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Further Observations on the Golden Digger

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FURTHER OBSERVATIONS ON THE GOLDEN DIGGER

In two previous numbers of this journal, I have already given some of the results of my studies on the habits, instincts, and intelligence of the Golden Digger wasp. During the past summer I have again studied this wasp, but will give here only a few observations, reserving the rest for a more extended paper.

In the September, 1930, *Science Bulletin*, with reference to the wasp's instinctive habit of depositing her prey just outside the den, and then entering for a preliminary inspection trip, I made the following statement: (The wasp has just alighted with her grasshopper) "Will she now drag it into the nest? Never, at the first trip if allowed to follow her instincts. No; she must first make a preliminary trip of inspection."

The observations of the past summer have taught me how dangerous it is to make such an absolute statement even when all the data up to that time bore witness to its truth. For at least one wasp violated that seemingly absolute rule of her tribe: "Don't enter your burrow with prey until you have first examined to see if everything is all right." But here is how it happened.

I was stooping in the midst of a colony of diggers, anxiously watching a big queen's antics in trying to handle an antennaeless grasshopper, when my attention was suddenly diverted by another wasp which kept up a constant circling about my head. I noticed that she was heavily laden with a big "hopper", and I was curious to know why she was so long in finding her nest, for usually each wasp comes with but little preliminary circling directly to her own door. What was the trouble here? Happening to glance down, I noticed that I was stooping

almost directly over a freshly dug burrow. I stepped back instantly, and with a great circling swoop, the tired aviatrix alighted at her very door. And here I had the surprise of my life: she went in at once dragging her hopper with her! The experimenter was fooled again. Instinctive creature that she is, she is not fatally bound to do just one thing. She had taught me this before, but I had thought that her "preliminary inspection trip" was instinct, inviolate.

I remarked above that I had been watching the antics of a wasp struggling to carry a grasshopper from which I had removed the antennae. Years ago, Fabre, that master experimenter with insects, noting that the diggerwasps drag their grasshoppers by means of the long antennae, removed the antennae from the prey while the wasp was in the burrow. He reports that his wasps were completely foiled by this procedure, "To understand", he says, "that she can take a leg instead of an antenna is utterly beyond her powers. She must have an antenna or some other string attached to the head. If these cords did not exist, her race would perish for lack of capacity to solve this trivial problem."

I am amazed as I read the above quotation from this famous observer. Repeatedly, I have performed the same experiment—removing carefully all appendages from the head, and in no case have I found a wasp completely foiled as Fabre's were. Discouraged they were, of course, but not baffled. I tried this on twenty or more individuals, and every one, some sooner, some later, succeeded in carrying in the prey. Several, after repeatedly failing to grasp the head, simply reversed ends dragging the creature into the den by the ovipositor. Here again they taught me that they could adapt themselves to new circumstances—conditions that they probably never met in nature.

"It hath been an opinion", says Bacon, "that the French are wiser than they seem, while the Spaniards seem wiser than they are." But I leave it to you to decide whether the Golden Diggers are more like the Spanish or the French.

Roy L. Abbott.