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Our Humble Helpers: Familiar Talks on the Domestic Animals

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OUR HUMBLE HELPERS

CHAPTER I

THE COCK AND THE HEN

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Under the big elm tree in the garden Uncle Paul has called together for the third time his usual listeners, Emile, Jules, and Louis. After the story of the Ravagers, which destroy our harvests, and that of the Auxiliaries, which protect them, he now proposes to tell the story of our Humble Helpers, the domestic animals. He thus begins:

"The cock and the hen, those invaluable members of our poultry-yards, came to us from Asia so long ago that the remembrance of their coming is lost. At the present day they have spread to all parts of the world.

"Is it necessary to describe the cock to you? Who has not admired this fine bird, with its bright look, its proud bearing, its slow and sedate walk? On its head a piece of scarlet flesh forms a scalloped crest; under the base of the beak hang two wattles resembling pieces of coral; on each temple, by the side of the ear, is a spot of dull white naked skin; a rich tippet of golden red falls from the neck over the shoulders and breast; two feathers of a greenish metallic [12]luster form a graceful arch of plumage in the upper part of the tail. The heel is armed with a horny spur, hard and pointed; a formidable weapon with which, in fighting, the cock stabs his rival to death. His song is a resonant peal that makes itself heard at all hours, night as well as day. Hardly does the sky begin to brighten with the twilight of dawn when, erect on his perch, he awakens the nocturnal echoes with his piercing *cock-a-doodle-doo*, the reveille of the farm."

"That," said Emile, "is the song I like so much to hear in the morning when I am about half-way between sleeping and waking."

"It is the cock's crowing," put in Louis, "that wakes me up in the morning when I have to go to market in the next town."

"The cock is the king of the poultry-yard," resumed Uncle Paul. "Full of care for his hens, he leads them, protects them, scolds and punishes them. He watches over those that wander off, goes in quest of the vagrants, and brings them back with little cries of impatience, which, no doubt, are admonitions. If necessary, a peck with the beak persuades the more refractory. But if he finds food, such as grain, insects, or worms, he straightway lifts up his voice and calls the hens to the banquet. He himself, however, magnificent and generous, stands in the midst of the throng and scratches the earth to turn up the worms and distribute here and there to the invited guests the dainties thus unearthed. If some greedy hen takes more than her share, he recalls her [13]to a sense of

her duty to the community and reprimands her with a peck on the head. After all the others have eaten their fill he contents himself with their leavings.

“Plainer in costume, the hen, the joy of the farmer’s wife, trots about the poultry-yard, scratching and pecking and cackling. After laying an egg she proclaims her joy with an enthusiasm in which her companions take such a share that the whole establishment bursts into a general lively chorus in celebration of the happy event. She has a habit of squatting down in a dusty and sunny corner where she flutters her wings with much content and makes a fine shower fall between her feathers to relieve the itching that torments her. Then with outstretched leg and wing she sleeps away the hottest hours of the day; or, without disturbing her voluptuous repose, spying a fly on the wall, she snaps it up with one quick dart of her beak. Like the cock, she swallows fine gravel, which takes the place of teeth and serves to grind the grain in her gizzard. She drinks by lifting her head skyward to make each mouthful go down. She sleeps on one leg, the other drawn up under her plumage and her head hidden under her wing.”

“These curious particulars of the hen’s habits,” said Jules, “are quite familiar to us all; we see them every day with our own eyes. One only is new to me: hens, you say, swallow little grains of sand which take the place of teeth for grinding the food in the gizzard. I don’t know what the gizzard is, and I [14]don’t see how little stones that have been swallowed can be used as teeth.”

