I add below the description of another species discovered among the collection of *Braconidæ*, belonging to the American Entomological Society, now in my hands for examination and study.

Roptronia californica, n. sp.

♂.—Length 5.5 mm. Pale ferruginous; spot on vertex enclosing the ocelli and extending forward to base of antennæ, occipital foramen, clypeal spiracles, prothorax above anteriorly and beneath, mesopleura, metathorax and abdominal petiole, black; eyes brown; antennæ, except pedicel, brown, 14-jointed; legs pale brownish-yellow; wings hyaline, the stigma and veins brown.

This species structurally does not differ greatly from *R. garmani*, except in having the head, except vertex and face, the mesonotum and the scutellum, except at apex, smooth and almost impunctate; the mesopleura, except space beneath wings, are closely punctate, while the metathorax is rugose. The venation is almost identical in the two species, except in *californica*, the first abscissa of the radius is perpendicular and not longer than the width of the stigma, while in *garmani* it is oblique and more than twice longer than the width of the stigma. Another character not noted in the other two species is that the postscutellum is conically produced, viewed from the side its apex reaches an elevation above the disk of the scutellum.

Hab.—Southern California.

The three species now known in this genus may be tabulated as follows:

Head and thorax black, rugose; postscutellum normal.

Abdomen black; legs, except tips of anterior and middle femora and their tibiæ and tarsi, mostly black. ♂. Length 7.5 mm. *R. garmani* Ashm.

Abdomen red; legs, except coxæ and hind legs which are black. rufous. ♀. Length 6.75 mm..... *R. pediculata* Prov,

Head, except spot on vertex and frons, mesonotum, scutellum and abdomen, except the petiole, pale ferruginous; postscutellum conically elevated; legs pale brownish-yellow. ♂. Length 5.5 mm. *R. californica* Ashm.

—Mr. Howard presented the following:

ON SOME PARASITES OF COCCIDÆ, WITH DESCRIPTIONS OF TWO NEW GENERA OF APHELININÆ.

By L. O. Howard.

It had been my intention to simply submit for publication the descriptions which follow, of two new genera of Aphelininæ,

but the opportunity is a good one to make a preliminary announcement of certain facts which have come to my attention, mainly in the last year, concerning the interesting geographic distribution of certain species of scale-insect parasites.

When I first began the study of hymenopterous parasites of scale-insects, in 1879, although I had abundant material at hand from the United States, all of the Aphelininæ studied were comprised in the genera Aphelinus and Coccophagus. In 1880 I published descriptions of 13 species of these two genera, adding in 1885 three others. Ten years later, in going over accumulated material for the purpose of revising the subfamily, it became evident that new elements had entered our fauna. Several genera not previously recognized in the United States were found to be abundantly represented and several of them were described as new. In late years, in point of fact, the formerly abundant species of Aphelinus have apparently become rarer and rarer, while their place has been taken by Aspidiotiphagus, Prospalta, Perissopterus, Ablerus, and Encarsia.

The great interest which has sprung up of recent years in the study of the Coccidæ in different parts of the world, largely arising from the great economic importance which these insects are assuming, has resulted in the gradual accumulation at Washington of parasitic forms from many different parts of the world, and their study is already revealing many points of interest. As is quite to be expected, several of these parasites have accompanied their Coccid hosts in their commercial distribution to widely separated countries on plants, nursery stock and fruit, and seem to have as readily accommodated themselves to varying conditions of climate as have their hosts. A careful study of these forms and their distribution will be a labor of years, but certain facts already accumulated will be of interest.

Aspidiotiphagus citrinus (Craw) is a species which was unknown in this country, and, in fact, unknown to science, prior to 1891, when it was described by Mr. Craw, under the name *Coccophagus citrinus*, in a pamphlet published at Sacramento, entitled "Destructive Insects." Since that date, this species has come to me in hundreds of examples from 18 distinct species of scale-insects and from the following localities:

Many localities in the United States (various collectors); Grenada, B. W. I., (H. H. Smith); Portici, Italy, (A. Berlese); Punduloya, Ceylon, (E. E. Green); Kandy, Ceylon, (A. Koebele); Hong Kong and Amoy, China, (A. Koebele); Tamsui, Formosa, (A. Koebele); Yokohama, Japan, (A. Koebele); Newlands, Cape Colony, (C. P. Lounsbury); Brisbane, Queensland, (A. Koebele); Adelaide, South Australia, (F. S. Crawford); Honolulu, Hawaii (A. Koebele).

