# Three New Parasitic Hymenoptera from the Indo-Malayan Region

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The three hymenopterous parasites described herewith were discovered by Messrs. Pemberton and Hadden during their explorations for enemies of the insect pests of sugar cane for importation to the Hawaiian Islands. The types are deposited in the collection of the Hawaiian Sugar Planters' Experiment Station, and paratypes in the collection of the author and of the U. S. National Museum.

## Family SCELIONIDAE

### Scelio serdangensis n. sp.

Q .-Black, the scape, mandibles and legs, including coxae, rufo-testaceous. Tegulae dark castaneous to rufo-testaceous. Wings moderately smoky, much clearer along the anterior margin from the base to a little beyond the end of venation, and with the usual longitudinal hyaline streak just below the middle of disk. Venation testaceous. Head and mesonotum coarsely reticulato-punctate. Lower part of face between each eye and antennal prominence with about four short carinae converging toward mouth. Genal carina twofold, the components hardly spreading apart except close to the eye. Cheeks coarsely reticulato-punctate. Vertex behind ocelli dullish, finely and confluently punctured in the middle and becoming coarsely reticulato-punctate at the sides. Smooth area above antennal prominence reaching about one-third of distance to anterior ocellus, or it may be said to extend a little more than half way, with its upper portion more or less disfigured by transverse carinae. Lateral ocelli about equalling the anterior ocellus in size and almost or quite touching the eye margins. Thorax in lateral aspect nearly twice as long as high, with the propodeum very weakly declivous. Side pieces of pronotum, mesoscutum, and scutellum very coarsely reticulato-punctate, the separating carinae on the mesonotum tending to form prominent longitudinal lines. Apical margin of scutellum smooth and shining. Metanotum very short, having in the middle a vertically declivous surface with a slightly protruding lip above, its vertical surface finely and closely longitudinally striate. Lateral portions of metanotum smooth and polished, each with about seven or eight very deep, round punctures equally spaced in a row. Abdomen moderately broadly fusiform, with the third segment rather less than twice as broad as long. First tergite nearly twice as broad at apex as it is long in the median line. Second tergite deeply impressed across the base. Tergites 1 to 5 longitudinally striate, the striae

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leaving a smooth transverse strip on apical margin of tergite 2 and a similar area on the middle of apical margin of tergite 3. Tergite 3 longest, 4 only slightly shorter, and 2 and 5 about three-fourths as long as 3. Antennal scape nearly reaching level of anterior ocellus. Pedicel nearly twice as long as thick. Flagellum moderately stoutly fusiform. Joint 1 of flagellum somewhat longer than the pedicel. Joints 2 to 9 more or less transverse. Joints 2 to 4 distinctly longer beneath than on dorsal side, and 5 slightly longer beneath than above. Joints 2 and 3 subequal, together about equalling 1. Joint 4 on the under side somewhat shorter than 5, and much shorter than 5 on the dorsal side. Joint 5 distinctly longer than the following joint, but not equalling 6+7, nor as long as 1. Joints 6 to 9 subequal in length, 10 slightly longer and pointed at apex but hardly longer than thick. Pubescence of body consisting of coarse, stiff, somewhat flattened setae, silvery white and conspicuous on the head and anterior part of thorax, and somewhat finer, more appressed and less conspicuous on sides of abdomen. Sides of propodeum with very dense, fine, appressed, white pubescence.

Length, 3.4 to 3.8 mm.

3.—Similar to the female. Antennae piceous, the scape somewhat rufotestaceous toward base. Legs as in female. Wings clouded only on the apical third. Sculpture similar except that the vertex behind ocelli to the occipital carina is coarsely reticulato-punctate like the frons. Scape shorter than in female, reaching about two-thirds of the distance to anterior ocellus. Pedicel, disregarding the short stalk at base, hardly longer than thick. Joint 1 of flagellum nearly twice as long as thick and about one-third longer than pedicel. Joint 2 about as long as thick and somewhat thicker than 1. Joint 3 much the largest and broadest joint of flagellum and about as long as thick. Joints 4 to 7 each about as long as thick, very similar in shape, but decreasing slightly in size successively toward apex. Joint 8 nearly twice as long as thick and pointed at apex. Pubescence of body fine and considerably less conspicuous than in female.

Length, 3.1 to 3.6 mm.

Described from 14 females, 7 males (holotype ?, allotype and paratypes) reared from eggs of *Oxya chinensis* (Thunb.) at Serdang, Selangor, Federated Malay States, in October and December, 1930 (C. E. Pemberton).

