Pentatoma rufipes

Wheatear

Nightingale

Yellowhammer

Butcherbird

THE PENTATOMÆ AND THEIR EGGS

Of the forms which life is able to bestow on her creations, that of the bird's egg is one of the simplest and loveliest. Nowhere do we find the beauty of the circle and the ellipse, the geometrical bases of organic bodies, combined with greater precision. At one of the poles is the sphere, the perfect form, capable of enclosing the greatest volume in the smallest envelope; at the other is the point of the ellipsoid, which tempers the monotonous austerities of the big end.

The color-scheme, likewise very simple, adds its graces to those of form. Some eggs display the dull white of chalk, others the translucid white of polished ivory. The Wheat-ear's are a delicate blue, like that of a sky freshly washed by a rain-storm; the Nightingale's are a dark green, like that of a pickled olive; the eggs of certain Warblers are tinted with an exquisite carnation, like that of roses still in the bud.

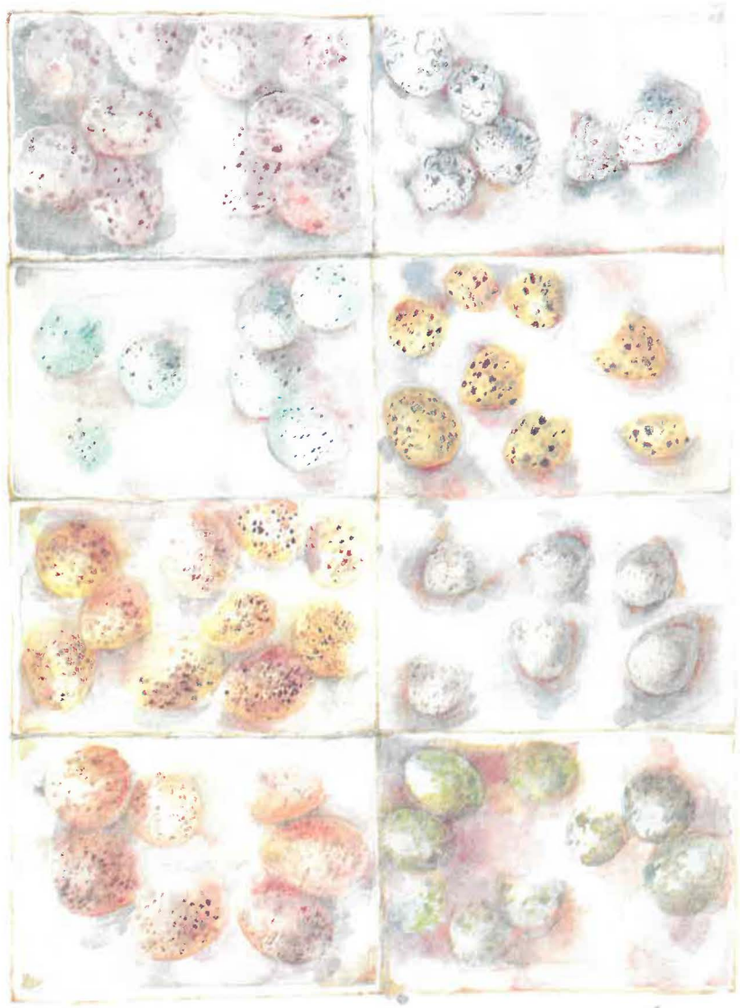
The Yellow-hammer scrawls an indecipherable scribble on her eggs; that is to say, the shells display mottled markings, an artistic mixture of lines and blots. The Butcher-birds encircle the large end with a speckled

Prothonotary Warbler

Thickbilled Warbler

Yellow Warbler

Booted Warbler



crown; the Blackbird and the Raven sprinkle brown splashes, innocent of design, on a greenish-blue ground; the Curlew and the Gull employ large spots like those on the Leopard's coat; and so with the rest; each has its specialty, its trade-mark, always designed in sober colors, the mere matching of which constitutes a merit.

