

POULTRY-KEEPING

IN INDIA



ISA TWEED

774

POULTRY-KEEPING IN INDIA.



CRÊVECŒURS.

HOUDANS.

LA FLÈCHE.

THACKER, SPINK & CO., CALCUTTA.

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POULTRY-KEEPING IN INDIA.

A SIMPLE AND PRACTICAL BOOK
ON THEIR CARE AND TREATMENT, THEIR VARIOUS BREEDS, AND
THE MEANS OF RENDERING THEM PROFITABLE.

BY ISA TWEED

ILLUSTRATED.

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P R E F A C E.

FOR many years I have kept Poultry for domestic purposes, and I have been very successful in breeding and rearing them. During these years I have kept a rough Journal and noted down my experiences in poultry-keeping, and, also, all the information on the subject I gathered from various sources.

I now give my notes to the Public, and trust they will prove of some service to all who keep Poultry. I have only stated facts as proved by personal experience, and I have endeavoured to make my notes as brief and explicit as possible.

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ISA TWEED.

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POULTRY-KEEPING IN INDIA.



CHAPTER I.

PLEASURE AND PROFIT OF KEEPING AND BREEDING POULTRY.

POULTRY-KEEPING is a source of pleasure to those who have the means to keep them properly and the time to give them personal attention. But, apart from the pleasure derived from poultry-keeping, it is a proved fact that poultry-breeding is profitable in India. It is surprising that greater time and care have not been given to this important industry. At present the breeding and rearing of poultry is almost entirely in the hands of the low caste, poor and ignorant natives, who allow the birds to live and grow anyhow, and are satisfied if they procure a few pice for a *moorgi*. There is no need to try and compete with these natives. The fowls they rear are very small and sell for very small prices. But there is no fear of over-stocking the market in this country. There is a demand for a larger and better class of poultry, and they who supply this demand are sure to find it profitable.

There is no more delicious and delicate meat than that of a well-fattened fowl. Who does not enjoy the luxury of a large new-laid egg, or a fine fat tender fowl? While many enjoy these luxuries, there are few who are willing to give a little time and care to procuring them. Some small souls imagine that poultry-rearing is degrading to their imaginary greatness, and look upon it as beneath their dignity. Nothing that is honest and useful is in itself degrading. If a person is ashamed to rear fowls, he ought to be ashamed to eat them.

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.

Any person who has a small back-yard can conveniently and profitably keep a few fowls, but those who live in the suburbs of towns, and in the mofussil, have all the necessary advantage for poultry-rearing

There are a great many Europeans, Eurasians and Native Christians in India who have small incomes and find it difficult to maintain their large families. Now, to such persons, poultry-breeding and rearing can be a source of profit, and be made to contribute towards the maintenance of the family. In a family where there are some children of twelve or more years of age, there need be no lack of help in taking care of the poultry. One person can look after the feeding of the fowls, another look after the chickens,

another see to the cleaning of the house, and thus assist the parents to add a little to their small income. The parents may supervise and direct the operations, but the management must never be left entirely in the hands of the uninstructed and inexperienced young people. If a person be unable or unwilling to give a little of his time and attention to his poultry, he had far better not engage in poultry-keeping at all.

Some persons have tried their hand at poultry-breeding and rearing and failed. They have failed, not because the thing was impracticable or unprofitable, but because they did not comply with the conditions upon which success is assured. They failed because they did not know how to manage the business, or because they left everything to servants; failure was the fruit of their ignorance and neglect. To assure success one must know how to manage poultry, and must see to everything himself, and not trust servants.

A man I knew made up his mind to breed and rear poultry, so he went to the nearest bazaar and bought twenty hens and one cock. The hens were the commonest obtainable; some were very old and some sickly. He made a small enclosure 10 × 10 feet for them and fussed about for a few weeks. The hens laid very few eggs, some died, others were drooping, and at the end of three months he was left with only four or five fowls. After this sad experience the poor fellow felt himself qualified to pronounce poultry-keeping an impossible task for Europeans in India.

A lady procured six handsome Cochin fowls and kept them in a small, dark, damp room and an enclosure about 3×6 feet, and ordered the *mehter* to feed the *belatee moorgi* on *dan* and *bat*. In a few weeks the poor birds sickened and died. This good sister was convinced that "India is no place to keep fowls, for they die every year in the rains."

India is no worse than any other place in the world for breeding fowls. The trouble is not with the country so much as with the stupidity and laziness of the people who try to rear them. Poultry-keeping and breeding is always a pleasurable and profitable occupation to those who try to make it so.

There is always a good market for poultry. Breeding stock will sell for from five rupees to twenty rupees a pair ; and fowls for the table will sell—large ones from one rupee to two rupees each, medium-sized ones from eight to twelve annas, and small ones, for stew and curry, from three to six annas each. The small village *moorgies* sell for half the above-mentioned prices.

Eggs for breeding-stock will sell for from three to six rupees a dozen ; and eggs for the table will sell for three to eight annas a dozen.

CHAPTER II.

THE GROUND SUITED FOR POULTRY-BEARING.

SOIL.—Poultry can be kept with varied success all over India, but any portion of the country where the soil is sandy, gravelly and abounding in *kunkar*, with a good proportion of lime or chalk in it, and with a natural drainage, is admirably adapted to the rearing of fowls, especially so where the rainfall is not excessive. The more porous and well-drained the soil is the better. The heavier the soil is, and the more it retains moisture, the worse will it be for the fowls that have to stay on it. Marshy, dirty or badly-drained grounds are fatal to fowls.

SHELTER.—Poultry must be sheltered from the sharp cold north and east winds, and from heavy rain. If they are allowed to walk about in water and puddle, or be chilled by the cold winds they will not thrive. During the cold weather and rains the north and east sides of the house and shed must be kept air-tight.

SHADE.—Poultry need to be protected from the midday sun, and the hot winds during the hot season. There should be a shed and a number of shrubs and trees for shade to protect the fowls from the heat. The west side of the house and shed should be made air-tight. The south and east are the coolest during the hot season.

CHAPTER III.

FOWL-HOUSE, SHED AND YARD.

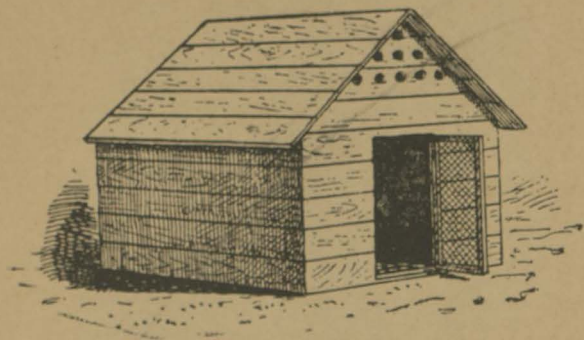
SPACE.—Fowls will not thrive if kept in close confinement. The more space allowed them the better. Close confinement and overcrowding are fatal to poultry.

The House.—One hundred and fifty cubic feet of space or a place five feet long, five feet wide, and six feet high is necessary for every five large birds. Some persons would crowd twenty fowls into this small space, but in doing so they will sacrifice the health and happiness of the birds and hinder the production of eggs.

The Shed.—There ought always to be an open shed or verandah attached to the fowl-house to serve as shelter for the birds from rain and the midday sun. The shed should be, if possible, as wide and twice as long as the house, but if it be the same size as the house it will suffice.

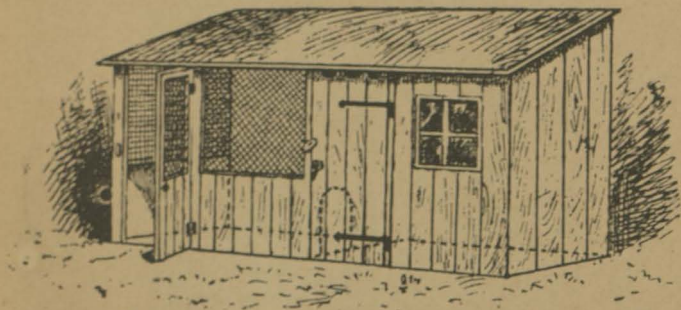
The Yard.—A run twelve feet wide and twenty feet long is the minimum space needed for one cock and four hens; the greater the space allowed the better.

CONSTRUCTION.—The fowl-house must be built of either brick, wood or mud walls. If of brick or mud, it must be made smooth and whitewashed with lime both inside and out; if of wood, the interior must be painted with a



POULTRY-HOUSE AND SHED.

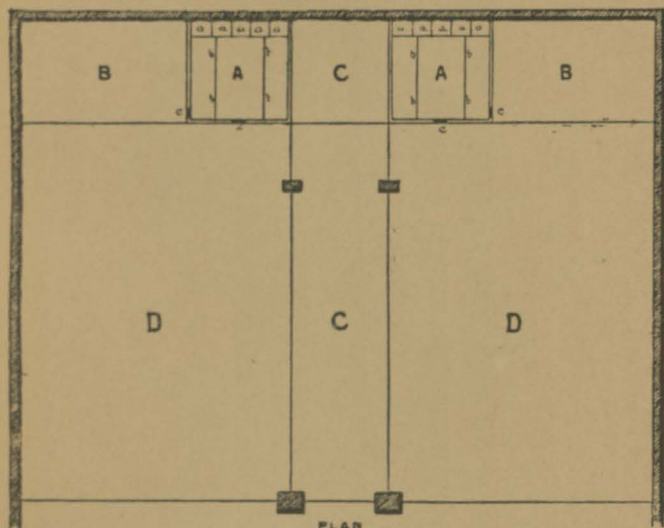
POULTRY BOX HOUSE, 5 FEET \times 5 FEET GROUND AREA.
TOTAL HEIGHT 6 FEET,



*(Wire mesh door on wooden frame, and holes bored above doorway
for ventilation.)*



ELEVATION

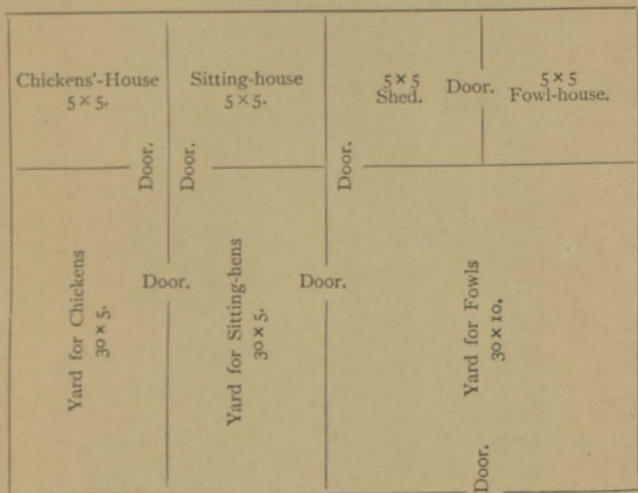


PLAN

SCALE.

Fig.

- | | | | |
|---|----------------------------------|------------|--------------------------------|
| A | A Roosting and laying-houses. | <i>a a</i> | Nests. |
| B | B Fenced-in covered shed. | <i>b b</i> | Perches. |
| C | C Shed and run for sitting-hens. | <i>c c</i> | Trap-doors for fowls to enter. |
| D | D Grass runs. | | |



FOWL-HOUSE FOR SMALL STOCK.

mixture of three parts kerosine oil and one part tar, and the outside with white or green paint. Never put tar to the top of a wooden house; it will make the house terribly hot.

A serious objection to mud walls is that they are convenient for rats to make holes in, and for snakes to lodge in.

The house should be closed on the north, east and west, opening only on the south. The house ought always to open on the south.

The size of the house will of course depend on the number of fowls to be kept. But it is advisable to have several small houses rather than one large one, as in case of an epidemic breaking out, the only chance of saving at least part of the stock is to be able to prevent any communication between the different sets of birds. A house (ten feet square) to hold twenty fowls is large enough.

Roof.—The roof of the house may be made of either *pucca* work, thatch or wood, but never of corrugated iron or tin. There should be no open space between the roof and walls, for cats, rats, or snakes to get in by. If corrugated iron be used for roofing, a good layer of thatch or mortar must be put over it or wood under it.

Ventilation.—A third or half of the south side of the house ought to be enclosed with one-inch mesh wire-netting; on the north, high up near the roof, there should be an opening, 18 inches by 12 inches, covered with the same kind of wire-netting. There must be no opening on the west or east. This will afford perfect ventilation

at all seasons, and the house will not be too warm in the hot, or too cold in the cold, season.

Door.—The door of the house ought to be a wooden frame covered with one-inch mesh wire-netting. The size of the door should be in proportion to the house.

Floor.—The floor of the house ought always to be *pucca*, well-beaten down and plastered or cemented. On the floor there should be coarse sand put at least two inches deep. The droppings on the sand must be removed every morning, and the sand changed every three weeks or month.

Perch.—Inside of the house, eighteen inches from the east and west wall, running parallel to the wall, there should be perches twelve or eighteen inches from the ground. The perches should be made of good strong wood, three inches in diameter, rounded off at the top.

Laying Nests.—A box two feet long, eighteen inches wide and eighteen inches high, with one side open, should be placed against the north wall in the house for the hens to lay in. One box will do for three hens. Broken straw or hay should be put two or three inches deep in the box, and the open side put towards the north, twelve inches from the wall. Unless laying nests are provided, the hens will lay on the ground or in some place where the eggs are apt to get broken or be stolen. The box must be painted, both inside and outside, with a mixture of quick-lime and phenyle and water.

Shed.—During the rains fowls will not thrive if they are confined entirely to the house or allowed to constantly

walk about in the wet and damp. A shed must be attached to the house ; the east and west sides closed up, the north leading into the house, and the south enclosed with two-inch mesh wire-netting.

If desired, the shed may be placed to the west in a line with the house. The roof of the shed should be either *pucca*, wood or thatch, attached to the house and sloped down to the south. The floor of the shed may be plain mud, covered over with a good three inches of gravel or broken bricks and old plastering. The door of the shed on the south ought to open into the yard.

The gravel on the shed floor must be changed once a month, and the earth dug up a foot or two deep and turned over once in six months.

Dust Bath.—A box two feet by one foot and a half by one foot and a half should be filled with dry clean earth or ashes and placed in the shed against the east wall. This box should be continually refilled.

Lime.—A similar box filled with broken old sand plastering, old lime and mortar, or pounded bricks and slaked lime should be placed in the shed against the west wall.

Yard.—The yard should be enclosed, if possible, on three sides with two-inch mesh wire-netting. The height of the fencing will depend upon the size and breed of the fowls. The Brahma and Cochin will need fences only four feet high ; Game, six feet high ; and other breeds, from six to ten feet. It is preferable to make the fence only six feet high and cover the enclosure with two-inch mesh wire-

netting. There ought to be plenty of green grass on the yard. Every six months the ground in the yard must be properly dug up and turned over, and some kind of grain such as wheat, barley, gram, mustard, &c., sown on it. When only one breed is kept, and there is a wall around the compound of the house, there is no need for an enclosed run; the fowls may be allowed the freedom of the compound.

If the soil in the yard is unsuitable for poultry, the following method must be adopted to improve it:—Dig up the ground about six inches deep and throw six inches deep of sand, *kunkar*, old mortar and plastering and lime over the ground, mix properly, and level so that no water can lodge on the ground. The ground must be properly rolled and grass allowed to grow on it. Fowls will thrive in such a yard.