In Kieffer's key to the species of the Indo-Malayan region (Das Tierreich, 48, p. 309), this species agrees best with S. consobrinus Kieffer, from which the female differs in having the lateral ocelli slightly larger and closer to the eye margin, the occiput dullish and much more finely sculptured, and the reticulations of mesonotum forming more definite longitudinal carinae. The male differs from the same sex of consobrinus in having more definite converging striae on the lower part of the face, the reticulations of vertex considerably coarser, not becoming finer just above the occipital carina as in consobrinus, and the wings clearer

at base and with a rather abruptly bounded pale fuscous cloud on the apical third of disk. In *consobrinus* the cloud has a more yellowish or brownish tint and occupies the apical half but is very indefinitely bounded.

In Dodd's key to the Australian species (Proc. Roy. Soc. Queensland, 38, p. 131-134), serdangensis runs to S. bipartitus Kieffer from which the female differs in having the first tergite distinctly transverse, the vertex with a finely rugose area behind ocelli, the lateral ocelli closer to the eye margins, the sculpture of mesonotum much coarser and much more distinctly reticulate, etc.

#### Scelio pembertoni n. sp.

Q.-Black, the basal half of scape, mandibles and tegulae rufo-testaceous. Legs yellowish testaceous, with hind tibiae more brownish and the tarsi somewhat fuscous. Wings moderately smoky, with the usual longitudinal hyaline streak on the middle of disk. Venation fuscous, with the submarginal vein dark brown. Head rather coarsely and closely foveately punctate, but not at all reticulately sculptured. Lower part of face between each eye and antennal prominence with about four short carinae converging toward mouth. Genal carina simple, but joining with a transverse carina on anterior part of cheeks. Ocellar region of vertex with an impunctate transverse space. Area between ocelli and occipital carina deeply punctured like the frons and cheeks. Smooth area above antennal prominence reaching about half way to the anterior ocellus. Lateral ocelli oval, larger than the anterior ocellus and well separated from the eye margins. Scape reaching nearly to the anterior ocellus. Pedicel about thrice as long as thick. Flagellum slenderly fusiform. Joint 1 of flagellum somewhat longer than pedicel. Joints 2 and 3 hardly shorter above than beneath, 2 being slightly longer than thick, and 3 slightly broader than long. Joint 4 distinctly shorter above than beneath and distinctly broader than long. Joint 5 much longer than the preceding or following joint, subquadrate and somewhat broader than long. Joints 6 to 9 subequal in length but decreasing successively in width toward apex, 6 being distinctly transverse and 9 only slightly wider than long. Joint 10 somewhat longer than thick and conically pointed. Thorax in lateral aspect rather less than twice as long as high, with the propodeum very weakly declivous. Dorsal surface of pronotum, the mesoscutum and scutellum foveately punctate like the head. Scutellum with a small projecting tooth on each side. Metanotum distinctly longer than in serdangensis. The median part somewhat protruding and rather finely and densely rugose. The lateral parts with a row of about eight punctures along the posterior margin and finely wrinkled in front of the punctures. Propodeum rather coarsely rugose, with about six short longitudinal carinae at the base. Abdomen somewhat narrowly fusiform. Tergite 1 transverse, about twice as broad at apex as the median length. Tergite 2 somewhat broader than long and shorter than 3. The latter about one and one-third times broader than long. Tergite 4 about equal to 2, except that it is a little broader. Tergite 5 about two-thirds as long as 4 and about one and one-fourth times broader at base than long. Tergite 2 slightly depressed at base. Tergites

1 to 5 longitudinally striate, 2 being also rather distinctly reticulate on basal half. The striae on 1 to 3 somewhat irregular, branching or anastomosing, but not so markedly so as in S. philippinensis Ashmead. Tergite 2 with a smooth narrow band on apical margin. Tergites 2 and 3 with a similar but less evident smooth strip that is more or less triangularly inclined at middle. Pubescence fine, pale colored but inconspicuous, a single hair arising from each one of the large punctures on head and thorax. The hair on the dorsal surface of thorax is much more abundant than in serdangensis but is not easily seen except in profile view.

Length, 3.5 to 4.0 mm.

&.—Similar to the female. Coloration the same, with the apical fifth of scape and the flagellum very dark brown or fuscous, becoming slightly more reddish beneath. Wings as deeply colored throughout as in the female. Sculpture practically the same throughout as in female. Scape much shorter, reaching about halfway to the anterior ocellus. Pedicel about twice as long as thick and thickest a little before the apex. Joint 1 of flagellum about three times as long as thick and distinctly longer than the pedicel or the following joints. Joints 2 to 7 about equal in length, with joint 3 distinctly thicker than the preceding or following joints, but not conspicuously enlarged as in serdangensis. Joints 4 to 7 decreasing only slightly in thickness distad. Joint 8 about twice as long as thick and conically tapering on the apical half. Pubescence as in the female.

