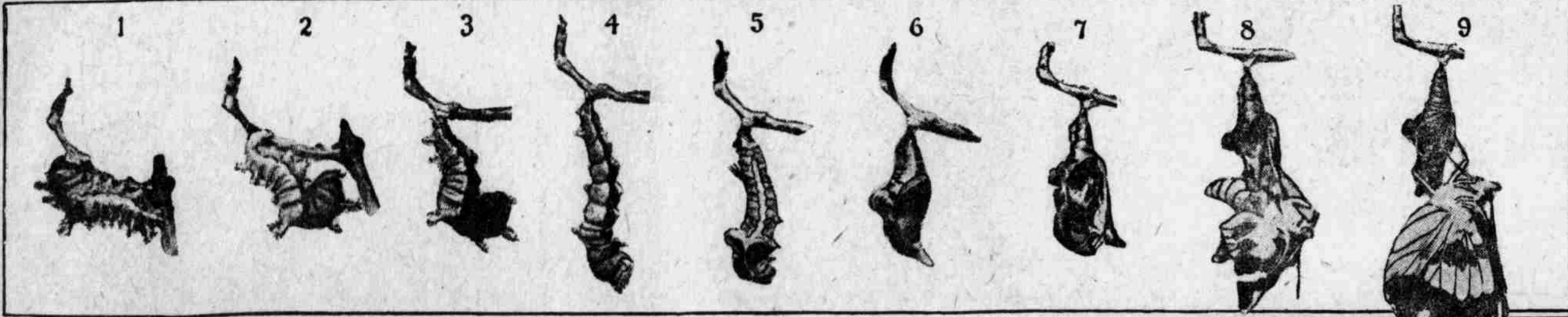


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NEW FACTS ABOUT BUGS' LIVES AND LOVES



The Birth of the Butterfly.
 1—The Caterpillar Climbs the Twig, Impelled by the Coming Change.
 2—The Chrysalis Hood Begins to Form.
 3—The Body Writhes in Its Labor to Attach Itself to the Twig.
 4—Spent with Its Efforts It Hangs Motionless.
 5—The Chrysalis Hood Extends Over the Worm.
 6—The Chrysalis Is Complete.
 7—The Change Begins; the Wing Shields Are Forming.
 8—The Butterfly Half Out.
 9—The Butterfly Is Born.

The Tragic Honeymoons of the Praying Mantis, the Sixth Sense of the Moth, the Misunderstood Cigale

THE stories of the intelligence shown by the ant and the bee, their complex social habits and the evidences of a real insect civilization, make up one of the most marvelous chapters of nature. But the ant and the bee are not alone in the insect world in their possession of what seems to be the

higher reason, as well as at least one other sense which man does not possess. Dr. J. H. Fabre, the greatest student of insect life in the world, a French scientist and a philosopher, has just written a book which has given him the title of "The Homer of the Insect." A few extracts from it are printed on this page.

By Dr. J. H. Fabre

(From "Social Life in the Insect World.")
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FAME is the daughter of legend. Who is there that doesn't know the legend of the cigale, who went begging for food to the ant, and was told: "You sang the Love Tragedy of the Scorpions."



1—The Scorpions Meet Each Other and, Claws Clapsed, Perform This Solemn Dance to Celebrate Their Engagement.
 2—Then for Several Hours They "Hold Hands" in This Manner, Gazing into Each Other's Eyes.
 3—The Female Scorpion Then Leads Her New Mate to His Rest.
 4—After the Honeymoon the Scorpion Bride Sets Upon Her Bridegroom and Devours Him.
 5—The Scorpion Mother Playing Like a Cat and Kittens with Her Brood. (Photographs by Dr. J. H. Fabre.)

all Summer. Now dance all Winter, and keep warm." Let us seek to rehabilitate the songstress so calumniated by the fable. At no time does the cigale plead starvation at the doors of the ant hills; the ant, on the contrary, harassed by drought, begs of the songstress! Begs, do I say? Borrowing and repaying are no part of the manners of this land-plat. She exploits the cigale; she impudently robs her. Let us consider this theft; a curious point of insect history as yet unknown.

In July during the stifling hours of the afternoon, when the insect peoples, frantic with drought, wander hither and thither vainly seeking to quench their thirst, the cigale makes light of the general aridity. Crouching on the twig of a suitable shrub she perforates the rind subtended by the sap which the sun has matured. Plunging her proboscis into the bung-hole she drinks.

