

ON SOME NEW PARASITIC INSECTS OF THE SUBFAMILY
ENCYRTINAE.

By L. O. HOWARD, PH. D.,
Honorary Curator, Division of Insects.

There follow descriptions of ten new genera and thirty-four new species of Encyrtine insects, the new genera being described at this time to secure their insertion in Mr. William H. Ashmead's about to be published Revision of the Encyrtinae.

ASTEROPAEUS, new genus.

Female.—This is intermediate in some respects between *Chrysoplatycerus* Ashmead and *Anicetus* Howard. Body short, stout; abdomen nearly circular, concave above, shorter than thorax; scutellum rounded at tip, with no tuft of bristles; scapulae meeting at inner basal angle; frons moderately broad, ocelli forming a slightly acute-angled triangle; facial impression bounded by an arched carina superiorly; antennae rather short, scape and flagellum flattened and very broad, funicle joints extremely short, the whole funicle equaling only the first joint of the club in length; eyes smooth; wings clouded, hyaline at tip; marginal vein thick, short, shorter than stigmal, subequal in length to post-marginal.

ASTEROPAEUS PRIMUS, new species.

Female.—Length, 0.86 mm.; expanse, 2 mm.; greatest width of forewing, 0.37 mm. General color dark orange; mesoscutum suffused with purple or at least giving purplish reflections; facial carina also purplish; abdomen metallic green, somewhat yellowish in middle; antennae with superior margin and tip of club black; all legs honey yellow, hind tibiae somewhat dusky without. Head and mesoscutellum finely shagreened; mesoscutum and abdomen lustrous; antennae and thorax with rather prominent dark-colored hairs; wings with a thin patch of pronounced dark bristles below submarginal vein, remaining discal cilia whitish.

One female reared from a *Ceroplastes*, upon a leguminous tree, collected at Guaymas, Mexico, September 24, 1894, by Prof. C. H. Tyler Townsend.

Type.—No. 5021, U.S.N.M.

TETRACNEMOIDEA, new genus.

Female.—A small, rather stout-bodied form, with the abdomen compressed from the sides; epistoma plainly carinate; eyes well separated; ocelli forming an obtuse angled triangle; thorax with the axillae not differentiated by a suture; scutellum rounded at tip; wings with a punctiform marginal vein, post-marginal and stigmal very short; antennae inserted near mouth, scape slender, cylindrical, flagellum about twice as long as scape, club slightly enlarged, oval; pedicel twice as long as funicle joint, first funicle joint slightly longer than wide, others increasing somewhat in width, but remaining subequal in length.

Male.—This is one of the forms with branched antennae, and resembles the female except in this respect: Joints 1 to 4 of the funicle each bears a rather long, hairy branch; joints 5 and 6 without branch; joints 1 to 4 subequal in length, 1 rather shorter than others; joint 5 less than half as long as 4, 6 a little longer; club as long as 5 and 6 together.

TETRACNEMOIDEA AUSTRALIAENSIS, new species.

Female.—Length, 0.97 mm.; expanse, 2.15 mm.; greatest width of forewing, 0.39 mm. General color black, with slight greenish, metallic reflections on thorax; antennae dark brown; legs honey yellow, hind femora brownish above; wings hyaline. Head and thorax rather delicately reticulate, faintly lustrous; pleura and abdomen smooth, shining.

Male.—Resembles female except in generic and sexual characters and the following: Hind legs brown throughout, middle tibiae sometimes slightly darkened.

Described from ten females, four males, reared at Sidney, Australia, March, 1892, from a *Dactylopius* on *Pittsporum*, by Mr. A. Koebele.

Type.—No. 5022, U.S.N.M.

PARAPSILOPHRYS, new genus.

Resembles *Psilophrys* in the peculiar antennae, but differs mainly in sculpture, in the possession of a faint marginal cilia to the forewings, and in the extremely long ovipositor. Also comes close to *Tineophocotous*, differing principally in antennae and venation.

Female.—Body long, rather slender; abdomen as long as head and thorax together; antennae long, slender, inserted just above mouth border; scape reaching above vertex, slender, cylindrical; pedicel three times as long as thick; first funicle joint longer than pedicel, remaining joints decreasing slightly in length to sixth, which is only about twice

as long as broad; club as long as two preceding joints together, only slightly enlarged; head with frons strongly convex, scrobes extending only to base of eyes, strongly indicated semicircular; ocelli forming a right-angled triangle, occipital margin acute; scutellum slightly rounded at tip, almost pointed, axillae just meeting at tip; wings with faint marginal cilia, marginal vein almost lacking, stigmal short but longer than post-marginal, abdomen somewhat compressed from sides, ovipositor extruded to about the length of the abdomen; head and mesonotum finely and closely punctate.

Male.—Abdomen short, subtriangular, much shorter than thorax; antennae long and slender like those of the female, except that they are not quite so long, proportion of joints relatively about the same; in other respects resembles female.

PARAPSILOPHRYS GELECHIAE, new species.

Female.—Length, 3 mm.; expanse, 4.2 mm.; greatest width of fore-wing, 0.77 mm. General color, metallic blue-green, somewhat bronzy on mesoscutellum; antennae with metallic bulla, brown scape and underside of pedicel, and black flagellum; all legs honey yellow, except hind tibiae and tarsi, which are nearly black externally, and hind coxae which are metallic; tegulae light honey yellow; head and mesoscutum with close fine punctation, mesoscutellum with deeper punctation, mesopleura delicately but plainly shagreened; wings hyaline, veins dark brown, especially at stigma.

Male.—Length, 2.4 mm.; expanse, 3.8 mm. General color, metallic green with bluish reflections from abdomen only; antennae honey yellow throughout; in other respects resembles female, except that hind tibiae are yellow at tips.

