

***JEAN-HENRI
FABRE***



***THE LIFE
OF THE SPIDER***

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CHAPTER I: THE BLACK-BELLIED TARANTULA

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The Spider has a bad name: to most of us, she represents an odious, noxious animal, which every one hastens to crush under foot. Against this summary verdict the observer sets the beast's industry, its talent as a weaver, its wiliness in the chase, its tragic nuptials and other characteristics of great interest. Yes, the Spider is well worth studying, apart from any scientific reasons; but she is said to be poisonous and that is her crime and the primary cause of the repugnance wherewith she inspires us. Poisonous, I agree, if by that we understand that the animal is armed with two fangs which cause the immediate death of the little victims which it catches; but there is a wide difference between killing a Midge and harming a man. However immediate in its effects upon the insect entangled in the fatal web, the Spider's poison is not serious for us and causes less inconvenience than a Gnat-bite. That, at least, is what we can safely say as regards the great majority of the Spiders of our regions.

Nevertheless, a few are to be feared; and foremost among these is the Malmignatte, the terror of the Corsican peasantry. I have seen her settle in the furrows, lay out her web and rush boldly at insects larger than herself; I have admired her garb of black velvet speckled with carmine-red; above all, I have heard most disquieting stories told about her. Around Ajaccio and Bonifacio, her bite is reputed very dangerous, sometimes mortal. The countryman declares

this for a fact and the doctor does not always dare deny it. In the neighbourhood of Pujaud, not far from Avignon, the harvesters speak with dread of *Theridion lugubre*, {1} first observed by Léon Dufour in the Catalonian mountains; according to them, her bite would lead to serious accidents. The Italians have bestowed a bad reputation on the Tarantula, who produces convulsions and frenzied dances in the person stung by her. To cope with 'tarantism,' the name given to the disease that follows on the bite of the Italian Spider, you must have recourse to music, the only efficacious remedy, so they tell us. Special tunes have been noted, those quickest to afford relief. There is medical choreography, medical music. And have we not the tarentella, a lively and nimble dance, bequeathed to us perhaps by the healing art of the Calabrian peasant?

Must we take these queer things seriously or laugh at them? From the little that I have seen, I hesitate to pronounce an opinion. Nothing tells us that the bite of the Tarantula may not provoke, in weak and very impressionable people, a nervous disorder which music will relieve; nothing tells us that a profuse perspiration, resulting from a very energetic dance, is not likely to diminish the discomfort by diminishing the cause of the ailment. So far from laughing, I reflect and enquire, when the Calabrian peasant talks to me of his Tarantula, the Pujaud reaper of his *Theridion lugubre*, the Corsican husbandman of his Malmignatte. Those Spiders might easily deserve, at least partly, their terrible reputation.

The most powerful Spider in my district, the Black-bellied Tarantula, will presently give us something to think about, in

this connection. It is not my business to discuss a medical point, I interest myself especially in matters of instinct; but, as the poison-fangs play a leading part in the huntress' manoeuvres of war, I shall speak of their effects by the way. The habits of the Tarantula, her ambushes, her artifices, her methods of killing her prey: these constitute my subject. I will preface it with an account by Léon Dufour, {2} one of those accounts in which I used to delight and which did much to bring me into closer touch with the insect. The Wizard of the Landes tells us of the ordinary Tarantula, that of the Calabrias, observed by him in Spain:

'Lycosa tarantula by preference inhabits open places, dry, arid, uncultivated places, exposed to the sun. She lives generally—at least when full-grown—in underground passages, regular burrows, which she digs for herself. These burrows are cylindrical; they are often an inch in diameter and run into the ground to a depth of more than a foot; but they are not perpendicular. The inhabitant of this gut proves that she is at the same time a skilful hunter and an able engineer. It was a question for her not only of constructing a deep retreat that could hide her from the pursuit of her foes: she also had to set up her observatory whence to watch for her prey and dart out upon it. The Tarantula provides for every contingency: the underground passage, in fact, begins by being vertical, but, at four or five inches from the surface, it bends at an obtuse angle, forms a horizontal turning and then becomes perpendicular once more. It is at the elbow

of this tunnel that the Tarantula posts herself as a vigilant sentry and does not for a moment lose sight of the door of her dwelling; it was there that, at the period when I was hunting her, I used to see those eyes gleaming like diamonds, bright as a cat's eyes in the dark.