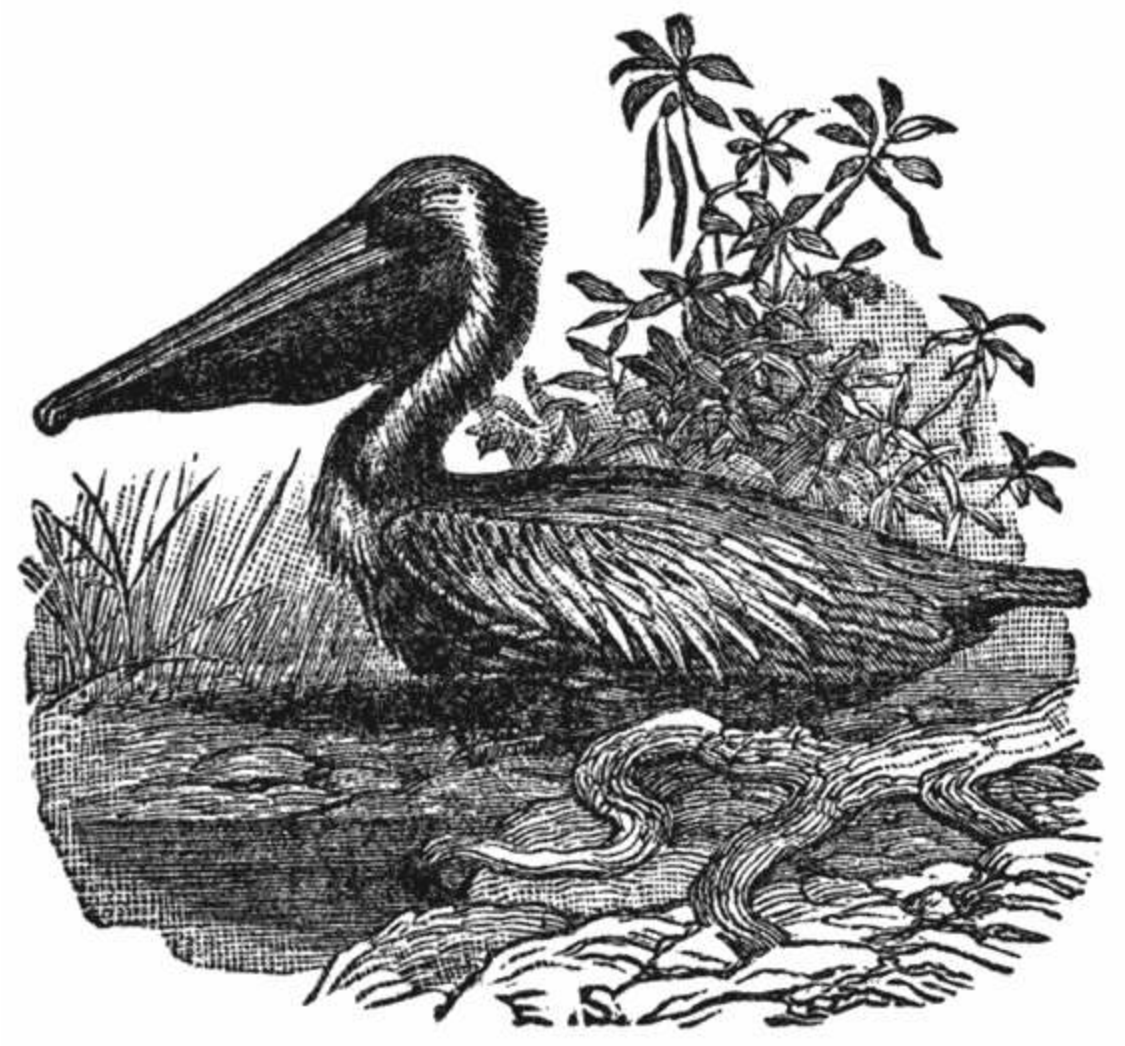
“A short digression on the digestive organs of birds,” replied Uncle Paul, “will give you the information you ask for.

“Birds do not chew their food; they swallow it just as they seize it, or nearly so. The beak, lacking teeth, is for that very reason unsuited for the work of grinding. It merely seizes; it strikes, picks up, digs, pierces, breaks, tears, according to the kind of food adapted to the bird’s needs. A solid horn covers the bony framework of the two mandibles and makes their edges sharp and very well fitted for dismembering if necessary, but not for triturating.

“Rapacious birds that feed on live prey have the upper mandible short, strong, hooked, and terminating in a sharp point, sometimes with serrate edges. With this weapon the hunting bird kills its prey, and tears it to pieces while holding it with its vigorous talons armed with sharp, curved nails.

