On the parasites of Diaspis pentagona.

By L. O. Howard, Washington, D. C.

Diaspis pentagona has long been a resident of the District of Columbia, surely since 1892, when it was discovered on the grounds of the U. S. Department of Agriculture (Insect Life, vi, 287). Its prevalence in Italy upon the mulberry tree renders it a very dangerous enemy of the silk industry in that country, and Italian entomologists, notably the late Professor Targioni Tozzetti and Professor Antonio Berlese, have long sought means of eradicating it. In the absence of records of parasitism it was not at first thought to be at all feasible to utilize its natural enemies. In the summer of 1905, however, Professor Berlese urged the writer, in Florence, to send to Italy branches of trees infested by the *Diaspis* from America in the hope that parasites might be reared. Curiously enough, this scale does not seem to attack mulberry in the United States, and on the grounds of the Department of Agriculture there existed, until within a short time, a peach tree literally covered with the scale, within a hundred yards of mulberry trees which did not become infested. In the spring of 1906, during the writer's absence on a second trip to Europe, Mr. Marlatt secured a number of branches of lilac from the District of Columbia all abundantly infested by the scale, and sent them, carefully packed, to Professor Berlese. From these scales were bred in Florence three species of parasites: the first, *Tetrastichus canadensis* Ashmead; the second, *Prospalta murtfeldtii* Howard, and the third, a new species of *Prospalta*. On the writer's return to Washington at the end of May other branches were taken from the same tree, and rearing experiments were begun here. More than 200 specimens of the new species of *Prospalta* have been reared, 25 to 50 specimens of *Ablerus clisiocampae* Ashmead, and two specimens of *Perissopterus pulchellus* Howard. We have, then, four species of primary parasites of *Diaspis pentagona* to place on record, as follows:

(1) *Prospalta berlesei* n. sp. One specimen reared in Florence by Professor Antonio Berlese from scales sent from Wash-

ington, and more than 200 specimens reared at Washington from June 20 to July 5, from scales taken from the same tree.

(2) *Ablerus clisiocampae* Ashmead. Originally supposed to have been reared from the eggs of *Clisiocampa,* but, with little doubt, in reality reared from some Diaspine scale covered by *Clisiocampa* egg-mass. Subsequently reared from *Chionaspis furfurus,* in the District of Columbia, and from *Aspidiotus forbesi* on pear and apple, from Champaign, Ill., the latter rearing by Mr. W. G. Johnson.

(3) *Perissopterus pulchellus* Howard. Originally reared from a *Lecaniodiaspis* on linden in the District of Columbia in 1879; later from a *Lecaniodiaspis* from East Atchison, Mo.; from *Chionaspis pinifoliae* from Providence, R. I., and from *Aspidiotus forbesi* on currant at Champaign, Ill., the latter rearing having been made by Mr. W. G. Johnson; now reared in two specimens from *Diaspis pentagona* at Washington.

(4) *Prospalta murtfeldtii* Howard. Originally reared from *Aspidiotus uvae* by Miss Mary E. Murtfeldt at Kirkwood, Mo., in 1888; later from *Aspidiotus forbesi* on cherry and currant by Mr. W. G. Johnson at Champaign, Ill., and now reared by Professor Antonio Berlese from *Diaspis pentagona* at Florence, Italy, received from Washington, D. C.