Described from two females, one male, reared June 17, 1893, from cocoons of a *Gelechia* on cottonwood, received from Mr. B. G. Lamber-son, Jetsam, Wyoming.

Type.—No. 5023, U.S.N.M.

BLEPYRUS, new genus.

Female.—Comes closest to *Pentelieus* Howard. Body stout, head lenticular when seen from above, occipital margin very acute; face not prolonged, scrobes not deep, rounded at top, ocelli forming a slightly obtuse-angled triangle, lateral ocelli almost touching eye margin, frons not broad, rather deeply confluent punctured, almost rugoso-punctate or with close thimble-like punctures; eyes large, broadly oval, hairy; antennae inserted at mouth-border, scape slender, cylindrical, short, not reaching beyond middle of face; flagellum short, scarcely longer than scape, pedicel nearly twice as long as broad, funicle very short, joints almost annular, club very large, obliquely flattened and longer than pedicel and funicle together; mesonotum lustrous, only slightly sculptured; axillae not meeting at inner basal angle; wings with very short

marginal vein and very long stigmal and post-marginal, the post-marginal longer than the stigmal; legs stout, middle tibial spur very strong, nearly as long as first tarsal joint.

Supposed male.—What is presumably the male of this genus, since specimens were reared at the same time and place from the same host and since it bears certain structural resemblances, has the antennal scape very short, rather stout, inserted about the middle of the face, pedicel short, as broad as long, funicle joints stout, subequal in length, regularly clothed with hair, not very distinctly separated, club short, oval, not or slightly wider than the funicle and hardly as long as two preceding funicle joints together; the axillae meet at tip, the ocelli form a broadly obtuse-angled triangle, and the head and mesoscutum are similarly shagreened.

BLEPYRUS MEXICANUS, new species.

Female.—Length, 1.4 mm.; expanse, 3.5 mm.; greatest width of fore-wing, 0.6 mm. Very variable in size, these measurements being for the larger specimens. Frons with thimble-like punctures, mesoscutum and scutellum squamoso-punctate, axillae apparently obsolete, scutellum with a median impressed line at base, mesopleura faintly aciculate. Color black with strong purplish reflections on mesoscutum, scape of antennae dark at base, otherwise honey-yellow; pedicel dark above, club black, funicle dark above, front femora black, middle femora black, somewhat yellowish at tip; middle tibiae brown at base, hind femora with basal half black, remainder of legs honey-yellow.

Supposed male.—Length, 1.16 mm.; expanse, 3 mm.; greatest width of fore-wing, 0.57 mm. Head and mesoscutum transversely shagreened, with a few small scattered punctures; mesoscutellum finely punctate. Color metallic green with golden reflections, more pronounced on the head; tegulae brown, scape of antennae and all legs straw yellow, flagellum of antennae light brown.

Described from three females and three males reared from *Pseudococcus yuccae*, received from Prof. C. H. Tyler Townsend, Monterey, Mexico, October, 1894.

Type.—No. 5024, U.S.N.M.

BLEPYRUS MARSDENI, new species.

Female.—Length, 1.5 mm.; expanse, 3.5 mm.; greatest width of fore-wing, 0.57 mm. Mesopleura nearly smooth, very faintly aciculate, especially toward hind border; head deeply confluent punctured, mesonotum finely squamoso-punctate. General color black with evident bluish reflections on head and mesoscutum; mesoscutellum with faint coppery reflections; antennal scape honey-yellow, flagellum dark brown, all coxae black, front femora entirely black, middle and hind femora black at base, remainder of legs honey-yellow; wings subhyaline, very faintly dusky, veins light brown.

Described from three female specimens reared September, 1893, from

specimens of a *Rhizococcus* on *Citrus* trees and a *Dactylopius* on *Croton*, received from Hon. J. H. Marsden, commissioner of agriculture and forestry, Honolulu, Hawaiian Islands.

Type.—No. 5025, U.S.N.M.

BLEPYRUS TEXANUS, new species.

Female.—Length, 1.4 mm.; expanse, 3.5 mm.; greatest width of fore-wing, 0.57 mm. Head with close deep punctures, which are hardly confluent, and with a faint aciculation; mesoscutum finely squamoso-punctate, scutellum more strongly longitudinally striato-punctate, axillae closely united with scutellum so as to be very difficult to distinguish, mesopleura smooth, shining. General color black, head and mesoscutum with purplish reflections, antennae uniformly yellow, all femora black, yellowish at tips; hind femora with apical third honey-yellow, all tibiae and tarsi honey-yellow.

Described from two females reared from *Dactylopius virgatus*, received from Prof. C. H. Tyler Townsend, Brownsville, Texas.

Type.—No. 5026, U.S.N.M.

RHOPOIDEUS, new genus.

Female.—Body rather stout, compact. Head subquadrate when seen from above; eyes widely separated, naked; ocelli at angles of slightly obtuse-angled triangle; cheeks rather full, face deeply impressed; antennae inserted near mouth, scape slender, long, reaching nearly to middle ocellus; flagellum short, pedicel twice as long as broad; funicle 5-jointed, joints 1, 2, and 3 small and narrow, each rather broader than long, 4 and 5 broader and longer and as broad as long; club much broader, ovate, somewhat flattened, longer than entire funicle; mandibles rather long, sickle-shaped, acute, edentate. Thorax slightly arched; scapulae meeting at inner basal angle; mesoscutellum broad. Abdomen conical, depressed above, ovipositor distinctly extruded. Wings ample; marginal vein punctiform; post-marginal lacking, stigmal stout, slightly curved, entering the disk of the wing at angle less than 45°.

This genus resembles *Rhopus* Foerster, a probable synonym of *Metallon* Walker, as pointed out by Ashmead, but differs in antennae and ovipositor. Especial attention is called to the edentate mandibles.

