

Loren Eisely → All the  
Strange Hours

CHAPTER 23

## The Coming of the Giant Wasps

TO pass immediately from cats to wasps is perhaps a strange transition, even for a naturalist, but from childhood on I had attempted in off hours to observe the New World version of the insect realm of Henri Fabre. In fact, insects had fascinated me long before I became an anthropologist. I will never forget that autumn just because of the warm September light on the hillside and the way those great *Sphex* wasps, the cicada killers, came in over the grass like homing bombers. Perhaps they had hunted briefly about in other summers, but in this year someone had told me moles were tunneling in the backyard of our apartment house. I had gone out to investigate and it had needed only one glance at a quaint, big-lensed, intelligent head coming out of one of the burrows to know that something magnificent had intruded into our little backyard garden.

As the days passed one could hear an occasional cicada's song terminating abruptly in a kind of stifled shriek—a sign that an assassin had reached him. If one waited quietly it would not be long before one of the huge wasps, the largest on the eastern seaboard, would come gliding in toward its excavation with a paralyzed cicada in its clutches. Then the creature would

## DAYS OF A DOUBTER

emerge alone, circle at speed to get its bearings, and wing off into the trees.

What I admired about the wasps was the deadly perfection of instinct they exhibited, and their utter indifference to man. If I stood near one of the holes long enough, I might be circled but never attacked. I was merely being utilized as a beacon marker.

These wasps of the genus *Sphex* are solitary, and giants of their kind. The first one I ever saw, years ago in another state, was carrying prey heavier than herself and getting it airborne by utilizing the corner of a building to bounce her upward thrusting legs against, while using her wings at full power. When she had reached sufficient altitude she had zoomed off in a beeline for her distant burrow. Here, in the backyard, the wasps had selected the sunny hill slope for their nests. This neighborhood activity is their only sign of incipient socialization. They had come to this spot, I suspected, because there was little or no appropriate wild land remaining in the growing suburbs around us. If they took cognizance of human beings at all they would not have intruded here. They frightened old ladies by their mere size, and gardeners trampled remorselessly upon their excavations. But still, in the early morning light, they would return to dig and their energy was boundless.

I was as pleased that autumn as if someone had reported a panther in our pine tree. I was getting old enough to want to rethink what I had learned when I was younger. I believe now that it was the coming of the giant wasps that first aided in implanting some doubts in my mind about the naturalness of nature, or at least nature as she may be interpreted in the laboratory.

These wasps, and their assorted brethren, the tarantula killers, present in miniature several of the greatest problems in the universe. Beautiful as they appear in sunlight, their deeds below ground are less edifying. They would justify Darwin's well-known remark about the horribly cruel works of nature, or

even Emerson's observation that there is a crack in everything God has made.

Yet these hymenopterans exercise no moral choice. Their larval stage has to be supported by a peculiarly frightful form of feeding upon paralyzed flesh, while the adults must contribute to their survival by one of the most precise surgical operations known among the lower creatures. Otherwise the species would perish. Beauty and evil, at least by human standards, course together over the autumn grass. The wasps have always impressed me as formations of fast fighter planes impress me—incredible beauty linked to destruction in the heart of man. As a cynical pilot once put it of his charges, "They are nothing but a flying gun platform."

Similarly one could say of *Sphex speciosus* that it is nothing but a flying hypodermic needle. But how wrong, how terribly wrong, oversimplified, and reductionist would be both observations. Into man's jet fighters, year by year, have gone some of the most elaborate scientific calculations in the world—mathematical equations of the utmost abstract beauty, which, when embodied in reality, result in speeds outrunning the human imagination. Their potential uses of terror lie in the ambivalent nature of man, or perhaps in the ambivalent nature that created man. So the great wasps, the invaders of the autumn grass, carry navigational aids whose complexity remains unexplained and whose surgical intent is comprehended, if at all, only in the dream that lies below all living nature—a dream as tenuous and insubstantial as the shaft of September light through which roams a flying deadly lancet. "My thoughts are not your thoughts," runs the Biblical injunction of Jehovah. "Your ways are not my ways. I make the good. I create evil. I, the Lord, do all these things."

I have come to believe that in the world there is nothing to explain the world. Nothing in nature that can separate the existent from the potential. I start with that. Biological scientists, however, are involved by necessity in the explanation of life.

In the end many are forced into metaphysical positions which reflect their own temperamental bent. There are reductionists like Jacques Loeb, who strove to bring life into the manageable compass of physics and chemistry, or men such as the philosopher Henri Bergson, who attempted to distinguish life as a separate, indefinable principle, the *élan vital*.