Some people allow decayed vegetable matter, and cow-dung, horse-dung, &c., to remain in the poultry-yard. Dirt and filth of any kind is a fruitful source of disease, and will work havoc among the poultry. No decomposed matter or excrements of any kind should be allowed to remain where the poultry are.

Light.—Light is just as essential to the well-being of poultry as is fresh air. The fowl-house must never be built in a dark, gloomy corner, or against the north or east side of another building, or directly under trees. Plenty of sunshine is absolutely necessary; without it fowls will take cold and become mopish and die.

Water-vessels.—A vessel with clean and fresh water ought to be placed in the yard near the shed-door.

Trap-door.—A small trap-door, twelve inches high and ten inches wide, should be attached to the door of the fowl-house. The door must be kept locked, but the trap-door must be left open during the day to allow the hens access to the laying nests. The door of the shed opening into the yard should be kept open during the day when the weather is fair. One has to guard against servants and crows, and, also, dogs stealing eggs from the nest.

Box-House.—Some people, who have not the means or room to make a proper fowl-house, keep fowls successfully in the following manner :—A box is made five feet long, three feet wide and four feet deep, enclosed on five sides with board ; the top is enclosed with one-inch mesh wire-netting. The top is a cover on hinges and lifts like that of a trunk, and is secured with a lock and key. On the front side of the box there is a door about a foot square, made of wooden frame and wire-netting, to let the birds in and out, and also to give ventilation. In the centre, one foot from the bottom, a perch is run the whole length of the box. This box is placed in a shed, or back verandah. It holds a cock and four hens, and is quite safe from cats, rats and jackals.

This box must be kept very clean, and have a good layer of sand or earth on the wooden bottom. It must be swept every day, and the box and perch frequently painted with a mixture of kerosine oil and tar.

The fowls are kept in the box at night and let out in the compound or yard during the day. Some straw is placed

in one corner of the box for the birds to lay on, and the small door is kept open to allow them to get in.

CLEANLINESS.—Cleanliness is an absolute necessity. The house and shed must be swept every day, and every particle of the droppings removed. The yard, also, must be kept thoroughly clean, and nothing offensive allowed to remain.

The water-vessels must be thoroughly scrubbed every day, and the water changed twice a day.

At all seasons of the year, but especially during the rains, vermin breed rapidly in a fowl-house. The boxes, perches and all the wood-work must be frequently cleaned and painted over with a mixture of kerosine oil and tar, or washed with a strong solution of phenyle.

The sand on the floor of the house and the gravel on the shed-floor must be changed as directed above. The ground in the shed and yard must be dug up and turned over twice a year.

The food and water must be good and clean.

The walls inside of the house and shed must be white-washed with quick-lime every two or three months.

CHAPTER IV.

FOOD.

THE fowls' food is one of the things that need the most careful attention. Any neglect or mistake in this matter is sure to cause serious loss.

QUALITY OF FOOD.—The quality of the food must be the best. It is no economy to feed on damaged grain and meal, or rotten meat, potatoes and vegetables. Bad food will engender disease.

Of all grain wheat is certainly the best for poultry. The grain, whole or coarsely ground, and the coarse *atta* and bran are most excellent food for both young and full-grown fowls.

Barley is equally as good as wheat, but fowls in India do not readily eat the whole grain; it must be given in meal mixed with skimmed milk.

Oats, beans, peas and gram are all very good for poultry. These grains must be bruised before given.

Indian corn is very fattening, and must not be given to poultry kept for breeding or to growing birds. But it is very good for fattening fowls.

Rice or paddy has the least value of all grain. It has only seven per cent. of flesh-forming substance and a mere

trace of bone-making substance. It must not be given to young and growing birds or to breeding stock.

Boiled rice is good for sick fowls.

Skimmed milk and curds are good for fowls, and should be given mixed with ground wheat, barley, oats, peas, beans and gram.

Fowls need some animal food to supply the waste in their system. Meat of sorts and bone-meal ought to be given once a week. Fresh bones, ground finely and mixed with meal, should be given as a substitute for meat. All refuse food, such as scraps of meat, bread-crusts, potatoes, vegetable, rice, dall, curry, &c., from the table and kitchen should be gathered together and given to poultry.

Green-food is an absolute necessity. Fresh tender grass, onions, garlic, cabbage, lettuce and all other vegetable leaves are excellent. Nothing tends more to keep fowls in health and good condition. The lack of it will injuriously affect the birds and cause the eggs to be poor in quality.

Hemp seed, mustard and linseed given occasionally in small quantities during the cold season and rains, and moulting time are very beneficial, especially to growing birds.

Some people feed their poultry entirely on paddy and rice. Fowls fed on paddy and rice will not thrive. If large well-grown birds are wanted, they must not be fed on paddy. It may be given to Bantams when the object is diminutive size. The village *moorgi* has nothing better than paddy, and that is one of the reasons why they are so inferior in size.

QUANTITY OF FOOD.—It is no economy to starve poultry. They need an ample and regular supply of adequate food. It is also injurious to overfeed them. Overfed fowls are subject to many diseases from which properly fed ones are free, and cease to lay before the proper time, or are attacked by apoplexy on the nest.

It is difficult to give a fixed scale of food. Cochins will eat twice as much as many other breeds, and different birds of the same breed often have very different capacities for food. The same hen will eat nearly twice as much when laying as when she is not laying. Fowls need more nourishing food in the cold season than during the hot weather.

The one simple rule with adult birds is to give them as much as they will eat eagerly, and no more. Throw the grain around on the ground, but directly the fowls begin to feed with apparent indifference, pick over the grain or cease to run when the food is thrown at a distance, the supply should be stopped. Food must never be left on the ground. If such a practice be allowed, much of what is eaten will be wasted, and a great deal will never be eaten at all. Sour or dirty food will engender disease.

The quantity of grain allowed for each fowl will depend upon the extent of the yard and the quantity of scraps they receive from the kitchen and table. If the grass run be a large one, the fowls will forage for themselves and pick up a great deal of food. If the grass run be extensive, and there be a fair quantity of refuse food, then each fowl will

need on an average two chittacks, or four ounces of additional food every day. If the run be small, and there be not sufficient scraps, then three chittacks will be needed. They will not thrive on less, and more will be injurious.

FREQUENCY AND REGULARITY OF FEEDING.—Fowls ought to be let out of their houses into the yard a little before sunrise; they enjoy the cool fresh morning air. On being let out, the first thing they will do is to drink water. Fifteen minutes after they are let out they should be given their morning food. This should consist of wheat, barley, oats, peas or gram well ground and mixed with skimmed milk or warm water. A little salt, black or cayenne pepper, chopped meat, bread, potatoes, vegetables and other refuse food ought to be added to it. The quantity of food given in the morning must be from three-fourths of a chittack to one chittack per fowl.

If the grass run be large, and the weather be fair, the fowls should be allowed to remain out the whole day and given no more food during the day. But if they are confined in the shed or in a small run, they need some food at midday. This feed should consist of good sound grain, or bran mash with plenty of chopped green grass or green vegetable. The quantity should be the same as that given in the morning.

The evening feed should be given a little before sunset, shortly before the birds go to roost. A good feed of sound grain ought to be given at this time, for a long night is before these always hungry creatures. Wheat or

some other whole grain ought to be given, in the proportion of one to one and a quarter chittack per fowl.

PREPARATION OF FOOD, AND MODE OF FEEDING.—The grain for the morning feed must always be well ground and mixed with warm water or skimmed milk. Great care must be taken not to make the food too moist. Only enough milk or water must be allowed to make it easily crumble. Season with salt and black pepper, or, in the wet season, with a little cayenne pepper, and add the scraps of meat and vegetables; once a week raw onions and garlic, chopped finely, should be added to it. Charcoal finely ground and added to the food is very beneficial to both chickens and adult fowls.

Boiled potatoes, cabbage, turnips and other vegetables mixed with wheat bran is excellent food for poultry. Ground bones and a little salt should be added to this.

The kind of food used for the morning meal should be frequently changed. Poultry thrive better if the food is varied.

Soft food should be placed in small quantities in wooden troughs or shallow dishes, or else crumbled on the clean ground. Soft food should be only soft enough to crumble easily, but not stick to the fingers; wet food is positively injurious to fowls.

The grain must be thrown far and wide on the gravel shed-floor. When the yard is small, the feeding-ground must be covered over with dry leaves, straw or hay. This will give the fowls exercise and occupation in finding the grain.

WATER.—Fowls are thirsty creatures, and should be given plenty of pure drinking water. The water-vessels must be scrubbed overnight and kept near the shed door ready for use in the morning. Early in the morning, before the fowls are let out, the vessels must be filled with water. The water must be changed again at 4 P.M. A few drops of Condry's fluid or sulphate of iron should be added to the water.

LIME.—Lime is a necessary article of food for fowls. It supplies the substance for the egg-shells. If fowls are not allowed sufficient lime, they will not thrive, and will lay soft-shelled eggs. The lime must be slaked and mixed with sand or pounded brick, and placed in a box in the shed.

COST OF FOOD.—The cost of feeding fowls varies much, according to locality, management and price of grain. Wheat, barley, oats, peas and gram can be had at from one rupee twelve annas to two rupees eight annas per maund, or 80 lbs. It will be economical to grind the grain and make your own meal and bran.

If you trust your servants with the feeding of the fowls, the food will cost twice as much as it otherwise would, or the fowls will be starved. Personal care goes a great way in reducing the cost of keeping poultry.

CHAPTER V.

THE SELECTION OF BREEDS.

THERE are many breeds of fowls. Some are beautiful, ornamental birds, well worthy the attention of fanciers who can afford to keep them for show. Some are both beautiful and useful birds, and can be kept profitably by all people with ordinary care and economy. Some are very delicate birds and do not thrive in India; others, again, are hardy, and not only thrive well but multiply rapidly.

OBJECT IN KEEPING POULTRY.—The selection of the breeds to keep will depend entirely upon the object with which fowls are kept. Some persons keep fowls as mere ornaments and pets; others keep them for the benefit of the household, and use the eggs and fowls for the table; others, again, keep them to breed from and sell. The class of people first mentioned generally select the most showy and expensive birds. The second and third class of people mentioned, would be wise if they combined their interests and kept only such fowls as will furnish ample produce for the consumption of the family as well as a surplus which can be readily sold at a profit and help to defray the expenses for the keep of the poultry.

DELICATE BREEDS.—I will first mention some of the breeds that are very handsome, but are either too delicate for India, or unproductive, and consequently not worth the while of people who desire profit to keep them. Such are the different varieties of Spanish fowls; all the varieties of crested Polish fowls; the Crève-cœrs; Silkies and Bantams. The Dorking is a splendid breed of fowls, but extremely delicate, and the hens are indifferent layers.

THE BEST LAYERS.—1, The Wyandotte; 2, Plymouth Rock; 3, Houdan; 4, Brahma; 5, Shanghai; 6, Ghagus; 7, Chittagong, are the best layers among the larger breeds. 1, The Hamburgh; 2, Leghorn; 3, Minorcas; 4, Andalusian, are the best layers among the smaller breeds.

All hens of the same breed do not lay alike. Some hen of the best-laying breeds are the worst layers, and some of the worst-laying breeds lay very well.

THE LARGEST AND MOST WEIGHTY BIRDS.—1, Brahma; 2, Cochin; 3, Dorking; 4, Shanghai; 5, Wyandotte; 6, Plymouth Rock; 7, Chittagong; 8, Houdan; 9, Aseel; 10, Ghagus.

THE MOST HARDY BIRDS.—1, Brahma; 2, Plymouth Rock; 3, Chittagong; 4, Aseel; 5, Shanghai; 6, Wyandotte; 7, Cochin; 8, Ghagus; 9, Houdan.

THE BEST TABLE FOWLS.—1, Aseel or Game; 2, Chittagong; 3, Houdan; 4, Plymouth Rock; 5, Brahma; 6, Shanghai; 7, Wyandotte; 8, Ghagus; 9, Cochin.

EGGS.—There is an old and prevalent notion that dark-shelled eggs are richer than white-shelled ones, and there

can be no doubt that this is to a certain extent true, though by no means absolutely so.

Brahmas, Cochins, Shanghaies, Game or Aseels, Chittagongs, Plymouth Rocks, and Wyandottes lay the richest and darkest-shelled eggs, while the eggs of the Spanish and Polish varieties are the poorest and whitest of all.

The eggs of the Bantam and Hamburgh though very small are the nicest in flavour. A good-sized egg should weigh from two to two and a half ounces, or one to one and a quarter chittack.

NON-SITTERS.—The Houdan, Leghorn, Hamburgh and all the Spanish and Polish varieties are non-sitters. When any of these breeds are kept, hens of some sitting breed or an incubator must be kept to hatch the chickens.

THE BEST SITTERS AND MOTHERS.—Silkies, Plymouth Rocks, Wyandottes and some Bantams are the best sitters and mothers. The Brahma, Cochin and Shanghai are excellent sitters and mothers, but they are very heavy and apt to be clumsy with their eggs and chickens and destroy many of them. The Game is a splendid sitter and mother, but she will kill all the other chickens, and wound all the hens in the yard if not carefully watched; she will also peck her own chickens to death when enraged by the other fowls. The common country hen, called the Pâti, is, as a rule, the best mother of all fowls. She is not much larger than the Bantam, and is very vigilant and a grand forager. But it must be borne in mind that all

hens of the same breed are not equally good mothers. They differ in this as much as in laying qualities.

THE BEST BREEDS TO KEEP.—If the object of keeping fowls be to obtain a good supply of eggs and chickens for the table, as well as good birds for profitable sale, the selection should be made from the following breeds: 1, Brahma; 2, Plymouth Rock; 3, Wyandotte; 4, Shanghai; 5, Houdan; 6, Cochin, from among the imported breeds; and 1, Chittagong; 2, Ghagus; 3, Aseel, from the Indian breeds. The Hamburgh, Leghorn and Andalusian, though good layers, are too small for the table.

OTHER INDIAN BREEDS.—There are breeds of fowls in India resembling the Leghorn and Hamburgh in size and shape and of very fair-laying qualities; they are of various colours. Another breed obtainable in India resembles the Plymouth Rock and Wyandotte in shape, but are smaller and of different colours. They are very good layers. These fowls are found all over India, but especially in Bengal. I procured some excellent hens from Nulchetty, a place on the river between Calcutta and Burisal, and mated them with a Chittagong cock; this cross produced some large and fine table birds. If the object of keeping poultry be only to procure eggs and ordinary table fowls, then no better fowls than these need be kept.

A PROFITABLE METHOD.—The following is the best method to pursue: keep a stock of pure-bred fowls and some hens of other breeds, say one cock and two hens of a pure breed and two hens of another breed. Set the eggs

of the hens of pure stock, and raise the chickens to replenish the stock, or sell. The eggs of the hens crossed by the pure-bred cock may be used for the table, or set, and the chickens used for the table. This plan will insure keeping the main stock pure, and at the same time produce good eggs and fowls for the use of the household.

The pure-breed chickens will fetch good prices ; the cross-breeds will also sell well.

