

Western	<i>F. rostrata</i> n. sp. B. C., Alta., Mont.
"	<i>F. latifrons</i> n. sp., Man., N.W.T., S.D., Colo.
"	<i>F. latianulum</i> n. sp., B.C. Northern Ontario, Wash., Ida.
"	<i>F. nitida</i> V. d. W., Colo., B. C.
"	<i>F. emarginata</i> n. sp., Colo.
"	<i>F. acuminata</i> n. sp., Colo.
"	<i>F. spinosa</i> n. sp., Cal.
"	<i>F. palpalis</i> Coq., Cal.
"	<i>F. compressa</i> n. sp., Colo.
"	<i>F. latifacies</i> n. sp., Nev.
"	<i>F. latigena</i> n. sp., B. C. Mont.
"	<i>F. brevirostris</i> n. sp., Colo.
"	<i>F. hirtidorsum</i> n. sp., Colo.
"	<i>F. longiunguis</i> n. sp., B. C.
Eastern	<i>F. orientalis</i> Tn., N.S., N.B., Que., Ont., Ind., Va., N.C.
"	<i>F. planiforceps</i> n. sp., N.C.
"	<i>F. dakotensis</i> Tn., Ont., Man., Me., Mass., D. C.
"	<i>F. hispida</i> n. sp., N.S., N.B., Ont.

## NOTE ON THE NESTING HABITS OF CHLORION ELEGANS.

BY C. N. AINSLIE,

U. S. Bureau of Entomology.

August 23, 1923, in a cutting of the Northern Pacific R. R. two miles east of the Montana line, in North Dakota, I noticed a rather large, light-colored Sphecid wasp, later determined for me by Professor O. A. Stevens of Fargo as *Chlorion elegans* Smith, busily engaged in trying to engineer an inch-long bit of dry grass root into a small opening in the sloping bank. The bank at this spot was composed of a fine sandy clay, quite firm but easily excavated.

The actions of this wasp reminded me of a house wren, struggling with the problem of inserting an awkwardly long twig through a small opening in her nest box. She worked with nervous haste for a number of minutes and was watched at short range with the utmost interest. As time went on and her efforts appeared to be without result she began to act as if discouraged. The fear that she might give up the task and depart without ceremony led to her capture and untimely death in a cyanide tube.

With the coast clear by means of her summary execution, the examination of the nest was clearly the most important duty. Perpendicular slicing revealed the fact that the entrance to the nest, a tunnel about 6 mm. in diameter, was entirely open for the first inch. Beyond this the passage was completely blocked by a plug composed of a compact mass of finely divided fiber, evidently produced by tearing to pieces the roots of grass such as the wasp was seen carrying when taken. These grass roots in the dry soil of this region are very woody and firm in texture and the preparation of this body of fiber an inch or more in length and 6 mm in diameter must have required many hours of unremitting labor for

the mother wasp with only her powerful mandibles to split the stems. Much muscular effort also must have been expended in the packing of this fiber into its place, since of necessity the wasp was compelled to work entirely from the outside end of the mass in placing it. Each bit of fiber must have been pushed into place separately and with some force, to produce the firm body composing the plug. These fibers were so closely packed that no parasite could by any possibility force its way through this cleverly constructed barrier.

Behind this obstacle the passage was open for nearly two inches, then opened quite abruptly into a chamber, broadly oval, measuring not far from an inch and a half in its major axis and a little more than half an inch high. Within this vault lay fourteen tree crickets, *Oecanthus quadripunctatus*, two males and twelve females. All fourteen were still living but were paralyzed and entirely helpless, showing no sign of life save an occasional quiver of antenna or tarsus. These victims were placed in no particular order but were piled two or three deep in the middle of the floor, just as they had been dropped by the wasp when trundled in through the narrow passage. At the time this nest was investigated these crickets were quite numerous in the flowering heads of *Solidago rigida* which grew all about, and the wasp could easily have secured all she needed without flying far.

No egg was found in the nest although one was undoubtedly present, hidden perhaps by being mixed with the friable soil that interfered somewhat with the examination.

No other wasp of this species was observed flying about or nesting here although numerous small bees were busy searching every crevice and a number of Chrysidiids were taken not far from the nest.

It might have been worth while to have spent another hour or two watching this wasp before capturing her, in order to learn her methods of closing and concealing the opening to her nest. For she probably had some individual and unique way for both these operations.

A year previous, another Sphecid wasp, determined by the writer as *Sphex vulgaris*, was under observation in the outskirts of Sioux City, Iowa, while she completed the provisioning of her nest with slender green lepidopterous larvae. When all was finished to her satisfaction she closed the opening of her burrow by kicking a lot of earth into the mouth of the tunnel, pushing the earth in for some distance. Then after carefully smoothing the surface, she made a series of short flights in her peculiarly graceful fashion, each time bringing a selected fragment of dry earth, a lump half the size of a pea, and dropping these, with a few bits of weed stem that she found, on the freshly disturbed earth in order to conceal all traces of excavation. One could not help a feeling of admiration while watching her deft actions as she swung airily to and fro with one idea uppermost in her head, that of securing safety for her embryo offspring.