'The outer orifice of the Tarantula's burrow is usually surmounted by a shaft constructed throughout by herself. It is a genuine work of architecture, standing as much as an inch above the ground and sometimes two inches in diameter, so that it is wider than the burrow itself. This last circumstance, which seems to have been calculated by the industrious Spider, lends itself admirably to the necessary extension of the legs at the moment when the prey is to be seized. The shaft is composed mainly of bits of dry wood joined by a little clay and so artistically laid, one above the other, that they form the scaffolding of a straight column, the inside of which is a hollow cylinder. The solidity of this tubular building, of this outwork, is ensured above all by the fact that it is lined, upholstered within, with a texture woven by the *Lycosa's* {3} spinnerets and continued throughout the interior of the burrow. It is easy to imagine how useful this cleverly-manufactured lining must be for preventing landslip or warping, for maintaining cleanliness and for helping her claws to scale the fortress.

'I hinted that this outwork of the burrow was not there invariably; as a matter of fact, I have often come across Tarantulas' holes without a trace of it, perhaps because it had been accidentally destroyed by the weather, or because the *Lycosa* may not always light upon the proper building-materials, or, lastly, because architectural talent is possibly declared only in individuals that have reached the final stage, the period of perfection of their physical and intellectual development.

'One thing is certain, that I have had numerous opportunities of seeing these shafts, these outworks of the Tarantula's abode; they remind me, on a larger scale, of the tubes of certain Caddis-worms. The Arachnid had more than one object in view in constructing them: she shelters her retreat from the floods; she protects it from the fall of foreign bodies which, swept by the wind, might end by obstructing it; lastly, she uses it as a snare by offering the Flies and other insects whereon she feeds a projecting point to settle on. Who shall tell us all the wiles employed by this clever and daring huntress?

'Let us now say something about my rather diverting Tarantula-hunts. The best season for them is the months of May and June. The first time that I lighted on this Spider's burrows and discovered that they were inhabited by seeing her come to a point on the first floor of her dwelling—the elbow which I have mentioned—I thought that I must attack her by main force and pursue her relentlessly in order to

capture her; I spent whole hours in opening up the trench with a knife a foot long by two inches wide, without meeting the Tarantula. I renewed the operation in other burrows, always with the same want of success; I really wanted a pickaxe to achieve my object, but I was too far from any kind of house. I was obliged to change my plan of attack and I resorted to craft. Necessity, they say, is the mother of invention.

‘It occurred to me to take a stalk, topped with its spikelet, by way of a bait, and to rub and move it gently at the orifice of the burrow. I soon saw that the Lycosa’s attention and desires were roused. Attracted by the bait, she came with measured steps towards the spikelet. I withdrew it in good time a little outside the hole, so as not to leave the animal time for reflexion; and the Spider suddenly, with a rush, darted out of her dwelling, of which I hastened to close the entrance. The Tarantula, bewildered by her unaccustomed liberty, was very awkward in evading my attempts at capture; and I compelled her to enter a paper bag, which I closed without delay.

‘Sometimes, suspecting the trap, or perhaps less pressed by hunger, she would remain coy and motionless, at a slight distance from the threshold, which she did not think it opportune to cross. Her patience outlasted mine. In that case, I employed the following tactics: after making sure of the Lycosa’s position and the direction of the tunnel, I

drove a knife into it on the slant, so as to take the animal in the rear and cut off its retreat by stopping up the burrow. I seldom failed in my attempt, especially in soil that was not stony. In these critical circumstances, either the Tarantula took fright and deserted her lair for the open, or else she stubbornly remained with her back to the blade. I would then give a sudden jerk to the knife, which flung both the earth and the Lycosa to a distance, enabling me to capture her. By employing this hunting-method, I sometimes caught as many as fifteen Tarantulae within the space of an hour.

‘In a few cases, in which the Tarantula was under no misapprehension as to the trap which I was setting for her, I was not a little surprised, when I pushed the stalk far enough down to twist it round her hiding-place, to see her play with the spikelet more or less contemptuously and push it away with her legs, without troubling to retreat to the back of her lair.