RHOPOIDEUS CITRINUS, new species.

Female.—Length, 0.6 mm.; expanse, 1.4 mm.; greatest width of fore-wing, 0.18 mm. Head rather coarsely shagreened; mesonotum more finely transversely shagreened; mesopleura finely longitudinally aciculate; head and mesonotum with fine short, rather sparse white pile. General color light orange; eyes nearly black; ocelli carmine; antennae faintly dusky; ovipositor sheaths nearly black at tips; wings hyaline, veins distinct.

Eight females labeled 3821x, which refers to a tortricid found on

Prunus at Truckee, Nevada County, California, by Mr. A. Koebele in September, 1885. The notes show no rearing of any parasites from this material, and it is feared that there was a mistake in the labeling. No. 3831 refers to *Aspidiotus perniciosus*, a much more probable host.
Type.—No. 5027, U.S.N.M.

ATROPATES, new genus.

Female.—A rather stout-bodied form. Head seen from above sub-semicircular, somewhat concave posteriorly; vertex not very broad; ocelli at angles of right-angled triangle; eyes naked; frons prominent, face strongly declivous, making the head appear triangular from side; scrobes semicircular; mandibles short, 3-dentate. Antennae inserted at border of mouth; scape with a strong leaf-like expansion; pedicel rather slender, about twice as long as broad; the 6-jointed funicle increasing rapidly in width from joint 1 to joint 6, joints 1 to 3 subequal in length, 1 as broad as long, 3 twice as broad as long, 3 to 6 increasing somewhat in length, 6 about twice as broad as long; club flattened, obliquely truncate, as long as entire funicle, and at its middle nearly twice as wide as funicle joint 6. Mesonotum rather strongly convex; scapulae meeting at tips; mesoscutellum bare; metanotum bare. Abdomen ovate, flattened above. Fore wings clouded; marginal vein stout, longer than the slender stigmal; post-marginal shorter than stigmal.

Male.—Head narrower when seen from above, plano-concave, frons not prominent, scrobes circular, eyes more widely separated than in female. Antennae inserted below middle of face but well above mouth border; scape slender, cylindrical; flagellum filiform, pilose with hairs about as long as three times the width of the funicle; pedicel about twice as long as broad; funicle joint 1 five times as long as broad; relative length of funicle joints 1 to 6 about as follows: 10, 8, 8, 7, 9, 8; club nearly twice as long as last funicle joint, ovate. In other respects like female except that abdomen is triangular and fore wings are hyaline.

ATROPATES COLLINSI, new species.

Female.—Length, 1.5 mm.; expanse, 3 mm.; greatest width of fore-wings, 0.51 mm. Head smooth, glistening, with very fine sparse punctures; mesonotum lustrous, very faintly shagreened, with fine, sparse piliferous punctures; mesopleura longitudinally striate. General color honey yellow, mesopleura somewhat lighter; face and mesoscutum with faint purplish luster; eyes black, ocelli dark red; antennal club black, leaf-like expansion of scape edged with brown below, pedicel and funicle joints 1 and 2 dusky; lower face with a brown transverse band at clypeus; abdomen brown and strongly metallic at base and tip, ovipositor sheaths light yellow; hind tibiae somewhat dusky at outer basal third. Fore wings with a discoidal cloud, lighter at tips; marginal vein dark brown.

Male.—Length, 1.1 mm.; expanse, 2.8 mm.; greatest width of forewing, 0.5 mm. Head and mesonotum closely and finely shagreened. Color black with bronze reflections; antennae brown; middle and hind femora and tibiae brown, wings perfectly hyaline.

Eleven females and six males reared at Washington from females of *Pulcinaria incommensabilis* Rathvon received in 1889 and 1891 from Mr. Lewis Collins, Brooklyn, New York, H. Hentz & Co., Brooklyn, and Mr. L. H. West, Roslyn, New York. All of the parasites issued late in July. The species is named after Mr. Collins in recognition of his able work as secretary of the Tree Planting Society of Brooklyn, in the course of which he has made many valuable entomological observations.

Type.—No. 5028, U.S.N.M.

EURYRHOPALUS, new genus.

Female.—A stout-bodied form allied to the *Bothriothoracini*. Head lenticular seen from above; eyes very large, vertex very narrow; ocelli at angles of an extremely acute-angled triangle; face strongly declivous; mandibles stout, 3-dentate. Antennae inserted below middle of face; scape short, cylindrical; funicle joints very short, widening rapidly to the broad, compressed, obliquely truncate club which is nearly as long as entire funicle. Punctuation of head and mesonotum differing in character; mesonotum flat, scutellum not arched, mesoscutum with a slight posterior projection overlapping on the scutellum for two-thirds of its breadth, scapulae scarcely to be distinguished, their sutures in the scutellum obsolete (in certain lights they can be faintly traced). Stigmal vein of fore wing given off at juncture of submarginal with costa, long and slender; postmarginal as long as stigmal; hind wings with the costal cell extending to the hooklets. Abdomen short, flattened above, subtriangular.

EURYRHOPALUS SCHWARZI, new species.

Female.—Length, 1.7 mm.; expanse, 3.6 mm.; greatest width of forewing, 0.58 mm. The narrow vertex and face bear four parallel longitudinal rows of rather large punctures, the lateral rows at eye border, the two rows of each side diverging from the others below; cheeks finely longitudinally aciculate; mesonotum lustrous, very finely shagreened and with fine piliferous punctures; mesopleura opaque, very finely longitudinally aciculate. Color black, not metallic; tarsi yellowish; front tibiae brown. Fore wings with a small discoidal cloud, veins very distinct, dark brown.

One female, Biscayne Bay, Florida, May 16, Dr. E. A. Schwarz.