THE BEST CROSSES.—The following breeds crossed produce splendid table fowls :—

1. The Brahma cock with the hen of either of the following breeds : Dorking, Houdan, Game, Chittagong and Ghagus.

2. The Cochin cock, and Houdan, Game, Chittagong or Ghagus hen.

3. Shanghai cock, and Houdan, Plymouth Rock, Wyandotte, Game, Chittagong or Ghagus hen.

4. Houdan cock, and Brahma, Cochin, Shanghai, Game, Chittagong or Ghagus hen.

5. Game cock or Chittagong cock, and Brahma, Cochin, Shanghai, Houdan, Plymouth Rock, Wyandotte, Dorking or Ghagus hen.

6. The Plymouth Rock cock, or Wyandotte cocks, and Shanghai, Houdan, Game, Chittagong or Ghagus hen.

7. The Crève-cœur cock and the Brahma or Cochin hen produce fowls of great size and weight.

8. The Dorking cock should be mated with the Brahma, Chittagong or Game hen.

CHAPTER VI.

THE DIFFERENT BREEDS OF FOWLS.

I SHALL describe only such breeds as are profitable to keep; I shall endeavour to mention their merits and demerits in as few words as possible.

BRAHMA.—The Brahma is the most prominent of all breeds, and is unequalled as a family fowl. It is valued for its great size and hardiness, and for its being a good layer of large-sized and rich eggs. The flesh of a six-month old bird is very good.

The Brahmas are exceedingly quiet and tame, and can easily be kept in a small run with a four-feet high fence. The hens are good sitters and mothers. The chickens are hardy and grow fast, being ready for the table in six months. Some birds of this breed grow to immense size and weight; when a year old, cocks should weigh from 10 to 15 lbs., and hens from 8 to 12 lbs. Several cocks have weighed from $17\frac{1}{2}$ to $18\frac{1}{4}$ lbs.

They are very handsome birds, majestic in appearance, having heavily-feathered legs, though less so than Cochins. There are two varieties of Brahmas, — light and dark. The outward appearance of both is similar in everything but colour of feathers.



LIGHT BRAHMAS.

THACKER, SPINK & CO., CALCUTTA.

They should have small, neat heads, small pea-combs, and deep, massive bodies. The back should be short and broad ; breast broad and forward ; and the saddle should rise to the tail. The tail should be upright and spread out like a fan, but the sickle should be an inch longer than the tail. The beak should be strong, curved and black or dark. The comb—the smaller the better—should consist of three serrated ridges, the central ridge being the largest, and unite at the pike and curve backwards. The ear-lobes should be bright red, and round ; the wattles bright red, long and pendant. The neck should be curved, giving grace to carriage. The hackle should be flowing and abundant, increasing in bulk from the point nearest the head, and fall over the back. The wings should be small and the points well tucked away under the saddle feathers of the cock, and under the fluff of the hen. The feathers of the back and thigh should be abundant in the hen. The leg should be rather short and of an orange colour, heavily feathered to the tips of the middle toe. The legs should be strong and well formed. The Brahma is square rather than lumpy, and of sprightly and active habits, much more so than the Cochin.

The plumage of the Light Brahma should be mainly white or cream colour, the correct shade being pure white. The flight feathers and those in the neck-hackle should be black, with an edging of white. Black feathers should be interspersed in the legs and saddle, while the

tail and tail coverts should be principally black, some feathers being striped with white. The fluff should never be dark.

In Dark Brahmas the predominating colour should be black. The head, in both the cock and hen, should be white and the neck-hackle white striped with black. The primary feathers in the wing should be black-bordered with white. The breast and tail of the cock should be black, the back white, and other parts of the body chiefly black with a little white mingled among it. In the hen the ground-colour of the whole plumage, except the head and neck, should be dark grey, and each feather pencilled with metallic black. The fluff should be black. Some hens are of a lighter grey with dark grey pencilling. The lustrous bar on the wing of the cock should be green-black.

The Light Brahmas are considered better than the Dark ones, but Dark Brahmas attain to a greater size than Light ones. In judging Brahmas, colour, size, shape, feathers and condition must be taken into consideration.

The Brahma was originally an Indian bird, but now it is largely bred in Europe and America. The best birds are imported from England. Some have been bred in India, and the breed is rapidly spreading over the country. Good birds can be had from fifteen to twenty-five rupees per trio—a cock and two hens. Imported birds cost more.

COCHIN.—The Cochin somewhat resembles the Brahma in shape and general appearance, but is rounder and more fluffy. The hens are fairly good layers, and good



ASEEL, OR INDIAN GAME.

DARK BRAHMAS.

COCHINS.

THACKER, SPINK & CO., CALCUTTA.

sitters and mothers, but are very clumsy and apt to break their eggs and crush their chickens. They are very quiet and tame, and can be kept in a small run enclosed with a three-foot fence. They are not so sprightly and active as the Brahmas.

The chickens are very hardy and easily reared.

Their eggs are very rich, and usually of a good size, but their flesh is rather coarse after they are six months old. When crossed with the Houdan, Chittagong or Game, they produced good table fowls.

They grow to a great size. The cocks should weigh from 10 to 13 lbs. and the hens from 8 to 10 lbs.

The comb of both the cock and hen should be single, small and erect; the head small and neat; the ear-lobes red; the eyes red, dark or yellow; the neck rather short; and the hackle flowing widely over a short and broad back, which should rise at once into a broad saddle in the cock and an ample cushion in the hen; the breast should be broad, deep and full; the tail of the cock and hen should be as small, low and full as possible, with very little quill in it; the wing should be small and deeply tucked in between the cushion or saddle above and the fluff below; the eggs should be short, thick, yellow in colour, and heavily feathered.

There are five leading varieties of Cochins: the Buff, Partridge, Cuckoo, White and Black.

Buff.—The plumage of the Buffs may vary in shade from bright lemon to deep cinnamon. The hen should be

the same shade all over ; the hackle, saddle feathers and wing bar of the cock may be a little darker than the rest of the body ; a very small amount of black may be allowed in the cock's tail, but no white should be seen.

Partridge.—The breast, under-part of the body, thighs and tail of the cock should be black ; his hackle and saddle should be golden, with a black stripe down the centre of each feather ; he should have a rich red back and bar on the wing. The plumage of the hen should be light-brown, and the feathers closely and uniformly pencilled a darker brown ; her hackle should be deep yellow.

Cuckoo.—The plumage of the Cuckoo is a light bluish grey, barred across with lines of darker shade, like the Plymouth Rock.

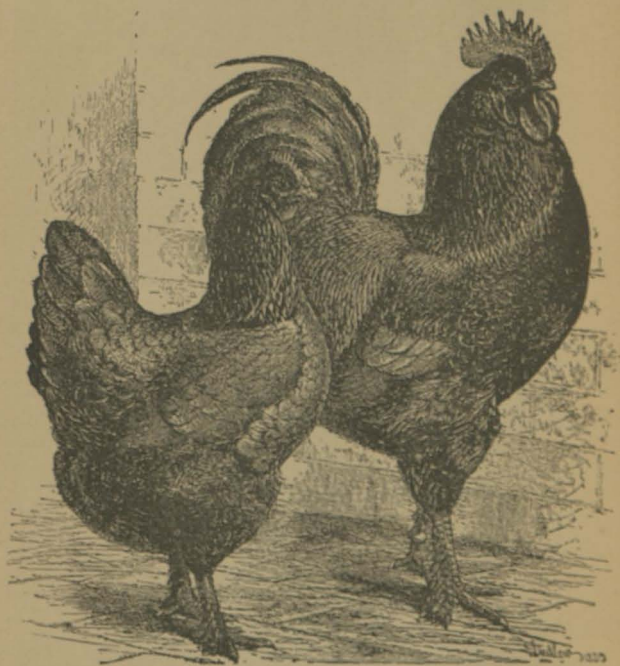
White.—The plumage of the white Cochin must be pure brilliant white all over, with no feather of another colour.

Black.—Black Cochins must be of a greenish-black all over without a coloured feather.

Silkie.—There is a breed of silky Cochins ; they are smaller than the other breeds.

The Cochin is a China bird, but is largely bred in Europe. Good birds sell for from fifteen to twenty-five rupees per trio—a cock and two hens. Imported birds cost more.

SHANGHAI OR LANGSHAN.—The Shanghai is a very handsome and useful bird. The hens are good layers, and splendid sitters and mothers. Their eggs are large and rich. They are very tame, but have longer wings than



LANGSHANS, OR SHANGHAIES.

THACKER, SPINK & CO., CALCUTTA.



WHITE LEGHORNS.

PLYMOUTH ROCKS.

BROWN LEGHORNS.

either the Brahma or Cochin, and need a fence six feet high to keep them in. The chickens are hardy.

The Shanghai carries abundance of flesh of good quality and flavour. The cock should have a single and medium-sized comb,—the hen should have a single and rather small comb; the combs of both the cocks and hens must be erect; the breast should be full and prominent; the carriage upright; legs of moderate length, dark coloured and scantily feathered; the tail, full and carried rather high; they should not have much fluff. The cock should weigh from 9 to 10 lbs., and the hen from 7 to 8 lbs.

There are two varieties of this breed—the black and the red. The plumage of the black should be black with a glassy sheen. The red should be bright red, darker in the hackle and saddle; the hens are of a lighter colour.

The Shanghai is a China bird. Good birds sell for from twelve to twenty rupees per trio—a cock and two hens.

PLYMOUTH ROCK.—Plymouth Rocks are very handsome and useful birds. They have plenty of good flavoured flesh, and are good layers. They are capital sitters and mothers, and are quiet and tame. They are hardy, and can be kept in a moderate-sized run within a five-foot high fence. The chickens are hardy, and mature early. These birds are sometimes bred to a great size, but, as a rule, cocks should weigh from 8 to 12 lbs., and hens from 7 to 9 lbs.

The comb should be single and small,—the beak yellow; the neck curved back and broad; the breast very broad;

the wings well tucked up ; the tails short and full ; the legs short, stout, clean and bright yellow ; the birds should be compact and square in shape.

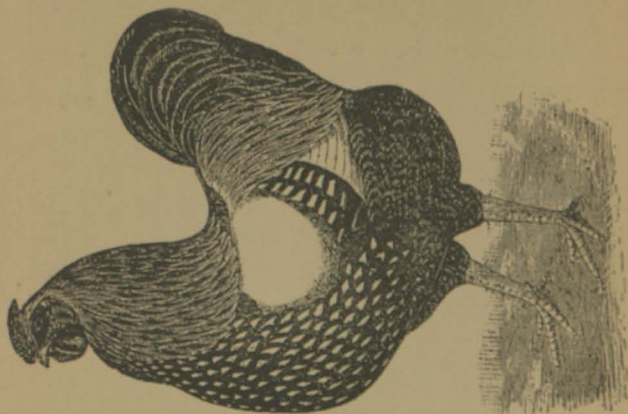
There are three varieties of this breed—the Cuckoo, Black and White ; but the Cuckoo is considered the best. The plumage of the Cuckoo should be light-grey or steel-grey, and each feather striped with bars of bluish black ; there should be no black, white, red or yellow feather in the plumage. All these varieties are alike in everything but the colour of their plumage.

The Plymouth Rock is an American breed, produced by crossing their Dominique with the Cochin. Some fine specimens are found in India. Good birds will sell for from twelve to fifteen rupees per trio—one cock and two hens.

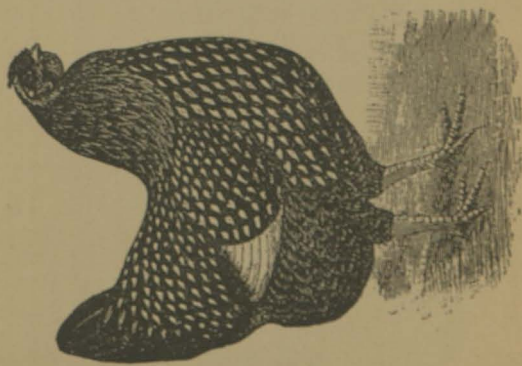
WYANDOTTE.—The Wyandotte is an excellent breed of fowls. They are splendid table fowls, and take the first place as layers. They are very good sitters and mothers, and are very hardy. The average weight of the cock is between 8 and 12 lbs., and that of the hen between 7 and 9 lbs.

The comb must be rose, with a good spike, and closely fitting to the head ; the beak should be dark-brown ; the breast deep and broad ; the legs rather short, of a bright yellow colour, and free from feathers. In shape it resembles the Plymouth Rock.

The plumage should be silvery-white, striped or laced with black ; the tail black and full ; the outer edge of the wing primaries white.



LACED WYANDOTTE COCK.



LACED WYANDOTTE HEN.

THACKER, SPINK & CO., CALCUTTA.

There are also the golden and the pure white varieties, but the laced are the best.

The Wyandotte is an American breed. Good birds will sell for from twelve to fifteen rupees per trio—one cock and two hens.

THE HOUDAN.—The Houdans are pretty and useful birds. They have plenty of good flesh on them, and are capital layers. They are fairly hardy. They are a non-sitting breed. The cocks should weigh from 8 to 10 lbs., and the hens from 6 to 8 lbs.

The comb must be leaf-shaped, and above it a large crest; the crest must be large, arched, full in the centre and falling over the sides; the beard must be very full, and the wattles fairly long and thin; the face and wattle red; the nostrils arched; the beak black; the hackle full; the breast broad and full; back straight; the wings carried well up; the tail full, high and nearly erect; sickle black and white; the legs nearly white and thin; the thigh short and thick; they should always have a distinctly defined fifth toe. Their plumage should be black and white. The black must be of an olive-green tint, and the white evenly spangled all over the body.

The Houdan is a French breed. Good birds should sell for from twelve to fifteen rupees per trio—one cock and two hens.

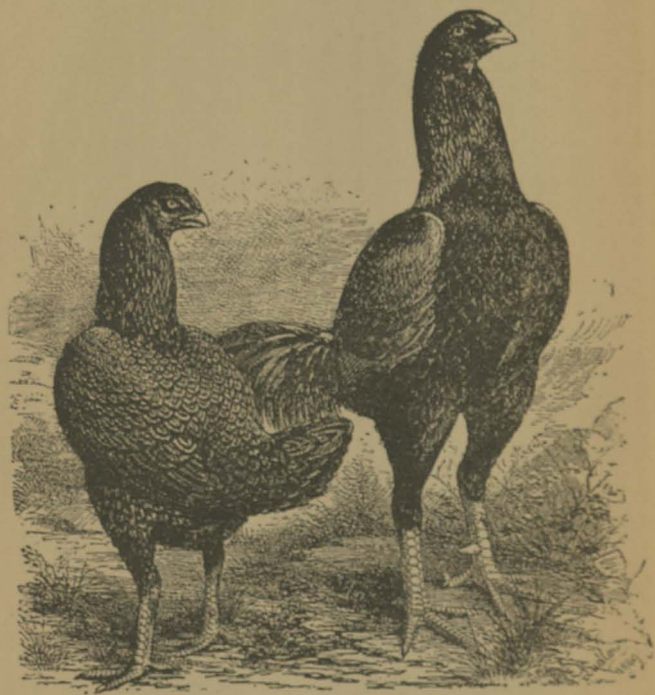
THE MALAY OR CHITTAGONG.—These birds are called Malay, because they are natives of the Malay Peninsula; and Chittagong, because they are largely bred in Chittagong.