There are many thirsty creatures wandering hither and thither, and at last they discovered the cigale and the private well, betrayed by the oozing sap upon the brink. I have seen crowded around the honeyed perforation, wasps, flies, earwigs, sphinx - moths, pomplididae, rose chafers, and, above all, ants. I have seen them nibbling the ends of the cigale's claws; I caught them tugging at the ends of her wings, climbing on her back, tickling her antennae. One audacious individual so far forgot herself, under my eyes, as to seize her proboscis, endeavoring to abstract it from the well. So we see reality

completely reverses the action described by the fable. The shameless beggar, who doesn't hesitate at theft is the ant. The industrious worker who willingly shares her goods with the suffering, is the cigale. Yet another detail, and the reversal of the fable is further emphasized. After five or six weeks of gaiety the songstress falls from the tree exhausted by the fever of life. A bandit in search of booty, the ant, discovers the remains. She divides the rich find and cuts it up into tiny fragments, which goes to swell her stock of provisions. It is not uncommon to see a dying cigale, whose wings are still trembling in the dust, drawn and quartered by a gang of knackers—her body is black with them. After this instance the truth of the relations of the two insects is obvious.

The tragedies of the insect world! Again the cigale. It is late, and they are silent. Drowsy with light and heat they have exhausted themselves in producing their symphonies all day long. In the thick foliage of the plain-tree there is a sudden sound like a cry of anguish. It is the despairing lamentation of the cigale, surprised in the silence by the green grasshopper, that ardent hunter of the night, which leaps upon her, seizes her by the flank, tears her open, and devours the contents of her stomach. After the orgy of music comes night and assassination.

But there is another creature of this world which is quite as curious and as interesting as the cigale, but much less famous because it is voiceless. It is called by the provencals *Lou Prego-Dieu*, the creature which prays to God. Its official name is the praying mantis.

Good people, how very astray your childlike simplicity has led you! These attitudes of prayer

the attitude of prayer is promptly abandoned. Suddenly unfolded, the three long joints of the deadly forelegs shoot out their terminal talons, which strike the victim and drag it backward toward the two saw blades of the thighs. The vice closes with a movement like that of the forearm upon the upper arm and all is over; cricket, grasshopper and even more powerful insects, once seized in this trap are lost. Their frantic struggles will never release the hold of this terrible engine of destruction.

At the sight of a great cricket the mantis suddenly assumes a most terrifying posture. The wing covers open and are thrust obliquely aside; the wings spread to their full width, standing up like parallel screens of transparent gauze, forming a pyramidal prominence which dominates the back; the end of the abdomen curls upward, then falls and unbends itself with a sort of swishing noise, a puff like the sound emitted by the feathers of a strutting turkey-cock. One is reminded of the puffing of a startled adder. Motionless in its weird position, the mantis surveys the arctid, its gaze fixed upon it, its head turning gently as on a pivot as the other changes place.

The cricket sees spring up before it a terrible spectral form with talons outstretched, ready to fall upon it; it feels itself face to face with death and falls to flee while there is time. It is said that young birds, paralyzed with terror by the gaping mouth of serpents will allow

conceal the most atrocious habits; these supplanting arms are lethal weapons; these fingers tell no rosaries, but help to exterminate the unfortunate passer-by. It is the tiger of the peaceful insect peoples; the ogre in ambush which demands a tribute of living flesh! If it only had sufficient strength and size its bloodthirsty appetites and its horrible perfection of concealment would make it the terror of the countryside. If man and it were in the proportion of the grasshopper and the mantis no dragon which ever infested earth was ever so terrible. The *Prego-Dieu* would become a satanic vampire. As it is, I have often been obliged to get a second person to free me from one of these tenacious captives.

Thanks to a flexible neck, the head can turn to right or left, bow or raise its head in the air. Alone among insects, the mantis is able to direct its gaze; it inspects and examines; it has almost a physiognomy! Its fore-legs and thighs are nothing but combinations of spikes, steely spines and double-edged saws. The fore-legs terminate in strong hooks, the points of which are sharp as the finest needle; a tool which is fluted and has a double blade like a pruning knife.

When the mantis is in repose its weapons are folded and pressed against the thorax and are perfectly inoffensive in appearance. The insect is apparently praying. But let a victim come within reach and

themselves to be snatched from the nest. The cricket will often behave in almost the same way. Once within reach of the enchantress, the grappling hooks are thrown, the fangs strike, the double saws close together and hold the victim in a vise.

But we have yet to learn the worst. The customs of the mantis in connection with its own kin are more atrocious even than those of the spiders. The female mantis will always eat her sisters even when her favorite quarry, the cricket, is attainable. And, alas, its poor husband!

We are near the end of August. The male mantis, a slender and elegant lover, judges the time to be propitious. He makes eyes at his powerful companion; he turns his head toward her; he bends his neck. His little pointed face almost seems to wear an expression! For a long time he stands thus motionless, in contemplation of the desired one.

The latter, as if indifferent, does not stir. He need not despair, she will accept him as her mate because she loves him as the choicest of game. During the day, or at latest on the morrow, he is seized by his companion, who first gnaws through the back of his neck, according to use and wont, and then methodically devours him mouthful by mouthful, leaving only the wings. Here we have no case of jealousy, but simply a depraved taste. In the course of two weeks I have seen the same mantis treat seven hus-

bands in this fashion. She accepts them all and all pay for her favor with their lives.