Type.—No. 5029, U.S.N.M.

BERECYNTUS, new genus.

Female.—Comes nearest to *Prionomitus* Mayr, from which, however, it differs in its lengthened face. Head seen from above semicircular,

vertex broad. Ocelli at angles of an obtuse-angled triangle; eyes sparsely hairy, broadly oval; cheeks longer than eyes; scrobes elongate: epistoma with a large, rounded, longitudinal carina; mandibles stout, long, 3-dentate, with a long, sharp, apical tooth. Antennae inserted slightly above mouth; scape long, slender, subcylindrical, slightly swollen near middle and reaching nearly to top of head; pedicel subcylindrical, nearly four times as long as broad; funicle joints short, increasing slightly in width from 1 to 6 and each about as long as broad; club about two-thirds as long as funicle, broader at base than sixth funicle joint, obliquely truncate from tip to near base. Mesonotum flat, scutellum slightly elevated, rounded at tip; scapulae narrow, not quite meeting at tips. Abdomen flat, broadly oval, pointed at tip. Marginal vein of fore wing very short, broader than long; postmarginal much shorter than the rather stout stigmal vein; costal cell of hind wings very narrow but extending nearly to hooklets.

BERECYNTUS, BAKERI, new species.

Female.—Length, 1.4 mm.; expanse, 3.4 mm.; greatest width of forewings, 0.63. Head and mesoscutum densely and shallowly punctate, with irregular, frequently hexagonal punctations, those of head rather finer than the others; mesoscutellum with close, shallow, very elongate punctation; mesopleura faintly longitudinally aciculate. Head, thorax, and abdomen lustrous. General color highly metallic green; mesoscutellum bronzy; flagellum of antennae black; all legs black except femorotibial knees and tarsi, which are brown. Wings hyaline, veins dark brown.

One female collected in Colorado by Mr. C. F. Baker (Baker's No. 866).

Type.—No. 5030, U.S.N.M.

ASTYMACHUS, new genus.

Female.—Comes nearest to *Aphycus*. An elongate, rather slender form. Head moderately broad, eyes naked, vertex broad, ocelli at angles of a slightly acute-angled triangle; mandibles short, tri-dentate, teeth subequal. Antennae inserted just below middle of face; scape short, not widened; pedicel longer than first funicle joint, triangular, somewhat longer than wide; funicle joints increasing somewhat in width from 1 to 6, each about as wide as long; club ovate, as long as funicle joints 4, 5, and 6 together. Mesonotum apparently not arched; scutellum transverse, naked; metanotum naked. Hind femora considerably swollen. Abdomen long-ovate, perfectly sessile, acute at tip; ovipositor extruded for about one fifth the length of the abdomen. Wings hyaline; marginal vein short but thick; post marginal lacking; stigmal short, but longer than marginal.

Male.—Resembles female except in antennae. Funicle joints and club clothed with short but rather thick pubescence; funicle joint 1 longer and narrower than other funicle joints, about as long as pedicel; club not quite so long as three preceding funicle joints.

ASTYMACHUS JAPONICUS, new species.

Female.—Length, exclusive of ovipositor, 1.16 mm.; expanse, 2 mm.; greatest width of forewing, 0.32 mm. All specimens are mounted in balsam, so that details of sculpture can not be made out. General color bright orange yellow; eyes black; ocelli dark red; antennae light brown; ovipositor-sheaths black; terminal joints of all tarsi dark brown.

Male.—Resembles female in all respects except in the generic characters pointed out above and in the primary sexual characters.

Many male and female specimens reared by Mr. Albert Koebele from a Lecanium-like coccid on *Bambusa*, Gifu, Japan (Koebele's No. 1259).

Type.—No. 5031, U.S.N.M.

HETERARTHRELLUS, new genus.

Female.—Has somewhat the facies of *Aphycus*, differing mainly in the antennae. Mandibles short, 3-dentate. Head short, vertex broad, eyes naked, face not prolonged, scrobes subcircular. Antennae inserted near mouth; scape long, reaching above top of head, subcylindrical; pedicel only half as long as first funicle joint; funicle joint 1 six times as long as broad, remaining funicle joints rapidly decreasing in length to 6, which is about as broad as long; club flattened, oval, slightly wider than funicle joint 6 and somewhat longer than funicle joints 5 and 6 together. Head and thorax opaque, closely microscopically punctate, scapulae barely meeting at tips; abdomen subopaque. Fore wings with a short marginal vein and a longer postmarginal and stigmal, which are subequal in length, the stigmal distinctly curved; submarginal very close to costa. Hind wings with a very narrow costal cell, which, however, extends nearly to hooklets.

Male.—Resembles female except in antennae, which are filiform with slightly enlarged club and furnished with long hairs not arranged in whorls. The pedicel is very short and the funicle joints subequal in length, the terminal ones perhaps a trifle shorter.

HETERARTHRELLUS AUSTRALIENSIS, new species.

Female.—Length, 1.28 mm.; expanse, 3.4 mm.; greatest width of forewing, 0.59 mm. Head and mesonotum very finely microscopically punctate, mesonotum and cheeks covered with dense short white pile; mesopleura and abdomen very finely shagreened, the latter with dense short white pile. Ocelli forming a slightly obtuse-angled triangle, well separated from both occipital and eye margins. General color black; head and mesopleura orange; antennal scape with a white spot below, near tip; propleura orange except tip, which is pallid; tegulae pallid with a brown spot at tip; all legs honey yellow; hind tibiae dusky. Wings hyaline, veins dark brown.

Male.—What is probably the male of this species, although reared from a different insect, is uniformly black except for an orange spot each side of face between eyes, orange pleura and tegulae and legs like

the female. A male reared from the same host, but which is mutilated, has the mesopleura dusky and the lower face orange.