This remarkable distribution is practically followed by *Prospalta aurantii*, *Aphelinus fuscipennis*, *A. mytilaspidis* and *A. diaspidis*—all species of the writer's; some of the localities mentioned for Aspidiotiphagus not yet being noted for some, and a few additional localities being noted for others, as, for example, *A. diaspidis* from San Luis, Mexico, and *A. fuscipennis* from Natal.

Another species which has also practically this same almost

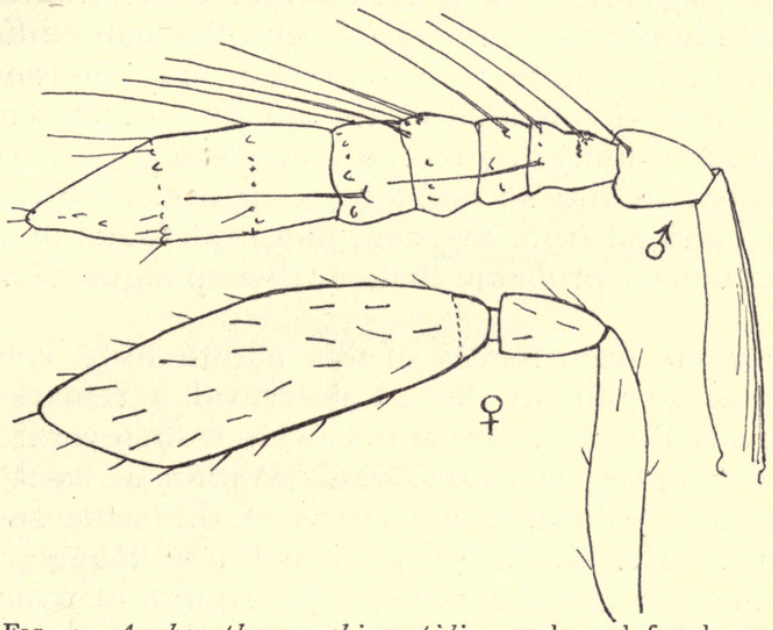

FIG. 9.—*Arrhenophagus chionaspidis;* male and female antennæ—greatly enlarged (original).

universal distribution is curiously enough *Arrhenophagus chionaspidis* Aurivillius. This extraordinary Encyrtine was described by Dr. Aurivillius in 1888, from specimens reared in the female sex only, from *Chionaspis salicis* in Sweden. The remarkable structural characters of the form attracted my attention and I wrote to Dr. Aurivillius for specimens and he was good enough to send me a large number. At the March (1895) meeting of this Society, I recorded the verification from these specimens of the characters described and figured by Aurivillius and mentioned the rearing of the same species from *Diaspis rosæ* in this country at Kirkwood, Mo., by Miss Mary E. Murtfeldt. This discovery I considered at the time a remarkable one, but later received specimens of the same species from Mr. W. G. Johnson, who had reared them from the Diaspis scale at Champaign, Ill., and later had the pleasure of rearing in Washington specimens of the same species from *Diaspis rosæ* received from Mr. R. J. Black, of Bremen, Ohio. Still later, specimens from the same host insect were received from Professor Berlese, reared at Portici, Italy, and, again, Mr.

E. E. Green, of Punduloya, Ceylon, sent specimens reared from Fiorinia. On receipt of the results of Mr. Koebele's rearings, six new localities were added, namely, Kandy, Ceylon; Atami, Japan; Tamsui, Formosa; and Hong Kong, Amoy, and Macao, China. All of the specimens examined by the writer, and there were hundreds of them, down to the very last slide from the last named locality, were females, and it was, therefore, a great pleasure to find a single specimen from Macao reared from *Chionaspis eugeniæ* which represented the hitherto unknown male. The identity is unmistakable and the male differed from the female, as was quite to be expected, only in the antennæ. Instead of being 3-jointed, as are the antennæ of the female, those of the male are 9-jointed, 4 of the joints belonging to the funicle, as represented in the accompanying figure. Thus, although originally described from Sweden, and next found in the United States, it becomes probable that Arrhenophagus is an oriental form.

Other curious occurrences of this nature have come to me. Thus, in the autumn of 1896, I described a remarkable Coccophagus reared by Mr. Green in Ceylon from several Lecaniine scales as *Coccophagus orientalis*. Within a week after the description was published specimens of the same species were received from Mr. H. A. Morgan, at Baton Rouge, La. The species of the new genus Azotus, a description of which follows, is another similar instance. A unique example was received in December last from Dr. Paul Marchal, of Paris, who had reared it from the common European *Diaspis ostreæformis* the previous June. After the description of the new genus was drawn up, a single example (the second one known) of the same species was received from Mr. Wm. M. Maskell, of New Zealand, who had reared it from *Aspidiotus nerii* received from Sidney, New South Wales. From such instances it will be seen that at the present time with many of these parasites it is quite as hopeless a task to endeavor to ascertain original home as it is to ascertain the same for their hosts.