“Fish-eating birds that tear the fish to pieces in order to swallow it have the hooked beak of the rapacious birds; those that swallow the fish whole have a straight beak with long, wide mandibles. Some throw it into the air to catch it in their beak a second time, head first, and swallow it without any difficulty in spite of the fin-bones, which lie flat from front to back while the fish is passing through the narrow gullet. A great fishing bird, the pelican, has in its lower mandible a large membranous pouch, a sort of fish-pond, where it stores the fish as long as the catch [15]lasts. Thus stocked up, it seeks a quiet retreat on some

ledge of rock by the water-side and takes out, one by one, the fish packed away in its pouch, to feed on them at leisure.”



Pelican

“The pelican seems to me a wise fisher,” remarked Emile. “Without losing a minute in swallowing, it begins by filling the bag under its beak. The time will come later for looking over the catch and enjoying the fish at leisure. I should like to see it on its rocks with its bag full.”

“And that other one,” said Jules, “that throws the fish it has caught into the air so as to catch it again head first and not strangle when swallowing it—is not that one just as clever?”

“Each kind has its special talent,” replied Uncle Paul, “which it uses with the tool peculiar to the bird, the beak. If the story of the auxiliaries, related some time ago, is still fresh in your minds, you will remember that insect-eating birds have the beak slender and sometimes very long, to dig into the fissures of dead wood and bark; but those that catch insects on the fly, as the swallow and the fern-owl, have the beak very short and exceedingly wide, so that the game

pursued is caught in the open gullet and becomes coated with a slimy saliva which holds [16]it fast. Finally, I will remind you of the granivorous birds—the sparrow, linnet, greenfinch, chaffinch, and many others. All these birds, whose chief food consists of grain, have the beak short, thick, pointed; adapted, in fact, to the picking up of seeds from the ground, freeing them from their husks, and breaking their shells to obtain the kernel. By virtue of its strong mandibles, the beak of the hen belongs to this last category, although at the same time its rather long, sharp, and slightly hooked extremity indicates carnivorous tastes. Such a beak calls not only for seeds, but also for small prey, such as insects and worms.” [17]

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CHAPTER II

THE GIZZARD

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“Nearly all the higher or mammiferous animals,” Uncle Paul continued, “such as the dog, cat, wolf, horse, have only one digestive pouch—a stomach—where the alimentary substances are dissolved and made fluid, so as to enter the veins and be turned into blood, by which all parts of the body are nourished. But the ox, goat, and sheep—the cud-chewers, in short—have four digestive cavities, which I will tell you about later. I will tell you how, in the pasture, these animals hastily swallow almost unchewed grass and put it by in a large reservoir called a paunch, from which it comes up again afterward in a season of repose, to be rechewed at leisure in small mouthfuls.

“Well, birds are fashioned in a similar way, as far as eating is concerned. Not being able to chew, as they have no teeth, they swallow their food without any preparation, nearly as the beak has seized it, and amass a quantity of it in a spacious stomach, just as the ox does in his paunch. From this reservoir the food passes, little by little, into two other digestive cavities, one of which immerses it in a liquid calculated to dissolve it, and the other grinds and triturates it better than the best pair of jaws could [18]do. There takes place a kind of chewing, it is

true, only the food, instead of returning to the beak, where teeth are lacking for its thorough mastication, continues its journey, and on the way comes to the triturating machine. Birds, then, are generally provided with three digestive cavities.

“The first is the crop, situated just at the base of the neck. It is a bag with thin and flexible walls, its size proportioned to the resistant nature of the food eaten. It is very large in birds that feed on grain, especially the hen, and is medium-sized, or even wholly wanting, in those that live on prey, which is much easier to digest than dry and hard seeds. In the crop, the food swallowed in haste remains hours and even days, as in a reservoir; there it softens somewhat, and is then submitted to the action of the other digestive pouches. The crop corresponds in a certain sense to the bag in which the pelican stores up his fishing; it represents also the first stomach of the ox and the other cud-chewers or ruminants.

“Next to the crop is a second enlargement, called the succenturiate ventricle, of small capacity but remarkable for a liquid of a bitter taste that oozes in fine drops through its walls and moistens the food as it passes. This liquid is a digestive juice; it has the property of dissolving the alimentary substances as soon as trituration has done the greater part of the work. The food does not remain in this second stomach; it merely passes through to become impregnated with the digestive juice.