One female and the last-mentioned male reared from pupae of *Seymnus flavifrons* Blackburn, Paramatta, New South Wales, by Mr. A. Koebele, and the other male and a mutilated female of probably this species from larvae of *Rhizobius debilis* Blackburn, at Adelaide, South Australia, also by Mr. Koebele.

Type.—No. 5032, U.S.N.M.

Genus APHYCUS Mayr.

Aphycus MAYR, Die Europäischen Encyrtiden, 1876, p. 21.

The following table contains the females of all known species of this genus of which this sex has been described. No table of males is given since males of but few species are known. Of the 16 species listed by Dalla Torre in his recent catalogue 11 are included in this table, together with 19 new species. Of the remaining 5 species listed by Dalla Torre, *A. amoenus* Howard and *A. immaculatus* Howard are known in the male sex only, *A. chrysopae* Ashmead belongs to *Isodromus*, and *A. niger* Ashmead and *A. unicolor* Ashmead belong to new genera which Mr. Ashmead will soon characterize.

ANALYTICAL KEY TO SPECIES.

- | | |
|---|---|
| Scape widened, with leaf-like expansion below | 2 |
| Scape not widened | 9 |
| 2. Mesoscutum with two curved transverse black lines. | |
| 1. <i>lichtensiae</i> Howard (Ceylon). | |
| Mesoscutum with no such lines | 3 |
| 3. Wings hyaline | 4 |
| Wings more or less dusky. | |
| Wings almost wholly dusky; mesonotum black. | |
| 2. <i>fuscipennis</i> , new species (Sonoma County, California). | |
| Wings with only a dusky patch below stigma; mesonotum orange. | |
| 3. <i>lecanii</i> , new species (Alameda and Los Angeles, California). | |
| 4. Club more or less black, with preceding joints white or yellow | 5 |
| Club entirely white or yellow. | |
| Scape entirely black; 4 or 5 funicle joints dusky. | |
| 4. <i>pulchellus</i> , new species (Ithaca, New York). | |
| Scape with white spot above; first funicle joint only dusky. | |
| 5. <i>dactylopii</i> , new species (Hong Kong, China). | |
| 5. Lateral ocelli almost or quite touching eye border | 6 |
| Lateral ocelli well separated from eye border. | |
| Lateral ocelli placed well forward of occipital margin. | |
| Ocelli forming an equilateral triangle; legs profusely spotted. | |
| 6. <i>punctipes</i> Dalman (Germany and Sweden). | |
| Ocelli forming a somewhat obtuse-angled triangle; legs not spotted. | |
| 7. <i>townsendi</i> , new species (Brownsville, Texas). | |
| Ocelli forming a somewhat acute-angled triangle; tibiae with two dots only; only two funicle joints dusky; general color, lemon yellow. | |
| 8. <i>cockerelli</i> , new species (Las Cruces, New Mexico). | |

- Ocelli forming a decidedly acute-angled triangle; four funicle joints dusky; abdomen dark above, thorax somewhat infuscated.
9. *annulipes* (Ashmead) (Florida).
Lateral ocelli at occipital margin.
10. *nigritus*, new species (Los Angeles, California).
6. Mesopleura smooth..... 7
Mesopleura strongly longitudinally striate.
11. *johnsoni*, new species (Champaign, Illinois).
7. Mesonotum orange or yellow 8
Mesonotum black..... 12. *coquilletti*, new species (Los Angeles, California).
8. Scape with continuous white dorsal margin; tibiae very distinctly spotted.
13. *lounsburyi*, new species (Cape Town, South Africa).
Scape with dorsal margin partly black; tibiae indistinctly spotted.
Two funicle joints only brown.. 14. *pulvinariae* Howard (Davenport, Iowa).
Three funicle joints brown.
15. *maenlipes* Howard (South Carolina and Ohio).
Four funicle joints brown.
16. *californicus*, new species (Alameda, California).
9. Wings with a large brown spot in the middle.
17. *apicalis* Dalman (Sweden and Germany).
Wings somewhat dusky, with a hyaline cross band beyond stigma.
18. *angelicus*, new species (Los Angeles, California).
Wings hyaline 10
10. Ocelli forming an acute angled triangle 11
Ocelli forming an obtuse-angled triangle.
19. *australiensis*, new species (Australia).
Ocelli forming a right-angled triangle.
Color yellow.. 20. *texanus*, new species (Texas, New Mexico, and Arizona).
Color black, with a whitish trans-facial band.
21. *oaxacae*, new species (Oaxaca, Mexico).
11. Club light brown, concolorous with rest of flagellum..... 12
Club black, contrasting with preceding joints 13
Club with dark brown base, apical half yellow.
Abdomen and metanotum bright orange yellow.
22. *flavus* Howard (Florida; Los Angeles, California).
Abdomen and metanotum black or blackish.
23. *hederaceus* Westwood (England and Germany).
12. Tip of scutellum with depressed hairless circular area.
24. *oregonensis*, new species (Oregon).
Tip of scutellum with no such area.
Scutellum and mesopleura black..... 25. *eroplastis* Howard (New Mexico).
Scutellum and mesopleura yellow..... 26. *flaviceps*, new species (Illinois).
13. First 3 funicle joints nearly as wide as last 3.
27. *mexicanus*, new species (Mexico).
First 3 joints much reduced.
Uniformly light orange yellow..... 28. *alberti*, new species (Australia).
Uniformly brown above..... 29. *brunneus* Howard (New Jersey).
Black above, light yellow below 30. *eruptor* Howard (Florida).

APHYCUS FUSCIPENNIS, new species.