‘The Apulian peasants, according to Baglivi’s {4} account, also hunt the Tarantula by imitating the humming of an insect with an oat-stalk at the entrance to her burrow. I quote the passage:

“Ruricolæ nostri quando eas captare volunt, ad illorum latibula accedunt, tenuisque avenacæ fistulæ sonum, apum murmuri non absimilem, modulantur. Quo audito, ferox exit Tarentula ut muscas vel alia hujus modi insecta, quorum murmur

esse putat, captat; captatur tamen ista a rustico insidiatore." {5}

'The Tarantula, so dreadful at first sight, especially when we are filled with the idea that her bite is dangerous, so fierce in appearance, is nevertheless quite easy to tame, as I have often found by experiment.

'On the 7th of May 1812, while at Valencia, in Spain, I caught a fair-sized male Tarantula, without hurting him, and imprisoned him in a glass jar, with a paper cover in which I cut a trap-door. At the bottom of the jar I put a paper bag, to serve as his habitual residence. I placed the jar on a table in my bedroom, so as to have him under frequent observation. He soon grew accustomed to captivity and ended by becoming so familiar that he would come and take from my fingers the live Fly which I gave him. After killing his victim with the fangs of his mandibles, he was not satisfied, like most Spiders, to suck her head: he chewed her whole body, shoving it piecemeal into his mouth with his palpi, after which he threw up the masticated teguments and swept them away from his lodging.

'Having finished his meal, he nearly always made his toilet, which consisted in brushing his palpi and mandibles, both inside and out, with his front tarsi. After that, he resumed his air of motionless gravity. The evening and the night were his time for taking his walks abroad. I often heard him scratching the paper of the bag. These habits confirm the opinion,

which I have already expressed elsewhere, that most Spiders have the faculty of seeing by day and night, like cats.

‘On the 28th of June, my Tarantula cast his skin. It was his last moult and did not perceptibly alter either the colour of his attire or the dimensions of his body. On the 14th of July, I had to leave Valencia; and I stayed away until the 23rd. During this time, the Tarantula fasted; I found him looking quite well on my return. On the 20th of August, I again left for a nine days’ absence, which my prisoner bore without food and without detriment to his health. On the 1st of October, I once more deserted the Tarantula, leaving him without provisions. On the 21st, I was fifty miles from Valencia and, as I intended to remain there, I sent a servant to fetch him. I was sorry to learn that he was not found in the jar, and I never heard what became of him.

‘I will end my observations on the Tarantulae with a short description of a curious fight between those animals. One day, when I had had a successful hunt after these Lycosae, I picked out two full-grown and very powerful males and brought them together in a wide jar, in order to enjoy the sight of a combat to the death. After walking round the arena several times, to try and avoid each other, they were not slow in placing themselves in a warlike attitude, as though at a given signal. I saw them, to my surprise, take their distances and sit up solemnly on their hind-legs, so as mutually to present the shield of

their chests to each other. After watching them face to face like that for two minutes, during which they had doubtless provoked each other by glances that escaped my own, I saw them fling themselves upon each other at the same time, twisting their legs round each other and obstinately struggling to bite each other with the fangs of the mandibles. Whether from fatigue or from convention, the combat was suspended; there was a few seconds' truce; and each athlete moved away and resumed his threatening posture. This circumstance reminded me that, in the strange fights between cats, there are also suspensions of hostilities. But the contest was soon renewed between my two Tarantulae with increased fierceness. One of them, after holding victory in the balance for a while, was at last thrown and received a mortal wound in the head. He became the prey of the conqueror, who tore open his skull and devoured it. After this curious duel, I kept the victorious Tarantula alive for several weeks.'

My district does not boast the ordinary Tarantula, the Spider whose habits have been described above by the Wizard of the Landes; but it possesses an equivalent in the shape of the Black-bellied Tarantula, or Narbonne Lycosa, half the size of the other, clad in black velvet on the lower surface, especially under the belly, with brown chevrons on the abdomen and grey and white rings around the legs. Her favourite home is the dry, pebbly ground, covered with sun-scorched thyme. In my *harmas* {6} laboratory there are

quite twenty of this Spider's burrows. Rarely do I pass by one of these haunts without giving a glance down the pit where gleam, like diamonds, the four great eyes, the four telescopes, of the hermit. The four others, which are much smaller, are not visible at that depth.