“The third and last stomach is known as the gizzard. [19]It is rounded and is slightly flattened on both sides, like a watch-case, and is composed—especially in birds that live on grain—of a very thick, fleshy wall, lined on the inside with a kind of hard and tenacious leather which protects the organ from attrition. Finally, it is to be noted that at the same time the bird is swallowing grain it takes care also to swallow a little gravel, some very small stones which, away down in the gizzard, will perform the office of teeth.”

“I know what the gizzard is,” volunteered Emile. “When they are cleaning a chicken to cook, they take out of the body something round that they split in two with a knife; then they throw away a thick skin all wrinkled and stuffed with grains of sand, and the rest is put back into the chicken.”

“Yes, that is the gizzard,” said Uncle Paul. “Let us complete these ideas got from cooking. The bird, not having in its beak the molars necessary for grinding, as in a mill, the seeds that are hard to crush, supplies its gizzard with artificial teeth, which are renewed at each repast; that is to say, it swallows little pebbles. The grain, softened in the crop and moistened with the digestive juice during its passage through the succenturiate ventricle, reaches the gizzard mixed with the little stones that are to aid the triturating action. The work then performed is easy to understand. If you pressed in your palm a handful of wheat mixed with gravel, and if your

fingers, by continual movement, made the two kinds of particles rub vigorously against each other, is it [20]not true that the wheat would soon be reduced to powder? Such is the action of the gizzard. Its strong, fleshy walls contract powerfully and knead their contents of sand and seeds without suffering damage themselves from the friction, because of the tough skin that lines their inside and protects them from the roughness of the gravel. In such a mill the hardest kernels are soon reduced to a sort of soup.

“To make you understand the prodigious power of the gizzard, I cannot do better than relate to you certain experiments performed by a learned Italian, the abbot Spallanzani. A century ago the celebrated abbot, while pursuing his researches on the natural history of animals, caused a number of hens to swallow some little glass balls. ‘These balls,’ he said, ‘were sufficiently tough not to break when thrown forcibly on to the ground. After remaining three hours in the hen’s gizzard they were for the most part reduced to very tiny pieces with nothing sharp about them, all their edges having been blunted as if they had passed through a mill. I noticed also that the longer these little glass balls remained in the stomach, the finer the powder to which they were reduced. After a few hours they were broken into a multitude of vitreous particles no larger than grains of sand.’”

“A stomach that can grind glass balls to powder,” commented Jules, “is certainly a first-rate mill.”

“You shall hear something still more remarkable,” returned his uncle. “Wait. ‘As these balls,’ continued the abbot, ‘were polished and smooth, they [21]could not create any kind of disturbance in the gizzard.’ So he was curious to see what would happen if sharp and cutting bodies were introduced. ‘We know,’ he says, ‘how easily little pieces of glass, broken up by pounding, tear the flesh. Well, having shattered a pane of glass, I selected some pieces about the size of a pea and wrapped them in a playing card so that they would not lacerate the gullet in their passage. Thus prepared, I made a cock swallow them, well knowing that the covering of card would break on its entrance into the stomach and leave the glass free to act with all its points and sharp edges.’”

“With all those little pieces of glass in its stomach,” said Jules, “the bird must surely have died.”

“Not a bit of it. The bird would have come out all right if the experimenter had not sacrificed it to see the result. The cock was killed at the end of twenty hours. ‘All the pieces of glass were in the gizzard,’ the abbot tells us, ‘but all their sharp edges and points had disappeared so completely that, having put these fragments on my palm, I could rub them hard with the other hand without inflicting the slightest wound.

“‘The reader,’ he goes on, ‘must be curious to learn the effect produced on the gizzard by these sharp-pointed bodies that rolled around there

unceasingly until they lost their keen edges and sharp points. Opening the cock's gizzard, I examined minutely the inside skin after having well washed and cleaned it. I even separated it from the gizzard, [22]which is done without difficulty, and thus it was easy to scrutinize it as closely as I wished. Well, after all my pains I found it perfectly intact, without a tear or cut, without even the slightest scratch. The skin appeared to me absolutely the same as that of the cocks that had not swallowed glass.'"

