce them to breed; but it is best to hatch the eggs under a common hen. Some hen pheasants, however, will lay and sit very well. Such are usually those which have been hatched and reared in confinement; and the fact proves to our mind that with care and perseverance these birds might in time be as thoroughly *domesticated* as the other inmates of our poultry-yards. It is confirmatory of this, that whilst the wild hen only lays a dozen or fifteen eggs, in confinement, the eggs being taken daily, a home-reared bird will often lay forty or fifty, as in the case of the common fowl.

Pheasants require, more than any other stock, the most scrupulous cleanliness, with very abundant green food, and rather more animal substance than other poultry, otherwise the general treatment is very similar. The cock, who must be at least two years old, should be mated with three or four hens not under twelve months.

One wing should always be cut or stripped, to prevent the birds flying up and injuring themselves, as they will otherwise do. This is the more necessary, as an aviary for pheasants should never be covered, the *adult* birds doing much better in an open run well gravelled and kept clean.

When reared as an amusement on such a limited scale, the chicks, which hatch on the twenty-fourth or twenty-fifth day, should be put out and treated generally much like chickens, or

rather turkey-chicks, giving them a *board* coop made tight and sound, and only letting them run on grass when quite dry and warm; and always giving them perfect shelter from wet and cold winds; but at the same time plenty of fresh air. They must, however, have more animal food than other chickens; and for the first few days it is best to feed entirely on hard-boiled egg chopped fine, ants' eggs, and curd pressed through a cloth till quite dry, with now and then a *little* stale bread-crumb soaked in milk. For green food, leeks or onions minced small are best. After a week their staple food may be oatmeal dough mixed very dry, and made into little pills, or Spratt's Food, varied with chopped egg and bruised hemp-seed, and occasionally crushed wheat, animal food being also given. Ants' eggs, as is well known, are the very best animal diet for young pheasants, and almost necessary to any great success in rearing, though much may be done without by care and attention.

The chicks must be fed for some time nearly every hour; and their water, which should always be drawn *from a spring*, must be renewed several times a day. This is the only way of avoiding the dreaded "gapes," which is tenfold more fatal to young pheasants than to any other fowls; but which may be kept off by keeping the water always *clear*, and never letting them out, while young, on wet grass. Adult birds, however, are very hardy; and do not, if the soil be tolerably light and dry, require shelter from any ordinary weather, beyond what a few shrubs, or even dry brambles, thrown in their pen, will afford them.

Feeding-boxes, so commonly used, we consider bad. Keep the ground *clean*, and scatter the food broadcast. There is no better than buckwheat and barley for old birds, with green food regularly, and a little animal food now and then, like other fowls.

For rearing on a large scale, Mr. Baily, who has had great experience, recommends laying pens twelve feet square, to be erected on light dry grass land, if possible on the side of a hill

facing west or south. These pens should be made of temporary hurdles or fencing, six or seven feet high, constructed of laths nailed an inch apart, and touching the ground everywhere at bottom, so as to keep out vermin. The advantages of such a plan are, first, cheapness, and secondly, convenience; as the hurdles can be taken down when the breeding season is over, and packed away in a very small compass. It is also advisable to erect them every year on fresh ground, which such a rough construction eminently facilitates.

Every such pen is adapted for a cock and three or four hens, whose wings must be cut to prevent their flying over. For a nest a slight hollow should be scooped in the ground in the centre, and filled with sand, at each end of which, and six feet apart, a short stake thirty inches high should be driven, on the tops of which is nailed a horizontal pole. Against this pole rough twig fagots are inclined from each side, forming a rough kind of shelter, which the pheasant prefers to any regular receptacle.

The eggs should be collected every evening; and if this be regularly done, every hen in the breeding-pen will usually lay at least twenty-five; the laying faculty, as we have already remarked, being increased by domestication. They are best set under Game hens, but the hen pheasant may also be allowed a share, which she will hatch well, but is not quite so manageable with her chicks as the common hen.