With the exquisite simplicity of its geometry and its ornament, the bird's egg enchants the least cultivated eye. In return for the little services which they render me, I sometimes admit to my study certain small boys of the neighborhood, zealous searchers all. Now what do these simple-minded youngsters see in my work-room, of which they have heard all sorts of wonders? They see big, glass-fronted cupboards in which a thousand curious things are arranged, the cumbersome accumulations that gather about any one who investigates stones, plants and animals. Shells predominate.

Huddling together in mutual encouragement, my shy visitors admire the magnificent Sea-snails of every shape and color; they point a finger at this or that shell which, by the luster of its mother-of-pearl, its size and its strange protuberances, is especially conspicuous in the midst of all the rest. They gaze at my treasures and I watch their faces. I read on them surprise, amazement and nothing more.

These things out of the sea, too complex in formation to impress a novice, are mysterious objects that speak no known language. My little giddy-pates are bewildered by these corkscrew stair-cases, these scrolls and spirals and conchs, whose geometry is beyond their comprehension.

Nightingale

They are left almost cold before this display of oceanic wealth. If I could get at what lies at the back of their minds, these children would say:

"How funny!"

They would never say:

"How pretty!"

It is quite another story with the boxes in which the birds'-eggs of the district are arranged, clutch by clutch, lying on cotton wool, protected from the light. Now their cheeks flush with excitement and they whisper, in one another's ears, which they would choose of the finest group in the box. There is no amazement now, but ingenuous admiration. It is true that the egg recalls the nest and the young birds, those incomparable joys of childhood. Nevertheless, a rush of reverent emotion evoked by the beautiful may be read on their faces. The gems of the sea astound my little visitors; the simple beauty of the eggs arouses a more human ecstasy.

In the very great majority of cases, the insect's egg is far from attaining this consummate perfection, which impresses even the unaccustomed gaze. The usual shapes are the sphere, the spindle or cone, and the cylinder, with rounded ends, none of which is especially graceful, owing to the absence of harmonious combinations of curves. Many of them are dingy in color; some, by their excessive richness, form a violent contrast with the shortcomings of the germ inside. The eggs of certain Moths and Butterflies are beads of bronze or nickel. In these life seems to germinate within the rigid walls of a metal box.

If we employ the magnifying-glass, we find that ornamentation of detail is not unusual, but it is always complicated, without that nobler simplicity which constitutes true beauty. The Clythræ[1] enclose their eggs in a shell whose substance is laminated in scales like those of a hop-cone, or twisted into intersecting diagonal fillets; certain Locusts engrave their spindles, scooping out spiral

Yellowhammer

rows of little pits like those of a thimble. There is, to be sure, no lack of prettiness in all this, but how far removed is such exuberance from the noble austerity of beauty!

The insect has ovarian æsthetics of its own, which have no relation to those of the bird. I know of one case, however, in which comparison is possible. An insect of indifferent repute, a woodland Bug, the Pentatoma of the naturalists, may offer its egg for comparison with the bird's. This flat-bodied insect, emitting a horrible smell, lays masterpieces of elegant simplicity, and, at the same time, of mechanical ingenuity; it disgusts us by its cosmetic, its hair-oil; but it interests us by its egg, which is worthy to rank beside that of the bird.

I have just made a discovery on a sprig of asparagus. It is a cluster of eggs, about thirty in number, arranged in rows, in close contact, like the beads on a piece of embroidery. I recognize the eggs of a woodland Bug. The hatching took place some little time ago, for the family has not yet dispersed. The empty eggshells have remained in place without any loss of shape, except that their lids are open.

What a delightful collection of miniature vases in translucent alabaster, barely clouded with light grey! One would like to read a fairy-tale of the world of tiny things in which the fairies take tea out of such cups as these. The body of the vessel, a graceful oval cut square at the top, shows a delicate brown network of polygonal meshes. Imagine the top of a bird's egg neatly removed, making a dainty little goblet of the remainder, and you have something very like the egg of the Bug. In either case there are the same gentle curves.

Here the resemblance ceases. It is in the upper part of the egg that the insect displays its originality; its creation is a box with a lid. This slightly convex cover is ornamented, like the body of the jar, with a network of fine mesh; it is further embellished along the edge with an opal border. At the hatching it swings open as on a hinge and comes away all of a piece.