They are very large birds; the cocks sometimes stand two feet six inches high, and weigh from 8 to 10 lbs.; the hens weigh from 6 to 9 lbs.

The flesh of the Chittagong fowl is very excellent. The hens lay well, but are not very good mothers. Adult birds are very hardy, but do not bear confinement well. They are very quarrelsome, and need a high fence to keep them in. The chickens are not very hardy, and need much care; but they become very strong when they grow to be about six months old. When crossed with the Cochin and other breeds they produce excellent birds for the table.

They should have small, erect and red combs, like a soft lump covered with small warts; sometimes they have pea-combs; the head and beak should be long; the beak yellow; the wattles very small and red, in the hen hardly visible; the ear-lobes small, red, sometimes with a little white; the eyes white or light yellow; eye-brows prominent and overhanging the eyes, making the head look very broad; the neck long; the breast broad and deep; the carriage very upright; broad shoulders; slightly narrow loins; the wings carried high and projecting at the shoulders; the back sloping gradually to the tail; the tail small and full, in the cock it should droop; the legs yellow, straight, long and strong, without feathers; the plumage very close, firm and glossy; the feathers narrow.

The Buff, White, Black, Dark-Brown and Grey are the recognised varieties, but the Buff or Light Yellow is considered the best.



ASEEL, OR INDIAN GAME.

THACKER, SPINK & CO., CALCUTTA.

Bufs.—The cock should be buff or golden, with bright yellow hackle and saddle; there should be no black or white feather about the neck, hackle or back; but the tail and wing primaries should be black, the sickle black or black and yellow, the coverts black with yellow border. The hen should be buff or light yellow; the back of the neck, hackle and smaller feathers in the tail may have some black feathers with a border of yellow, but the less black the better; the tail and wing primaries should be black.

The white ones should be pure white all over. The greys should be in colour like the light or dark Brahmas.

Good birds will sell for from six to ten rupees per trio—one cock and two hens.

THE ASEEL OR GAME.—Aseel means real, true; and the Aseel fowl is supposed to be the pure game. They are of all fowls the best table birds; their flesh is peculiarly well-flavoured, and there is plenty of it.

They are not very good layers, but they lay large and rich eggs. They are good sitters and fairly good mothers. They require a certain amount of liberty, and will not thrive well in confinement. They are intensely pugnacious, and on this account are hard to keep. The chickens are very delicate, and need great care and plenty of animal food.

The cocks should weigh from 8 to 11 lbs., and the hens from 6 to 9 lbs.

The comb must be small and pea-shaped; face long

and somewhat slender; heavy eyebrows; thick and long neck; hard and close-feathered; very broad breast; very upright carriage; small and drooping tail. In general appearance they resemble the Chittagong, but have shorter legs, and are more round and compact.

The colour is black, white, duck-wing, black and red, and mottled. The best specimens are from Hyderabad in the Deccan.

When crossed with the Cochin and other breeds, they produce very excellent table birds.

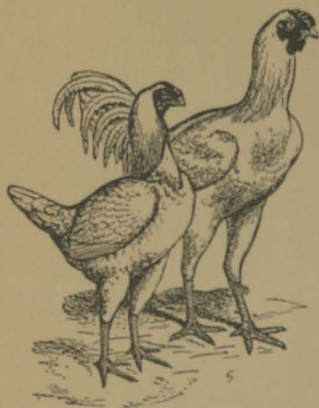
Good birds sell for from 12 to 20 rupees per trio—one cock and two hens.

GHAGUS.—The Ghagus is a purely Indian bird. They are good table fowls and excellent layers. They are hardy, but will not bear confinement. They are good sitters and mothers.

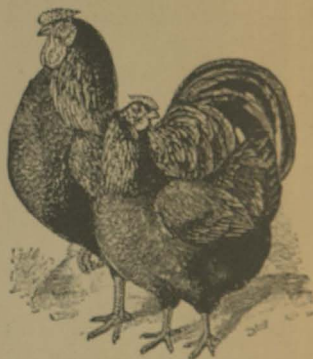
The comb is single and small; the wattles and ear-lobes small; neck thick; throat loose and baggy; the body large and rather square; the legs rather long, smoky-yellow or light-greenish; sometimes they have whiskers and beard; both the cocks and hens grow very large. They are of various colours—red, bay, brown, black and grey. The best specimens can be procured from the gipsy nomads who wander over India.

Good birds can be had for from three to five rupees per trio—a cock and two hens.

ORPINGTONS.—The Orpington is a bird produced by crossing together the black Plymouth Rock, the black,



MALAYS, OR CHITTAGONG.



ORPINGTONS.



1 - Rose Comb.



2 Pea Comb.



3 Single Comb.

TYPES OF COMBS.

clean-legged Shanghai and the Minorcas. It is very much like the Shanghai in shape, size and laying and table qualities, but has a rose-comb. It has been only recently introduced by Mr. Cook, of England, and is not yet sufficiently established.

CHAPTER VII.

BREEDING.

IF permanent success in poultry-keeping is desired, systematic breeding must be carried on. It is only by carefully breeding that the great improvement in our domestic poultry has been attained.

Breeding one's own poultry is much cheaper than buying them. They not only cost less money, but the danger of infection caused by diseased imported birds is avoided. Then, again, one is always sure of the blood, or strain, as it is called, of the birds he breeds in his yard. The general rule is, "like will produce like."

THE ART OF BREEDING is governed by a few rules which are simple and easy to understand; and these rules must be faithfully observed if any degree of success is to be gained.

1. Select only the best birds of the breed to breed from.
2. Never breed from weakly, sickly or deformed birds.
3. Always select the best layers to breed from.
4. Never breed from cocks or hens under a year old, or more than two and a half years old. The best chickens are produced from hens two years old mated with cocks a year old, or hens a year old mated with cocks two years old.

5. Never breed in—that is, the male bird should always be of a different family from the hens he is mated with.

6. To improve the breed the hen must be mated with a cock that is superior to her. If the cock be inferior to the hen, the chickens will be inferior to their mother; but if the cock be superior to the hen, the chickens will be superior to their mother.

7. To breed successfully, proper food and careful management are absolutely necessary.

THE PARENT'S INFLUENCE.—The male parent affects the external structure, shape, size and colour of the progeny; and the female parent influences the internal structure—the constitution, temper, habits and egg-producing powers. This is especially true of pure-bred birds.

STOCK BIRDS.—In selecting a cock for breeding purposes, it is necessary to see, first, that he is of a good size—has bone and plenty of flesh, not merely feathers; second, that he has the right shape of his breed; third, that he has good colour; fourth, that he is active and young, but not under a year old; fifth, that he is perfectly healthy; sixth, that he is of good parentage; seventh, that he has not been used too much and his powers exhausted. A pure-bred cock with these qualities will improve the birds bred in the poultry-yard.

In selecting a hen for breeding purposes, it is necessary to see, first, that she is of a good size, has bone and plenty of flesh, but is not too fat; second, that she has the right shape of her breed; third, that she is of good colour;

fourth, that she is quiet and tame, and young, but not under a year old; fifth, that she is a good layer; sixth, that she is perfectly healthy and in no way deformed; seventh, that she is of the same breed as the cock, and resembles him in colour. A pure-bred hen with the above-mentioned qualities, when mated with the cock described above, is sure to produce first-class birds.

Every year the very best hens and pullets must be picked out of the stock, and mated with the best young cocks. The cock must always be of a different family from the hens he is mated with. This should be done every year; and the defective and old birds either sold in the market or used for the table. This method will insure a good and reliable stock of birds. In a properly arranged yard, half the stock of birds will be bred each year, and half of the old stock will be killed off or sold. Unless this is done, it will be impossible to keep up the efficiency of the stock.

PROPORTION BETWEEN COCKS AND HENS.—Very large cocks must not be mated with small hens, and very small cocks must not be mated to large hens. Both birds must be of proper proportions. When one bird is too large and the other too small the eggs are infertile, and the small hens are seriously injured by the large heavy cocks.

NUMBER OF HENS TO A COCK.—Not more than four hens should be given to a Brahma, Cochin or Shanghai cock; the Plymouth Rock, Wyandotte and Game cock should have five; but the Houdan, Chittagong and Ghagus need

six hens for each cock. As the hens finish laying and leave the run, others must be put in their place.

Too few hens are as great a cause of infertile eggs as too many, and the strain upon the hens is also very liable to cause them irreparable injury.

HOW TO MANAGE COCKERELS.—As a rule, cocks begin to run with the hens much before the time they should. If cockerels are put with hens before they are one year old, they are stunted, and their progeny are not strong and large. Cockerels should be kept away from hens in a separate run, shed and house and properly fed and cared for, until they are a year old, when they should be mated to selected hens.

KEPT SEPARATE.—If more than one breed is kept, they must be kept separate, and on no account allowed to run together. They must have separate houses, sheds and runs

When a person has limited room and means, he should keep only one breed of fowls, and that a pure one. Keep a cock and two hens of a pure breed and two or three hens of other breeds. A few fowls can be easily managed, and will yield a great deal of pleasure and profit.

When the grounds are large, and the person can afford it, he should keep two separate pens of the same breed. When two or more pens of the same breed are kept, and the chickens of the separate pens are in no way related to each other, the cockerels of one lot may be mated with the pullets of another lot. But when all the fowls are allowed to run together the cocks must be procured from elsewhere.

CROSS-BREEDING.—Breeding cross-bred poultry needs skill, common sense and knowledge of the characteristics of the different breeds. All crosses are not good. I have already mentioned which breeds mated together produce the best crosses. Cross-bred fowls should not be bred from; they should be used for the table and for laying only. If they are bred from their progeny will be sure to deteriorate. The first cross is the best. By first cross, I mean the progeny of a cock of pure breed and a hen of another breed. If the first-cross hens are bred from, they must be mated to a cock of an entirely different breed from that of either of their parents.

CROWDING.—Another matter of very great importance is never to have too many fowls in one run or house. When fowls are crowded together they will not lay well, and the eggs they do lay, if not infertile, will produce weak and sickly chickens; not only so, but the fowls will soon become sick and die.

CARE AND FOOD.—A very great deal depends upon the care given to fowls and the food they receive. You need never expect to get good birds without good food and proper care. The best breed will soon deteriorate if neglected or badly fed.

HOW TO KNOW THE BEST LAYERS.—It is sometimes difficult to know the best layers among the hens. Those who keep only a few fowls and watch them closely can often distinguish the egg of each bird. But when many are kept, this is impossible. It is always best to keep the hens

from which you desire to breed separate from the common stock, and when this is done it is not difficult to tell which of them are the best layers. An active, intelligent-looking bird, with a bright comb, will, as a rule, be a better layer than a dull, lazy-looking hen.

HOW TO KNOW THE AGE OF BIRDS.—An experienced hand can tell an old fowl at a glance, but it is rather difficult to impart knowledge to a beginner ; for no one sign is infallible. In general, the legs of a young bird look delicate and smooth, its comb and wattles soft and fresh, and its general outline, even in good condition, rather light and graceful ; whilst an old one will have rather hard, horny-looking shanks, its comb and wattles look somewhat harder, drier and more “scurfy,” and its figure is well filled out. But many of these indications may be deceptive, especially as “dealers” have a way of making old birds look young. The only advice I can give a beginner is to use his own powers of observation, and try and detect the “old look.”

CHAPTER VIII.

EGGS AND HATCHING.

WHEN HENS LAY.—Hens usually begin to lay in February or March and continue laying, with a few intermissions, until October. Some hens lay during November, December and January, but very few do so. The price of eggs is highest during the cold season, and it is a decided advantage to the owners to be able to put eggs into the market at this season.

Pullets generally begin to lay when they are from six to nine months old. Birds hatched in March and April will begin to lay in September and October or November, and will continue to do so to the end of December or January. The second year these hens will begin to lay a month or so later than they did the first year; and birds above two years old will not begin to lay until February or March.

Chickens hatched in March and April will be ready for market in the cold season, when they will sell for better prices.

THE BEST TIME TO SET HENS.—Hens must be set from the beginning of February to the middle of March. Apart from what has already been said, chickens hatched from the 1st to the 15th of March thrive better and mature faster

than chickens hatched at any other time of the year. The rainy season is the worst time of the year for rearing chickens. Chickens hatched in October do well if they are given greater warmth and more nourishing food and are carefully protected from the cold winds and from wet and damps. I never hatch chickens from the 1st of April to the 1st of October.

SELECTION OF EGGS.—The selection of eggs for setting is a most important matter ; for on the eggs depend the qualities of the forthcoming brood. The following rules must be faithfully adhered to :—

1. Only eggs from the best hens must be set.

2. Only fresh eggs must be set. By fresh I mean eggs not more than three days old in the hot weather, and not more than from five to seven days old in the cold season.

Fresh eggs, if all be well, hatch out in good time, and the chickens are strong and lively ; the stale ones always hatch later, and the chickens are often too weak to break the shell. I have also invariably noticed, that even when stale eggs have hatched, the subsequent deaths have principally occurred in this portion of the brood ; but when all the eggs were fresh, not only nearly every one of them hatched within an hour or two of the first one, but the losses were very few.

3. Very small and very large eggs should be rejected. Only eggs of an ordinary shape and with a smooth surface should be used for hatching. Different breeds of fowls lay different sized eggs, but the size of the egg does not

indicate the size of the fowl it will produce. The Bantam lays the smallest egg, and the Spanish the largest, but the Spanish is the smallest in size of body, save only the Bantam and Hamburgh; whereas, on the other hand, the Brahma and Cochin, which are the largest fowls, do not have very large eggs. Larger eggs than usually laid by the fowl should not be selected for hatching. Very large eggs are generally double-yolked, and very small ones yolken.

4. Eggs intended for hatching must not be shaken, exposed to the sun or kept in wet or damp places. No oil, dirt or other liquid substance must be allowed to touch them; and they must be kept away from strong and bad odours. The eggs must never be kept in an air-tight vessel.

There are many theories abroad about being able to tell the sex of the chickens in the eggs, but none of these theories are proved by facts. The most plausible idea is that, the first half of the eggs laid are female, and the second half of the number laid are male.

SELECTION OF THE MOTHER.—Pullets of the first year, usually, are not good sitters and mothers. The second time a hen becomes broody she will usually sit well and be a good mother. A wild, quarrelsome or fidgetty hen will make a bad mother.

The hen selected for sitting must be in perfect health, and have all her feather's on her. A bald hen or one minus some feathers should never be selected for hatching for she will not properly cover her eggs.

The hen should be thoroughly broody. A broody hen can be recognised by her constant determination to sit in her nest. She will scarcely go out to eat, and will make a peculiar clucking sound and ruffle her feathers when she is touched. Many persons put eggs under a hen when she is not properly broody, and consequently the eggs are destroyed. Some hens will squat in their house for days, but when put on eggs be very troublesome, and will stand on the eggs and often break them. Such hens must be avoided.

Hens will sometimes lay several eggs after beginning to sit. Every egg placed under a hen should be marked quite round with ink, so that the egg laid in the nest may be detected and removed.