Would I have greater riches, I have but to walk a hundred yards from my house, on the neighbouring plateau, once a shady forest, to-day a dreary solitude where the Cricket browses and the Wheat-ear flits from stone to stone. The love of lucre has laid waste the land. Because wine paid handsomely, they pulled up the forest to plant the vine. Then came the Phylloxera, the vine-stocks perished and the once green table-land is now no more than a desolate stretch where a few tufts of hardy grasses sprout among the pebbles. This waste-land is the Lycosa's paradise: in an hour's time, if need were, I should discover a hundred burrows within a limited range.

These dwellings are pits about a foot deep, perpendicular at first and then bent elbow-wise. The average diameter is an inch. On the edge of the hole stands a kerb, formed of straw, bits and scraps of all sorts and even small pebbles, the size of a hazel-nut. The whole is kept in place and cemented with silk. Often, the Spider confines herself to drawing together the dry blades of the nearest grass, which she ties down with the straps from her spinnerets, without removing the blades from the stems; often, also, she rejects this scaffolding in favour of a masonry constructed of small stones. The nature of the kerb is decided by the nature of the materials within the Lycosa's reach, in the close neighbourhood of the building-yard. There is no selection:

everything meets with approval, provided that it be near at hand.

Economy of time, therefore, causes the defensive wall to vary greatly as regards its constituent elements. The height varies also. One enclosure is a turret an inch high; another amounts to a mere rim. All have their parts bound firmly together with silk; and all have the same width as the subterranean channel, of which they are the extension. There is here no difference in diameter between the underground manor and its outwork, nor do we behold, at the opening, the platform which the turret leaves to give free play to the Italian Tarantula's legs. The Black-bellied Tarantula's work takes the form of a well surmounted by its kerb.

When the soil is earthy and homogeneous, the architectural type is free from obstructions and the Spider's dwelling is a cylindrical tube; but, when the site is pebbly, the shape is modified according to the exigencies of the digging. In the second case, the lair is often a rough, winding cave, at intervals along whose inner wall stick blocks of stone avoided in the process of excavation. Whether regular or irregular, the house is plastered to a certain depth with a coat of silk, which prevents earth-slips and facilitates scaling when a prompt exit is required.

Baglivi, in his unsophisticated Latin, teaches us how to catch the Tarantula. I became his *rusticus insidiator*; I waved a spikelet at the entrance of the burrow to imitate the humming of a Bee and attract the attention of the Lycosa, who rushes out, thinking that she is capturing a prey. This method did not succeed with me. The Spider, it is true,

leaves her remote apartments and comes a little way up the vertical tube to enquire into the sounds at her door; but the wily animal soon scents a trap; it remains motionless at mid-height and, at the least alarm, goes down again to the branch gallery, where it is invisible.

Léon Dufour's appears to me a better method if it were only practicable in the conditions wherein I find myself. To drive a knife quickly into the ground, across the burrow, so as to cut off the Tarantula's retreat when she is attracted by the spikelet and standing on the upper floor, would be a manoeuvre certain of success, if the soil were favourable. Unfortunately, this is not so in my case: you might as well try to dig a knife into a block of tufa.

Other stratagems become necessary. Here are two which were successful: I recommend them to future Tarantula-hunters. I insert into the burrow, as far down as I can, a stalk with a fleshy spikelet, which the Spider can bite into. I move and turn and twist my bait. The Tarantula, when touched by the intruding body, contemplates self-defence and bites the spikelet. A slight resistance informs my fingers that the animal has fallen into the trap and seized the tip of the stalk in its fangs. I draw it to me, slowly, carefully; the Spider hauls from below, planting her legs against the wall. It comes, it rises. I hide as best I may, when the Spider enters the perpendicular tunnel: if she saw me, she would let go the bait and slip down again. I thus bring her, by degrees, to the orifice. This is the difficult moment. If I continue the gentle movement, the Spider, feeling herself dragged out of her home, would at once run back indoors. It is impossible to get the suspicious animal out by this

means. Therefore, when it appears at the level of the ground, I give a sudden pull. Surprised by this foul play, the Tarantula has no time to release her hold; gripping the spikelet, she is thrown some inches away from the burrow. Her capture now becomes an easy matter. Outside her own house, the *Lycosa* is timid, as though scared, and hardly capable of running away. To push her with a straw into a paper bag is the affair of a second.