"So the bird that is made to swallow pieces of broken glass," said Jules, "grinds them up without injury and without even a scratch, while we could not so much as handle this dangerous stuff with the tips of our fingers without wounding ourselves. This power of the gizzard is really inconceivable."

"What follows is still more surprising," resumed Uncle Paul. "Spallanzani continues: 'The experiments with glass not having done the birds any harm, I performed two others that were much more dangerous. In a leaden ball I placed twelve large steel needles so that they stuck out of the ball more than half a centimeter, and I made a turkey swallow this ball, bristling with points and wrapped in a card; and it kept the ball in its stomach a day and a half. During this time the bird showed not the slightest discomfort, and in fact there could have been none, for on killing the bird I found that its stomach had not received the slightest wound from this barbarous device. All the needles were broken off and

separated from the leaden ball, two of them being still in the gizzard, their points greatly blunted, while the other ten had disappeared, ejected with the excrement.

“‘Finally, I fixed in a leaden ball twelve little steel lancets, very sharp and cutting, and I made [23]another turkey swallow the terrible pill. It remained sixteen hours in the gizzard, after which I opened the bird and found only the ball minus the lancets; these had all been broken, three of them, their points and edges entirely blunted, being found in the intestines, the nine others having been ejected. As for the gizzard, it showed no trace of a wound.’

“You see, my little friends, a bird’s gizzard is the most wonderful organ of trituration in the world. What are the best-equipped jaws in comparison with this strong pouch which, without suffering so much as a scratch, reduces glass to powder and breaks and blunts steel needles and lancets? You can understand now with what ease the hardest seeds can be ground when the gizzard of the granivorous bird presses and rolls them pell-mell with small stones.”

“Where glass and steel are broken up,” said Emile, “grain ought to turn to flour as well as in a mill.” [24]

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CHAPTER III

THE CHIEF KINDS OF POULTRY

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Red Jungle Fowl

“Different kinds of poultry, the originals of our domestic species, are living to this day in a wild state in the forests of Asia, notably in India, and in the Philippine Islands and Java. The most noteworthy is the Bankiva or red jungle fowl. In shape, plumage, and habits the male bird bears a striking resemblance to the common rooster of our poultry-yards; but in size it is smaller even than the

partridge. It has a scalloped red comb, a tail of arched plumage, and a neck ornamented with a falling tippet of bright, golden-red feathers. This graceful little cock, irritable and full of fight, has the habits of ours. He struts proudly at the head of his flock of hens, over whose safety he watches with extreme care. If hunters range the forest, or if some dog prowls in the neighborhood, the vigilant bird, quick to perceive, suspects an enemy. He immediately flies to a high branch and thence gives forth a cry of alarm to warn the hens, which [25]hastily conceal themselves under the leaves or crouch in the hollows of trees and wait motionless until the danger is past. To get within gun-shot of these birds is well-nigh impossible, and to capture them one must have recourse to the same snares one uses for catching larks."

"A fowl smaller than a partridge, and that they catch in the woods with snares for larks," remarked Jules, "ought to be a very pretty bird, but not of much use if raised in poultry-yards. Does our poultry come from such a small kind as that?"

"It certainly comes either from the Bankiva fowl or from other kinds just as small that live in a wild state in the forests of Asia; but when and how the hen and the cock became domesticated is wholly unknown. From the dawn of history man has been in possession of the barnyard fowl, at least in Asia, whence later the species came to us already domesticated. During long centuries, improved by our care, which assures

it abundant food and comfortable shelter, the original small species has produced numerous varieties differing much in size and plumage. They are classed in three groups: the small, the medium, and the large.

“To the first group belongs the bantam or little English fowl, about the size of a partridge. It is a beautiful bird with short legs that let the tips of the wings drag on the ground, quick movements, gentle and tame habits. Its eggs, proportioned to the small size of the hen, weigh scarcely thirty grams apiece, while those of other hens weigh from sixty to ninety [26]grams each. These pretty little pullets are raised rather as ornaments to the poultry-yard than for the sake of their diminutive eggs.”

“These little fowl,” observed Louis, “look from their size like the primitive kind.”

“Yes, it was about like that they looked when man took it into his head to tame the wild fowl. In the poultry-yards of those times lived, not the large species of our day, but birds as small in body and as quick on the wing as the partridge. I leave you to imagine what care and vigilance were necessary in order not to frighten these timid little fowl and cause them to go back to the woods that they still remembered.”