Sometimes it falls off and leaves the jar wide open; sometimes it falls back into its normal position, once more closing the jar, which looks as though it were still intact. Lastly, the mouth is surrounded by very fine, thread-like attachments. These are, as it were, rivets to hold the lid in position, so as to close the vase hermetically.

We must not overlook one exceedingly characteristic detail. Quite close to the rim, inside the shell, there is always visible, after the hatching, a mark like a broad arrow, or a capital T, with the arms deflected like those of an anchor. What is the meaning of this infinitesimal detail? Is it a latch, a sort of lock with a bolt and hasp? Is it a potter's mark, conferring a certificate of origin on the masterpiece? What a strange effort of ceramic art merely to hold the egg of a Bug!

The young ones have not yet left the battery of jars from which they recently emerged. Gathered together in a heap, they are waiting for the bath of air and sunlight to harden them before dispersing and implanting their suckers where they please. They are plump, thickset, black, with the under surface of the belly red and the sides laced with the same color. How did

they get out of their jars? By what artifice did they raise the firmly-sealed lid? Let us try to find the answer to this interesting question.

It is the end of April. In the enclosure, just outside my door, the camphor-scented rosemaries are in full flower, bringing me visits from a multitude of insects which I can consult at any time. Various species of Pentatomæ abound, but do not lend themselves to precise observation, by reason of their wandering life. If I want to know exactly which egg belongs to which species or, above all, if I want to learn how the hatching is accomplished, it will not be enough to rely upon chance inspections of the flowering shrubs. It will be better to resort to rearing the insects under a wire-gauze cover.

My captives, isolated according to species and represented each by a certain number of couples, give me hardly any trouble. All they need is a cheerful sun and a bunch of rosemary daily renewed. I add to the furnishing of the cage a few leafy twigs from various bushes. The insect will choose whichever suits her as the spot for laying her eggs.

By the first fortnight in May the imprisoned Bugs have provided me with eggs in excess of my hopes, eggs at once collected, together with their support, species by species, and placed in small glass tubes, where unless I fail in vigilance, I shall easily be able to follow the delicate hatching-process.

It is really a beautiful, a most delightful collection, and would be quite worthy to figure beside the eggs of the bird, if larger dimensions came to the assistance of our feeble sight. From the moment we have to resort to the microscope, we allow the splendid to escape us. Let us magnify the Bug's egg under the lens and it will amaze us as surely as the Stonechat's sky-blue egg, and perhaps even more. What a pity that such beauty escapes our admiration by its minuteness!

The shape is never a complete ovoid: that is the bird's perquisite. The upper end of the Pentatoma's egg is always finished off with a sudden

truncation, into which a slightly convex lid is fitted, and we have before us a tiny ciborium, a delicious casket, an antique urn, a cylindrical cask with rounded ends, a full-bodied vase of Oriental porcelain, with ornaments consisting of bands, rosettes or traceries, varying according to the mother's individual taste. Always, moreover, when the egg is empty, we find a most delicate fringe of herring-boned threads running round the mouth. These are the rivets to fasten the lid, which are pushed up and back at the moment when the new-born insect is released.

Lastly, in all these egg-shells, after the hatching, we find inside them, quite close to the rim, that black mark in the shape of a broad arrow, of which we have already asked ourselves whether it is a trade-mark or a sort of lock or bolt. The future will show us how far our guesses fall short of the reality.

The eggs are never sown at random. The whole batch is laid in a close-packed group, in regular ranks of varying lengths, so that they make a sort of mosaic of beads firmly fixed to their common support, usually a leaf. They adhere so firmly that we may brush the leaf with a camel-hair pencil, or even touch them with the finger, without in any way disturbing their beautiful arrangement. After the young have gone we find the open shells still in position, like so many little jam-pots standing in rows on a market-woman's barrow.