The best time to set a hen is at night, as then she is more likely to settle down to her work. Besides, if the eggs are put under the hen at night, the chickens will begin to appear on the night of the 21st day, and will have the whole night to rest and gain strength.

THE NEST.—The nest on which the hen is placed must be made in a quiet corner where she will not be disturbed. Make a box eighteen inches high and eighteen inches square; the top must be made of one-inch mesh wire-netting, and the bottom and sides of planks; with a door nine or ten inches square on one side. Put two inches of fine dry earth or ashes in the box; make an oval excavation in the earth, and over this place a thick even layer of soft broken straw. Place the eggs on the nest in

this box, and gently put the hen on the eggs and close the door. In such a box as this the hen and eggs will be safe from the other fowls and from cats, rats and jackals, and she will have plenty of ventilation. The box must be well whitewashed both inside and outside, and some flower of sulphur sprinkled over the nest.

Another way of making a nest is this: take a small *gumla*, about eighteen inches in diameter and six inches deep, half fill it with fine dry earth or ashes, put some broken soft dry straw over the earth, and put the eggs on this; gently place the hen on the eggs and cover her up with a good strong *tappa* or large basket. The nest must be made in a place where the hen will be safe from cats, rats, &c., and away from the other fowls.

It is always best to have a separate house for sitting-hens. If they are kept in the same house as the other fowls, or where they will be constantly disturbed, they will not sit well, or will spoil their eggs. If two or three hens only be put on eggs, they can be kept each in a different out-house or godown, and be let out once or twice every day; but if a number of hens be set, it is advisable to have a separate house and run for the sitting-hens, and place all the nests in this house. All the hens can then be let out of their nests together, and put back in half an hour.

A sitting-hen must not be kept in a damp, dirty, draughty or badly ventilated place.

HOW TO TREAT SITTING-HENS.—Before putting the hen on the eggs, she must be placed under a *tappa* or basket and

fed and watered ; a plentiful supply of good grain must be given. She must be allowed to remain undisturbed for about twenty-four hours after she is placed upon her eggs. On the second day, and every subsequent day, she must be allowed out once or twice a day. Some hens leave their nests twice a day. It will do no harm if she does, so long as she is not allowed to keep off her eggs for more than twenty minutes each time.

The hen must have a plentiful supply of good grain and pure water, but no soft food. The food must be given when she comes out of her nest, and never given in the box. If the food is given at a regular hour every day, she will come out exactly at that hour. A box of dry earth or ashes must be kept in the yard where the hen can easily get to it. After she has eaten she will take a dust-bath and rid herself of the vermin that may be troubling her. Unless a dust-bath is provided, the hen will get covered with vermin. If the hen keeps away from her eggs longer than fifteen or twenty minutes, gently drive her into her box and close the door.

Hens ought to come off their eggs once every day. They require the few minutes run and daily supply of food. The temporary change from the cramped position is good for them, and the exposure to the fresh air greatly benefits the eggs. If the hen will not come off her nest, she must be gently lifted off at a given hour every day. Unless this is done, both the hen and the eggs will be injured. The person who lifts the hen must carefully feel

under her wings before removing her from the nest, in order to make sure that no egg is being held there. She must be lifted gently, by placing both hands under her wings.

The food given to the sitting-hen must consist of whole wheat, peas or paddy, and no limit should be placed on quantity ; give as much as she will eat. Soft food must never be given.

If the hen is troubled with lice, her nest and box must be changed, and some Keating's insect powder, or some flower of sulphur, must be sprinkled over the nest and rubbed under the hen's wings and over her head and back.

HOW TO TREAT THE EGGS.—After the eggs have been placed under the hen, all that needs to be done is to inspect them every day to see that they are all right.

Sometimes an egg gets broken in the nest ; when this happens, remove the remaining eggs and wash and dry them carefully ; change the earth and straw of the nest ; if there be any of the egg sticking about the hen, wash it away as well. Unless this is done, the remaining eggs will be injured. The water used for washing the eggs and hen must be 103°, no colder and certainly no hotter. As soon as the eggs and hen have been cleaned, the eggs must be placed under her in a new nest.

Should an egg get chipped or indented, so long as the skin below the shell be not broken there is hope for it. The flaw should be patched up with gummed paper. A good thing to mend such a flaw is the marginal paper round

PUTTING THE HEN OFF THE CLUCK.—To put a feather in the nose of the hen and duck her in cold water is cruel, and as ineffectual as injurious. The best method is to place the hen in a coop with a barred front and barred bottom and place it in a corner of the shed. Keep the bird in this coop for a few days, and give her plenty of grain and water in the coop. This will effectually break the cluck in a few days.

It is not always wise to refuse to allow a hen to sit. She needs the rest, and it will be well to allow her to remain on the nest for ten or fifteen days, even if there are no eggs to place under her.

HOW TO PACK EGGS.—Eggs are best packed in small baskets, with the top tied down. If packed in boxes, the cover must be tied or screwed, but never nailed down; if nailed down every egg will be damaged. The best packing is to wrap each egg separately and rather loosely in a piece of paper, and then very carefully in a separate wisp of soft straw; and finally imbed the eggs thus guarded, but not too tightly, in a basket or box with more soft straw between each egg. The large ends of the eggs must be placed downwards; and they must not be packed too tightly. Chaff or sawdust is too solid, and should not be used. Eggs packed in this way will go hundreds of miles without injury.

PURCHASING EGGS.—When it is necessary to purchase eggs for setting, they should be obtained from persons of good repute. Some persons, thinking they are economical,

Sometimes the chickens will be heard to cry in the eggs when they are placed in the warm water. The eggs must be allowed to remain only two minutes in the water, and then taken out, properly dried and put back under the hen.

Some persons occasionally sprinkle warm water over the eggs. When the weather is very hot and dry, it may be necessary to do this in order to give moisture. In Bengal I have not found it necessary to sprinkle the eggs. Putting the eggs in warm water a day or two before they are hatched is all that is necessary; it softens the shells and enables the chickens to break them and come out more easily.

On the twentieth or twenty-first day the chickens will begin to appear. Now, the hen must be fed on the nest and let alone for twelve or twenty-four hours. Occasionally the hand must be put under her to find and remove the egg-shells. These vacant shells if not removed may become attached to the other eggs and prevent the chickens from coming out.

The chickens need no food for the first twelve hours, so they must be left under their mother undisturbed all that time, but no longer. If after twelve hours there be some eggs under the hen still unhatched, these eggs must be placed under another hen, and the chickens with their mother removed to a clean and warm box. Some chickens will be later in hatching than others; so I have found it a very good plan to set two hens on the same day, and, when the chickens are hatching, give the early ones to one hen and the ones hatched later to the other hen.

A day before the chickens appear the nest and eggs must be sprinkled with Keating's insect powder, and after the chickens and hen have been removed from the nest, they should be gently rubbed over with the powder.

Rats often steal eggs and chickens from under the hens ; they sometimes kill the hen. The only remedy is to keep the hen with her eggs or chickens in a box with a good strong bottom and half-inch mesh wire-netting top and door.

Should any of the chickens be unable to get out of the shell, they may be aided, but, as a rule, if they cannot get out themselves they are generally not worth the trouble to rear. The best way to help the hatching is to place the egg, with the chipped portion out of the water, in a bowl of warm water (103°), keep the egg in the water for a couple of minutes, and then return it to the nest. This will soften the shell and enable the chicken to break it. Breaking the shell is dangerous, for if blood is drawn, death or deformity will sure to ensue.

NUMBER OF EGGS UNDER A HEN.—The size of the hen and the state of the weather must decide the number of eggs to be placed under her. If the hen be large and well-feathered, and if the weather be dry and warm, then from eleven to thirteen large eggs may be placed under her ; if the weather be cold, eight or nine should be given. Small hens should have only eight or nine eggs in the warm weather, and six or seven in the cold weather. If the eggs are small more may be given. No more eggs should

be placed under a hen than she can comfortably cover. It is better to place too few than too many. In the cold weather the chickens need shelter and warmth: if they do not get it they will die off. So a hen should not be given more than six to eight chickens when the weather is cold.

HOW TO KEEP EGGS.—The quality of the eggs to be set must be above suspicion. In order to ensure this, every egg should have legibly written upon it in pencil or ink the date on which it was laid. The best way to keep eggs is as follows:—Have a large board (as large or as small as necessary) with a number of round holes about an inch and a quarter in diameter bored in regular rows three-quarters of an inch apart. Fix this board on a stand or four legs, and place the eggs, the larger ends downward, on the holes. This egg-stand must be kept in a quiet, clean, dry, and properly ventilated place, where the eggs will not be exposed to concussion, bad odour or heat.

HOW TO TREAT EGGS WHICH HAVE TRAVELLED.—Eggs which have been brought by train or post, or otherwise travelled, run the risk of being broken; not only so, but they are very liable to prove infertile. Before being set under the hen, if the eggs are kept in the stand at rest and free from jar for twenty-four hours, they have a better chance of hatching. They must not be kept standing for more than twenty-four hours. The journey injures the germ, but by being rested it seems to recover from the injuries.

PUTTING THE HEN OFF THE CLUCK.—To put a feather in the nose of the hen and duck her in cold water is cruel, and as ineffectual as injurious. The best method is to place the hen in a coop with a barred front and barred bottom and place it in a corner of the shed. Keep the bird in this coop for a few days, and give her plenty of grain and water in the coop. This will effectually break the cluck in a few days.

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PURCHASING EGGS.—When it is necessary to purchase eggs for setting, they should be obtained from persons of good repute. Some persons, thinking they are economical,

get the cheapest eggs that are to be had, and when the chickens hatch out are surprised to find them good for nothing. Getting cheap eggs for setting is altogether false economy. A few pice more for each egg would often result in each chicken being worth a few rupees more. Then, again, some people charge large prices for eggs, but when the chickens come out, the eggs are found to be not exactly what they were represented to be.

If a person gets a name for supplying first-class eggs and fowls, he will prosper ; while if he does not keep his word, if he indulges in "tricks of the trade," selling stale or infertile eggs for fresh and good ones, or eggs of cross-breeds for those of pure-breed, old fowls for young ones, diseased birds for healthy ones, or cross-breds for pure-bred, people will quickly get to know his ways, and will leave him for some one who is honest. "Honesty is the best policy," even in poultry-farming.

CHAPTER IX.

REARING CHICKENS.

A VERY great deal depends upon the way chickens are treated during their growing stage, for such treatment very largely controls their size and stamina. A large percentage of chickens die from sheer neglect or mismanagement.

THE FIRST FEED.—For nearly twenty-four hours after hatching chickens require no food ; but it is not advisable to leave them longer than twelve hours without it. Twelve hours after the chickens are hatched, they must be taken out of the old nest, and, with the mother, placed in a clean box, or on a clean plank under a basket, and put in a warm, dry, and quiet corner. The mother must be fed before and apart from the chickens ; a liberal supply of good whole grain wheat must be given. After the mother has been fed, she must be allowed a good drink of water, and then put back with her chickens on the board under the *tappa*, or in the box. Care must be taken that the chickens do not swallow the grain, which, if they do, will stick in their throats.

The yoke of a hard-boiled egg should be mixed with some stale bread-crumbs, or with fine oat-meal or barley-

meal, and slightly moistened with milk. This should be crumbled on the board upon which the chickens are placed. The hen will call out the chickens from under her, and they will soon begin to pick up the food. A small quantity only should be given at a time. The food must be given little and often. The yolk of one egg with a desert spoonful of crumbs or oat-meal will do for a dozen chickens for the first day.

HOW OFTEN TO FEED THEM.—Chickens must be fed every two hours until they are a month old; after that, and until they are six months old, they must be fed four times a day. The first feed every day must be given before sunrise, as soon as it is light enough to see. The last meal must be given after sunset, when the chickens are put away for the night.

WHAT TO FEED CHICKENS ON.—The egg and bread-crumbs should be given every morning for the first three days. After the third day the morning meal should consist of oat-meal, barley-meal or coarse wheat flour, sufficiently moistened with milk so that it will not stick to the fingers when pressed and will easily crumble. The other meals during the day should consist of coarse grain oat-meal and coarsely ground wheat, given dry. At first the grain should be ground small, but as the chickens grow larger the grains should be larger, until at two months old they receive whole wheat. A little pepper, and occasionally a little salt and sulphur, should be added to the morning meal.

Once a day a little chopped onions and garlic should be given ; every other day or twice a week some finely-chopped raw or half-cooked meat must be given. White-ants and earth-worms are very good for chickens : they eat them greedily. When a good supply of white-ants is given every day, the meat is not necessary. Finely-ground fresh bones must be given when neither meat or white-ants are obtainable.

Chickens must be allowed green-grass from the second or third day of their life. Without green-food, they will never thrive.

WATER.—Chickens must not be allowed water for the first three days. On the fourth day, and every day after that, water must be given regularly four times a day. The water must be perfectly clean, and given in a shallow vessel. The following plan is a good one :—Fill a cup with water, put a saucer over it turned upside down, and turn the cup and saucer over. The cup will now stand topside down in the saucer, and there will be a rim of water all round in the saucer. This will give an ample supply to the little creatures, without the danger of their drowning themselves or polluting the water with their dirty little feet. The cup must be without a handle. Any similar contrivance will do. The two things necessary to guard against are, the chickens drowning or wetting themselves, and their polluting the water.

The water must be removed after the chickens have drunk sufficient.

Five drops of Condry's fluid, or a little camphor water put into the water, will be beneficial.

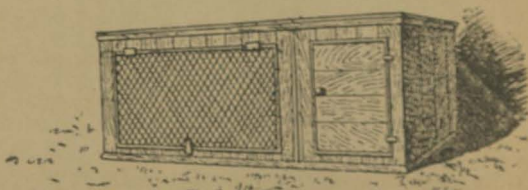
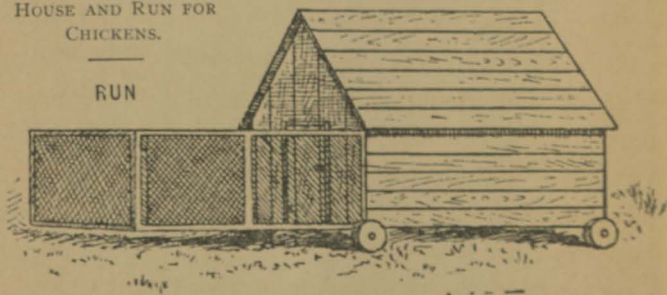
THE RUN.—For the first three days the chickens must be kept with the mother under a small *tappa* or in a box during the day. If the day is bright and the ground dry, the *tappa* should be placed on the grass in the compound. But if the ground is wet, or the weather damp, they must be put in a box with sand or dry earth in the bottom, and kept under a shed. For the first three days chickens need to be kept in close confinement; because if they are allowed to run about much their strength will be overtaxed. On the fourth day they need a little freedom, and must be placed under a *tappa* four feet in diameter. On the seventh day they must be removed to a proper run. A run six feet long, three feet wide and a foot and a half or two feet high, will be sufficient for a dozen chickens until they are three weeks or a month old. The Illustration gives a good idea of the run required. The covered box or coop must be attached to the run to protect the chickens from the rain and the heat of the midday sun. Such a run will save a world of trouble and anxiety, and prevent the brood wandering and getting tired before they are old enough to bear the strain. After the fifteenth day the chickens should be let out with their mother for two or three hours in the morning and evening. When they are a month old they must be allowed out the greater part of the day. The run must be shifted every day and placed on fresh grass.