It requires some patience to bring the Tarantula who has bitten into the insidious spikelet to the entrance of the burrow. The following method is quicker: I procure a supply of live Bumble-bees. I put one into a little bottle with a mouth just wide enough to cover the opening of the burrow; and I turn the apparatus thus baited over the said opening. The powerful Bee at first flutters and hums about her glass prison; then, perceiving a burrow similar to that of her family, she enters it without much hesitation. She is extremely ill-advised: while she goes down, the Spider comes up; and the meeting takes place in the perpendicular passage. For a few moments, the ear perceives a sort of death-song: it is the humming of the Bumble-bee, protesting against the reception given her. This is followed by a long silence. Then I remove the bottle and dip a long-jawed forceps into the pit. I withdraw the Bumble-bee, motionless, dead, with hanging proboscis. A terrible tragedy must have happened. The Spider follows, refusing to let go so rich a booty. Game and huntress are brought to the orifice. Sometimes, mistrustful, the *Lycosa* goes in again; but we have only to leave the Bumble-bee on the threshold of the door, or even a few inches away, to see her reappear, issue

from her fortress and daringly recapture her prey. This is the moment: the house is closed with the finger, or a pebble and, as Baglivi says, '*captatur tamen ista a rustico insidiatore,*' to which I will add, '*adjuvante Bombo.*' {7}

The object of these hunting methods was not exactly to obtain Tarantulae; I had not the least wish to rear the Spider in a bottle. I was interested in a different matter. Here, thought I, is an ardent huntress, living solely by her trade. She does not prepare preserved foodstuffs for her offspring; {8} she herself feeds on the prey which she catches. She is not a 'paralyzer,' {9} who cleverly spares her quarry so as to leave it a glimmer of life and keep it fresh for weeks at a time; she is a killer, who makes a meal off her capture on the spot. With her, there is no methodical vivisection, which destroys movement without entirely destroying life, but absolute death, as sudden as possible, which protects the assailant from the counter-attacks of the assailed.

Her game, moreover, is essentially bulky and not always of the most peaceful character. This Diana, ambushed in her tower, needs a prey worthy of her prowess. The big Grasshopper, with the powerful jaws; the irascible Wasp; the Bee, the Bumble-bee and other wearers of poisoned daggers must fall into the ambushade from time to time. The duel is nearly equal in point of weapons. To the venomous fangs of the Lycosa the Wasp opposes her venomous stiletto. Which of the two bandits shall have the best of it? The struggle is a hand-to-hand one. The Tarantula has no secondary means of defence, no cord to bind her victim, no trap to subdue her. When the Epeira, or Garden Spider, sees an insect entangled in her great upright web,

she hastens up and covers the captive with corded meshes and silk ribbons by the armful, making all resistance impossible. When the prey is solidly bound, a prick is carefully administered with the poison-fangs; then the Spider retires, waiting for the death-throes to calm down, after which the huntress comes back to the game. In these conditions, there is no serious danger.

In the case of the *Lycosa*, the job is riskier. She has naught to serve her but her courage and her fangs and is obliged to leap upon the formidable prey, to master it by her dexterity, to annihilate it, in a measure, by her swift-slaying talent.

Annihilate is the word: the Bumble-bees whom I draw from the fatal hole are a sufficient proof. As soon as that shrill buzzing, which I called the death-song, ceases, in vain I hasten to insert my forceps: I always bring out the insect dead, with slack proboscis and limp legs. Scarce a few quivers of those legs tell me that it is a quite recent corpse. The Bumble-bee's death is instantaneous. Each time that I take a fresh victim from the terrible slaughter-house, my surprise is renewed at the sight of its sudden immobility.

Nevertheless, both animals have very nearly the same strength; for I choose my Bumble-bees from among the largest (*Bombus hortorum* and *B. terrestris*). Their weapons are almost equal: the Bee's dart can bear comparison with the Spider's fangs; the sting of the first seems to me as formidable as the bite of the second. How comes it that the Tarantula always has the upper hand and this moreover in a very short conflict, whence she emerges unscathed? There must certainly be some cunning strategy on her part. Subtle

though her poison may be, I cannot believe that its mere injection, at any point whatever of the victim, is enough to produce so prompt a catastrophe. The ill-famed rattlesnake does not kill so quickly, takes hours to achieve that for which the Tarantula does not require a second. We must, therefore, look for an explanation of this sudden death to the vital importance of the point attacked by the Spider, rather than to the virulence of the poison.