Length, 3.1 to 4.25 mm.

Described from 14 females, 7 males (holotype 2, allotype and paratypes) reared from eggs of *O.vya chinensis* (Thunb.) at Serdang, Selangor, Federated Malay States, in December, 1930 (C. E. Pemberton).

In Dodd's key to the Australian species, this runs to *S. punctaticeps* Dodd, which differs from *pembertoni* in having the basal third of wings pale, tergites 1 to 5 striate, without reticulations on 2, punctures of frons much smaller and not confluent, scutellum without a projecting tooth on each side, second tergite deeply impressed at base, etc.

In Kieffer's key to the Indo-Malayan species, *pembertoni* runs to *S. xanthopterus* Kieffer, but actually agrees better with *S. philippinensis* Ashmead. In all three species the parapsidal lines of the mesoscutum are about equally obscure and better observed at low magnification. The three species may be separated as follows:

 2. Tergites 1 to 3 punctate-striate, with the striae on 1 and 2 irregular and more or less anastomosing; length about 3.5 mm........philippinensis Ashm. Tergite 2 somewhat punctate on basal half, the striae only slightly anastomosing; tergites 1 and 3 merely striate, with the striae rather regular; scape considerably darker at apex and wings more strongly clouded than

in preceding species; length 3.5 to 4.0 mm.....pembertoni Timb.

The two new species described above are closely allied with two species from Coimbatore, India, named in manuscript by Girault. At least one of these (o.ryae) has been mentioned in the Indian literature with a few descriptive words, but in no way recognizably described. Mr. Girault named these during his residence at Washington, D. C., but evidently did not complete his study of them before returning to Australia, as he has not published any description as far as known. With apologies to Mr. Girault, therefore, some of the distinguishing characters of his new species are presented in the following table, leaving the question of authorship to some future reviser. The types were deposited by Mr. Girault in the U. S. National Museum.

## Table of four Indo-Malayan species of Scelio

 3. Scutellum unarmed; first tergite of abdomen distinctly longer than wide at base and about as long as the apical width, its surface striato-punctate: second tergite rather strongly impressed on basal half, longitudinally striate except for a smooth area in the middle half of apical margin, the striae more or less irregular and anastomosing toward base of segment; head moderately coarsely and subreticulately punctured; flagellum rather slenderly fusiform; black, the legs, mandibles, scape and pedicel rufotestaceous, with the femora slightly infuscated at apex, veins of wings testaceous, the marginal vein somewhat infuscated; length, about 3.9 mm. (Coimbatore, India, from eggs of Oxya)......o.ryae (Girault) n. sp. Scutellum with a small projecting tooth on each side; first tergite of abdomen transverse, distinctly shorter than the basal width, its surface coarsely striate and not at all punctate; second tergite hardly impressed at base, rather closely striate except in a narrow strip on apical margin, and the basal half somewhat striato-punctate; sculpture of head and mesonotum coarser than in oxyae, with the interspaces between the foveate punctures distinctly less carina-like on the head than in oxyae; mandibles, legs and basal half of scape testaceous or ruto-testaceous, with the apex of scape strongly infuscated and the pedicel piceous or blackish; veins of wings rather dark brown, the submarginal a little paler; length, 3.1 to 4.25 mm.....pembertoni Timb.

## Family ENCYRTIDAE

The new species of Anagyrus described below belongs in a group of species having the flagellum white except the first funicle joint which is black or partly black. To this category belong A. pscudococci (Girault), A. subalbicornis (Girault), A. dactylopii (Howard), A. yuccae (Coquillett), A. subalbipes Ishii, A. sawadai Ishii, A. greeni Howard, and A. aurantifrons Compere. A. bohemani as identified by certain authors would also belong here, but Westwood in the original description cites only the "articulis ultimis albis." The new species differs from all of these especially in its unusually depressed form. It may be distinguished from three of the most similar Old World species as follows:

#### Females

tinguished under high magnification; pedicel distinctly longer than the

first funicle joint, which is about twice as long as thick and subequal to each of the next three joints; marginal vein hardly longer than wide, the postmarginal a little shorter than marginal; head and thorax orange yellow with a golden luster. (Hongkong, China, parasitic on Pseudococcus filamentosus)......dactylopii (Howard)

#### Males.

Mesopleura fuscous or brownish fuscous, with a small spot at the upper anterior corner and the propleura orange yellow; eyes with a short dense pile ......pseudococci (Girault)

 Scape entirely brown: face brown with an orange tint: mesopleura orange brown......greeni (Howard)