Let me end by giving a few specific details. The eggs of the Black-horned Pentatoma (*P. nigricorne*) are cylindroid in form, the base being a segment of a sphere. The lid, bearing a broad white band at the edge, frequently, but not always, has in the center a transparent protuberance, a sort of knob like that on the lid of a preserve-jar. Its entire surface is smooth and glossy, with no other ornament than its simplicity. The color varies according to the degree of maturity. When recently laid the eggs are

of a uniform straw-yellow: later, owing to the gradual organization of the germ, they turn a pale orange, with a triangular bright-red patch in the center of the lid. When empty they are a magnificent, pellucid opal-white, except the lid, which has become transparent as glass.

Of the clutches of eggs obtained the most numerous was a patch of nine rows, each containing about a dozen eggs. The total was thus about a hundred. But usually the number of eggs is smaller than this, amounting to only half as many or less. Groups containing about a score of eggs are not uncommon. The enormous difference between these extremes testifies to multiple layings at different spots, which, in view of the insect's rapid flight, may be at quite a distance from one another. This detail will be of value when the time comes.

The Pale-Green Pentatoma (*P. praesinum*) molds her eggs in little barrels, ovoid at the bottom and adorned over their whole surface with a network of fine polygonal meshes in relief. Their color is a sooty brown, and, after the hatching, a very light brown. The largest groups of eggs contain thirty or so. It is probably to this species that the eggs belong which first attracted my attention on a sprig of asparagus.

As for the Berry Pentatoma (*P. baccarum*) here we again have barrels with rounded ends, covered all over the surface with a tracery of meshes. At first they are opaque and dark; then, being empty, they become translucent and white or pale-pink. Of these eggs I find groups of fifty and others of fifteen or even less.

That blessed plant of the kitchen-gardens, the cabbage, gives me the Ornate Pentatoma (*P. ornatum*), striped black and red. The eggs of this species are the prettiest of all in coloring. They are like little casks with the two ends convex, especially the lower. The microscope shows us a surface engraved with pits, like those of a thimble, arranged with exquisite regularity. At the top and bottom of the cylinder there is a broad dull-black band; on the sides is a wide white belt with four large black spots symmet-

rically placed. The lid, surrounded with snow-white filaments and edged with white, swells into a black dome with a central white spot. In short, a funeral urn, with its violent contrast of coal-black and creamy white. The Etruscans would have considered it a magnificent model for their burial vessels.

These eggs, with their funeral ornamentation, are arranged in small groups, generally in two rows. There are hardly a dozen all told: a fresh proof that the eggs must be laid in a number of batches and at different points; for the Cabbage Bug cannot limit herself to this paltry number when one of her relatives exceeds the hundred.

May is not over before the various batches of eggs collected and placed in tubes hatch out, first one and then another. Two or three weeks are enough to develop the germ. This is the time for constant vigilance, if I wish to understand the mechanism employed for the emergence and, above all, the function of the strange tool, with the three black arms, which I find in every shell, at the edge of the opening, once the new-born larva has departed.

Those eggs which are translucent from the outset – for example, those of the Black-horned Pentatoma – enable me, in the first place, to discover that the implement of unknown use makes its appearance rather late, when the approaching deliverance is announced by a change in the color of the lid. It is not, therefore, an original part of the egg, as this descended

from the ovaries; it is elaborated during the process of development, and even at a somewhat advanced phase, when the little Bug has already been formed.

We must therefore cease to regard it, as I did at first, as a spring, a lock, some sort of a hinge to hold the lid in place. An actual device for keeping the egg closed and protecting the germ would have to be in existence when the egg was laid. And it is just at the end, when the time has come to leave it, that the egg reveals this device. It is a question no longer of closing, but of opening. And, in this case, might not the puzzling implement be a key, a lever to force open the lid, held on by thread-like rivets, and perhaps also by the glue of an adhesive? Assiduous patience will tell us.

Holding the magnifying-glass above my test-tubes, which I examine every moment, at last I witness the hatching. The process is just beginning. The lid is rising imperceptibly at one pole of its diameter; at the other it is tilting like a door on its hinges. The youngster has its back to the wall of the barrel, just below the edge of the lid, which is already gaping, a capital situation, enabling me to follow with some exactness the progress of the deliverance.