Between these extremes we all flounder, choosing to close our eyes to ultimate questions and proceeding, instead, with classification and experiment. Even then our experiments are apt to be colored by what we subconsciously believe or hope. Also there is life within us, a magnificent, irrecoverable good. It could be argued that there must be something a little strange about those who scorn that good, just as those who love its endless manifestations may be accused of some form of submerged worship.

This conflict extends into the last century, intensifying with the discovery of the principles of evolution. One of the last great evolutionary controversies of that century arose, in fact, over the behavior of the solitary wasps whose mysterious habits, so Henri Fabre, the French entomologist, proclaimed, simply did not lend themselves to an explanation by means of the selection of chance Darwinian mutations. To my mind the controversy was never really resolved, only softened and eventually dropped as other more comprehensible discoveries diverted the naturalists of the new century. Nevertheless the world owes a debt to Henri Fabre, who worked all his life in the sandy stretches of southern France. Fabre was too unschooled to accept readily what he was told in other people's books, including Darwin's. Instead he lay under the spell of the elegant French experimentalists who preferred controlled investigation to armchair theorizing.

It is not sufficient to say, therefore, that the schoolmaster Fabre was an anti-Darwinian who saw, in the perfection of instinct, an utter barrier to evolution. Fabre merely chose, on the basis of his field studies, to ask some legitimate and penetrating

questions. Darwin himself realized that among the amazing life cycles of insects there were cases difficult to explain on the basis of pure undirected variation. At one point he confessed in *The Origin of Species* that many instincts difficult to explain could be opposed to the theory of natural selection, "cases in which we cannot see how an instinct could possibly have originated" and "in which no intermediate gradations are known to exist." It was this sort of problem, notably the knowledge of their opponents' weaknesses possessed by the *Sphex* wasps, which had troubled Fabre.

A careful reading of the French entomologist reveals that he was not unaware of variation in the behavior of his wasps. He was, nevertheless, notably impressed by the surgical knowledge manifested by both grub and adult, instincts which seemed to rule out any theory of their origin through the selection of chance variations. The other Darwinian refuge of that time lay in the suggestion that learned behavior, "habit," might precede and prepare the way for the emergence of purely instinctive behavior.

Fabre had expressed doubts, not totally answered to this day, as to how unaided Darwinian natural selection, or, indeed, selected "habit," could produce something that would be of no natural use until the chain of instinctive reflexes led to the survival of the wasp. Such survival could only be effected through a very complicated mosaic of perfected and interlocking behavior distributed between the adult insect and its larval offspring. To paraphrase one modern naturalist, John Crompton, a surgeon does not learn his trade by indiscriminately pursuing and slashing at his potential clients with a sharpened lancet. Neither is it likely that the *Sphex* wasps acquired their skill through chance behavior which, in the most successful, slowly froze into the rigidities of perfected instinct.

The fearsome operations of these wasps depend upon an uncanny knowledge of the location of the nerve centers of their prey in order to stun, not kill the creature. The larvae, also,

must possess an instinctive knowledge of how to eat in order to prolong the life of the paralyzed body which they devour. To complicate matters further, the victim—even a formidable, outsize victim like a tarantula—seems to have some foreknowledge of its helplessness, some fear of which its agile opponent takes absolute confident advantage.

All is arranged in such a manner as to suggest the victim possesses an innate awareness of his own role, but cannot escape it. If, so Fabre muses, pure chance has, through long ages, decreed this relationship between hunter and hunted, why have not the cicada, the cricket, the tarantula, equally evolved a defense against their fate? If we attribute success to natural selection in the case of the wasp, why has not the same force been at work for the victim? Or, on the stage of life does the victim as well as the huntress play a foreordained role?

Whatever forces have been at work in the evolution of the wasp family, it is clear that they have little, if anything, to do with that nineteenth-century cliché about "the effects of habit," which tells us nothing. Fabre was right in that judgment, possibly right even in his fateful admonition, "It is not in chance that we will find the key to such harmonies." "The man grappling with reality," he concludes, "fails to find a serious explanation of anything whatsoever that he sees."

Let us grant that Fabre chose not to explore the evolutionary road. Let us admit that his metaphysical bent lay in another direction. But the attempt of many of the Darwinian circle to explain the mysteries of instinct was not always enlightening. They confused their own Darwinism by choosing the best of both worlds when they argued that chance-acquired habits might sink into the germ plasm. The experimenter on his little patch of poverty-ridden soil at Serignan had toiled long enough to know that the world he investigated provided more mysteries than answers. In his old age he adhered to that conclusion. Perhaps it was his philosophical weakness. Perhaps, on the other hand, it was simple honesty.