What is this point? It is impossible to recognize it on the Bumble-bees. They enter the burrow; and the murder is committed far from sight. Nor does the lens discover any wound upon the corpse, so delicate are the weapons that produce it. One would have to see the two adversaries engage in a direct contest. I have often tried to place a Tarantula and a Bumble-bee face to face in the same bottle. The two animals mutually flee each other, each being as much upset as the other at its captivity. I have kept them together for twenty-four hours, without aggressive display on either side. Thinking more of their prison than of attacking each other, they temporize, as though indifferent. The experiment has always been fruitless. I have succeeded with Bees and Wasps, but the murder has been committed at night and has taught me nothing. I would find both insects, next morning, reduced to a jelly under the Spider's mandibles. A weak prey is a mouthful which the Spider reserves for the calm of the night. A prey capable of resistance is not attacked in captivity. The prisoner's anxiety cools the hunter's ardour.

The arena of a large bottle enables each athlete to keep out of the other's way, respected by her adversary, who is

respected in her turn. Let us reduce the lists, diminish the enclosure. I put Bumble-bee and Tarantula into a test-tube that has only room for one at the bottom. A lively brawl ensues, without serious results. If the Bumble-bee be underneath, she lies down on her back and with her legs wards off the other as much as she can. I do not see her draw her sting. The Spider, meanwhile, embracing the whole circumference of the enclosure with her long legs, hoists herself a little upon the slippery surface and removes herself as far as possible from her adversary. There, motionless, she awaits events, which are soon disturbed by the fussy Bumble-bee. Should the latter occupy the upper position, the Tarantula protects herself by drawing up her legs, which keep the enemy at a distance. In short, save for sharp scuffles when the two champions are in touch, nothing happens that deserves attention. There is no duel to the death in the narrow arena of the test-tube, any more than in the wider lists afforded by the bottle. Utterly timid once she is away from home, the Spider obstinately refuses the battle; nor will the Bumble-bee, giddy though she be, think of striking the first blow. I abandon experiments in my study.

We must go direct to the spot and force the duel upon the Tarantula, who is full of pluck in her own stronghold. Only, instead of the Bumble-bee, who enters the burrow and conceals her death from our eyes, it is necessary to substitute another adversary, less inclined to penetrate underground. There abounds in the garden, at this moment, on the flowers of the common clary, one of the largest and most powerful Bees that haunt my district, the Carpenter-

bee (*Xylocopa violacea*), clad in black velvet, with wings of purple gauze. Her size, which is nearly an inch, exceeds that of the Bumble-bee. Her sting is excruciating and produces a swelling that long continues painful. I have very exact memories on this subject, memories that have cost me dear. Here indeed is an antagonist worthy of the Tarantula, if I succeed in inducing the Spider to accept her. I place a certain number, one by one, in bottles small in capacity, but having a wide neck capable of surrounding the entrance to the burrow.

As the prey which I am about to offer is capable of overawing the huntress, I select from among the Tarantulae the lustiest, the boldest, those most stimulated by hunger. The spikeleted stalk is pushed into the burrow. When the Spider hastens up at once, when she is of a good size, when she climbs boldly to the aperture of her dwelling, she is admitted to the tourney; otherwise, she is refused. The bottle, baited with a Carpenter-bee, is placed upside down over the door of one of the elect. The Bee buzzes gravely in her glass bell; the huntress mounts from the recesses of the cave; she is on the threshold, but inside; she looks; she waits. I also wait. The quarters, the half-hours pass: nothing. The Spider goes down again: she has probably judged the attempt too dangerous. I move to a second, a third, a fourth burrow: still nothing; the huntress refuses to leave her lair.