The little Bug, shrunken and motionless, has its head crowned with a skin cap, suspected rather than seen, so fine is it. Later, when it falls off, this cap will be plainly visible. It serves as the base of a trihedral angle. The three arms forming this angle are rigid and intensely black and look as if they ought to be of a horny nature. Two of them extend between the eyes, which are bright red; the third passes down behind the head and is connected with the others, right and left, by a dark, very fine line. I might very well regard these dark lines as tense threads, ligaments which brace the three arms of the apparatus and prevent them from slipping farther apart, thereby blunting the point of the angle, which is itself the key of the casket, that is, the rammer for pushing back the lid. This three-cornered miter protects the head, which is still soft and fleshy and incapable of

forcing the obstruction: with its adamantine point truly applied right at the edge of the lid it has a firm grip of the disk which has to be unfastened.

This mechanism, this cap surmounted by an armored point, must have its motive force. Where is it? It is at the top of the head. Look carefully, and there, involving a certain small area, almost a point, you will see rapid pulsations, we might almost say piston-strokes, produced, beyond a doubt, by sudden waves of blood. By hurriedly injecting what little fluid its body contains under its pliant cranium, the tiny creature turns its weakness into energy. The three-cornered helmet rises, pushing upwards, always pressing its point firmly on the same point of the lid. No blow is struck upon the tool; there is no intermittent percussion, but a continuous thrust.

The operation is so laborious that it lasts for more than an hour. By imperceptible degrees the lid is unfastened and rises obliquely, but as a rule continues to adhere to the rim of the vase at the opposite pole of the diameter. At this pivotal point, where it would seem that there must be a hinge, the lens reveals nothing peculiar. Here, as every elsewhere, there is a mere row of threads, drawn down to form rivets for closing the cask. On the side opposite the point attacked, these rivets, less disturbed than the rest, do not quite give way, act as a hinge.

Little by little the tiny creature emerges from its shell. The legs and antennæ, economically folded over the thorax and abdomen, are completely motionless. Nothing moves, yet the Bug protrudes farther and farther from its casket, doubtless with the aid of a process like that employed by the larva of the Balaninus,[2] on leaving its nut. The flow of blood which causes the piston-strokes of the cranium distends also that part of the body which is already free and converts it into a supporting cushion; the hinder part, which is still imprisoned, is diminished accordingly and in its turn enters the narrow opening. The insect passes through a draw-plate, so gently and carefully that the most I can detect is a tentative rocking to and fro at distant intervals as it drags itself from its socket.

At last the rivets are forced, the casket is open, and the lid, now on a slant, is sufficiently raised. The three-cornered miter has done its work. What will become of it? Henceforth useless as a tool, it has to disappear; and, as a matter of fact, I see it discarded. The filmy head-dress which served as its foundation tears, becomes a tattered rag and very slowly slips over the Bug's ventral surface, dragging with it the hard little black contrivance, which still retains its shape. Scarcely has this relic slipped mid-way down the belly when the tiny creature, hitherto motionless in the attitude of a mummy, frees its legs and antennæ from their economical position, stretches them out and impatiently waves them to and fro. It is over: the insect leaves its sheath.

The instrument of release, still in the shape of a T with arms bent slightly downwards and sideways, remains sticking to the wall of the shell, near the opening. Long after the insect's departure the lens finds the ingenious triangle in its place. Its formation is the same in the various Pentatomæ; but until we surprise the insect in the act of hatching its function is incomprehensible.

A word more on the manner of opening the lidded casket. I have said that the young Bug has its back to the wall of the little barrel, as far as possible from the center. It is here that it is born, dons its tiara and afterwards pushes with its head. Why does it not occupy the central region, a position which would seem to be prescribed by the shape of the egg and the more effectual protection of the grub's early frailty? Can there be any advantage in being born elsewhere, on the very circumference?