The early treatment will be as already described, but when a few days—say a week—old, the board coops are placed in regular rows out on a grass-field, which should be given up to the purpose. A space round every coop should be mown close, but the rest left standing to afford the poults shelter from the heat, which they are unable to bear, suffering from it almost more than from cold. The chicks should be shut in at night, but let out strictly at *daybreak* every morning, as they are early risers.

Feeding will be as before mentioned, taking, of course, equal pains to keep the water rigidly clear. Many large breeders hang up pieces of meat to putrefy, in order to procure the peculiar white worms, called "gentles," which are collected in a tin or zinc pan placed underneath; but such should be sparingly used, as the young poults often refuse plain food after. Ants' eggs are much better.

When the breeding season is over, the old birds, and the young also when well grown, are most conveniently kept fifty or sixty together, in pens fifty feet square; being suffered to remain there until wanted, or till the breeding pens are made up for next year.

On this system, with good management, eighty per cent. of the eggs laid may be brought to the gun, and the natural produce thus more than doubled.

Of the different varieties, the Common Pheasant is most delicate, and is rather wild. The plumage is too well known to need any description, especially as the breed is not so well adapted for the mere amateur as the beautiful Chinese or ring-necked breeds, which are daily becoming more common, and are hardier and easier to rear.

The Golden Pheasant cock is also a magnificent bird. The head bears a crest of beautiful amber-coloured feathers. The back of the head and neck is of a beautiful orange red, passing low down the breast into a deep scarlet, which is the colour of all the under parts. The neck feathers are arranged like plate armour, and are often erected by the bird. The back is a deep gold colour, the tail covert feathers being laced with crimson; tail-feathers brown mottled with black. The hen is of a more sober tint, being of a general brown colour with dark markings.

This variety is very wild and easily startled, but is, nevertheless, more easily reared than the Common Pheasant, and would probably become more domesticated with per-

severance in breeding under a hen. The hen pheasant herself is so shy that she scarcely ever hatches, unless in an unusually sheltered place, with shrubs and bushes arranged to resemble nature as much as possible.

The Silver Pheasant is most easily tamed of all the varieties, and is also the hardiest; whilst, in our opinion, it equals any in beauty. The cock bird of this breed has a *blue* crest, and all the upper part of the body is a silvery white, most exquisitely pencilled with fine black lines arranged with the most mathematical precision. Breast and under parts usually quite black, but sometimes a little mottled. The hen is brown, but remarkably neat and pretty.

This bird, if home-reared, may have its liberty in the poultry-yard, feeding with the other fowls; and has often been known to lay forty or fifty eggs. There appears, therefore, every reason to believe that with perseverance it might be rendered quite a domestic, and even profitable variety.

Hybrids between the Common Pheasant and other birds are not unfrequent. They have been known to breed with the Black Cock, Turkey, Guinea-fowl, and common domestic hen; the latter cross being not at all uncommon, as every gamekeeper knows. Such hybrids are, however, invariably sterile amongst themselves, and Mr. W. B. Tegetmeier has declared them to be totally unproductive when mated even with the parent; but there is undoubted evidence* of at least two birds having been reared as the produce of such a cross, mated again with the cock pheasant. The subject is only interesting from the singular fact, that although a cock pheasant is a much *smaller* bird than the domestic fowl, the cross produced is almost invariably very much *larger* in size than the mother, probably in consequence of the strong "wild blood" introduced; and hence some may think the experiment worth repeating. It is certainly true that by long

* See "Proceedings of the Zoological Society," 1836.

perseverance great difficulties of this kind have been overcome, and hybrids, formerly considered barren, have been found at least partially fertile; but in this case interbreeding has been so often tried that we cannot consider the field very promising. One great obstacle is the extreme and apparently untamable wildness of the hybrid from which it is wished to breed; and the only chance of success would appear to be rearing such singly, in company with his or her intended mate.

We have only one further remark to make. Pheasants should never be caught with the hand, as their bones are fractured with the greatest ease. An implement should be kept for the purpose, resembling a large butterfly net, but with the bag of open netting instead of gauze. In this way they may be caught when needed with the utmost facility; but they should never be meddled with more than absolutely necessary.

CHAPTER XXVIII.

WATER-FOWL.