The sixth sense of the moth! There is a great and beautiful European moth called the Great Peacock or Emperor. One morning a female emerged from a cocoon in my laboratory. I imprisoned her in a wire gauze cage. That night was stormy, the sky heavily clouded, the darkness so profound that out of doors one could not see one's hand before one's face. Yet between eight and nine o'clock forty courtiers of the captive princess flew into my study seeking her! The Great Peacock was comparatively rare near my home. Yet every night they flew to her. I caught and marked them. In eight days one hundred and fifty had visited me. They must have come from at least a radius of a mile and a half. How did they learn what was happening in my study. These agents of information affect the senses at a distance: sight, sound and smell. Sight could guide them once they entered the open window, but how could it keep them out of doors, among unfamiliar surroundings? One would have to imagine a keenness of vision capable of annihilating leagues of space, able to see through walls. Sight cannot be the guiding sense.

Sound is equally out of question. The female is absolutely mute. Does she perhaps limit vibrations of such delicacy or rapidity that only the most sensitive microphone could appreciate them? The idea is barely possible.

Smell remains. Are there effluvia analogous to what we call odor absolutely imperceptible to us but capable of stimulating a sense organ far more sensitive than our own. A simple experiment suggested itself. I would mask these effluvia, stifle them under a powerful, tenacious odor which would take complete possession of the sense organ and neutralize the less powerful impression.

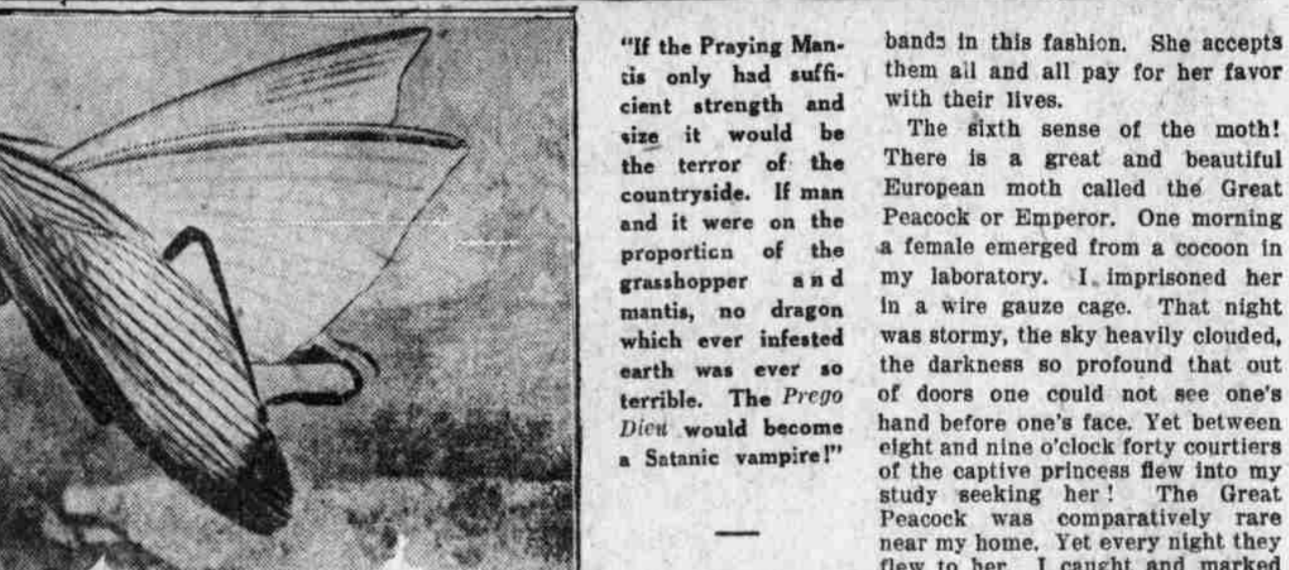
I sprinkled naphthalene about, placed a capsule beside the female and used other strong odors. Yet the moths arrived on time. Furthermore they came with a great wind against which no known scent could travel! The only time they would not respond was when I put the female in a hermetically sealed glass jar!

What is the sense that drew them so unerringly? Certainly we do not have it.

'A Little Sun Worshipper, the African Spider Mother, That Holds the Egg Up to the Sun for Hatching.

Two Mantises Fighting Like Prize Fighters with Their Enormous Claws.

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"If the Praying Mantis only had sufficient strength and size it would be the terror of the countryside. If man and it were on the proportion of the grasshopper and a dragon which ever infested earth was ever so terrible. The *Prego Dieu* would become a Satanic vampire!"

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