

FIGURE 1.—LYCOSA GYROPHORA.
B. The Eyes.

MORE ABOUT SPIDERS.

"It was no snake, I verily believe,
But a sly *spider* that seduc'd poor Eve."

IT would be a great mistake to suppose this order (*Arachnida*) can be exhausted in a few Magazine articles. Volumes could not contain

all that may be said of them: the varieties, the changes, the habits, the manœuvres; the marvelous instinct, the philosophical subjection to circumstances; the eagerness with which life is enjoyed when they are free; and the resignation, content, and patience with which it is borne when in a state of captivity; the maternal affection, the devotion to their young; the industry, the ingenuity, the combination, the tact. The exhibitions of *almost* reflecting powers approximate this division of Natural History to that of our humanity in a degree most startling, most overwhelming, to a close observer of their habits and modes of existence.

I propose in this paper to present some illustrations of their nests, a few warlike incidents, and some remarks concerning the mysteries of their organization, which will place the reader on the threshold of a kingdom, into which, if he have patience and courage to advance, will open never-ending subjects of study, and produce most convincing proofs of Divine instruction given to all creatures. There are most marvelous exhibitions of instinct; of the combining of purposes to produce certain results which would cover a man, unless he were a Christian believer, with dismay and terror. There is no room here for a single thought save that of the majesty of a Creator; for even in the falling of the spider's thread

must be seen the finger that directs and the hand that guides.

The bee builds now as she did thousands of years ago in Paradise. The ant excavates her subterranean city or builds her mounds of clay as she did when the world was young. The

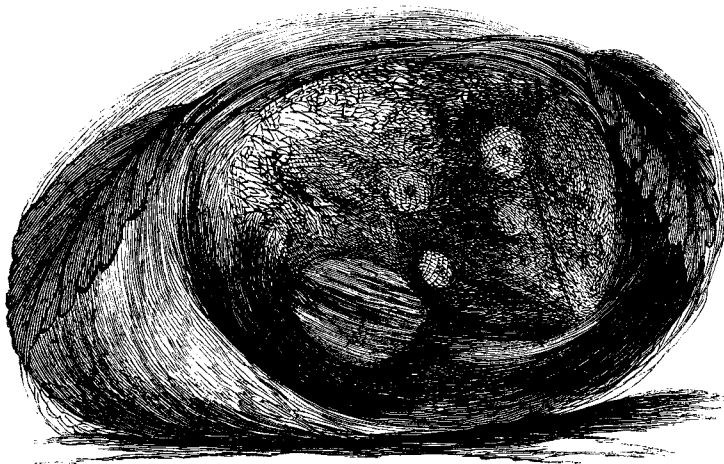


FIGURE 2.—NEST OF LYCOSA.

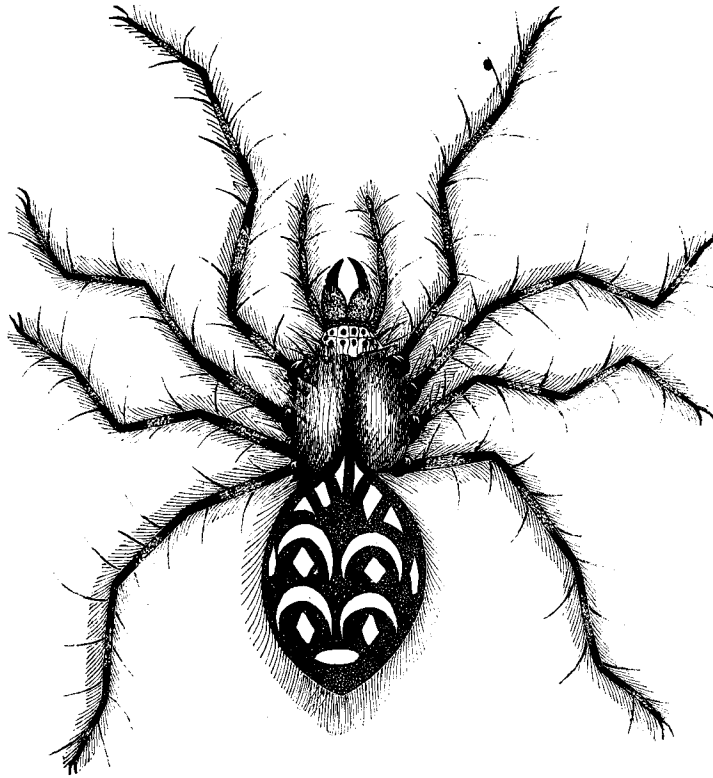


FIGURE 3.—THORIDION SCHIZOPODS.

wasp rolls out the paper for her palace with the same patience and assiduity that were expended upon the first specimen hung beneath the stars. The moth seeks the same flowers which she did when the moon glimmered down for the first time upon the sheen of her golden wings. The butterfly sips at early dawn the same nectar which she sought when the flowers first opened their cups to the earliest dew that fell from the blue canopy of the then near and embracing heaven. There is never any change in their routine; the never-varying process of their labors is always the same. But the spider will accommodate itself to any thing, to any position, to any circumstance. It will submit to a total annihilation of old habits; and, what is more, succumbs cheerfully, patiently, resignedly. No position ever finds them at fault. They are never at a loss to provide for an emergency; and, unlike man, whom they resemble in so many points, they never despair—they never lose time in re-pining.

The nests which I am about to present are probably not precisely what they would have been if built in the solitude of the forest, or beside the lonely rocks; still they do not depart from the natural procedure of the architects, but are simply proofs of what I have said above, showing

their capacity for succumbing to circumstances and adapting themselves to the accidents of life.

For instance, the *Lycosa Gyrophora*—*Lycosa* of the Lichen—(Figure 1) if at liberty, would have spread her web over a space of nearly a foot, covering the lichen or moss which she had chosen with a very thickly woven sheet, fastened down closely on all sides, in the centre of which would have been placed her treasure—the egg-bag. To one thread would have been attached every line; and this she would have held so firmly, that not a midge with its delicate wing could have touched a line but she would have been on the alert to resent the insult.