Yes, there is, and a very distinct advantage, of a mechanical order. With the top of its head, which throbs with the rushes of blood, the new-born

insect thrusts his pointed cap against the lid to be unfastened. What can be the cranial thrust of a drop of albumen but lately congealed into a living entity? He would be a bold man who should venture to reply, so far is it beneath all evaluation. And this mere nothing has to push open the solid lid of the box.

Let us picture the thrust applied to the center. In that case the effort to dislodge the lid, the veriest trifle of an effort, would be uniformly distributed over the entire circumference, and all the rivets which fasten it would play their part in the resistance offered. Singly, the stitches would give way before the tiny force available; but all together they are invincible. The method of the central thrust is therefore impracticable.

If we wished to loosen a nailed plank, it would be an illogical action to bang it in the middle. The whole of the nails would react in a common and insurmountable resistance. On the contrary, we attack it at one end; we apply the leverage of our implement progressively to one nail after another. The little Bug in its casket does much the same: it pushes out the extreme edge of the lid, so that, beginning at the point attacked, the rivets give way, one by one. The total resistance is overcome because it is divided.

Well done, little Bug! You have your own science of mechanics, based on the same laws as ours; you know the secrets of the lever and the lifting-jack. To break its shell, the nascent bird grows a callosity on its beak, a pick-axe point whose function is to break down the chalky wall piecemeal. When the task is accomplished this callus, the tool of a day, disappears. You have something better than the bird's device.

When the hour of your emergence comes, you don a cap in which three stiff ribs converge to a point. At the base of this appliance your soft cranium acts like the piston of a hydraulic press. Thus attacked, the roof of your hut is unfastened and thrown back. The bird's callosity disappears when the shell is in pieces; so does the miter with which you push out the

head of your barrel. As soon as the lid opens wide enough to let you pass, you doff your cap with its tripod of rods.

Your egg, however, is not broken; there is no violent demolition such as that practiced by the bird. When empty, the eggshell is not a ruin: it is still the graceful little egg that it was in the beginning, rendered yet more exquisite by its translucence, which enhances its beauties. In what school, little Bug, did you learn the art of opening your natal casket and the use of your little contrivance? There are those who will say:

"In the school of chance."

But you, in all humility, cock your miter and reply:

"That's not true."

The Pentatoma is noted for another detail, which, if it were definitely proved, would surpass a hundredfold the marvels of the egg. I quote the following passage from de Geer,[3] the Swedish Réaumur:[4]

"The Bugs of this species (*Pentatoma griseum*) live on the birch-tree. In the early part of July, I found several of them accompanied by their young. Each mother was surrounded by a troop of young ones, to the number of twenty, thirty and even forty. She always kept close beside them, commonly on one of the catkins of the tree that contained her eggs, and sometimes on a leaf. I have noted that these little Bugs and their mother do not always remain on the same spot, and that as soon as the mother begins to move away all her little ones follow her, stopping whenever the mother calls a halt. She thus leads them from catkin to catkin or leaf to leaf and takes them wherever she pleases, as a Hen does her Chicks.

"There are Bugs that do not leave their offspring; they even keep watch

over them and take the greatest care of them while they are young. One day I happened to cut a young birch-branch peopled with such a family and I first observed the extremely uneasy mother, incessantly beating her wings with a rapid movement, without, however, stirring from the spot, as though to drive away the enemy that had just approached, whereas, in any other circumstances, she would at once have flown away or sought to escape, which proves that she was remaining only to defend her young."

M. Karl de Geer has observed that it is chiefly against the male of her species that the mother Bug is obliged to defend her young, because he tries to devour them wherever he comes upon them; and on such occasions she always tries with all her might to protect them against his attacks.

In his *Curiosités d'historie naturelle*, Boitard still further embellishes the picture of family life painted by de Geer:

"It is most curious," he says, "to see how the mother Bug, when a few drops of rain are falling, leads her young under a leaf or the fork of a branch to shelter them. Even there her anxious affection is not reassured; she drives them into a closely-packed flock, places herself in their midst and covers them with her wings, which she spreads over them umbrella-

wise; and, in spite of the discomfort of her position, she retains this attitude of a brooding Hen until the storm has blown over."