Female.—Length, 1.35 mm.; expanse, 2.8 mm. Scape with a strong ventral leaflike expansion. Vertex not broad; ocelli forming an acute-angled triangle. General color dull black; scape above, apex of pedicel and funicle joints 4, 5, and 6 white; head and face yellowish white,

except for a brown streak on lower cheek at each side of jaws; pro- and meso-pleura, tegulae, a narrow band of the mesoscutum bordering tegulae, and all legs yellowish white, except that each tibia has three narrow black bands and each femur two interrupted dark bands. Forewings dusky, with a white transverse band just beyond tip of stigmal vein.

Eight females reared in August by Mr. Albert Koebele from a *Lecanium* on *Aretostaphylos pungens*, which he had collected the previous May in Sonoma County, California.

Type.—No. 5033, U.S.N.M.

APHYCUS LECANII, new species.

Female.—Length, 0.72 mm.; expanse, 2.3 mm. Resembles preceding species, except that mesonotum and middle of abdomen above are bright orange, the middle femora are unspotted and the front femora have only a single black dot near knee, while the fore wings have a broad fuscous stripe below marginal vein and are more or less dusky at tip.

Male.—What is probably the male of this species is uniformly black, with hyaline wings, brown legs (lighter at knees); antennae brown, except funicle joints 5 and 6, which are dirty white.

Many specimens. Los Angeles County and Alameda County, California, A. Koebele. Reared from males of a *Lecanium* on *Pinus insignis* (June), from a *Lecanium* on *Heteromeles arbutifolia* (March and April), and from a *Lecanium* on *Quercus agrifolia*.

Type.—No. 5034, U.S.N.M.

APHYCUS PULCHELLUS, new species.

Female.—Length, 1.35 mm.; expanse, 3.2 mm. Vertex very broad; ocelli at angles of slightly obtuse-angled triangle, lateral ocelli well separated from eye-margin; head large and firm; abdomen elliptical; wings perfectly hyaline. General color dark orange; antennal scape black, slightly orange above near tip; pedicel black, lighter at tip; first funicle joint brown, second, third, and sometimes fourth light brown, remainder of funicle and club dirty yellow; metanotum and dorsum of abdomen and all legs pallid; wing-veins not brown, but apparently without color.

Nine females reared January 25 to 30, 1890, from a *Kermes* on *Quercus tinctoria*, collected October 14, 1889, by the writer, at Ithaca, New York. From the same *Kermes* were bred specimens of *Hamadryas bassettella*.

Type.—No. 5035, U.S.N.M.

APHYCUS DACTYLOPII, new species.

Female.—Length, 1.2 mm.; expanse, 2.5 mm. Resembles preceding species except as follows: Scape with a broad white band just before tip; pedicel with its apical half silvery white; first funicle joint black;

remainder of funicle and club silvery white. General color dark dull orange, brighter on head; notum with hind border of pronotum dark, sutures blackish and a black spot at center of mesoscutellum; mesopleura orange; abdomen with a central orange spot below.

One female reared from *Dactylopius vastator* Maskell, collected at Hong Kong, China, and reared by Mr. Maskell at Wellington, New Zealand, April 14, 1896.

Type.—No. 5036, U.S.N.M.

APHYCUS TOWNSENDI, new species.

Female.—Length, 1.37 mm.; expanse, 2.9 mm. Wings hyaline; vertex moderately broad; ocelli forming a slightly obtuse-angled triangle, the lateral ocelli placed well in advance of the occipital margin and well separated from the eye border. Wing veins dark brown; general color dark orange; head somewhat lighter; mesoscutum a dark shade at middle, mesoscutellum with a central dark shade, mesopleura orange; underside of abdomen mahogany, upperside of abdomen black; legs, including coxae, pallid; hinder part of head black; scape black with white spot at tip; funicle white; club black.

Three females, reared from a *Phenacoccus* on cotton by Mr. C. H. T. Townsend, Mesilla Park, New Mexico. (?)

Type.—No. 5037, U.S.N.M.

APHYCUS COCKERELLI, new species.

Female.—Length, 1.28 mm.; expanse, 2.8 mm. Vertex narrow; ocelli at angles of an acute-angled triangle; wings hyaline; veins light brown; general color light lemon yellow, scape with its expansion black, yellowish above; pedicel with a black dot at base; funicle joints 1 and 2 black, remainder of funicle lemon yellow, club black; pronotum, tegulae, mesopleura, and all legs, pallid, except that all tibiae bear two minute brown dots exteriorly near base; abdomen sometimes slightly dusky above.

Six females, reared from a *Lecanium* on osage orange, collected by Prof. T. D. A. Cockerell, at Las Cruces, New Mexico.

Type.—No. 5038, U.S.N.M.

APHYCUS NIGRITUS, new species.

Female.—Length, 0.93 mm.; expanse, 2.3 mm. Vertex rather narrow; ocelli at angles of somewhat acute-angled triangle, lateral ocelli touching occipital margin. General color black; vertex and face orange; border of scutellum yellowish; mesopleura orange; all legs dusky, hind legs lighter on inner surface; wing veins dark brown, nearly black; antennal scape black, white at apical third; pedicel and first funicle joint black; (remainder of antennae broken off).

One female, reared from *Dactylopius* on *Artemisia*, Los Angeles, California, Mr. D. W. Coquillett.

Type.—No. 5039, U.S.N.M.

APHYCUS JOHNSONI, new species.

Female.—Length, 1.16 mm.; expanse, 2.9 mm. Vertex rather narrow; ocelli forming a rather acute-angled triangle, lateral ocelli well separated from occipital margin, but close to eye margin; antennal scape with expansion black and dorsal margin white; pedicel with apical third silvery white, funicle joints 1 and 2 black, remainder of funicle yellow; club black; head bright orange; pronotum black with whitish border; mesonotum dark orange, somewhat suffused with a dusky shade; metanotum and abdomen black; tegulae and mesopleura pallid; mesopleura strongly longitudinally striate; front legs with three brown spots near tip; all tibiae with three transverse bands, the distal band on the hind tibiae less pronounced; middle femora unspotted, hind femora with a dusky shade exteriorly; wings hyaline, veins light brown.