The architect of the nest, represented in Figure 2, was obliged to adapt herself to new circumstances. She was placed, in the hurry of capture, under a glass in which was a piece of the lichen that grows on rocks every where. I had forgotten that there was another inhabitant concealed there—a pretty little *Epeira* belonging to the same locality, whose nest was in course of construction with the two dead leaves you perceive. The first performance of the *Lycosa*, after she had examined the premises, made her toilet, and ascertained her true position, was to devour the poor little *Epeira*. This done, she cut away and cleared off all the labor of the

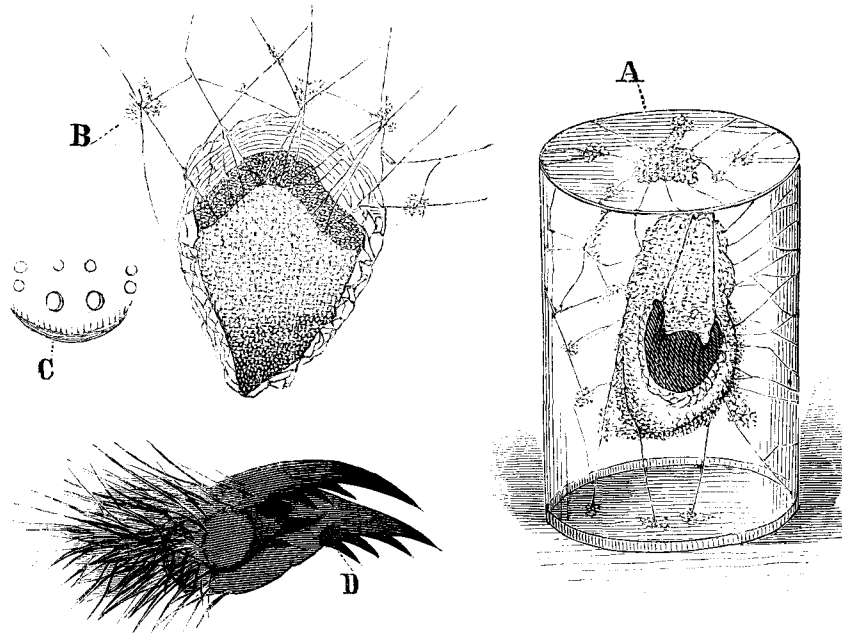


FIGURE 4.—NEST ETC., OF THORIDION.

A. Nest.—B. Egg Bag —C. Eyes.—D. Claws.

former occupant, and before noon the next day she had constructed the nest before you.

It is impossible for pen or pencil to convey the beauty of the silvery strands—resembling floss silk—which compose the nest. It was laid over and around the lichen, and was so strongly attached to the paper on which the glass stood that it can not be detached without cutting it away, piece by piece, with a knife. The egg-bag is placed under the floss, and is elaborately covered with a dense golden-brown sheet of silk; and over all this strong coarse lines are carried around and over the leaves, attaching every part firmly together, and more firmly to the paper. And here the owner sat, from day to day, watching and brooding, eating and reposing, for six long months. But on the tenth day of the seventh month she roused herself, cut away the silk leading to the egg-bag; crept in, examined it; detached and opened one end of it; came out, renewed the broken threads, spun a fresh cover over the whole, and toward evening gathered herself close up to the golden bag and died. Her eggs had evidently never been impregnated.

This is not a large specimen, being her first year. They live along river-courses, wherever the lichens grow affluently, and where they are not likely to be disturbed. They are very shy and timid, and you must look close to find one. Toward winter, and if they remain over to the next spring, they burrow far under the rocks.

The next specimen (Figure 3) is the *Thoridion schizopods*, so called from her claws being so singularly divided. How she would have woven

her nest if free I can not tell; but one morning I found this beautiful little purse (Figure 4), elaborated as you see it, under the glass. It is the prettiest, daintiest little affair conceivable, combining beauty, strength, and elasticity. It is impervious to water. No moisture will adhere to it. I have tried several times to sink it, without success. It is composed of strong white silk over a stronger frame of dark-brown. The apparent opening around the rim is tightly closed with coarse brown silk; and it was attached to the glass in the manner represented, line for line. The spider generally composed herself between the lines attached to the bottom. She did not live over six weeks in confinement. Her food did not suit. In her natural state it would have been the small meadow grasshopper and locusts. Beef and flies were not to her taste. When full-grown, this spider will cover a space of three inches in circumference. Fine specimens can be found in meadow lands any where.

The *Clubiona filices*—Fern Clubiona—(Figure 5) is a most ferocious dame. She constructs her web far under the falling branches of the fern thickets, and she will dispute any attempt to disturb her. Had it been possible to have been bitten by a spider, when I captured this one I should have experienced her disposition to do all the harm she was capable of effecting. I nearly drew her legs off in detaching her claws from my glove. She had hidden her castle and herself in the deepest recesses of the fern bushes, and if the regularity with which the leaves were drawn together had not attracted my attention,