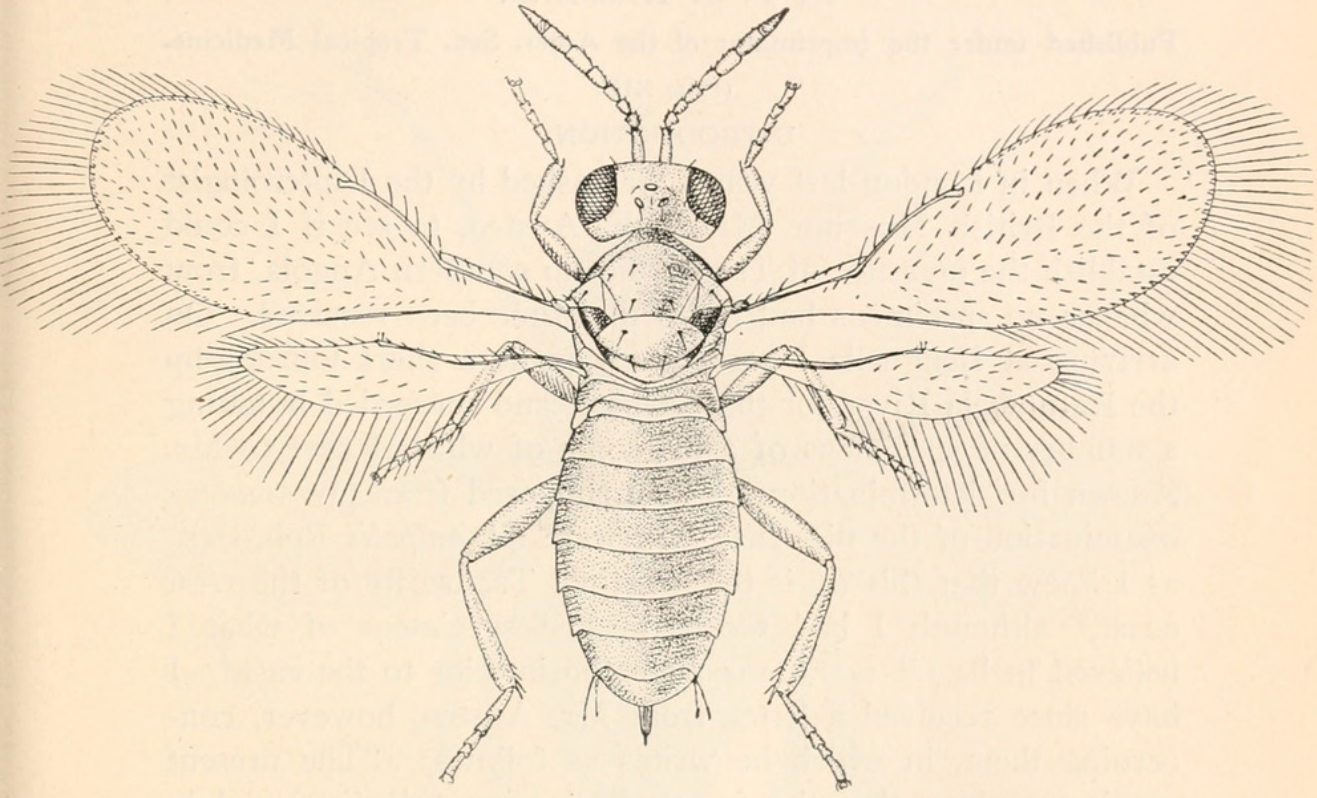
(5) There is also one, presumably hyperparasitic, reared by Professor Berlese at Florence from *Diaspis pentagona* received from Washington, D. C. This is *Tetrastichus canadensis* Ashmead.

It now only remains to describe the new *Prospalta,* remarking upon the strange fact that this presumably American species should have first been reared by Professor Berlese in Florence.

Prospalta berlesei n. sp.

Female.—Length, 0.73 mm.; expanse, 1.47 mm; greatest width of fore-wing, 0.19 mm. Comes close to *P. aurantii.* Joint one of funicle about as long as pedicel, but slightly narrower; joint two rather shorter than joint one; joint three longer than joint one, and a little broader; club joints subequal in length, and each about as long as joint three of funicle; the basal joint very slightly wider than joint three of funicle, and the terminal joint tapering from near base to its pointed tip. In general effect the flagellum is longer and more filiform than in *P. aurantii.* Surface of thorax smooth. General color, a bright straw-yellow;

ocelli coral-red, eyes black; mesoscutellar parapsides black; abdomen fuscous, with narrow, light yellow bands between the segments; metanotum fuscous; antennæ light yellow-brown; legs yellowish; wings hyaline, with a very slight dusky shade on disc; veins yellowish; forewings



as with *P. aurantii,* but proportionately slightly longer and broader; disc densely, uniformly covered with very short cilia; marginal cilia of both wings as with *P. aurantii.*

Male.—Unknown.

Described from many specimens reared from *Diaspis pentagona,* Washington, D. C., June, 1906.

Type No. 9942, U. S. National Museum.

Additional Species of Minnesota Diptera.—Since the printing of the Tenth Annual Report of the Minnesota Entomologist, in December, 1905, about 75 additional species of Diptera, captured in that State, have been named, representing the following families:

Agromyzidæ, Anthomyidæ, Bibionidæ, Cecidomyidæ, Chiromonidæ, Culicidæ, Dolichopodidæ, Drosophilidæ, Empidæ, Ephydridæ, Geomyzidæ, Helomyzidæ, Leptidæ, Lonchopteridæ, Muscidæ, Mycetophilidæ, Ortalidæ, Oscinidæ, Pipunculidæ, Psilidæ, Sapromyzidæ, Scatophagidæ, Sciomyzidæ, Sepsidæ, Simuliidæ, Syrphidæ, Tachinidæ, Trypetidæ.

These species have been listed, and a copy of the list mailed to each Station Entomologist and others known to be interested. Any one failing to receive a copy, and desiring one, can obtain it by writing to Mr. F. L. Washburn, Experiment Station, St. Anthony Park, Minn.