Chickens' coop, with wire run, which may be left out at night without fear of jackals or cats. There should be a lid to the coop to get at the hen and chickens and for cleaning the coop, which should have a bottom, and a piece of gunny thrown over the wire netting during bad weather and at night. The above is a most useful construction, and is a protection not only against animals but kites and crows. Though a little expensive it will repay itself well.

HOUSE AND RUN FOR
CHICKENS.

RUN



COOP WITH COVERED RUN ATTACHED
FOR CHICKENS.

If chickens are kept in close confinement they will droop and die. When kept confined long they begin to pipe, and this will prove injurious to their health. They must be kept contented and happy, and they are most contented and happy when they run about and scratch for themselves.

CROWS AND KITES.—The greatest enemies chickens have in India are crows and kites. One cannot too carefully guard against them. Chickens must always be kept under a covered run, and when let out be watched by some person to protect them from the kites and crows.

AT NIGHT.—The chickens with their mother must be properly cooped at night so as to be safe from cats, rats, and thieves, and kept away from draughts and wet. The coops must be large enough and sufficiently ventilated to be comfortable. Damp, overcrowding and want of proper ventilation are fruitful causes of disease.

A couple of inches of dry earth or sand, or ashes must be placed in the coop on the wooden floor, and some soft broken straw placed over that.

KEPT SEPARATE.—The hen with her brood must be kept away from the other fowls, or else she will be constantly fighting, and injure or destroy the chickens. Two hens with chickens must not be kept in the same run, or very close to each other; for they will peck each other's chickens to death.

Chickens of different sizes must not be kept together. The larger ones will ill-treat the younger ones and injure them permanently.

INJURIOUS PRACTICES.—Some people remove the little horny scale which appears on every chicken's beak; they have an idea that this will enable them to pick better. This practice is as stupid as it is useless, and often proves positively injurious to the little birds. Another foolish and hurtful practice is putting food or pepper-corns down their throats, and dipping their bills in water to make them drink.

The best thing to do is to *leave them alone*, and let them pick up their own food.

CLEANLINESS.—Absolute cleanliness is very essential, even more so than for grown-up fowls. If the boxes, coops, ground and runs are allowed to become tainted with their excrements and stale food, it will be impossible to successfully rear them. The sand or earth in the coop must be continually changed, and the run moved every day to a fresh place.

VERMIN.—Chickens will not thrive if they are covered with vermin. The best way to keep them free from insects is to rub some Keating's insect powder on their head, body and under their wings; and to occasionally wash their boxes with a strong solution of phenyle and water and dry in the sun. If the coop, house and run are not kept perfectly clean, it will be impossible to keep the chickens free from vermin.

WET AND DAMP.—If young birds are kept in wet or damp spots they cannot thrive. Wet and damp cause a great many deaths among chickens. They should never be allowed out during unsettled weather.

PERCHES.—Chickens under six months of age should never be allowed to roost on perches. Doing so will make their breast-bones crooked and will disfigure them for life. Chickens should be bedded on sand, ashes or straw.

CHAPTER X.

ARTIFICIAL HATCHING, AND REARING BY HAND.

HATCHING. — All poultry-keepers have at times been troubled with hens that were bad sitters. It is exceedingly provoking to have a sitting of eggs spoiled; also, frequently when there are a number of good eggs which should be set, it is difficult to procure a broody hen. All these annoyances are done away with by the incubator. Artificial incubation is no longer a mere theory. In these days it has reached a state of perfection that is almost astonishing. In these machines a large number of eggs can be hatched at any time and season of the year and almost as successfully as by hens.

In hatching by incubators it is of the utmost importance that the eggs be fresh; they should not be more than three days old in the hot weather and seven days old in the cold season. If stale eggs are placed in the incubator the probabilities are they will not hatch. Another thing to be guarded against is the proper regulation of the heat in the incubator. In the plains of India the heat should be only 103° or a very little more; less will be ineffectual, and much more will be injurious. A great deal more moisture is required in the machine in India than at home; and more in Northern India than in Bengal.

One of the best machines of the kind is that known as Hearson's, made by Chas. Hearson & Co., Limited, 235, Regent Street, London, W.

It is unnecessary for me to explain the method of working this machine. Full directions and information are supplied with each machine. There are machines of different sizes. All illustrated price-lists can be obtained from the manufacturers.

REARING.—It is, doubtless, very provoking to have a sitting of eggs spoiled, but it is even more annoying, when the chickens have been hatched and are strong and lively to find some of them crushed to death by their clumsy mothers, and others dying for want of proper care from their mothers. Hence many attempts have been made to solve the problem of rearing by artificial means. Hearson's foster-mother and cold brooder are the best contrivances of the kind, and with proper care and cleanliness, can be worked successfully in India. When chickens are hatched in an incubator, they must be removed from the machines as soon as they are dry. Some of the incubators have drying boxes for chickens just hatched. When the chickens are hatched they must be taken from the egg-drawer and put into the drying-box and kept there for from sixteen to twenty-four hours, when they must be removed to the foster-mother. Care must be taken that the drying box and foster-mother are not too warm, and that there is sufficient ventilation. The heat must not be more than 98°. No water must be kept in the machine, and there must be free circulation of air.

But there is a simpler and cheaper method of rearing chickens by hand, which is better adapted to India, especially when the chickens are hatched in the first week of March. After the chickens are hatched they must be allowed to remain with their mother for six or seven days. The animal heat from the hen is very necessary for the chickens. No artificial method can prove as efficacious at this period of the chicken's life. They must be fed as directed in the previous chapter. On the evening of the seventh day after they are hatched, the chickens will be strong enough to run about, and will be able to eat properly. They should now be taken from under the hen and placed in a basket and covered with a piece of soft flannel. This basket should be from twelve to eighteen inches in diameter and about twelve inches deep, with a cover; put clean soft straw four inches deep in this basket, place the chickens on the soft bed of straw and cover them with a piece of soft flannel, and place the basket in a safe place, a good distance away from the hens and away from the draught. Leave the chickens alone in this nest for the whole night, and see that they are comfortably warm. The greater number of chickens there are together the less covering will be required. Care must be taken to give them sufficient warmth without suffocating them. A basket eighteen inches in diameter and fifteen inches deep will be large enough for a dozen chickens.

The next morning the chickens must be taken out of the basket and placed on a clean plank under a small *tappa* or run, or in a box; some food should be thrown from a little

above their heads down on the plank. At first they may not eat, and will keep crying for their mother, but repeat throwing the food, and a few of the chickens will begin to pick up and eat the little pieces, and gradually the others will do the same. As soon as the little creatures stop picking and running about they must be put back into their nest in the basket, or into the box mentioned below, and kept quiet for two hours, when they must be taken out and fed; after which they must be again put back. They will enjoy the warmth and go to sleep. This process must be repeated every two hours until the chickens are fifteen days old. On dry sunny days they must be left out in the open on the dry green grass under a small run for two or three hours in the morning and evening. It is a good thing to put the chickens out on the dry green grass for an hour or half-hour from the second day they are hatched.

For the first three days they should not be allowed water; from the fourth day they must be given water three or four times a day.

I have already, in a previous chapter, spoken about the food for chickens; it is not necessary for me to add anything further about it.

Chickens should never be placed out on a wet, stormy or windy day. If the sun be too hot for the chickens, a piece of canvas or mat should be thrown over half of the *tappa* or run. When the weather is unsettled the chickens should be placed in a large box in a warm corner in the shed; some clean sand or dry earth should be put in the box.

For the first three days a *tappa* or run two or three feet in diameter will be sufficient for a dozen chickens to run in. On the fourth day they will need a little more room. After they are seven days old they must be placed in a proper run out on the green grass, and in the sun for three hours in the morning and three hours in the evening. A run six feet long and three broad and two feet high will be large enough for a dozen chickens. When three weeks or a month old they must be allowed perfect liberty in the open, but must have some person to watch them and guard them from crows and kites. Until they are eight weeks old chickens should be confined under a small run or in a box for two or three hours during the middle of the day; this rest will do them much good.

For the first week the chickens should be allowed to sleep under their mothers; for the seventh night the nest in the basket will suffice for them to sleep in. After the seventh night they should be put in a box made as follows:—Take a box two feet long, two feet wide and eighteen inches high, enclose half of the top with $\frac{3}{4}$ -inch mesh wire-netting, put a door on one side of the box, make the door of a wooden frame, eighteen inches by one foot, with $\frac{3}{4}$ -inch mesh wire-netting stretched over it; to the wire-netting on the top of the box attach strips of flannel, the strips being two or three inches wide and hanging down to the bottom of the box: place these strips an inch apart; on the bottom of the box place some clean sand or dry earth, and over this a piece of blanket or some soft dry straw. When the chickens are

placed in this box, they will go in between the flannel strips, and nestle there as they would under the hen's wings. When the night is cold throw a piece of cloth over the netted side of the box. This box makes a capital foster-mother during the warm weather. It will be sufficiently large for a dozen chickens from a week to a fortnight old ; as the chickens grow larger fewer of them must be kept together ; not more than four chickens six weeks old must be kept in a box of this size. The wire-netting on the top and the side will give ample ventilation and the flannel will give all the warmth required. I prefer to put the chickens in this box as soon as they are removed from their mother.

When chickens are hatched under hens, they must be properly rubbed over with Keating's insect powder when they are twelve hours old, and again when they are removed from under their mother and before they are placed in the box mentioned above. If lice are allowed to remain on chickens they will not thrive. The box and the flannel must be washed with phenyle and water and dried in the sun at least once a week, and the chickens occasionally rubbed with the insect powder.

After the chickens are eight weeks old they should be kept in a large box-house or small room on straw or sand. In calculating space for chickens above eight weeks old and under four months old, you must count two chickens as equal to one full-grown fowl.

The chief difficulty in rearing chickens by hand is keeping them contented and happy. It is not difficult to

feed them and give them warmth, but it needs a great deal of time and care to keep them from becoming restless and from piping. For the first week chickens brought up by hand give more trouble than those reared by a hen, but they soon get very tame and are easily managed.

If there are only a few chickens, and the hen be a good mother, it will not be wise to take them away from their mother. A hen can manage six or eight chickens very well. But if there be more chickens than a couple of hens can properly manage, it will be best to rear them all by hand. It will be less trouble and expense to rear thirty or forty chickens by hand than to look after four or five hens with their broods.

CHAPTER XI.

MANAGEMENT OF LARGER CHICKENS,
CAPONISING, MANURE, AND FATTENING FOWLS.

LARGE CHICKENS.—Inexperienced persons are very apt to make a great mistake in rearing chickens, by neglecting those between a month and six months old for the younger brood. They think the birds are old enough to look after themselves, and do not require the same amount of care as the younger ones ; whereas the fact is, that the birds need more care when they are between a month and six months old than they ever did or will, and any neglect at this period will be attended with serious results. At this time the down or nest feathers are being shed, and full-grown feathers take their place. This causes a continual drain upon the system, and the birds need greater warmth and extra nourishment, and require to be carefully guarded against exposure to cold and wet.

Chickens under six months old must be fed four times a day, and allowed at each meal as much as they will eat ; generous feeding will produce good birds.

Wheat, barley-meal, green-grass, and some animal food are the best articles of food for young and growing fowls.

Particular attention must be given to cleanliness of their boxes, house and run or yard. Dirty soil and filthy houses will soon kill the birds.

I have already spoken about the space needed for larger chickens, and also about giving them a bed of straw or sand to sleep on.

I must repeat that it is very necessary to keep the cockerels and pullets in separate houses and yards. When the cockerels are four months old they must be removed from among the hens and pullets and kept by themselves until they are one year old.

Cockerels are ready for the table when they are between four and six months old. It is advisable at this period to select the best birds, and keep them separate for replenishing the breeding-stock, and either sell or eat all the rest. Those selected for breeding must be treated with great care, and when twelve months old they must be mated with selected hens.

The pullets will be ready for the table when they are five or six months old. The inferior birds should be either sold or used for the table; and those intended for the breeding pens must be at six months of age mated with cocks that are six months older. The instructions given in the chapter on breeding must be faithfully adhered to.

CAPONISING.—Caponising is the taking away from cockerels the power of reproduction. By this means the weight of the birds and the tenderness of the flesh are

greatly increased. The operation should be performed in the cold weather, and when the bird is between four and six months old.

The following description is a translation of a French treatise :—

“The instrument employed in the operation should be very sharp ; a surgeon’s small operating-knife, termed a curved-pointed bistoury, is far better than an ordinary knife, as it makes a much neater wound, and so increases greatly the chances of healing ; or a curved-pointed pen-knife may be used. A stout needle and waxed thread are also requisite ; a small curved surgical needle will be found much more convenient in use than a common straight one.

“It is necessary that there should be two persons to perform the operation. The assistant places the bird on its right side on the knees of the person who is about to operate, and who is seated in a chair of such a height as to make his thighs horizontal. The back of the bird is turned towards the operator, and the right leg and thigh held firmly along the body, the left being drawn back towards the tail, thus exposing the left flank, where the incision has to be made. After removing the feathers the skin is raised up, just behind the last rib, with the point of the needle, so as to avoid wounding the intestines, and an incision along the edge of the last rib is made into the cavity of the body sufficiently large to admit of the introduction of the finger. If any portion of the bowels

escape from the wound it must be carefully returned. The forefinger is then introduced into the cavity, and directed behind the intestines towards the back, somewhat to the left side of the middle line of the body.

“ If the proper position is gained (which is somewhat difficult to an inexperienced operator, especially if the cock is of full size), the finger comes into contact with the left testicle, which in a young bird of four months is rather larger than a full-sized horse-bean. It is movable, and apt to slip under the finger, although adhering to the spine; when felt it is to be gently pulled away from its attachments with the finger and removed through the wound—an operation which requires considerable practice and facility to perform properly, as the testicle sometimes slips from under the finger before it is got out, and, gliding amongst the intestines, cannot be found again readily; it may, however, remain in the body of the animal without much inconvenience, although it is better removed as its presence is apt to excite inflammation.

“ After removing the left testicle, the finger is again introduced, and the right one sought for and removed in a similar manner. It is readily discovered, as its situation is alongside of the former, a little to the right side of the body. Afterwards the lips of the wound are brought together and kept in contact with two or three stitches with the waxed thread. No attempt should be made to sew up the wound with a continuous seam, but each stitch should be perfectly separate, and tied distinctly from the others.

“In making the stitches great care should be taken ; the skin should be raised up so as to avoid wounding the intestines, with the needle, or including even the slightest portion of them in the thread—an accident that would almost inevitably be followed by the death of the bird.

“After the operation the bird had better be placed under a coop in a quiet situation, and supplied with drink and soft food, such as sopped bread. After a few hours it is best to give him his liberty, if he can be turned out in some quiet place removed from the poultry-yard, as, if attacked by the other cocks, the healing of the wound would be endangered.