“It must have been as much trouble,” said Louis, “as it would be for us to tame a covey of partridges. Such an undertaking would not be easy. We are a long way from those first attempts at domestication

with our hens of to-day, so tame, so importunate even, that they come boldly and pick up crumbs under the very table."

"The common poultry, that which stocks the greater number of farms, belongs to the medium-sized breeds. Its plumage is of all colors, from white to red and black. Its head is small and ornamented with a red comb, sometimes single, sometimes double, coquettishly thrown to one side. The cock, for its proud bearing and magnificent plumage, has no equal among the other species. The common fowl is the easiest to keep, for its activity permits it to seek and find for itself, by scratching in the [27]ground, a great part of its food in the form of seeds and worms. It may be found fault with for its wandering proclivities, favored by a strong wing which it avails itself of to fly over hedges and fences, to go and devastate the neighboring gardens.

"Among the other medium-sized species which, associated with the common fowl, are found in poultry-yards as ornaments rather than as sources of profit, I will name the following:

"First, the Paduan fowl, recognizable by its rich plumage and particularly by the thick tuft of feathers that adorns its head. This beautiful headdress of fine plumage, so proudly spread out in fine weather, is, when once wet by rain, nothing but an ungraceful rag, heavy and tangled, which tires the bird and makes the rustic life of the poultry-yard impossible as far as it is concerned.

“The Houdan fowl wears a thickly tufted top-knot which is thrown back over the nape of the neck. Sometimes this headdress covers the eyes so completely that the bird cannot see in front nor sidewise, but only on the ground, which makes it uneasy at the slightest noise. The plumage is speckled black and white, with glints of purple and green. The cheeks and the base of the beak are draped with little upturned feathers. Each foot has five toes instead of four, the usual number—not counting the cock’s spur, which is simply a horn, a fighting weapon, and not a toe. Three of the toes point forward and two backward.

“The fowl of la Flèche, so renowned for the delicacy [28]of its flesh and its aptness for fattening, has no crest and is long-legged, with black plumage of green and purple luster. The legs are blue and the comb rises in two little red horns.

“Similar but better developed horns, accompanied by a thick headdress of feathers, adorn the Crève-cœur species. The hen is a beautiful black; the cock wears, against body plumage of the same dark color, a rich gold or silver tippet.

“Finally, to the large species belongs the Cochin-China, an ungraceful bird, with very strong body and shapeless and disordered plumage, generally reddish white. Its eggs are brownish in color.” [29]

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CHAPTER IV

THE EGG

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“When moistening your slices of bread with egg, has it ever occurred to you to examine a little the structure of what furnishes your repast? I think not. To-day I am going to tell you something about this: I will show you in detail this wonder called an egg.

“First, let us examine the shell. In hens’ eggs it is all white, as also in those of ducks and geese. Turkeys’ eggs are speckled with a multitude of little pale red spots. But it is particularly the eggs of undomesticated birds that are remarkable for their coloring. There are sky-blue ones, such as those of certain blackbirds; rose color for certain warblers; and somber green with a tinge of bronze is found, for example, in the eggs of the nightingale. The coloring is sometimes uniform, sometimes enhanced by darker spots, or by a haphazard sprinkling of pigment, or by odd markings resembling some sort of illegible handwriting. Many rapacious birds, chiefly those of the sea, lay eggs with large fawn-colored spots that make them look like the pelt of a leopard. I will not dwell longer on this subject, interesting though it may be, as in telling you the [30]story of the auxiliary birds I have already described the eggs of the principal kinds.”

“I have taken care,” interposed Jules, “to remember the curious variety of coloring that eggs have. I recall very distinctly the nightingale’s, green like an olive; the goldfinch’s, spotted with reddish brown, especially at the larger end; the crow’s, bluish green with brown spots; and so many others that I hesitate to say which are my favorites, so nearly equal are they in beauty.”

“Let us learn now about the nature of the shell,” his uncle continued. “The substance of the shell is, in the hen’s egg, as white as marble; its own color not being disguised by any foreign pigment. This pure white and its other characteristics, hardness and clean fracture, do they not tell you of what substance the shell is composed?”