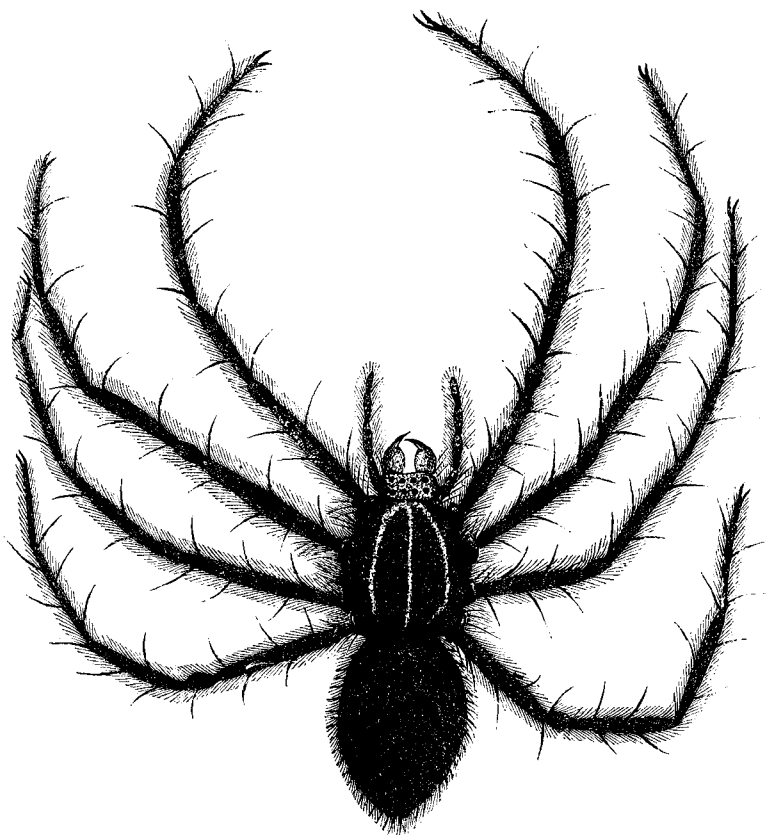


FIGURE 5.—CLUBIONA FILICES.

I should have missed her. But on a closer examination I found that they covered a silken ball (Figure 6) of nearly the diameter of a half dollar, with the fern leaves closely concealing it. She must either have been injured in our fight, or she must have died from rage, for she lived only a few hours after her capture.

On a branch just above the nest of the Clubiona hung a nest of the *Epeira filices*—*Epeira* of the Fern (Figure 7). It was but recently finished; the fresh leaves had not had time to wither or fade. There was no opening perceptible, except a thinness of the web where you perceive the dark spot between the leaves. This I broke away, and out crawled a pretty little pale-brown spider. She had a ball of eggs within, confined nicely with two bands resembling white satin ribbon. She died before the eggs were hatched. When I saw the little ones working out I placed them in a garden, where they (at least some scores of them) flourished finely.

The *Ctenus tangeneus*—Touching *Ctenus*—is rare. She is thus called from her propensity for touching a thing and drawing back again and again. You might suppose her blind by her manœuvres until you rouse her; but she then

shows that she can clutch tight enough. She is brown, covered with very black hairs. Her claws are very simple, but equal, and able to hold the slightest thread. She draws down the end of a long grass leaf and spins her web as you see in Figure 8. The centre resembles a finely-woven linen button. When she considers herself in a place of safety her bag may be seen hanging as represented; but on the slightest alarm it is caught in her jaws and she drops to the ground. You need not seek her now. Before you can wink twice she is some yards away, gliding like lightning from leaf to leaf, from branch to branch. They are the fleetest creatures known, I think; and if by chance you can pursue one closely she changes her run into a succession of long leaps, doubling and dodging like the hare. But no matter what her haste or fright may be, she never relinquishes her bag. This is of a dark lead-color, and the eggs are yellow.

Notwithstanding my limited space, I must present the charming little *Clubiona agaricus*—Mushroom Clubiona—(Figure 9). She is a most brilliant creature. The red with which her body is colored is a most peculiar shade, and as the

light falls upon it the variety of hues is most astonishing. She is very small, and carries her egg-bag—a dark-colored affair—attached to her. She weaves her nest under the bell of the mushroom. It is thick, and closely woven of white silk. Here she dwells, devouring all the small flies and gnats attracted by the locality where mushrooms grow, or the glutinous stuff thrown off by them. She is always busy, and apparently changes her location daily. If she remains till spring she works her way under turf or manure, and can often be found near a bed of the latter, concealed under a close web spun in the



FIGURE 6.—NEST OF CLUBIONA.

hollow of a clod, or in the space between two small clods, which are connected by her web. Here she remains in safety until her summer domicile shoots up in a night; and her chosen home gladdens her longing sight once more. Again her chamber is hung with its silvery upholstery, her egg-bag safely deposited therein. Then, with content, feeling her labors ended, she drops beside her treasure and calmly expires.

Those entomologists (Walckenaer and others) who propose to class spiders from the manner of

habits very remotely, or from analogy presumed that they never vary. This is most decidedly erroneous, as any one who chooses can convince himself.

Here is before me now a small *Epeira*, of the size of a large pin-head—a fac-simile, but in miniature, of the *Epeira diadema*—the large geometrical garden spider. You might suppose that she was the young of this species, if you did not perceive her maturity by her egg-bag. Three days ago she spun a most scientific and perfect web.

Radii and circles, as if measured by rule, hung between a branch of fuschia and the top of a geranium. She had eleven lines running down to the jars to secure the web; and here she swung all day. Early next morning she cut away the whole fabric, transferring herself to another geranium, and there spun a long, vertical, triangular web, with loose lines running in every direction close to the earth. Here she watched the entire day. This morning a long suspension-bridge, of more than twenty cables, runs up to an ivy branch; and here she is now performing upon the tight-rope with apparently great enjoyment. Now all this you may suppose “a

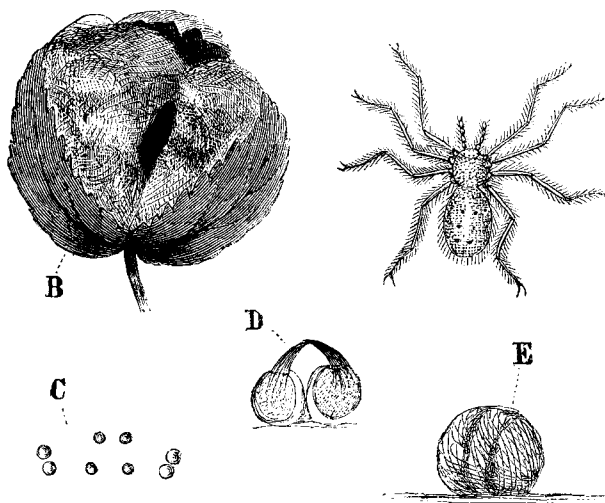


FIGURE 7.—EPEIRA FILICES.