THE above heading should be borne in mind before such stock is added to the poultry-yard. They are strictly *water* birds; and although ducks may be often seen in courts and alleys, where the nearest approach to a pond which they have ever known is some filthy mud-puddle, to keep animals whose *habitat* is so well marked in such unnatural circumstances must revolt every truly humane mind, and cannot in the long run repay any one who attempts it.

DUCKS.—In the case of these birds alone may some little exception be made to the above remark, as they will do well in a garden or any other tolerably wide range where they can procure plenty of slugs and worms, with a pond or cistern only a few feet across. Kept in this manner, they will not only be found profitable, but very serviceable; keeping the

place almost free of those slugs which are the gardener's great plague, and doing but little damage, except to strawberries, for which they have a peculiar partiality, and which must be carefully protected from their ravages. Other fruit is too high to be in much danger.

In such circumstances there can be no doubt whatever that ducks are profitable poultry; and where numerous fowls are kept, a few should also be added, as they will keep themselves, very nearly, on what the hens refuse; but where every atom of the food they consume has to be paid for in cash, our own opinion is that ducks do not pay to rear, except for *town* markets, their appetites are so everlasting and voracious. This point, however, we must leave to the experience of the reader, and proceed to consider the two principal varieties—known as the Aylesbury and Rouen. The following descriptions and accompanying remarks are from the pen of Mr. John K. Fowler, of Aylesbury, one of the largest poultry-breeders, and certainly the most successful exhibitor of ducks, in England:—

"My idea of a perfect Aylesbury drake and duck is, that in plumage they should be of the purest snow-white all over. The head should be full, and the bill well set on to the skull, so that the beak should seem to be almost *in a line* from the top of the head to the tip. The bill should be long, and when viewed in front appear much like a woodcock's: it should be in prize birds of a delicate flesh colour, without spot or blemish, and with a slight fleshy excrescence where the feathers commence. If it occasionally has a very slight creamy tint, it would not disqualify, but any approach to dark buff or yellow is fatal to the pen. Eye full, bright, and *quite black*.

"The legs should be strong, with the claws well webbed, and in colour of a rich dark yellow or orange. Body rather long, but broad across the shoulders, and the neck rather long and slender. The drake should have one, and sometimes has two, sharp curls in his tail.

"The weight of each bird in a show-pen ought to be about nine pounds, but this is not very often attained.

"Immense numbers of ducks are bred around Aylesbury. It is not at all unusual to see around one small cottage 2,000 ducklings, and it has been computed that upwards of £20,000 per annum is returned to the town and neighbourhood in exchange, whilst the railway not uncommonly carries a ton weight of the birds up to the London market in a single night.

"The Aylesbury Duck often begins to lay before Christmas. Sitting hens are then procured; and immediately after hatching the ducklings are taken away from the hen and put, fifty or a hundred together, in a close *warm* place, with *one* hen tied by the leg to teach them to peck, and also to huckle them. They should be given stimulating food; that is, meal well mixed with boiled meat and greaves; they are thus made fat in six or seven weeks, and, if sent to market in March or April, realise from 12s. to 18s. per couple.

"With regard to my own breeding-stock, the selection gives me no trouble. All the large breeders know that I will give a guinea at any time for a very fine and well-developed bird, and I thus keep my strain large, and am constantly infusing new blood.

"Many persons cannot imagine how the specimens of the breed reared *here* acquire such faultless flesh-coloured bills. The cause is local, as might be supposed. The beautiful prize tint is obtained by giving the ducks in their troughs of water a peculiar kind of white gravel found only in the neighbourhood of Aylesbury, in appearance resembling pumice-stone. In this gravel they constantly shovel their bills, and this keeps them white. Also, birds intended for exhibition are seldom allowed out in the sun, as it tans the bills sadly.

"In selecting breeding-stock, drakes should be chosen with very long bills, like a woodcock's, and ducks with broad backs and large solid bodies."