Archenomus, new genus.

Male.—Tarsi 4-jointed. Antennæ 8-jointed, subcylindrical, pointed at tip, pedicel somewhat broader than other joints, joints 1 and 3 of funicle long, joint 2 very short; club 3-jointed, attenuate. Body short, stout; mesoscutar parapsides moderately long; mesoscutellum broad and short, much flatter before than behind. Fore-wings broad with a long fringe which is shorter at apex than on outer costal margin; marginal vein very heavy, a little more than one-third the length of the submarginal

and bearing 10 marginal bristles; postmarginal absent; stigmal very short and curving very slightly into disc of wing, about as with Prospalta, and ending at about one-half the wing length. Legs stout, femora somewhat swollen, tarsal joints 1, 2 and 4 subequal in length, 3 somewhat shorter; hind tibiæ with a single spur, nearly as long as first tarsal joint; middle tibiæ each with two minute apical spurs.

Female.—Differs mainly in antennæ. Funicle joints 1 and 2 small, subequal in length, little wider than long, each shorter than pedicel; 3 as long as 1 and 2 together; joint 1 of the long club longer than the other two joints, which are subequal in length. Entire flagellum subcylindrical, pedicel not swollen.

Archenomus bicolor new species.

Female.—Length .7 mm; expanse 1.5 mm; greatest width of fore-wing .25 mm. Funicle joints 1 and 2 small, little wider than long, each about half length of pedicel; funicle joint 3 as long as 1 and 2 together; club

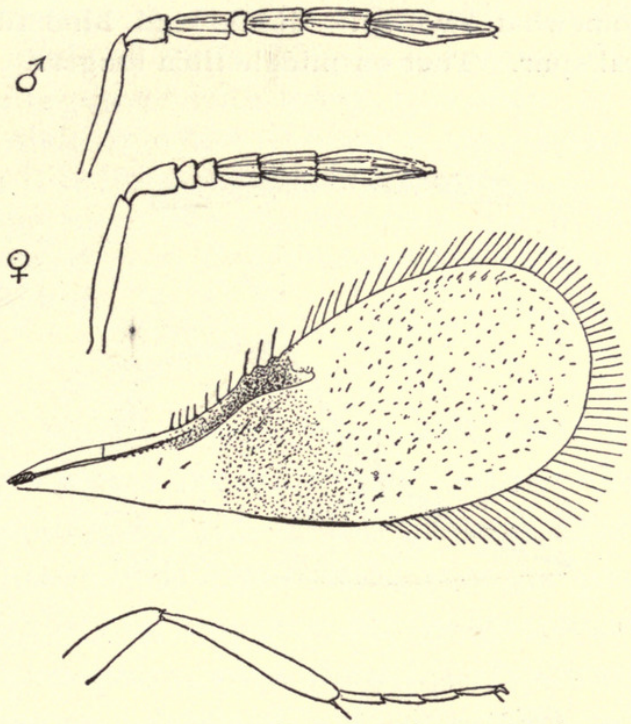

FIG. 10.—*Archenomus bicolor;* male and female antennæ, fore wing and hind leg—greatly enlarged (original).

3-jointed, joint 1 longest, 2½ times as long as 3rd funicle joint; joints 2 and 3 subequal, 3 acuminate at tip. General color dark brown; head dark yellow; scutellum light yellow, axillæ brown; margin of mesoscutum and its parapsides dark orange-yellow; tip of abdomen sometimes yellowish; all legs pale, except slight dusky shades on middle of femora and at base of tibiæ; basal half of wings infuscated; wing veins dark brown, eyes reddish.

Male.—Resembles female, except in generic and sexual characters.

Type.—No. 3646, U. S. N. M.

Described from many male and female specimens reared by Professor Paul Marchal, of Paris, from *Diaspis ostreæformis* on pear, June, 1896.*

Azotus, new genus.