B. Nest.—C. Eyes.—D. Mandibles.—E. Egg-Bag.

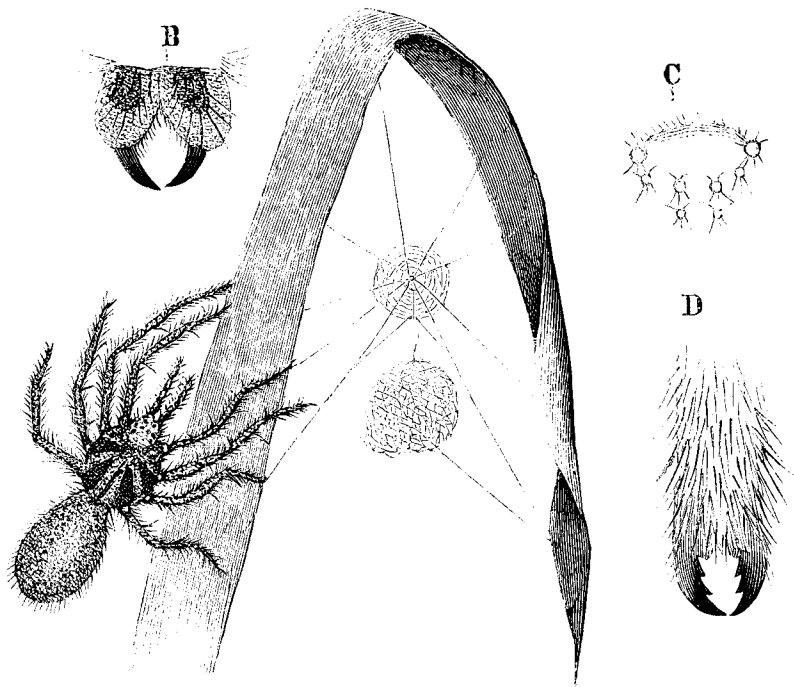


FIGURE 8.—CTENUS TANGENEUS.
B. Mandibles.—C. Eyes.—D. Claws.

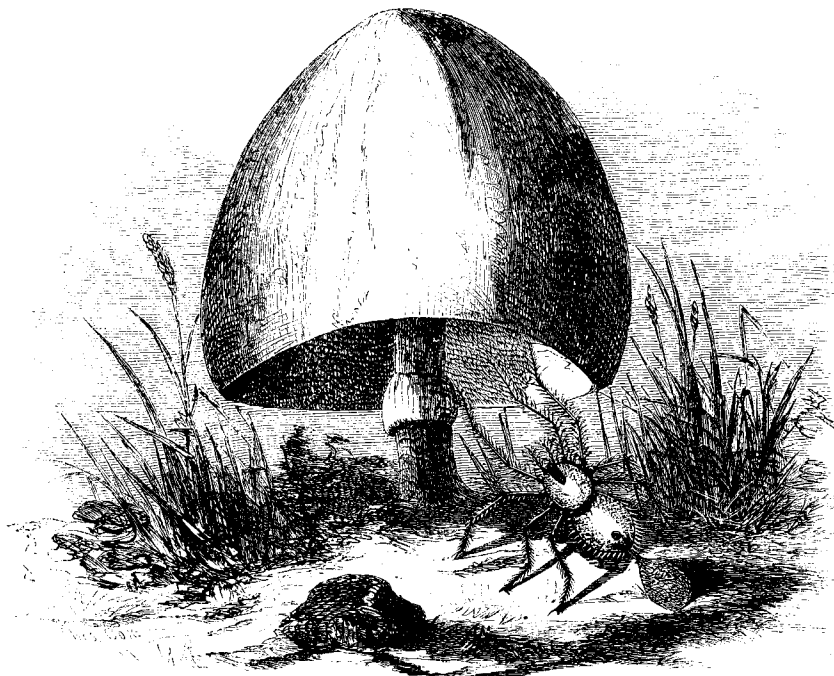


FIGURE 9.—CLUBIONA AGARICUS.

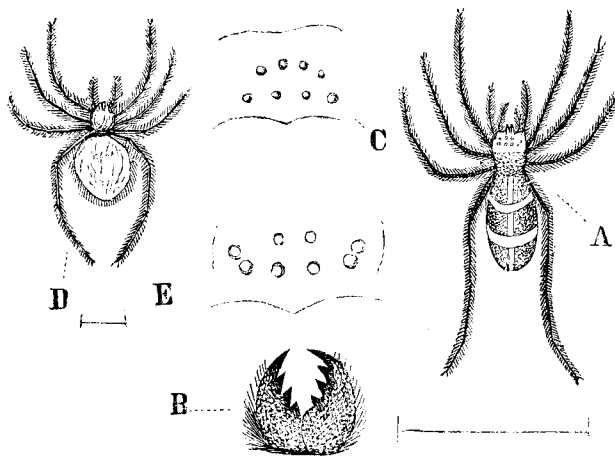


FIGURE 10.—DRASCEUS AND EPEIRA.
A. *Drasceus Perfidus*.—B. Mandibles.—C. Eyes.—D. *Epeira Prasina*.—E. Eyes.

freak of fancy." Not so; she is wisely providing for her own comfort. In the jar where grows the ivy a small *Tipula* had deposited her eggs, and the newly-escaped flies are coming forth by dozens. Already the lower web is spangled with their wings, and these irregular lines serve her purpose equally as well—far better, in fact—than the elaborate web of two days ago. A hundred such instances can be deduced, which

renders such a classification, at least in this country, worthless. Let us turn now to a consideration of other faculties. Spiders are susceptible of anger and revenge, affection and friendship, and the love of companionship, even when in captivity with other insects whose most violent opponents they would be if in a state of freedom. I have verified these observations in an endless number of instances. A *Lycosa* and a Beetle hibernated in the earth in the same jar all winter. An *Epeira* and a Lady-bird lived together under a glass nine months in most affectionate companionship. I have now another under a glass with two small beetles, living most amicably. Often the spider can be seen close between her two companions, apparently enjoying a friendly gossip. They have been thus domiciled nearly three months. Put under the glass a fly, a rose-bug, or any other insect, and it is trussed up in a second. I have starved her five days at a time, and yet the little beetles went unscathed.