One female, reared by Mr. W. G. Johnson, at Champaign, Illinois, April 29, 1896, from a small *Lecanium* on elm.

Type.—No. 5040, U.S.N.M.

APHYCUS COQUILLETTI, new species.

Female.—Length, 0.86 mm.; expanse, 1.9 mm. Vertex rather narrow; ocelli forming an acute-angled triangle, lateral ocelli separated from occipital margin, touching eye margin. Wings hyaline, veins very light brown, antennal scape white at base and tibiae black in middle; pedicel with a black spot above, but otherwise white; first four funicle joints light brown, fifth and sixth silvery white; club black; head yellow; cheeks below brownish; pronotum black, with whitish border, meso- and metanotum black; entire underside of body pallid, including coxae and all legs; middle and hind tibiae with two interrupted black bands.

Two females, Los Angeles, California, D. W. Coquillett.

Type.—No. 5041, U.S.N.M.

APHYCUS LOUNSBURYI, new species.

Female.—Length, 0.7 mm.; expanse, 1.6 mm. Vertex very narrow; ocelli nearly touching eye margin and forming an acute-angled triangle; mesopleura smooth. General color dark orange, scape with its expansion black in middle, dorsal portion continuously white and expansion white at tip of base; pedicel black above at base, remainder silvery white; first two funicle joints black, remainder lighter at tip; club black, lighter at tip; occiput and pronotum black; abdomen dark at sides above; under sides of body pallid; all tibiae with three pairs of dark spots.

Four females, reared by Mr. C. P. Lounsbury, Cape Town, South Africa, from *Lecanium oleae*.

Type.—No. 5042, U.S.N.M.

APHYCUS CALIFORNICUS, new species.

Female.—Length, 0.7 mm.; expanse, 1.6 mm. Mesopleura smooth; vertex narrow; lateral ocelli almost touching eye border and forming slightly acute-angled triangle; wings hyaline, veins brown. General color orange; abdomen dusky above; pronotum and occiput black; under side of body pallid, except that abdomen is dusky toward tip; antennal scape black, yellowish at tip; pedicel oblique at base, white at tip; first four funicle joints black, joints 5 and 6 yellow; club black; all legs pallid, except that middle and hind tibiae have two brown bands.

Two females, reared by Mr. A. Koebele from *Lecanium* on *Adenostoma fasciculatum* collected near Alameda, California, June, 1887.

Type.—No. 5043, U.S.N.M.

APHYCUS ANGELICUS, new species.

Female.—Length, 0.72 mm.; expanse, 1.6 mm. Scape somewhat swollen but without a leaf-like expansion. (All of the preceding species have possessed a strong ventral leaf-like expansion to the scape.) Vertex narrow; ocelli forming an acute-angled triangle; lateral ocelli near eye margin; wings somewhat dusky with a hyaline cross band beyond stigma. General color orange, somewhat dusky on mesonotum; scape, pedicel, and first four funicle joints black, remaining funicle joints and club silvery white; legs and underside of body pallid, legs not spotted; ovipositor slightly extruded.

Three females, from *Dactylopius* on passion flower, Los Angeles, California, summer of 1886, Mr. Albert Koebele.

Type.—No. 5044, U.S.N.M.

APHYCUS AUSTRALIAENSIS, new species.

Female.—Length, 1.4 mm.; expanse, 3.9 mm. Scape slender, not at all widened, very slightly swollen toward tip; vertex broad; ocelli forming an obtuse-angled triangle; wings hyaline, veins light brown. General color uniform dark yellow, somewhat brighter on face; antennae yellowish, club light, dusky toward tip; legs entirely unspotted; mesopleura finely shagreened and with a few striae on apical portion.

Two females, reared from a *Dactylopius* on *Eucalyptus*, Melbourne, Victoria, Australia, A. Koebele.

Type.—No. 5045, U.S.N.M.

APHYCUS TEXANUS, new species.

Female.—Length, 0.88 mm.; expanse, 1.6 mm. Closely resembles preceding species, except that it is very much smaller; the antennae are not brownish toward tips, the ocelli form a right-angled triangle, the lateral ones almost touching eye border, while the pleura are faintly aciculate, not striate.

Eight females, bred from *Dactylopius virgatus*, July, 1895, Brownsville, Texas, Prof. C. H. T. Townsend.

Type.—No. 5046, U.S.N.M.

APHYCUS OAXACAE, new species.

Female.—Length, 1.28 mm.; expanse, 2.7 mm. Antennal scape perfectly cylindrical; vertex broad; ocelli very large, forming a right-angled triangle; head with vertex orange, face and cheeks black, with the exception of a broad white band below eyes and crossing face; scape black, with a whitish central spot below; pedicel black, whitish at tip, funicle and club dark brown; mesoscutum black anteriorly, reddish brown posteriorly; scutellum and scapulae brown; abdomen black, with brownish borders; propleura dirty yellow; mesopleura dirty yellow at base, dusky beyond; legs pallid; all tibiae with three distinct dark bands; hind femora with two dark spots; wings hyaline, veins dark brown.

One female, Oaxaca, Mexico, Mr. A. Koebele.

Type.—No. 5047, U.S.N.M.

APHYCUS OREGONENSIS, new species.

Female.—Length, 1.2 mm.; expanse, 2.8 mm. Vertex rather narrow; ocelli large, forming an acute-angled triangle; well separated from eye and occipital borders; scape slightly swollen toward tip; wings hyaline, veins light; mesoscutellum with a central longitudinal hairless line and a circular hairless space at tip; mesopleura strongly longitudinally striate; color dark orange; cheeks with a darker lustrous area; abdomen black above, except at center; metanotum black internally, scape black in the middle, yellowish at either end; flagellum brown; mesonotum with a narrow black line at anterior border.