Male.—Tarsi 5-jointed; antennæ 8-jointed; club 2-jointed; joint 3 of the funicle much shorter than other funicle joints; anterior wings without oblique hairless line; head not quite as broad as thorax; mesoscutellum not quite as broad as scutellum, twice as broad as long; axillæ and mesoscutar parapsides about as in Eretmocerus; marginal vein a trifle shorter than submarginal; stigmal well marked, descending at an angle of about 30° into the disc of the wing; club not large; postmarginal absent; fore-wings with rather long marginal cilia regularly increasing in length from point just beyond stigmal vein to anal angle; marginal vein of fore-wings with three long bristles and four shorter ones; one on submarginal and one short one at juncture of submarginal with marginal. Hind femora somewhat swollen. Middle and hind tibiæ each with a rather long apical spur. That on middle tibia longer.

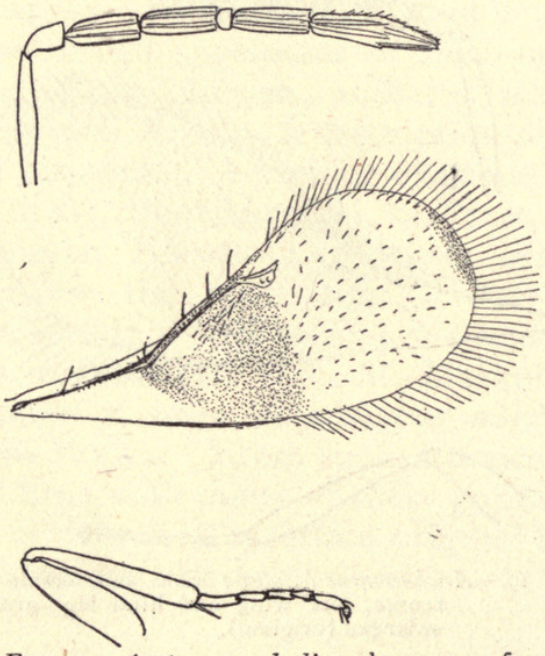

Fig. 11.—*Azotus marchali;* male antennæ, fore wing and hind leg—greatly enlarged (original).

*Just as this is going to the printer 4 specimens of the female of this species have been received from F. M. Webster, of Wooster, O., who reared them from *Diaspis amygdali* recently received from Japan. Six females were also reared from an Aspidiotus on sweet gum from Savannah, Ga. The writer also possesses several badly damaged specimens of what is probably this species, which were reared, by Mr. E. E. Green in Ceylon, from *Chionaspis vitis.*

Azotus marchali new species.

Male.—Length .44 mm.; expanse 1.4 mm.; greatest width of fore-wings .23 mm. Fore-wings with longest marginal cilia a trifle more than one-third wing width; discal cilia regularly distributed except that there is a triangular clear space below marginal vein and another below stigmal; hind wing with two irregular incomplete rows of discal cilia; marginal cilia about as long as the wing breadth; fore-wings rather irregularly infuscated on basal half; antennal scape slender; pedicel short; funicle joints 1, 2 and 4 subequal in length, 1 slightly longer, each much longer than pedicel; funicle joint 3 very short, as broad as long, about one-fifth as long as 2; club nearly twice as long as funicle joint 4, about five times as long as broad. General color brown, face yellowish, femora light at tips, tibiæ light at either end, tarsi nearly white except basal and terminal joints; antennæ light brown; eyes bright red.

Type.—No. 3647, U. S. N. M.

Described from one specimen, apparently a male, reared by Prof. Paul Marchal, of Paris, June, 1896, from *Diaspis ostreæformis* on pear, together with many specimens of *Archenomus bicolor*, to the male of which it bears a superficial resemblance, but from which it is immediately separated by its 5-jointed tarsi. Later a single specimen was received from Mr. Wm. M. Maskell, which he had reared from *Aspidiotus nerii* on *Baloghia lucida*, received from Sidney, N. S. W.

In discussion Mr. Ashmead expressed great interest in the paper and congratulated the author both on the discovery of the male of Arrhenophagus and upon the remarkable facts ascertained concerning its distribution. He stated that the paper illustrated well the impossibility of mapping the geographical distribution of parasitic Hymenoptera, since these insects always follow their hosts. Mr. Schwarz expressed a disagreement with Mr. Ashmead and thought that such extraordinary instances of distribution as these referred to by Mr. Howard could hold only with the parasites of scale-insects. If Mr. Ashmead's claim were true we could import parasites from many portions of the world with the certainty that they would acclimatize themselves. Mr. Ashmead stated that the rule would hold for other parasitic Hymenoptera as well as for the parasites of scale-insects, and instanced many species which he had found to be cosmopolitan, stating that we probably have many more, but that the specific study of these