FIGURE 11.—FIGHT OF DRASCEUS AND EPEIRA.

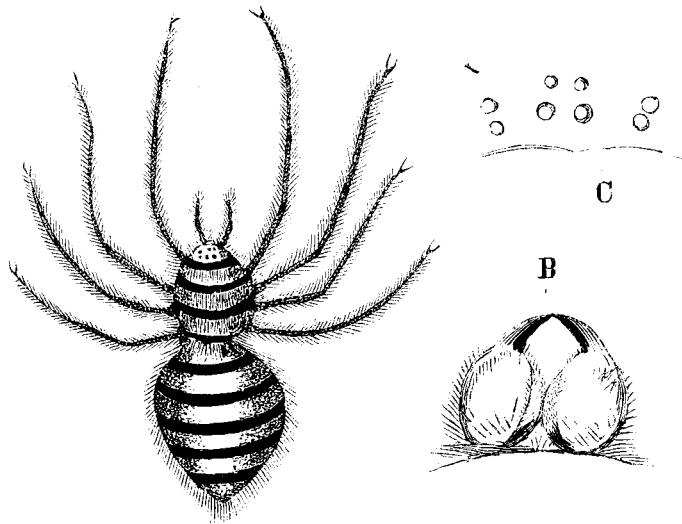


FIGURE 12.—*EPEIRA FASCIATA*.
B. Mandibles.—C. Eyes.

Their affection for their young, their industry, ingenuity, perseverance, and instinct, I need not here recapitulate. But some of their manœuvres and manner of defense in their various rencontres may be amusing.

A pleasant day last August I was busy in a garden, behind some shrubbery, lying in wait to entrap a Lace-Wing, who was occupied depositing her eggs on some dahlia plants near by. My attention soon became absorbed in watching the uneasy movements of a very small *Epeira*—(Figure 10)—a pretty little thing, nearly white,

shaded with green. They are generally seen about six weeks at this season, feeding on the minute *Tipulæ* and *Culicides* (Gnats), which come forth as second broods about this time. She was very restless, moving around, up and down, as if hesitating whether to abandon her web or not. I looked behind the lilac bush on which her web was hung, and there perceived the cause of her alarm. A *Drasusus* (Figure 10), which would have made a hundred of her bulk, was keenly watching her chance. She had constructed a bridge from the tough leaves

of a species of South American aloe. You can see (Figure 11) how her cables were placed; but you must understand that these, though they look like single lines, were really more than twenty double; and as they vibrate with the gentle breeze you might have conceived them to be threads of silver. The chief one ran down, as you see, to a hole under the grass, where her family were just coming into existence.—Hunger was the cause of her present proceedings. Her anxiety for her young prevented her from hunting for food farther away. How long this contest had been going on I could not surmise; but now I seated myself to watch its conclusion. Most unequal were the adversaries; and any one little conversant with such affairs would have supposed it could have but one termination—in favor of

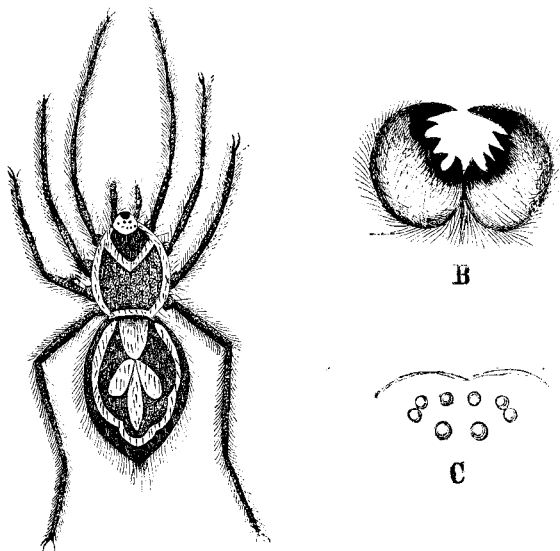


FIGURE 13.—*THORIDIUM MIGRATUM*.
B. Mandibles.—C. Eyes.

the Drasseus. Four long hours did each plot and counterplot—hiding under leaves, and watching each other's movements with most direful animosity. I was rather weary, I must confess, and concluded to return to my Lace-Wing, when I saw the giantess march haughtily across her bridge, determined to storm her enemy's castle, and die or be victorious.

"Poor little one!" thought I, "your doom is sealed! What a *bon-bon* you will prove!"

It must be remembered that these pulmonaria see only on a level, or with their heads down, never upward. As soon as she had disappeared under the leaves, and was evidently ascending, the little *Epeira* dropped down and struck the main cable, and quick as lightning swung up to the point of the aloe leaf. Her enemy, distracted at the idea of some intruder visiting her own nest, hastened to retrace her steps. But just as she reached the angle of the two lines (at a) the little one silently dropped down upon her, and fixed those minute fangs into the body where the thorax joins the abdomen. The battle was over, the victory won. I was startled at the unexpected cheer which escaped me at such an amazing exhibition of foresight and management. In the afternoon late, when I visited the spot, the enemy was wound up in a silken ball and hung to the aloe leaf, a warning to all future intruders. The little heroine was reposeing from her fright and fatigue. I wish she could have understood my congratula-

tions. But by-and-by, when the moon gets up, she may probably, if not too lazy or compassionate, visit her enemy's home, over the silken bridge she took so much pains to build, and sup on her young. Ah! does not retribution meet us at every turn?