Fortune at last smiles upon my patience, which has been heavily tried by all these prudent retreats and particularly by the fierce heat of the dog-days. A Spider suddenly rushes from her hole: she has been rendered warlike, doubtless, by prolonged abstinence. The tragedy that happens under the

cover of the bottle lasts for but the twinkling of an eye. It is over: the sturdy Carpenter-bee is dead. Where did the murderess strike her? That is easily ascertained: the Tarantula has not let go; and her fangs are planted in the nape of the neck. The assassin has the knowledge which I suspected: she has made for the essentially vital centre, she has stung the insect's cervical ganglia with her poison-fangs. In short, she has bitten the only point a lesion in which produces sudden death. I was delighted with this murderous skill, which made amends for the blistering which my skin received in the sun.

Once is not custom: one swallow does not make a summer. Is what I have just seen due to accident or to premeditation? I turn to other Lycosae. Many, a deal too many for my patience, stubbornly refuse to dart from their haunts in order to attack the Carpenter-bee. The formidable quarry is too much for their daring. Shall not hunger, which brings the wolf from the wood, also bring the Tarantula out of her hole? Two, apparently more famished than the rest, do at last pounce upon the Bee and repeat the scene of murder before my eyes. The prey, again bitten in the neck, exclusively in the neck, dies on the instant. Three murders, perpetrated in my presence under identical conditions, represent the fruits of my experiment pursued, on two occasions, from eight o'clock in the morning until twelve midday.

I had seen enough. The quick insect-killer had taught me her trade as had the paralyzer {10} before her: she had shown me that she is thoroughly versed in the art of the butcher of the Pampas. {11} The Tarantula is an

accomplished *desnucador*. It remained to me to confirm the open-air experiment with experiments in the privacy of my study. I therefore got together a menagerie of these poisonous Spiders, so as to judge of the virulence of their venom and its effect according to the part of the body injured by the fangs. A dozen bottles and test-tubes received the prisoners, whom I captured by the methods known to the reader. To one inclined to scream at the sight of a Spider, my study, filled with odious Lycosae, would have presented a very uncanny appearance.

Though the Tarantula scorns or rather fears to attack an adversary placed in her presence in a bottle, she scarcely hesitates to bite what is thrust beneath her fangs. I take her by the thorax with my forceps and present to her mouth the animal which I wish stung. Forthwith, if the Spider be not already tired by experiments, the fangs are raised and inserted. I first tried the effects of the bite upon the Carpenter-bee. When struck in the neck, the Bee succumbs at once. It was the lightning death which I witnessed on the threshold of the burrows. When struck in the abdomen and then placed in a large bottle that leaves its movements free, the insect seems, at first, to have suffered no serious injury. It flutters about and buzzes. But half an hour has not elapsed before death is imminent. The insect lies motionless upon its back or side. At most, a few movements of the legs, a slight pulsation of the belly, continuing till the morrow, proclaim that life has not yet entirely departed. Then everything ceases: the Carpenter-bee is a corpse.

The importance of this experiment compels our attention. When stung in the neck, the powerful Bee dies on

the spot; and the Spider has not to fear the dangers of a desperate struggle. Stung elsewhere, in the abdomen, the insect is capable, for nearly half an hour, of making use of its dart, its mandibles, its legs; and woe to the Lycosa whom the stiletto reaches. I have seen some who, stabbed in the mouth while biting close to the sting, died of the wound within the twenty-four hours. That dangerous prey, therefore, requires instantaneous death, produced by the injury to the nerve-centres of the neck; otherwise, the hunter's life would often be in jeopardy.

The Grasshopper order supplied me with a second series of victims: Green Grasshoppers as long as one's finger, large-headed Locusts, Ephippigerae. {12} The same result follows when these are bitten in the neck: lightning death. When injured elsewhere, notably in the abdomen, the subject of the experiment resists for some time. I have seen a Grasshopper, bitten in the belly, cling firmly for fifteen hours to the smooth, upright wall of the glass bell that constituted his prison. At last, he dropped off and died. Where the Bee, that delicate organism, succumbs in less than half an hour, the Grasshopper, coarse ruminant that he is, resists for a whole day. Put aside these differences, caused by unequal degrees of organic sensitiveness, and we sum up as follows: when bitten by the Tarantula in the neck, an insect, chosen from among the largest, dies on the spot; when bitten elsewhere, it perishes also, but after a lapse of time which varies considerably in the different entomological orders.

This explains the long hesitation of the Tarantula, so wearisome to the experimenter when he presents to her, at