Shall I confess it? This umbrella made of the mother's wings during showery weather, this procession of a Hen leading her Chicks, this devotion in warding off the attacks of a father inclined to devour his family leave me just a little incredulous, without surprising me, experience having taught me that the books are full of little anecdotes incapable of surviving the ordeal of a strict investigation.

An incomplete observation, wrongly interpreted, sets the story going. Then come the compilers, who faithfully hand down the legend, the unsound fruit of the imagination; and error, confirmed by repetition, becomes an article of faith. What, for example, was not reported of the Sacred Beetle and her pill, the Necrophorus[5] and her work of burial, the Hunting Wasp and her game, the Cicada and her well, before the truth was arrived at? The real, which is perfectly simple, and supremely beautiful, too often escapes us, giving way before the imaginary, which is less troublesome to acquire. Instead of going back to the facts and seeing for ourselves, we blindly follow tradition. To-day no one would write a few lines on the Pentatomæ without dragging in the Swedish naturalist's doubtful story, and no one, as far as I know, has mentioned the genuine marvels connected with the mechanism of the hatching.

What can de Geer have seen? The observer's high standing gives us confidence; none the less, I shall take the liberty of experimenting in my turn before accepting the master's statements.

The Grey Bug, the subject of my story, is less frequent than the others in my neighborhood: on the rosemaries in the enclosure, my field of exploration, I find three or four which, when placed under glass, do not give me any eggs. The set-back does not seem irreparable: what the grey refuses to reveal the green or the yellow or the red-and-black striped – one and all of similar formation and like habits – will show me. In species so

closely akin, the family cares of the one must, in all but a few details, be reproduced in the others. Let us then note how the four Pentatomæ reared in captivity behave in the matter of their new-born young. Their unanimous testimony will convince us.

At the very outset I was struck by a fact which disagreed with what I had a right to expect in a future Hen leading her Chicks. The mother pays no attention to her eggs. When the last has been laid in its place at the extreme end of the last row, she makes off, heedless of what she has left behind her. She does not trouble about it any more, does not return to it. If the hazards of her wanderings lead her up to it, she steps on the heap, crosses it and passes on, indifferent. The evidence leaves nothing to be desired: the coming upon a patch of eggs is an incident of no interest to the mother.

We must not attribute this negligence to the aberrations which may possibly occur in a state of captivity. In the perfect liberty of the fields I have come across many batches of eggs, perhaps including those of the Grey Bug; never have I seen the mother standing by her eggs, which she would have to do if her family required protection as soon as hatched.

The gravid mother is a quick flier and of a vagabond temperament. Once she has flown to a considerable distance from the leaf which has received her eggs, how is she to remember, two or three weeks later, that the hour for hatching is at hand? How is she to find her eggs again? Moreover, how is she to distinguish them from those of another mother? To believe her capable of such feats of clairvoyance and memory in the immensity of the open fields would be midsummer madness.

Never, I say, did I detect a mother permanently posted beside the eggs which she had fastened to a leaf. Further, the total emission is split up into partial deposits dispersed at random, so that the whole tribe comprises a series of clans encamped here and there, often removed to considerable distances which it is impossible to specify.

To rediscover these flocks at the time of the hatching, which falls earlier or later according to the date of production and the degree of exposure to the sun; then, from all over the country-side, to gather into one herd the whole of her very frail and short-legged offspring: this were an obvious impossibility. Let us nevertheless suppose that, by a stroke of good fortune, one of these groups is found and recognized and that the mother devotes herself to it. The others are necessarily abandoned. They thrive none the less well for that. Why, then, should some of the young Bugs be so strangely favored by maternal solicitude while the majority are able to do without it? Such peculiarities make one suspicious.

De Geer speaks of groups of twenty. These, we are forced to believe, were not the complete family, but detachments sprung from a partial laying. A Pentatoma smaller than the Grey Bug has given me, in one single deposit, more than a hundred eggs. This fecundity must be the general rule where the mode of life is the same. Apart from the twenty watched, then, what became of the rest, left to their own devices?