The inorganic world out of which life has emerged and into which, in season, it falls back, possesses the latent capacity for endless ramification and diversity. A few chance elements which appear thoroughly stable in their reactions dress up as for a masked ball and go strolling, hunted and hunter together. Their forms alter through the ages. They are shape-shifters, role-changers. Like flying lizards or ancestral men, they run their course and vanish, never to return. The chemicals of which their bodies were composed lie all about us but by no known magic can we return a lost species to life. Life, in fact, is the product of singular and unreturning contingencies of which the inorganic world disclaims knowledge. Only its elements, swept up in the mysterious living vortex, evoke new forms, new habits, and new thoughts.

I am an evolutionist. I believe my great backyard Sphexes have evolved like other creatures. But watching them in the October light as one circles my head in curiosity, I can only repeat my dictum softly: in the world there is nothing to explain the world. Nothing to explain the necessity of life, nothing to explain the hunger of the elements to become life, nothing to explain why the stolid realm of rock and soil and mineral should diversify itself into beauty, terror, and uncertainty. To bring organic novelty into existence, to create pain, injustice, joy, demands more than we can discern in the nature that we analyze so completely. Worship, then, like the Maya, the unknown zero, the procession of the time-bearing gods. The equation that can explain why a mere Sphech wasp contains in its minute head the ganglionic centers of its prey has still to be written. In the world there is nothing below a certain depth that is truly explanatory. It is as if matter dreamed and muttered in its sleep. But why, and for what reason it dreams, there is no evidence.

It is now high autumn. Apples are falling untended and smashing on the stones I have come to call Wasp Alley. The

smell is drunken, ciderous. In the growing dark, wasps of many species—vespas, yellow jackets, mud daubers—clamber over the ripe ungathered fruit. On this particular evening something more formidable rises and bumps my nose inquisitively before it flies away over the roofs. It is one of the giant Sphexes caught in an innocent moment of adult feeding, the deadly needle sheathed at last. Instinctively I know this will be our final encounter of the haunted year.

But still, not quite. The sun, a week later, falls in gold October splendor over the little hillside. Coming home in the afternoon I sit down, a little stiffly, and survey the drowsy slope where the closed burrows of the sphecoids lie hidden in the autumn grass. At the bottom of each burrow reposes a mummy case, a sleeping pupa. It will lie there still drowsing under the winter snows, and surrounded by the emptied husks of its feeding.

Beneath the midsummer sunlight of another year a molecular alarm will sound in the coffin at rest in that silent chamber; the sarcophagus will split. In the depths of the tomb a great yellow and black Sphech will appear. The clock in its body will tell it to hasten, hasten up the passage to the surface.

On that brief journey the wasp may well trip over the body of its own true mother—if this was her last burrow—a tomb for life and a tomb for death. Here the generations do not recognize each other; it remains only to tear open the doorway and rush upward into the sun. The dead past, its husks, its withered wings are cast aside, scrambled over, in the frantic moment of resurrection.

The tomb has burst. A tiny chain of genes and releaser genes in the black dark has informed the great winged creature of her destiny, the unseen flowers, the shrilling of cicadas in the sun. She carries, not alone the surgical instrument, but the map of operations yet to be performed on an insect she has never seen. She is a nectar feeder, but it is for carnivorous grubs that

she will labor, the grubs of which she was once one, feeding on paralyzed flesh in the sightless gloom of a walled chamber.

Briefly I recalled the days at the hatchery: one-legged chicks, scissor-billed chicks that could not peck properly—the dreary cheeping orphans whose bodily instructions had gone awry. I knew also of similar human wrecks immured from sight in institutions, or hidden in shamed households where, as a guest, waking in the night, one could hear them cry out in desperation far overhead in an attic room.

“The injustice, the injustice—” a great scholar had once breathed to me, over my account of the hatchery and its horrible methods of disposal. Here beneath the leaves on the autumn grass slept nature, or a part of nature, so beautifully, so exquisitely contrived that it was hard to imagine error, hard to conceive of all the pieces of that intricate puzzle being put together from the blind play of natural selection alone. Looked at from one point of view, nature had created monstrous evil, the tormenting of helpless, paralyzed flesh. Looked at in another way, the eternal storm maintained its balance.