For the gravel mentioned by Mr. Fowler, it is difficult to find a perfect substitute. Any other kind of clean white gravel may, however, be tried, and it may be well worth while for intending prize-takers to *transport* a quantity to their yards. It is also very beneficial to the paleness of their bills to let the ducks out on the wet grass in the very early morning, before the sun is up. Besides the tanning influence of the sun, it is well known that ferruginous soil has a peculiar specific effect on the bill, often turning it yellow in a single week. A bill thus stained can never be paled again; and Aylesbury Ducks should, therefore, never be let out on land containing iron ore.

"Rouen Ducks," Mr. Fowler states, "are reared much the same as Aylesbury, but are not nearly so forward, rarely laying till February or March. They are very handsome, and will weigh eight or nine pounds each; and, as a rule, do much better in most parts of England than the Aylesburys. Their flesh is excellent, and at Michaelmas is, I think, superior to the other.

"The best general description of the Rouens in plumage is to be precisely like the wild mallard, but larger. The drake should have a commanding appearance, with a rich green and purple head, and a fine long bill, formed and set on the head as I have described for the Aylesburys. The bill should look *clean*, of a yellow ground, with a very pale wash of green over it, and the 'bean' at the end of it jet black. His neck should have a sharp, clearly-marked white ring round it, not quite meeting at the back. Breast a deep rich claret-brown to well below the water-line, then passing into the under body-colour, which is a beautiful French grey, shading into white near the tail. The back ought to be a rich greenish-black quite up to the tail feathers, the curls in which are a rich dark green. Wings a greyish-brown, with distinct purple and white ribbon-mark well developed. The flight-feathers must be grey and

brown—any approach to white in them is a fatal disqualification, not to be compensated by any other beauty or merit. Legs a rich orange. Nothing can exceed the beauty of a drake possessing the above colours in perfection.

"The bill of the duck should not be so long as in the drake, and orange-brown as a ground colour, shading off at the edges to yellow, and on the top a distinct splash or mark of a dark colour approaching black, two-thirds down from the top; it should there be rounded off, and on no account reach the sides. I may also remark that any approach to slate-colour in the bills of either sex would be a fatal blemish. The head of the duck is dark brown, with two distinct light brown lines running along each side of the face, and shading away to the upper part of the neck. Breast a pale brown, delicately pencilled with dark brown; the back is exquisitely pencilled with black upon a moderately dark brown ground. The shoulder of the wing is also beautifully pencilled with black and grey; flight-feathers dark grey, any approach to white being instant disqualification; and ribbon-mark as in the drake. Belly, up to the tail, light brown, with every feather delicately pencilled to the tip. Legs orange, often, however, with a brown tinge. The duck sometimes shows an approach to a white ring round the neck, as in the drake; such, a *good* judge would instantly disqualify."

To the foregoing we need add nothing. We will only remark that when intended for fattening, ducks should have only a trough of water instead of their usual pond, and should then be fed on barley meal. Celery will add a delicious flavour. In ordinary rearing the ducklings should be left with the hen, or mother-duck, and kept from the water entirely for a week or ten days; then only allowed to swim for half an hour at a time, till the feathers begin to grow, else they will be liable to die of cramp. They will soon be totally independent of their mother, and may then be left entirely to them-

selves; only taking precautions against *rats*, to which ducklings fall victims far oftener than any other poultry.

The *Pekin Duck* is a recent introduction, and one of the most valuable. It was imported direct from Pekin into both England and the United States independently, in the year 1873, but most English importations have been from the American stock. The characteristics are most marked and distinct in many points. The plumage is white, with a most peculiar canary-yellow under-colour all through it; but the duck differs chiefly from others in a remarkable curved or boat-shaped contour of the body, both breast and stern being so curved as irresistibly to suggest the notion of a birch-bark canoe. The legs and bill are deep yellow or reddish-orange, the legs set far back, which makes the bird walk rather upright. Some birds have been shown destitute of the yellow tinge through the feather, but there have generally been other signs in such of a cross with the Aylesbury.