Six females, reared from *Pudrinaria* on Oregon flowering currant, February, 1890. The scales were received from Mr. F. S. Mattison, Aunesville, Marion County, Oregon.

Type.—No. 5048, U.S.N.M.

APHYCUS FLAVICEPS, new species.

Female.—Length, 0.77 mm.; expanse, 2.2 mm. Scape somewhat swollen toward tip; vertex narrow; ocelli forming a very acute-angled triangle; scutellum with a longitudinal hairless line but no circular hairless spot at tip; wings hyaline, veins colorless. General color orange; head light lemon yellow; scape black at tip, yellow at base; flagellum brown; abdomen black above; ventral surface of body light yellow; tibiae with three light brown bands.

Two females, reared by Mr. W. G. Johnson, Champaign, Illinois, from a *Lecanium* on an unknown plant.

Type.—No. 5049, U.S.N.M.

APHYCUS MEXICANUS, new species.

Female.—Length, 1.5 mm.; expanse, 3.2 mm. Scape long, cylindrical, reaching as high as top of head; vertex very narrow; ocelli form an acute-angled triangle; wings hyaline, veins light brown. General color orange; scape black below, yellowish above; pedicel black at base, yellowish at tip; first four funicle joints brown, fifth and sixth yellow; club black; abdomen black above; pleura light yellow, finely shagreened, with few longitudinal impressed lines; occiput black; pronotum black below, pallid behind, with two black shallow spots; tegulae pallid, with a brown spot at tip; metascutellum black; metascutum orange with black spot either side; metapraescutum with a brown spot either side and another brown spot either side of the scapulae; legs pallid, not spotted.

Many specimens reared from a *Ceroplastes* in the City of Mexico, by Prof. C. H. T. Townsend. Two specimens reared from *Ceroplastes cirripediformis* in Baton Rouge, Louisiana, in December, by Mr. H. A. Morgan.

Type.—No. 5050, U.S.N.M.

APHYCUS ALBERTI, new species.

Female.—Length, 0.81 mm.; expanse, 2.1 mm. Resembles preceding species, except that first three funicle joints are reduced in size, whereas in *mexicanus* they are subequal with the last three, in lacking the brown dots either side of scutellum, in having abdomen concolorous with the thorax. It is also a considerably smaller species.

Male.—Uniform black above; lower face reddish yellow; antennae brown; tegulae yellowish; pleura and under side of body honey-yellow; all legs honey-yellow.

One male, one female, reared from *Lecanium hesperidum*, at Sidney, New South Wales, Mr. A. Koebele.

Type.—No. 5051, U.S.N.M.

Genus CHRYSOPOPHAGUS.

Chrysopophagus ASHMEAD, *Insect Life*, VII, pp. 245, 246.

CHRYSOPOPHAGUS BANKSI, new species.

Female.—Length, 2.1 mm.; expanse, 3.8 mm. Resembles *C. compressicornis* Ashmead, except in the following particulars: Scutellum is brownish yellow, not orange; abdomen is brownish yellow, except at base, where it is dark and metallic; all legs are uniform dark honey-yellow; fore-wings are almost uniformly dusky, except at base; the flagellum of antenna is black; pronotum is dark honey-yellow; head is smooth or very faintly shagreened.

Described from three female specimens, two collected by Mr. Nathan Banks at College Station, Texas, August 31, 1890, and one collected by

Prof. T. D. A. Cockerell at Mesilla Park, New Mexico, June 24, 1896.

Type.—No. 3851, U.S.N.M.

Genus ECTROMA Westwood.

Ectroma WESTWOOD, Philosophical Magazine, 1833, 3d ser., III, p. 344, No. 30.

ECTROMA AMERICANUM, new species.

Female.—Length, 1.6 mm. Ocelli at angles of right-angled triangle; head smooth, shining, very faintly shagreened; mesoscutum shining, with close silvery pubescence; mesoscutellum with golden pubescence; first abdominal segment and sides of metanotum with silvery pubescence; general color, dull yellowish brown; mesoscutellum somewhat brighter colored; scape of antennae honey-yellow; pedicel and funicle black; club pure white; dorsum of abdomen dark brown and sides of mesonotum also dark; all legs uniform honey-yellow; rudiments of wings prominent, those of forewings as long as middle tarsi.

One female, collected by Prof. T. D. A. Cockerell at Mesilla, New Mexico, June 24, 1896.

Type.—No. 3852, U.S.N.M.

This is the first representative of this remarkable group to be found in America. Other species are known from Europe, Java, and Madeira.

Genus PHAENODISCUS Foerster.

Phaenodiscus FOERSTER, Hymenopterologische Studien, 1856, II, p. 144, No. 6.

PHAENODISCUS ARIZONENSIS, new species.

Female.—Length, 1.5 mm.; expanse, 3.3 mm. Comes closest to *P. aeneus* Dalman. Frons with large sparse punctures; face with still larger punctures; mesonotum transversely shagreened and with large regular piliferous punctures; wings deeply infuscated, except at tip; costa above submarginal vein much arched; stigmal, postmarginal and marginal veins subequal in length; general color dusky reddish brown, lighter on face and mesopleura, and much darker on abdomen and mesoscutum, the latter being somewhat metallic; all coxae nearly black, legs yellow-brown; scape of antennae, pedicel, and first three funicle joints light brown; funicle joints 4, 5, and 6 yellowish white.

Three females, Mr. H. G. Hubbard, Chiricahua Mountains, Arizona, May 31, 1897.

Type.—No. 3853, U.S.N.M.