I remembered how that formidable autumn creature had hovered before my face as though questioning my own existence in the apple-strewn twilight. Apples were still falling untended, while far away, on another part of the planet, people died of hunger. The great *Sphex* itself was doomed in the oncoming frosts of autumn. Everything living was falling, disintegrating as under the violence of an unseen hurricane.

“Created to no purpose by an endlessly revised genetic alphabet,” one part of my mind contended. “A work of ecstasy,” the words of Emerson echoed in another chamber of my thought. “But the injustice,” pleaded my grand old scholar. The leaves continued to fall silently. Why should I ally myself against his protest on a day in which my own bones were stiffening in the autumn sun? Who was I to rule against that judgment?

Throughout September I had watched the tiger-faced *Sphexes*

digging with furious energy. I had heard the muffled shriek that ended the cicada's song. On that lonely backyard slope it had somehow pleased me that the wasps came and went as though I belonged to another world they chose to ignore, a misty world for which they carried no instruction, just as I carried none for the totality of the night. Though shorn of knowledge, willing to accept the dreadful otherness of the Biblical challenge, “your ways are not my ways,” I had come to feel at last that the human version of evolutionary events was perhaps too simplistic for belief.

There is a persistent adage in science that one must not multiply hypotheses unduly and without reason. I grant its usefulness. Nevertheless it can sometimes lead to the assumption that science finds nature simple and that someday all will be known. Vain delusion, incredible folly, I thought, brooding there at sundown over the sleeping surgeons known as *Sphex*. We, our species, will be gone before we know.

I drew my stiffened foot beneath me. As in the case of the French observer on his little sand plot, uncounted mysteries had a way of persistently intruding into my mind. The wasps' master chart of surgery was not always perfect. Still it was terrifying enough to provoke the envy of any practicing physician. This evolutionary marvel was just not that of slow selection for size or greater running speed, as among horses. The entire pattern had to work or the species would perish. There seemed to be no intermediate possibility. The larvae have to feed in a certain way. The adult female has to seek prey upon which it has never personally fed. It has, furthermore, to identify that prey. The wasp has to bring its paralyzed cicada back over a distance to a burrow it has already constructed and whose position it has previously mapped with the care of an aerial navigator. To explain this uncanny phenomenon by computerized armchair genetics may be theoretically possible if one starts from certain current assumptions which leave me vaguely uncomfortable. Perhaps that can be termed my metaphysical po-

## THE COMING OF THE GIANT WASPS

sition. I am simply baffled. I know these creatures have been shaped in the cellars of time. It is the method that troubles me.

Some ten years after Fabre's death in 1915 Alexander Petrunkevitch, the spider specialist, had described his own adventures with a tarantula-killing wasp, *Pepsis marginata*. All of the great wasps are fascinating in their diverse surgical habits, but what had long intrigued me about this particular account of the Caribbean killer wasp, *Pepsis*, was something that seemed once more to lie doubly out of time and belief. Shifting my foot again in the misty light of the Sphex graves, I tried to recall it. It was important now; I had not many more autumns in which to ponder such problems. *Pepsis*, the tarantula killer, dueled with a far more formidable creature than a cicada. Its knowledge of its prey's anatomy was just as deadly as that of the giant Sphex. But one thing more, one bit of preternatural intelligence, continued to challenge my faith in the pure undiluted chances of natural selection.

When *Pepsis* paralyzed her giant foe and deposited her egg, she added one more complicated pattern to the behavior of the killer wasps. She packed her big, hairy opponent so masterfully into its grave that it could never dig its way out even if it were, by some chance, to recover. Every limb of the huge spider was literally handcuffed to earth. Poison needle, utter paralysis, were not enough. A final act of devastating ingenuity had been added.

The autumn light was growing dull about me, the shadows were gathering. I was beyond the country of common belief; that would seem to be the source of my problem. I had spent a lifetime exploring questions for which I no longer pretended to have answers, or to fully accept the answers of others. I was slowly growing as insubstantial as the sunlight on this hillside. I could not account for myself any more than I could validate in material terms the strange anatomical charts that slept, for now inactivated, in the tombs beneath my feet.

Slowly, painfully, I arose and limped away. As I walked I knew, with the chill of a not too welcome discovery, that I was

## DAYS OF A DOUBTER

leaving the sharply defined country of youth and scientific certitude. I was seeking an undiscoverable place, glimpsed long ago by the poet Shelley

built beyond mortal thought  
far in the unapparent.

Strangely, in a little-known passage the great experimentalist Claude Bernard once echoed, more grimly, the same idea. "I put up with ignorance," he said. "That is my philosophy." Thus ended the visitation of the giant wasps. I never saw them again.