This breed is the best layer (on an average) of all the ducks, and very seldom desires to sit at all, though some instances are recorded. It is very hardy, and grows fast; and it gives the breeder a white duck without that trouble about the bill which so adds to the difficulty of breeding Aylesbury ducks. The size is good, though the weight is seldom what might be supposed. We once knew a duck weigh 11 lbs., but, as a rule, very large specimens do not exceed 15 lbs. per pair; the flesh is, however, delicate and peculiarly free from grossness. On the whole this must be pronounced one of our most valuable breeds, and is rapidly making way. Its appearance on the water is very ornamental.

The Cayuga is a large black duck, originating in North America. The original wild stock is no doubt descended from the mallard, and was of a brownish black, with an irregular white collar round the drake's neck. Breeding to get out these faults of colour at first reduced the size; but this was recovered, and

the breed now is a good size, and black all over, with as much green lustre as possible—in fact, as nearly as possible a large edition of the Black East India Duck. The shape, however, is not nearly so short as that of the East India Duck, but more resembles that of the Aylesbury.

This duck has been bred to weigh 19 lbs. per pair. It is hardy and matures early; is quiet in habit, and a very good layer. The flesh has a gamey flavour which most people like, and surpasses most wild ducks in this respect. It is very apt to moult out white feathers after the first year or two. This fault should be avoided, and the legs chosen as dark as possible.

The *Muscovy*, or *Musk Duck*, appears to be totally a distinct species; the cross between it and other ducks being, at least usually, unfertile. The drake is very large, often weighing ten pounds, and looking far more on account of the loose feathering: but the female is less than the Aylesbury, not exceeding about six pounds. The plumage of this variety varies greatly, from all white to a deep blue-black, but usually contains both. The face is naked, and the base of the bill is greatly carunculated. The drake is very quarrelsome, and we well remember the injuries inflicted by an old villain of this breed belonging to a relative, upon a fine Dorking cock in the same yard. When excited, the bird alternately depresses and raises its head, uttering most harsh and guttural sounds, and with the red skin round the face, presenting an appearance which has been justly described as "infernal."

The flesh of the Musk Duck is very good eating; but it is far inferior as a layer to either the Rouen or the Aylesbury, and cannot be considered a very useful variety.

Call Ducks are principally kept as ornamental fowl. The voice of the drake is peculiar, resembling a low whistle. They vary in colour, one variety precisely resembling the Aylesbury in plumage, but with a yellow bill, and the other the Rouen;

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ROUEN DUCKS. TOULOUSE GEESE. AYLESBURY DUCKS.

but in both cases bearing the same relation to them as Game Bantams do to the Game fowl. The flesh is good; but there is too little to repay breeding them for the table, and their only proper place is on the lake.

The *East Indian*, or *Buenos Ayres Black Duck*, is a most beautiful bird. The plumage is black, with a rich green lustre, and any white, grey, or brown feathers are fatal. They should be bred for exhibition as small as possible, never exceeding five and four pounds. As they usually pair, equal numbers should be kept of both sexes. The flesh of this duck is more delicious than that of any other variety, in our estimation.

Many most beautiful varieties of small foreign ducks are often shown, the most common being the Mandarin and Carolina; but it is needless to give detailed descriptions here.

The Common Duck needs no description. We believe it to be the Rouen more or less degenerated, or, rather, perhaps, not bred up to the perfection of that breed. The same may be said of the French Duclair Ducks.

It should be remembered in keeping ducks that the *wild* birds are monogamous, and not more than two or three be given to one drake, if eggs are wanted for sitting. The duck usually sits well, and always covers her eggs with loose straw when leaving them, a supply of which should therefore be left by her. The usual number laid is fifty or sixty; but ducks have laid as many as two hundred and fifty in a year; and we believe with care this faculty might be greatly developed, and their value much increased as producers of eggs. At present they are mostly kept for table.

Ducks should have a separate house, with a brick or stone floor, as it requires to be frequently washed down. Clean straw should be given them at least every alternate night. Other attention they need none, beyond the precaution of keeping them in until they have laid every morning. This is

necessary, as the Duck is very careless about laying, and if left at liberty will often drop her eggs in the water whilst swimming.