There is a different way of settling such difficulties. This *Epeira fasciata* (Figure 12), all orange and black in bands—a most gorgeous dame—had her home on a pot of earth on which stood a small gallipot with a branch of lilac stuck in it. Here, under the glass, she lived many months. She went up leisurely every day and renewed the glutinous web hung at the top. I do not know whether she would have adopted this proceeding if at liberty. I rather think, however, that she would have done so from the smallness of the almost imperceptible outlets in her spinnerules. Put in a dozen flies, in a few evolutions they stuck fast. When hungry she would ascend, walk over the stuff without any hinderance, select her victim, use him up, often three at a meal, then renew the snare, and descend to the earth in the lower jar and make her toilet.

At last I got weary of this monotonous way of living, and put under the glass as a companion, or at least a change of victims, a *Thoridion migratum* (Figure 13)—a common brown spider, found in gardens and hot-houses. The *Epeira* ascended with all the *empressement* imaginable, examined the intruder, gave her a contemptuous

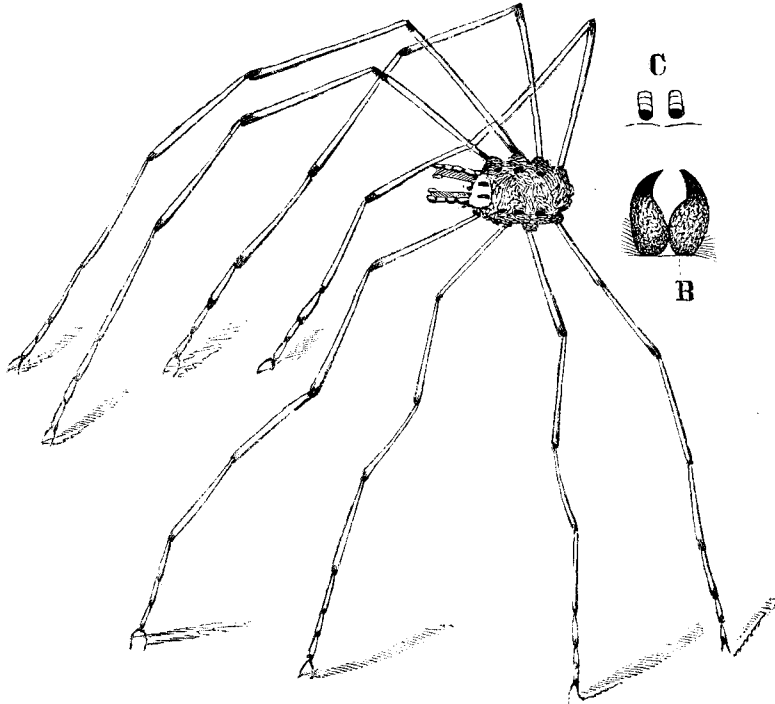


FIGURE 14.—THALANGIUM.

B. Mandibles.—C. Eyes.

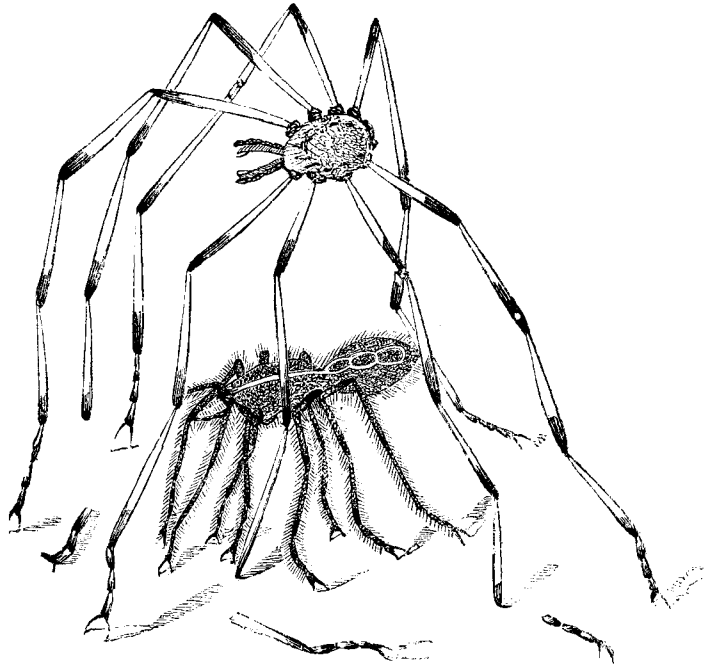


FIGURE 15.—THE FIGHT.

sneer, we may presume, and paused to reflect what next should be done. In the mean time the Thoridion was examining the new premises rather carelessly and indifferently. In a few minutes—as if she had made up her mind—a system of teasing and petty annoyances began on the part of the Epeira, to which, after a while, the Thoridion determined not to submit any longer. Then a chase began round the edge of

the jar. Round and round they went. Sometimes the Epeira allowed the Thoridion to almost touch her. Bets were made by the spectators—against my opinion or supposition—of how it would end. When the race was at its most exciting point the Epeira dropped on her path the fatal snare. A few steps more, and the enemy stuck fast. Pull away ever so fiercely, not a leg could be drawn forth. The Epeira descended

calmly to her lower station, rested from her fatigue, and when she thought her enemy sufficiently exhausted from struggling, went up, nipped her to secure her certain death; then bit her free, and carelessly pitching the body over the ramparts, went up to sup.

The next instance is still more puzzling. You may, after I have finished my account, decide upon what principle, instinct, or motive the Lycosa acted. I have come to a conclusion that it assimilates very closely to human forethought. She swung at the top of a large glass, and being pressed for a secure place, I fancied

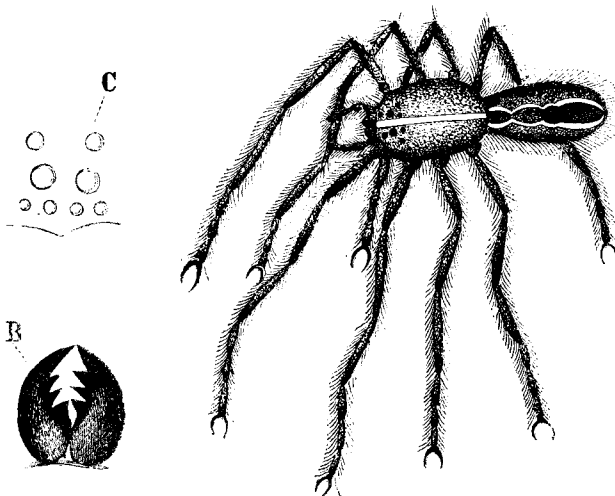


FIGURE 16.—LYCOSA NOOTES.