“After the operation the bird should not be permitted to roost on a perch, as the exertion of leaping up would unquestionably injure the wound ; it should, therefore, at night be turned into a room where it is obliged to rest on the floor previously covered with some clean straw. For three or four days after the operation the bird should be fed on soft food ; after that time it may be set at liberty, for a short period, until it has recovered entirely from the operation, when it should be put up to fatten.”

MANURE.—Fowl and duck manure is valuable for flower and fruit gardens, or any crop. It is too strong in its undiluted state, and must be thoroughly mixed with some fine dry earth before it is put on the ground. The manure should be collected in a pit or barrel, and kept some distance from the house.

FATTENING FOWLS.—Capons and young hens fatten the fastest. Growing chickens and old birds should not be put into the fattening-coop.

Only perfectly healthy and robust fowls should be selected. The birds selected must be kept each in a separate coop or compartment. These coops or compartments must be only fifteen inches square and two feet deep—no larger. The top, sides and back of the coop must be boarded up; the front enclosed with wire-netting or with bars. The fowls in the different coops or compartments must not see each other. The coops should be kept in a room that can be closed and made dark after the birds have been fed. If kept in the open, a canvas screen should be drawn before the doors. The bottom of the coop should be barred, and have a drawer underneath to receive the droppings. The droppings must be removed twice a day. The coops should be constantly painted over with kerosine oil or phenyle to keep free from vermin.

The best food for fattening fowls is Indian corn-meal, barley-meal, boiled rice, and, occasionally, wheat-bran or the inner husk of the rice. The meal and bran should be boiled till quite stiff and dry, and allowed to cool. The food should be changed occasionally. The fowls must be fed four times a day, and as much given at a time as they will eat. A constant supply of water is necessary.

A properly fed large fowl should gain 3 lbs. a week, and should be ready for the table in two or three weeks. Fowls fatten quicker in the warm weather than in the cold.

Sometimes a fowl refuses to put on fat, and becomes ill when subjected to the fattening process. When it is observed that a fowl has not gained weight during the first week, it is best to kill it as it is.

CHAPTER XII.

DISEASES OF POULTRY.

It is comparatively easy to prevent fowls from becoming ill, but once sickness gets in among them, it will be found extremely difficult, if not impossible, to effect a cure.

“Prevention is better than cure,” is a motto especially applicable to fowls and their diseases. In most cases, the only thing to be done when serious disease takes hold of a fowl is to kill it and bury it deep under ground.

The most common causes of illness among poultry are dirt, damp, overcrowding, bad food and water, badly ventilated or draughty house, and vermin, and very frequently contagion. I have seen poultry-houses reeking with the odour of manure, and infested with vermin. Lack of cleanliness is a prolific cause of disease. Fowls are certain to become ill if they are kept in a badly ventilated house or are overcrowded. Neither can they stand wet—they are unlike ducks. Water will soak right through their feathers and give them a chill.

When fowls have been purchased at an auction, market or from dealers, or have been bought from a person, the condition of whose poultry-yard you know nothing about, or when the birds have travelled, it is always safe to keep

them separate from the other birds for at least a fortnight. They must be fed and watered separately, and the vessels used for them never used for the other birds. Frequently a bird brought into the poultry-yard will bring infection with it, and cause terrible havoc among the birds. Too great precaution cannot be taken in this matter.

The first thing to do when a fowl becomes ill is to remove it from the rest, and place it in a small, dry, warm and properly ventilated house by itself. This will give the sick bird a chance to get better, and prevent the disease spreading through the yard. Sick poultry must be kept warm, fed properly and treated gently. The next thing to do is to find out and remove the cause or causes of the disease, and thus prevent all the other fowls from becoming sick. The poultry-house and the place where the sick fowl is kept must be frequently disinfected with carbolic powder, or phenyle and water.

I shall divide the diseases of poultry into three classes : first, common and simple ailments ; second, serious but not infectious diseases ; and, third, infectious diseases. Most of the medicines prescribed are homœopathic, and can be obtained from any homœopathic dispensary.

1.—COMMON AND SIMPLE AILMENTS.

Fledging.—Chickens often droop and suffer much whilst their feathers are growing, especially in the cold and wet weather ; and the breeds which feather most rapidly suffer most ; getting the feathers too early rapidly weakens them and stunts their growth.

Keep them out of the wet and damp, and give them sufficient warmth. Clip the feathers of the wings. Give some meat every day, and a little chopped onions and garlic. Put a few drops of Parrish's chemical food in their drinking water, or give a little tonic.

Moulting.—Some fowls suffer very much during moulting. If care be not taken, they will be permanently injured, if not die.

If properly fed and housed, fowls very seldom suffer much during this season.

Protect the bird from damp, cold winds, and from intense heat.

Give oat-meal or barley-meal mixed with milk in the morning, and a little meat during the day. Give the tonic for fowls.

Loss of Feathers.—Vermin and want of green-food are the chief causes of fowls losing their feathers before moulting.

Rub the fowls with Keating's insect powder, or with an ointment made of cocoa-nut oil and sulphur; give a liberal supply of green-food; provide a dust-bath; and remove the bird from among the other fowls, and keep it warm, well sheltered from damp and cold winds. Give the tonic.

Soft Eggs.—Some hens lay soft-shelled eggs, that is, eggs with a skin only. This is caused by want of sufficient lime or by over-feeding. It is also sometimes caused from the bird being driven about and frightened, or from the bird being troubled with vermin.

Remove the causes. Supply lime; reduce food; keep free from vermin; and treat the bird gently.

Scaly Legs.—Sometimes fowls are greatly troubled with this. It is caused by an insect under the scales of the leg.

Bathe the legs every morning for a few days with kerosine oil nineteen parts and phenyle one part. The tonic will do good.

Soft Crop.—The crop is enlarged and soft as if filled with water; when pressed, most offensive water is discharged.

Give Condry's Fluid, five drops three times a day in a dram of water. Add charcoal to the food, or give it in pills. Stop soft food for a time; feed only on whole wheat.

Feather-eating.—Some fowls are greatly addicted to eating feathers. If they do not find them lying about, they will pull them off the other fowls.

It is caused from want of sufficient iron and animal food.

Put garlic, sulphur or iron in the food.

Feather-eating is sometimes a vice, and nothing will cure the bird of it. The best thing in such a case is to kill the bird.

Egg-eating.—Some fowls eat eggs, and will devour all they can find in the laying-house or sitting-nests.

Want of lime and gravel or worms and insects in the earth are the chief causes. Supply these and give the bird her liberty. If this will not cure her, a number of eggs should be emptied of their contents and filled with a paste of mustard. The hot mustard will teach the bird a lesson, and she will leave the eggs alone. If this will not cure

her, she must be killed. Cocks as well as hens are given to eating eggs; and if one fowl does it, others will learn to do it also.

Pale Yolks.—The eggs of some breeds are naturally of a pale colour; but sometimes eggs have an unnatural paleness, which is a proof of weakness. Birds kept in confined runs and insufficiently supplied with green-food produce pale yolks.

Give the hen a large run and abundance of green-food; also some of the tonic.

2.—SERIOUS BUT NOT INFECTIOUS DISEASES.

Apoplexy.—This disease is generally caused by over-feeding and close confinement. Black Shanghaies are very subject to apoplexy. They seem to suffer more than the other breeds from the effects of the heat. The attack is sudden and generally fatal. During the hot weather, and sometimes in the rains, hens in their nests in the act of laying are frequently attacked. Sometimes excitement will bring it on. If the bird be not quite dead when noticed, it should be immediately bled by cutting the vein nearest the bone under one of its wings, and cold water should be poured from a little height upon its head. If the fowl recovers partially, give it Belladonna 1x, one drop in a teaspoonful of water three times a day, for two or three days, and feed her sparingly on soft food for a week.

Sometimes signs of an approaching attack can be observed—the bird having a staggering, unsteady gait, as if

intoxicated. In such a case it must at once have its head bathed in cold water, and be removed to a cool, quiet place. Give it Belladonna for a day.

Bumble Foot.—Large fowls are especially subject to this ailment. It consists, as its name implies, of a gathering at the bottom of the foot. Paint the part affected with lunar caustic, or, if the foot is very bad, apply linseed poultices to it daily until the gathering is ripe, then lance it with a sharp knife, and take out all the matter. Sometimes a hard core will be found in it. The patient should not be allowed to roost on the perch at night, but should be bedded on straw till the foot is quite healed. The poulticing should be continued for a few days after the lancing, and if a little vaseline is applied to the spot it will soothe it. The bird should be kept in confinement until the wound has healed.

Cramps.—Cramps are brought on by exposure to the wet, or keeping the bird in a damp or cold place.

Boil *Neem* leaves in water, add some salt, and rub the legs with it. Give warm and nourishing food, and keep the bird in a dry, warm and sunny room on straw. Give internally *Rhus. Tax. 1x* and *Bry. Alb. 1x* alternately, one drop twice a day.

Crop-bound.—It is no uncommon thing for the crops of fowls to become so full of food or of some other substance that they cannot assimilate it. The consequence is that the fowl is unable to swallow anything, and naturally it pines away. The causes of crop-binding are various.

It may be caused by the bird swallowing a piece of leather, paper, bone or matted grass. It manages to get this as far as its crop, but there the thing sticks, and refuses to go any further, blocking up the passage to the stomach, and finally preventing the bird from swallowing anything else.

Again, a fowl will at times gorge itself with a quantity of dry food, until its crop becomes unduly distended. Then the bird goes and has a drink ; this causes the food to swell, the crop becomes yet more distended and loses its power of elasticity. In order to cure the bird, its crop must be emptied. To do this, first pour a little warm water down its throat, and gently kneed the crop with the hand for a few minutes. Leave the bird for about an hour, and then repeat the operation, this time pouring a little salad-oil down its throat. If this does not do any good, take the bird between the knees, with its head downwards, and try to force the food in the crop out into the mouth by pressing the crop downwards.

If all these measures fail to have any effect after they have been repeatedly tried, it will be necessary, as a last resort, to cut the crop open and empty it. This should only be done in extreme cases, when everything else has failed.

There should be two persons to perform the operation,—the operator and his assistant. Let the assistant take the bird in his lap, and keep it quite still by holding the base of the two wings with one hand, and the legs with the other. The operator will require a very sharp knife, a

small article such as the back of a spoon with which to empty the crop, and some thread for sewing it up. All the instruments, and also the hands of the operator, must be dipped in diluted Jeyes' perfect purifier, or carbolic lotion. First make a straight cut in the upper part of the crop, about an inch in length, and then take out all the contents of the crop through it. Wash the crop, and sew it up again. The thread used for the sewing should be either horse-hair or catgut, not any vegetable substance, and the two skins must not be sewn together. After the operation the bird should be fed very sparingly on soft food only, and for the first day it should not have any water. It must not be allowed to have any whole grain for at least a week afterwards.

Egg-bound.—Hens are sometimes unable to pass their eggs. This is caused by the eggs being too large, the hen being too fat, or inflammation of the egg-producing organs. If not relieved, the bird will die.

The bird will go more than once to the nest, sit there some time, and then rush about to find another place. She will become mopish, and then unable to move. She will die in a day or two, or may linger on for a few days.

Apply some castor-oil up the vent by means of a syringe. Some persons can bring away the eggs with the hand, but this operation needs very great care, as the bird may be permanently injured. Sometimes the egg will break inside and pass out. Give a teaspoonful of Epsom salt, and keep on low diet.

Inflammation of the Brains.—This is an incurable disease, so is also vertigo. Destroy the bird.

Leg-weakness.—This complaint is usually found among young cocks of the larger breeds, and is caused either by wrong feeding, too rapid growth, or breeding from immature or weakly parents.

Give plenty of animal food, and some lime every day. Give Parrish's chemical food or Fellow's syrup in small doses, or some of the tonic.

Paralysis.—This is incurable; it is best to destroy the bird.

Rheumatism.—This disease is very much like cramps, except that it is accompanied with swelling of the joints and great tenderness. The same treatment as cramps.

Vermin.—This cannot be called a disease, but frequently leads to it by causing want of rest and inquietude. In India, fowls are greatly troubled with these pests much more so than in England, especially during the rains. Lice and fleas may be included in this category. It causes hens to break their eggs, and leave their nests, and fowls to desert their roosts at night, during which time they cannot rest. Prevention is better than any cure in this case by keeping the poultry-house and the run clean. Lime-wash the inside of the house, floors, nests and perches, put some phenyle in the lime; or wipe with kerosine oil thoroughly. Sprinkle carbolic powder on the fowl-house floor.

Lice are a terrible but unavoidable plague, which you must fight against constantly. Chickens just hatched from

under the hen are sometimes covered with lice on the head and neck; sprinkle the little creatures with Keating's insect powder, then wait for a day or two, and rub Keating's insect powder on the affected parts very gently, and after a little while the disgusting parasites will try to make their escape by coming to the surface of the soft fluff of the chick, instead of sticking on the skin and tormenting the poor little bird. The lice seem half intoxicated from the effects of the powder and are then easily removed; still they do not die and ought to be burnt or otherwise disposed of. Carbolic powder is more effectual, but it also affects the chickens, which droop for a while, and though I have never seen any die of the effects of the powder or seem any the worse for it after a little time, still I should say Keating's powder was much the safest to use for chickens.

After about a week the process of rubbing heads and necks of chickens must be repeated. When half-fledged, the birds seem to have a period of rest from their enemy, but still they must be looked to, and if any traces of lice are found, apply with a soft rag oil, such as mustard, til, cocoanut or a little sweet oil mixed with a small quantity of kerosine oil, only enough to give the other oil a preponderating smell of kerosine. As the chickens get bigger, a little more kerosine oil may be used. As mentioned before, chickens from the incubator have the great advantage of keeping free of lice, at any rate till they have had time to grow strong. Many young broods droop

and die off, simply on account of lice, nobody suspecting the pretty little chicks to be so tormented and gradually killed by those small but formidable enemies.

For grown-up fowls, I use oil of sorts and kerosine in equal parts as a cure for lice, but it ought not to be necessary to use this remedy, except during the rains and, perhaps, when removing a hen from her nest. It must never be used for sitting hens, as the powerful kerosine kills the chicks in the egg.

White Comb.—White comb and black rot of the comb are both troublesome diseases, and frequently the affected birds die. The disease is caused from bad feeding and want of cleanliness.

Make an ointment of the following :—

Camphor	...	...	...	one part.
Phenyle	...	...	...	" "
Turpentine	...	...	...	two parts.
Cocoa-nut Oil	...	...	...	" "
Sulphur	...	...	...	four "

Rub the affected parts with the ointment.

Give plenty of green-food, and feed on soft food for a time.

Give Arsenicum Alb. *Ix*, one drop doses three times a day internally.

Wounds.—Wounds ought never to be neglected. Dress with Condy's Fluid or phenyle and water, or with carbolic acid and water.

A broken leg can be set if taken in hand at once, and a plaster-of-Paris jacket made over the leg with powdered

plaster and water, the fowl being held fast till the plaster becomes hard. The bird must be kept confined in a quiet corner for a few days.

3.—CONTAGIOUS DISEASES.

Chicken-pox.—Chicken-pox is often mistaken for roup. There may be a slight cold in the bird at the beginning, and the bird may appear to be dull and refuse its food ; but, generally, the disease shows no premonitory symptoms.