GEESE.—"Of the two principal breeds of geese," Mr. Fowler writes, "I very much prefer the Grey or Toulouse to the White or Embden, being larger and handsomer. I have had a Toulouse gander which weighed thirty-four pounds, a weight never, I am sure, attained by the White breed. They are also better shaped, as a rule, and every way the more profitable variety. The forehead should be flat, and the bill a clear orange red. The plumage is a rich brown, passing into white on the under parts and tail coverts.

"The Embden Goose is pure white in every feather, and the eye should show a peculiar blue colour in the iris in all well-bred birds."

We should recommend for market to cross the Toulouse Goose with the White, by which greater weight is gained than in either variety pure-bred; but much will depend upon circumstances. White or cross-bred geese require a pond, but the Toulouse, with a good grass-run, will do well with only a trough of water, and will require no extra feeding, except for fattening or exhibition.

The only foreign varieties requiring mention are the *Chinese* and the *Canada* geese, both of which appear to be really midway between the geese proper and the swans, which they resemble in length of neck.

The Chinese Goose is of a general brown colour, passing into light grey or white on the breast, with a dark brown stripe down the back of the neck. They have much of the beauty of the swan, which they also resemble in having a dark protuberance round the base of the upper mandible. The voice is very harsh and peculiar. This breed is not a good grazer, and is best reared in the farmyard.

The Canada Goose also is not a good grazer, and does best

near *marshy* ponds, in which circumstances they will thrive and be found profitable.

With regard to the general management of geese little need be said. More than four or five should not be allowed to one gander, and such a family will require a house about eight feet square; but to secure fine stock three geese are better to one male. Each nest must be about two feet six inches square, and, as the goose will always lay where she has deposited her *first* egg, there must be a nest for each bird. If they each lay in a separate nest the eggs may be left; otherwise, they should be removed daily.

Geese should be set in March or early April, as it is very difficult to rear the young in hot weather. The time is thirty to thirty-four days. The goose sits very steadily, but should be induced to come off daily and take a bath. Besides this, she should have in reach a good supply of food and water, or hunger will compel her, one by one, to eat all her eggs. The gander is sometimes kept away; but this is not needful, as he not only has no enmity to the eggs or goslings, but takes very great interest in the hatching, often sitting by his mate for hours.

The goslings should be allowed to hatch out entirely by themselves. When put out, they should have a fresh turf daily for a few days, and be fed on boiled oatmeal and rice, with water *from a pond*, in a very shallow dish, as they should not be allowed to swim for a fortnight, for which time the goose is better kept under a very large crate. After two weeks they will be able to shift for themselves, only requiring to be protected from very heavy rain till fledged, and to have one or two feeds of grain daily, in addition to what they pick up.

For fattening they should be penned up half-a-dozen together in a dark shed and fed on barley-meal, being let out several hours for a *last bath* before being killed, in order to clean their feathers.

"For exhibition," Mr. Fowler says, "all geese should be shut up in the dark, and fed liberally upon whole barley or oats thrown into water. It is essential to great weight to keep them very quiet, letting them out in the water, however, for half an hour every day."

SWANS.—There are six or seven varieties of swans known to naturalists, but only three are at present, or likely to be, domesticated in this country—viz., the English White or Mute Swan; the Australian or Black Swan, and the Chili or Peruvian Swan. The plumage of the two first needs no description; but that of the Chilian Swan differs from either in being white on the body, with a black head and neck, making rather a pleasing contrast of colour. In size the White Swan is largest of all. All three varieties are long-lived, and individual birds are reported to have reached the age of one hundred years.

The female swan lays in February, every other day until seven to nine eggs are laid. More than five cygnets, however, are seldom hatched. The nest is made somewhere amongst the flags and weeds at the water's edge, and it is dangerous to approach either the male or female during incubation, as they are very irascible, and a blow from their strong pinions will even break a man's arm.

The cygnets are best fed by throwing meal upon the water. The old birds, if they have a large water range, will only need feeding in severe winter, when they should have grain. They also like grass to be thrown to them, and bread, which they will frequently eat from the hand.

The young birds must be left to shift much for themselves, the parents being too jealous and powerful to submit to restraint. But for this they might perhaps be more widely kept, as young cygnets are excellent for the table, and very easily reared.

INDEX.

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20.394