B. Mandibles.—C. Eyes.

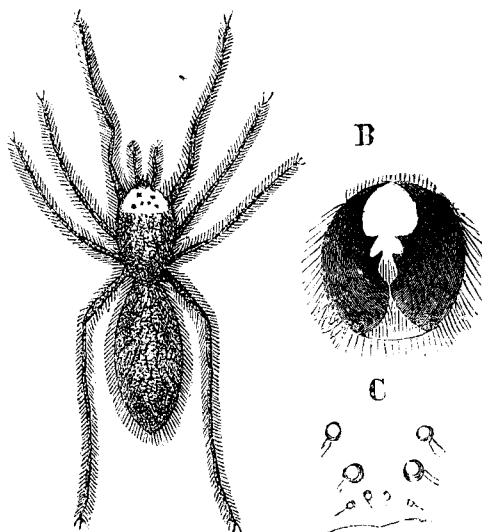


FIGURE 17.—LYCOSA VIOACEUS.

B Mandibles.—C. Eyes.

the long-legged Phalangium (Figure 14) might repose at the bottom without giving offense. Not so. In a few minutes down she came to examine the intruder. Her ire was up, and I soon saw a fight in prospective. It would be very unequal, for Long-legs has but two eyes, and they placed on her back—her food being the *Acarus telatarius* (Red Spider of hot-houses), and other mites found on plants. She needs them placed thus to secure her sustenance. The Phalangium is classed in the third family of the *Trachean Arachnida*, as it breathes through tracheæ like other insects; that is to say, through vessels which receive the aerial fluid, and distributing it through ramifications in every part of the body, thus remedying the want of circulation as it is found in the *Pulmonary Arachnida*.

The *Lycosa*, without loss of time, "pitched into her" literally (Figure 15). Imagine her dismay when those long legs (in some they have fifty joints) lengthened out and elevated the speck of a body far away out of the reach of her fangs—she would pass out more enraged than ever. The long summer's night I sat a spectator to this odd contest. I illuminated the ring grandly, and determined to crown the victor, if it went into next year. Two o'clock struck. The poor *Lycosa* was almost frantic with rage. Aim where she

might, the long legs descended over her like a shadow. Three—four rung out over the silent hills. I was becoming weary, and, apparently, so was the *Lycosa*. She lay stretched close up against the glass; her flashing eyes, scintillating with rage, fixed upon poor Long-legs, as if meditating what next step to take. A few more minutes passed, when up she sprung, with one bound, and snapped off like pipe-stems the two front legs, four joints up. So it went on, until only an entire one amidst the stumps was left. With this the Phalangium buffeted her adversary most superbly; but all in vain. Away went this leg at last, and down on her thigh-joints she sunk. It was all over with her. When the day was dawning she was being nicely trussed up; and the stanch heroine soon clambered up to her loosely woven castle—satisfied, no doubt, that she had done a good night's work.

The *Lycosæ* (Figures 16, 17, 19) are never seen in the daytime, and I doubt if they can see except in the dark, although their eyes are very bright.

This must be the last battle which I may record: In this old gate (Figure 19) lived a peaceful *Tegenaria*, spinning and weaving as if she might be waiting another Ulysses. One day came (Figure 17) this gayly-dressed *Lycosa* (Figure 18). The bright violet rays scintillating from her drove out modest Penelope into her fortress—the hole in the post—leaving her web suspended without as usual. I had often noticed her in my walks, and had determined upon kidnapping her when she had finished her labor of love—the egg-bag. On visiting the spot, one afternoon, I beheld a new tenant beside the

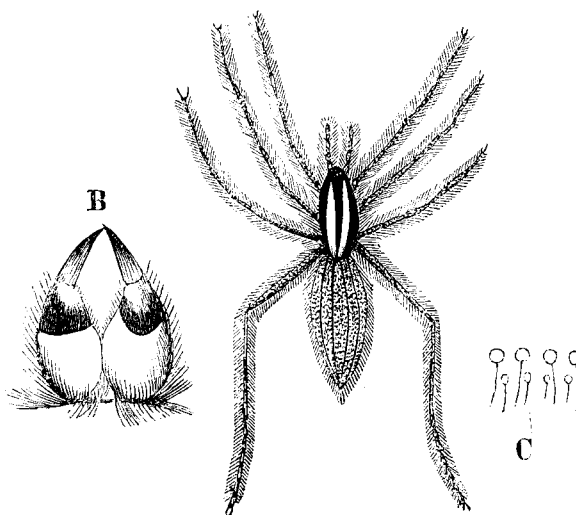


FIGURE 18.—TEGENARIA TEXTURA.

B. Mandibles.—C. Eyes.



FIGURE 19.—NESTS OF LYCOSA AND TEGENARIA.

old gate. The home was finished—a nice silken tube near the roots of a tree, and a few cables run carelessly up to the bar above. But neither occupant was to be seen. I took a straw and pushed in to the residence of the Tegenaria. Softly as it was done, I perceived she was within, with a powerful web spun over each side of the hole. Then I knew the quarrel had begun.