It is caused generally by contagion, and is very infectious. I have known it sometimes to break out when no other cause but want of cleanliness and bad food and water could be attributed. The disease is communicable from the fowl to human beings.

Symptoms.—A pustular eruption appears on the face, under the wings, and, in some cases, on the feet of the bird. The vesicles are pointed in the centre, and about the second or third day is filled with a watery fluid. Frequently the vesicles enlarge and run into one another. The eyes and mouth become affected ; the bird becomes blind and is unable to eat ; the feet become so bad that the bird is unable to walk. For the first day or two the bird shows very little signs of constitutional disturbance ; but the fever and inflammation gradually increase until the bird becomes very weak and is unable to move. It dies in a few days.

In mild cases the pustules dry up and fall off in three or four days and the fowl is soon quite well again. If properly treated the bird will recover even though the disease be of a severe form.

Treatment.—This disease must never be neglected. The secret of success is to commence treatment immediately the first signs of the disease appear.

Separate the sick bird from the other poultry, keep it in a dry, cool and properly ventilated room free from draughts and a good distance from the other poultry. Feed on soft food such as boiled rice, bread crumbs and milk, oat-meal, barley-meal, ground wheat and milk; give it as much warm water as it will drink. Wipe the face and the legs with a cloth dipped in a lotion of carbolic acid and cocoanut-oil: one part carbolic acid to a hundred parts oil.

Give internally the following native medicine which I have found to be very efficacious:—

Root of the *Chircheri* or *Chorchorá* plant, four tolahs.

Root of the *Jokha* or *Joga Bāilta* plant, four tolahs.

Thorn of the *Shimul* cotton tree, four tolahs.

The whole to be thoroughly ground and mixed together. Give five to ten grains to each fowl every morning for three days.

Homœopathic Treatment.—Give *Rhus Tox.* 3x, and *Aconite* 3x, alternately, two drops in half a teaspoon full of water every two hours until recovery.

Cholera.—Poultry-yards to-day are plagued with more than one disease that was altogether unknown to our grandfathers, and the most dreaded of these is undoubtedly chicken cholera. It makes its appearance in a yard, often no one knows how, and in a few weeks

destroys the greater number of the birds. Preventive measures often seem absolutely useless, and in spite of everything that he can do, the owner sees his best birds carried off, one after another. This disease was for some time only known to us by the reports of the damage it was doing in the yards of breeders in America and on the Continent, but every year it seems to be becoming more and more common among us.

The usual causes of cholera are lack of stamina in the birds, overcrowding, uncleanness, lack of green-food and absence of shelter from the rays of a hot sun. Drinking stale, tepid water, and eating decayed vegetable matter are also frequently to blame for its origin. There can be no doubt but that it is highly contagious, and one sick bird will pass the disease on to a whole yard.

When a bird is first attacked it loses its appetite, looks thoroughly out of condition, its feathers are ruffled, and its eyes sunken and lacking lustre. What food it does take it seems unable to assimilate, but it eagerly consumes a large amount of water. It has diarrhœa, and at first the excrement is green and slimy, but afterwards it becomes whitish and frothy, and sometimes specks of blood are found in it. The bird becomes more and more sleepy and disinclined for exertion, and at last it sinks down and dies. Occasionally convulsions immediately precede death.

Practically there is no cure for this disease, for it runs its course so rapidly, and affects the intestines so much, that before preventive measures can have time to take effect the

bird is dead. The fowl usually dies within thirty-six hours after the symptoms appear, though sometimes it lingers for several days. *Post-mortem* examinations show the liver to be swollen, congested with dark blood, and in such a state as not to bear handling; the spleen also is swollen, the intestines inflamed, and various other parts of the body affected.

If fowls are kept on fresh ground, are not overcrowded and are properly cared for, there is not much fear of their being attacked. Should a bird become ill, strict repressive measures must at once be taken. Every fowl in the slightest degree affected must immediately be put right away from the others. The water which the healthy birds drink should have a small piece of camphor placed in it. All the excrement must be gathered up, and the house and run have quicklime, or some other good disinfectant scattered over them. The inside of the house should be cleaned with special care, and the walls and various appliances washed with fresh lime-water in which is mixed carbolic or sulphuric acid or some similar compound.

Whatever is done towards attempting to cure the sick birds must be done on the first appearance of the disease, for in a few hours it makes such progress as to render successful treatment impossible.

When the disease first appears, give the bird two or three drops of Rubini's tincture of camphor on a little sugar. Give two doses at an interval of ten minutes. After which give *Veratrum Album* 3x and *Arsenicum*

Album 3x alternately every half hour or fifteen minutes, two drops in a teaspoonful of water.

Feed the bird on sago or cornflour gruel.

Great care must be taken not to spread the complaint by going immediately from the sick fowl among the healthy stock, or by carrying anything from the one to the other. When the bird dies, its body should be buried deep under ground, or burned.

Unless the bird is a very valuable one, the best thing to do is to kill it, and bury or burn it immediately it is attacked with the disease. It must always be borne in mind, that this disease is communicable from the fowl to human beings.

Cold.—This complaint is indicated by the same symptoms as we find in human beings, namely, a running at the nostrils, and a slight swelling of the eyes. It arises from cold or exposure, and if not attended to, may develop into roup or consumption, both of which should be consulted for further information. For cure, the bird should be kept in a warm place, and have doses of homœopathic tincture of Aconite 1x, and have nutritious food, rather stimulating in its nature. Inject a little Condyl's Fluid through the nostrils.

Diarrhœa.—Diarrhœa is caused by bad feeding, want of cleanliness, exposure to wet or excessive heat.

Give Ars. Alb. 3x, two drops in a little water every two hours, keep the bird in a quiet corner, and feed on boiled rice.

Dysentery.—This is brought on from the same causes as diarrhœa.

Give Mercurius Cor. 3x, one drop in a little water every two hours. Feed on barley or corn-meal cooked in milk. Keep the fowl quiet and away from the others.

Gapes.—This disease is chiefly confined to chickens, and is due to the presence of small worms in the throat. These obstruct the air-passage, so that the bird has continually to open its mouth and gape in the effort to breathe; hence the name of the disease.

There are numerous methods of treating gapes. One common way is to take a feather, strip all the down off it, except a little at the point, dip this point in turpentine, place it down the throat of the chicken, and after giving it a twist or two round to pull it out. The worms are often thus extracted from the throat with the feather. This plan, however, requires care, or else the chicken may be choked. In very mild cases it may be sufficient to place a little camphor or a small quantity of turpentine in the drinking-water. Another, and a very effective cure, is to cause the chickens to inhale the fumes of carbolic acid. When the acid is heated it gives off a quantity of fumes. Hold the head of the bird among the fumes so that it inhales them, taking care at the same time that they are not sufficiently dense to suffocate it. This will very likely require repeating two or three times in order to thoroughly destroy the gape-worms, or else mix one drop of turpentine, one drop of phenyle and one drop of tincture of camphor with six

drops of mustard oil and pour gently down the chicken's throat. It is well to dust the chicken-house and run with fresh lime after a case of gapes has appeared there.

The disease is epidemic, and is generally caused by foul water, exposure to wet or by unsuitable food. The sick birds must be separated from the others.

Scurfy Face and Comb.—This disease is caused by fungoid growth of insects, and is contagious. Apply the following lotion :—

Spirits of Camphor	...	...	One part.
Phenyle	...	...	" "
Turpentine	...	...	Two parts.
Cocoa-nut Oil	...	...	" "
Flower of Sulphur	...	...	Four "

Wash the parts with soap and warm water and apply the lotion twice a day.

Give the bird *Ars. Alb.* 1x twice a day, one drop in a little water, and feed on simple nourishing food.

Roup.—Roup is the disease most to be dreaded for poultry. It is highly contagious, and at the very first symptom the affected fowl ought to be separated from the rest and put in a warm place, fed on meal mixed with hot ale if possible. Roup begins with a common cold, a clear discharge comes from the nostrils, and the eyes look watery ; this discharge soon becomes frothy, often very offensive, the nostrils become partially or entirely closed, hence a difficulty in breathing ; in some cases the eye, and often the whole face, swell very much. There is an excellent article on roup in the *American Poultry World*, and I cannot do

better than quote it in full. It runs thus : " Roup is, as distinguished from other diseases about the head, an epidemic disorder, having its starting point in the soft lining membrane of the beak. From this it may extend in all directions—to the external skin, or down the throat, or into the eye, perhaps through the tear-duct. The constitution is severely affected by it ; and although it is frequently not more severe than a common cold, it may, and very frequently does, cause death."

Symptoms of Roup.—" It may come on suddenly, or slowly, with previous signs of general debility, moping, &c. The first signs are those of catarrh or cold in the head ; dry cough or dull wheezing. Much fever : the fowl drinks eagerly. The comb and wattles may be pale or dark coloured. The cold grows worse. There is a yellowish or bloody discharge thin and watery at first, which grows thicker and thicker, and fills, in severe cases, throat, nostrils and eyes, the latter being closed and swollen even to the size of a walnut, and the sides of the face may swell up. Pustules form all about the head and in the gullet, and discharge a frothy matter. The crop is generally swollen, though not always. The blind fowl cannot see to eat or drink, and hence is said to lose her appetite, although a most ravenous appetite is sometime displayed. The discharge has a bad odour, and this is one of the best signs of the presence of the disorder. Death may ensue from several causes : from starvation, the fowl not being able to eat ; from suffocation, the thick matter clogging

up the air passage, or from simple debility, as in so many other disorders.

“The matter may pass through the bowels, and thus simulate diarrhœa ; but this must happen only in such severe cases as not to mislead the observer. A symptom of which there is no satisfactory explanation is loss of some of the joints of the toes, after inflammation, resembling dry gangrene in the human subject.

“The list of symptoms will explain the various names which have been applied to it, *viz.*, swelled eyes, diphtheria, sore head, bronchitis, asthma, canker, influenza, sore throat, &c., but some of these conditions may exist even when roup is not present. One of the best means of detecting the approach of roup is to lift the wing of the suspected bird and see if there is not a spot where the feathers are smeared with a discharge from the beak, which has rubbed off when the bird has put its head under its wing at night. Also, invariably look at the nostrils, and see if they are clean and free from the slightest clogging. Go the rounds at night with a lantern and inspect your birds. Listen then for rattling or sneezing. After death, the gall, bladder and liver are found full of matter ; the flesh is soft, easily broken down ; has a very disagreeable smell ; it is very shiny and spongy, especially near the lungs. The blood has been carefully examined, but presents no alterations of importance, except that there are, perhaps, fewer white corpuscles, a defect depending on the depression of the power of digestion.”

Causes of Roup.—"In all the above, there does not seem to be the trace of any special poison ; it is like a typhoid influenza, which, when it comes as an epidemic, will destroy a great many human lives. Cases not treated are generally fatal, whenever it attacks many fowls at once, and that often very soon—in three days, although the fowl may live seven to eight. Those causes that can be determined do not need enumeration here. Anything that lowers the tone of the fowl—bad ventilation, filthy houses, &c. A very prominent cause, however, is exposure to cold and wet. So prominent is this, and so marked is the commencement of the disease at the beak, that it might almost be called malignant catarrh, and it is possibly nothing more. Fowls are sometimes destroyed by colds alone. Roup, therefore, is most common in autumn and winter, and where fowls are exposed to wet, cold draughts and damp sunless quarters.

"The disease is epidemic and contagious, from contact with the discharge, either when a diseased fowl touches another, or when a healthy fowl gets the discharge through the drinking fountain or otherwise. It can also, if brought into contact with the human eye, or with a wound, cause serious inflammation, so that caution is needed in handling the fowl. It has never been found, so far as we know, in any kind of wild fowl, though it may yet be discovered among them. It attacks all ages, preferably the older birds, and may run rapidly or slowly. It also kills ducklings and turkey poults, though rarely."

Treatment of Roup.—“By all means put the diseased fowls by themselves, and, so far as possible, each one in a separate place, and do not be in a hurry, even after improvement, to return them to the rest of the flock. If your situation allows of such a measure, break up all the healthy fowls into small colonies, at a distance from each other. Take all possible pains to prevent any of the discharge from coming into contact with any other fowl. This necessity involves that of thorough purification of the drinking vessels, and so forth. Some preparation of carbolic acid is best for this purpose. The quarters should be carefully cleaned and disinfected.

“The treatment is not always successful. We give the best, however. It consists of measures to combat the inconveniences and dangers arising from the accumulation of the discharge, and the administration of medicine internally.”

The secret of success is to begin treatment at the very commencement of the disease. The least delay may prove fatal.

Cold and discharge from the nose and eyes, give internally Acon. 3x, and Ars. Alb. 3x, alternately, two drops every two hours. If the discharge be thick and yellow, give Mer. Cor. 3x instead of Ars. Alb.

When there is ulceration of the throat, mouth or nostrils, give Belladonna 1x and Mer. Iod. 1x alternately one or two drops or grains every two hours.

When there is much fever and weakness give *Ars. Alb.* 1x and *Aconite* 1x alternately, one drop every two hours.

Put five drops of *Condy's Fluid* in half a teaspoonful of water and pour it gently down the bird's throat, or, if the nostrils are bad, inject into the nostrils. Do this every three hours.

Press the pus out of the nose, and remove the cankers from the mouth and eyes. Wash the bird's face and eyes with a strong lotion of *Condy's Fluid*.

If the bird refuses food, make up little balls of oat-meal or barley-meal and warm milk, and force them down the bird's throat. The balls must be made small, and only a small quantity given at a time.

The bird must be housed in a warm, dry and properly ventilated place, and kept on a bed of sand. Absolute cleanliness is necessary.

The disease is very contagious and is communicable to human beings. Unless the bird is taken in hand at the very commencement of the disease there is no hope of recovery. The best thing to do is to destroy the bird and burn or bury it.

Give the healthy stock five drops of *Condy's Fluid* in half a teaspoonful of water every morning, before the morning-feed.

Recovery will be slow, but the treatment must be persisted in. When the bird has recovered, it must be kept separated from the others for a month, and rubbed over with carbolic powder before it is put back into the yard,

TONIC FOR FOWLS.

To be given during the rains and cold weather only ; not in the hot weather.

Charcoal	...	...	... three seers.
Salt	...	...	... half a seer.
Linseed	...	...	... five seers.
Hempseed	...	...	... one seer.
Cayenne Pepper	...	...	... quarter seer.
Turmeric	...	...	... half a seer.
Garlic	...	...	... " "
Camphor	...	...	... quarter seer.
Chiretta	...	...	... half a seer.
Sulphate of Iron	...	...	... " "
Phosphorus	...	...	... one chittack.
Sulphur	...	...	... half a seer.
Treacle	...	...	... three seers.

Each ingredient to be finely ground separately, and then all to be thoroughly mixed together.

A quarter of a chittack to be given to each fowl, every morning, in small pills or in the food. Give for a month, and then stop for a month.

During the hot weather give the following :—

Charcoal	...	...	... five seers.
Camphor	...	...	... half a seer.
Chiretta	...	...	... " "
Sulphate of Iron	...	...	... " "
Sulphur	...	...	... " "
Treacle	...	...	... three seers.

Grind finely and mix together thoroughly. Give quarter of a chittack to a fowl every morning.

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