With all due respect to the Swedish naturalist, the tender cares of the mother Bug and the unnatural appetites of the father eating his children must be relegated to the fairy-tales with which history is crammed. I can obtain, in my breeding-cages, as many hatchings as I wish. The parents are

close at hand, under the same cover. What do they do respectively in the presence of the little ones?

Nothing whatever: the fathers do not hasten to slaughter their progeny nor do the mothers hasten to their rescue. They wander to and fro on the wire trellis; they take their rest in the restaurant provided by a tuft of rosemary; they pass through the groups of new-born Bugs and topple them over, without evil intent, but also without the least consideration. They are so small, the poor little wretches, and so feeble! A passer-by who grazes them with the tip of his foot turns them over on their backs. Like overturned Tortoises, they vainly kick and wriggle; no one heeds them.

Come then, O devoted mother! Since your family is beset by the danger of capsizing and other disagreeable accidents, place yourself at their head; lead them, step by step, into peaceful pastures; cover them with the buckler of your wing-cases! Any one waiting to observe these beautiful actions, these admirable and edifying moral characteristics, will waste his time and his patience. In three months of diligent watching I never saw, on the part of my charges, any action which in any way suggested the maternal solicitude so often extolled by the compilers of history.

Nature the universal nurse, *alma parens rerum*, is infinitely tender in her treatment of the germs, the treasure of the future; she is a harsh stepmother to the parent. As soon as the creature is capable of supporting itself, she delivers it without pity to life's cruel schooling, which teaches it to resist in the fierce struggle for existence. At first a tender mother, she gives the Pentatoma a delightful casket with a sealed lid to guard the budding flesh from harm; she caps the tiny insect with a mechanical device to set it free, a masterpiece of delicate ingenuity; and then, a stern schoolmistress, she says to the little one:

"I am leaving you. You must now fend for yourself in the hurly-burly of the world."

And the little insect does fend for itself. I see the new-born Bugs, pressed close against one another, remaining for some days on the patch of empty egg-shells. Their flesh grows firmer and their coloring brighter. Mothers pass at no great distance: none of them pays any attention to the drowsy company.

When hunger comes, one of the little ones moves away from the group in search of a canteen; the others follow; they love to feel shoulder touching shoulder, like grazing Sheep. The first to move draws the whole band after him; they make their way in a flock to the tender spots where they insert their suckers and drink their fill; whereupon all return to their native village, seeking a resting-place on the tops of the empty eggs. These expeditions in common are repeated within an increasing radius, till at last, having grown a little stronger, the community, becoming emancipated, makes off and disperses, no longer returning to the place of its birth. Henceforth each lives as he pleases.

What would happen if, when the flock is moving about, a mother were encountered, slow-stepping as the sober Bugs so often are? The little ones, I fancy, would confidently follow their chance-met leader, as they follow those among themselves who are the first to make a start. We

should then see something like the Hen at the head of her Chicks; accident would give all the appearance of maternal solicitude to a stranger quite indifferent to the mob of children at her heels.

The worthy de Geer, it seems to me, must have been deceived by such meetings as these, in which maternal care played no part whatever. A little coloring, by way of involuntary adornment, completed the picture; and since then the domestic virtues of the Grey Bug have been lauded in all the books.

Curlew

NOTES

1. See *The Glow-worm and Other Beetles*: chaps. xviii and xix. – *Translator's Note.*
2. For the Nut-weevil, see *The Life of the Weevil*, by J. Henri Fabre, translated by Alexander Teixeira de Mattos: chap. vi; also his *Social Life in the Insect World*, translated by Bernard Miall. – *Translator's Note.*
3. Baron Karl de Geer (1720–1778), author of *Mémoires pour servir à l'histoire des insectes.* – *Translator's Note.*
4. René Antoine Ferchault de Réaumur (1683–1757), author of *Mémoires pour servir à l'histoire naturelle des insectes* and inventor of the Réaumur thermometer-scale. – *Translator's Note.*
5. Or Burying-beetle. See *The Glow-worm and Other Beetles:* chaps. xi and xii. – *Translator's Note.*