I went to our violet friend, and penetrated with the straw into her domestic concerns. Up she came, foaming with rage, dashed up her cables, and across the bar to the domicile of the quiet little body over the way. She was determined one or the other should vacate without delay. Forthwith she commenced biting and tearing at the entrance nearest the web. I went round to watch proceedings. I was astonished to find the Tegenaria remained so quietly within. More and more furious became the attack. In a few moments out came the Tegenaria, with her bag between her jaws, and down the post she ran in the greatest haste. The Lycosa was well in by this time, and I was anxiously watching for her to come out the opposite side. But this was never to be. The interior of the web must have been made highly glutinous, the legs and mandibles of the poor Lycosa were so clogged it was impossible for her to extricate herself. Struggle as she might, she was caught. The Tegenaria hid her bag safely under the grass, and came sedately and slowly over the rail; behind, her adversary, and was preparing to finish her—the sly vixen!—when I put my bottle over the hole and drove her in. I secured the bag,

and with difficulty drew out the Lycosa. It was impossible to detach the web. I was enabled to obtain her bright colors during her struggles. She soon died, and fifteen minutes after she was as black as she well could be. The Tegenaria lived to be eaten by her children—a sacrifice of herself she seemed delighted to make.

I have mentioned elsewhere that the females of this family are invariably nearly double the size of the males, and are found vastly outnumbering them, owing to the habit they have of devouring their lovers. Besides this difference, the male spider of every subgenera has a great bulging out of the palpi, which appears, so far as I have seen, to differ in every individual even belonging to the same division, as you may perceive in the parts of Thoridions represented (Figure 21). No matter how very dissimilar the palpi may be in individuals, they seldom differ in other parts of the body exteriorly. Therefore it has been concluded by some entomologists that the palpi of the male have very much to do in the impregnating of the eggs; but the Eleusinean secrets of this kingdom are still hidden from mortal ken, as far as my authorities go, judging from my own and their experience. Conjectures are not facts, and should not be admitted by the advocates of truth.



FIGURE 20.—MANDIBLES AND EYES OF MUSHROOM SPIDER.

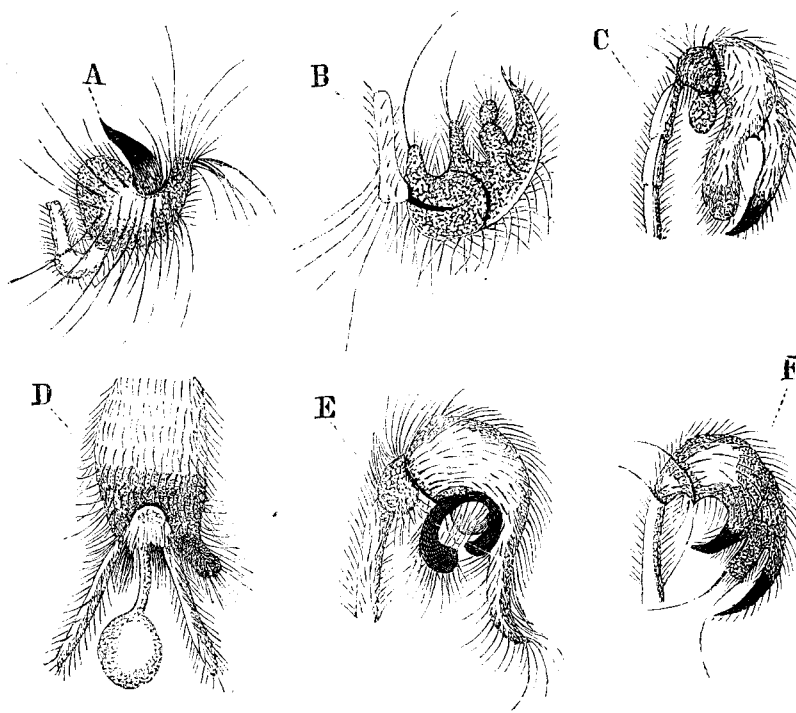


FIGURE 21.—PALPI OF MALES.

A. Palpus of Luminous Thoridion.—B. Of Wandering Thoridion.—C. Of Segestria, found near Philadelphia.—D. Abdomen of Male Clotho.—E. Palpus of Wall Clotho.—F. Palpus of Small Epeira

In the subdivision of *Clotho* I must state an exception to the general rule. You perceive (Figure 21, D) an appendage to the abdomen of the male. I have never met with it on any of the others. In illustrating these palpi you see them, as it were, closed, but on the approach of the female the expanse and ramifications these members exhibit would be enough to frighten any nervous person. In observing the male *Clotho*, which I came upon very unexpectedly, not perceiving that the female was near by, I congratulated myself on the discovery of something very new—a wonderful creature. The palpi were double the length and size of his whole body, and he appeared the most extraordinary creature ever seen. I had to touch him several times before he would change his position, he was so entranced; but at last, the female becoming alarmed, and scampering off, he concluded to follow her, but they both very unexpectedly found themselves in a bottle. Several times afterward I saw the expanding of these palpi, but could not get the glass near enough to authorize an illustration in this position.

We have all heard a great deal, and seen a vast deal written, about the ferocity of spiders, their cruelty, their insatiable appetite, and their dislike to companionship. I have seen seven varieties spinning their webs on one bush, and it is rare if ever a spider can be found truly isolated. There is always one or more not far

away. To be sure, they do not work together, like other insects, as the bee, the wasp. They, indeed, like wise human beings, dislike crowds or jams.

As for their appetite and their ferocity, if they could throw stones, should we not hear some smashing of glass? But the poet has answered this charge so well I will give you his suggestions:

"Arn't you a murderer?" gravely Susan cries;
 Arn't you forever busy with that claw,
 Killing poor unoffending little flies,
 Merely to satisfy your nasty maw?"

* * * * *

"But, Susan, don't you feed on gentle *lamb*?
 Don't you on pretty *pigeons* cram?"

Don't you on harmless *fishes* often dine?"
 "That's very true," quoth Susan; "true, indeed."
 "Oh! with what eloquence these spiders picad—
 This little rascal beats a grave divine."

SAINT BARBARA.

"WHAT a queer little body!" exclaimed one fashionable lady to another as a girl passed through the room, leading a child by the hand, and carrying one in her arms.

"Our Barby."

"Where in the wide world did you discover such a funny specimen of humanity?" laughed the first speaker. "She looks as if modeled from one of Punch's caricatures."

"Oh, we've had Barby, as the children call