“Either appearances deceive me greatly,” answered Louis, “or the shell is simply made of stone.”

“Yes, my friend, it is indeed of stone, but stone selected with exquisite care and refined as it were, in the bird’s body.

“In its nature the eggshell does not differ from common building-stone; or rather, on account of its extreme purity, it does not differ from the chalk that you use on the blackboard, or from the magnificent white marble that the sculptor seeks for the masterpieces of his chisel. Building-stone, marble, and chalk are at bottom the same substance, which is called lime, limestone, or carbonate of lime. The differences, [31]great as they may be, have to do

with the state of purity and degree of consistency. That which building-stone contains in a state of impurity from other ingredients is contained also in white marble and chalk, but free from any admixture. Thus in its nature the eggshell is identical with chalk and marble, harder than the first, less hard than the second, being between the two in an intermediate state of pure lime. To clothe the egg, therefore, with a solid envelope, the hen and all birds without exception use the same material as the sculptor works with in his studio and the scholar uses on the blackboard.

“Now, no animal creates matter; none makes its body, with all that comes from it, out of nothing. The bird does not find within itself the material for the eggshell; it gets it from outside with its food. Amid the grain that is thrown to her the hen finds little bits of stone left there through imperfect cleaning; she swallows them without hesitation, knowing full well, however, that they are little stones and not kernels of wheat. That is not enough; you will see her all day long scratching and pecking here and there in the poultry-yard. Now and then she digs up some worm, her great delicacy, and from time to time some fragment of limestone, which she turns to account with as much satisfaction as if she had found a plump insect.”

“I have often seen hens swallowing little stones like that,” remarked Emile. “I thought it was all their own carelessness or gluttonous haste, but now [32]I

begin to suspect the truth. Would not those little stones be useful in making the eggshell?”

“You are right, my little friend. The particles of lime swallowed with the food are converted into a fine pap, dissolved by the digestive action of the stomach. By a rigorous sorting the pure lime is separated from the rest, and it is made into a sort of chalk soup which at the right moment oozes around the egg and hardens into a shell. By swallowing little particles of lime, the hen, as you see, lays by materials for her eggshell. If these materials were wanting, if the food given her did not include lime, if, imprisoned in a cage, she could not procure carbonate of lime for herself by pecking in the ground, she would lay eggs without any shell and simply covered with a flabby skin.”

“Those soft eggs that hens sometimes lay come then from lack of lime?” asked Louis.

“They either come from the bird’s not having had the necessary carbonate of lime in her food or in the earth she pecked, or else her bad state of health did not permit the transformation of the little stones into that chalky pap which molds itself around the egg and becomes the shell. In countries where carbonate of lime is scarce in the soil, or even totally lacking, it is the custom to break up the eggshells and mix the coarse powder in the fowl’s food. It is a very judicious way of giving the hen in the most convenient form, the stony matter necessary for the perfect formation of the egg.”

“Sometimes,” observed Louis, “we find on the [33]dunghill eggs of a queer shape and as soft as hens’ eggs without the shell. Instead of a chicken, a snake comes out of them. They say they are laid by young cocks.”

“You are repeating now one of the false notions prevalent in the country—a foolish notion springing from a basis of actual fact. It is perfectly true that eggs soft, rather long, almost cylindrical, and of the same size at both ends, may be turned up by the fork as it stirs the warm manure of a dunghill. It is also perfectly true that from these eggs snakes are hatched, to the great surprise of the innocent person who thinks he sees there the product of some witchcraft. What is false is the supposed origin of the egg. Never, never has the cock, be he young or old, the faculty reserved exclusively for the hen, the faculty of laying. Those eggs found in dunghills, and remarkable for their strange shape, do not come from fowl; they are simply the eggs of a serpent, of an inoffensive snake which, when opportunity offers, buries its laying in the warm mass of a dunghill to aid the hatching. It is quite natural, then, that from serpents’ eggs serpents should hatch.”

“The ridiculous marvel of the supposed cock’s eggs,” returned Louis, “thus becomes a very simple thing; but one must first know that serpents lay eggs.”

“Henceforth you will know that not only serpents but all reptiles lay eggs just as birds do. Snakes’