### Anagyrus saccharicola n. sp.

Q.—Form strongly depressed. Head thinly submenisciform, distinctly broader than long, with the longitudinal curvature in median line extremely slight from the occipital margin to a point a little above the anterior ends of eyes. At the latter point the curvature becomes much more abrupt toward the oral margin. Eyes moderately large, oval, about twice as long as wide and broader at the anterior end. Inner orbits very slightly divergent anteriorly and almost parallel above. The space between the eyes broad and nearly one and one-half times longer than wide. Ocelli forming a right angle, the posterior pair about their own diameter from the occipital margin and twice as far from the margins of the eyes. Cheeks short and scarcely one-half as long as width of eyes. Antennae inserted close to oral margin, the sockets being much less than half as far from oral margin as their distance apart, and somewhat less than half as far from oral margin as the distance from either to the nearest margin of eye. Antennal

scrobes in the form of rather short grooves, very slightly convergent and not at all united above and ending at a point a little above the anterior ends of eyes. They are separated by a broad convex ridge. Scape of antennae moderately expanded, rather less than one-half as broad as long (excluding radicle) and deeply grooved on the outer side between the thickened dorsal margin and the ventral expansion, with the edge of the thickened part straight and carinate. Pedicel about thrice as long as thick and distinctly longer than the following joint. Flagellum increasing very slightly in thickness toward apex. Funicle joints decreasing slightly in length distad, the first one slightly over twice as long as thick and the sixth about one and one-half times as long as thick. Club ordinary, almost equaling length of three preceding joints combined. Thorax scarcely one-half as thick dorso-ventrally as the greatest width, whereas in ordinary species the depth of the thorax is not much less than the width. Notum strongly flattened. Posterior margin of mesoscutum nearly straight except that it is slightly produced in the middle to cover the inner ends of the axillae. Axillae considerably more than twice as wide as long at outer ends, their inner ends very acute and meeting although concealed by the mesoscutum. Scutellum four-sided, about as wide as long, with the apical angle approximately rectangular, the basal angle very obtuse and the exterior angles rather acute. Apex of scutellum not at all elevated above level of propodeum and fitting into a depression in the middle of the latter. Propodeum therefore apparently composed of two lobes, broad externally and acute mesad where they are separated by the apex of scutellum. Their surface ridged on anterior margin, behind which the surface slopes very gently backward. Abdomen broadly sessile, distinctly longer than the head and thorax combined, very acute at apex and deeply concave above to the base. Ovipositor entirely concealed. Wings moderately wide, reaching to apex of abdomen. Marginal vein about twice as long as wide, the post-marginal subequal to it, and both together about equal to the stigmal vein. Disk of wing nearly uniformly setose throughout. The speculum narrow, almost reaching the stigmal vein and with an oval cut-off portion below. Proximal margin of main portion of speculum bordered with one row of distinctly coarser setae, but these setae are coarse only in comparison with the others. Costal cell with a marginal row of fine setae on the apical half. Submarginal vein with about fifteen to seventeen bristles.

Face dull, very minutely and densely alutaceous, but the scrobal grooves, summit of the ridge between antennae and the inferior inner margin of eyes shining. Mesonotum dullish, not quite so densely alutaceous as the face, the axillae somewhat smoothish, the apical margin of the scutum in the middle and apical margin of scutellum narrowly smooth and shining. Mesopleura smooth in comparison with face but dull. Propodeum smooth and shining. The more or less involuted edges of the tergum of abdomen dull and alutaceous but the concave portion and the venter shining. Pubescence of head and mesonotum extremely fine, short and whitish and although rather dense it is inconspicuous. It is erect on the face and cheeks and depressed on the notum. Occipital margin of vertex with a few longer erect fuscous setae and the superior inner orbits with a row of about six similar setae. Metapleura and sides of abdomen with pubescence similar to that of mesonotum, becoming longer, erect but sparser toward apex of abdomen. Eyes with a dense erect pubescence, about as long as that of the frons.

Head and thorax orange yellow, the tegulae and prepectal plates whitish, the oral margin of face very narrowly, occiput, dorsal surface of propodeum and the abdomen fuscous or blackish. Scape, pedicel and first funicle joint black, the following joints white. Scape with a narrow oblique band across the apical part, the dorsal margin from base to a little beyond the middle and on exterior face from there to apex, and the groove on exterior side broadly from base to apex, white. About the apical third of pedicel white. Legs, including coxae, creamy white, with the tarsi, especially middle pair, more yellowish, and the dorsal margin of the middle and hind femora and tibiae somewhat dusky. Wings hyaline, the veins dilute fuscous.

Length, 1.22 to 1.75 mm. Length of head (in specimen 1.72 mm. long), 0.397; width of head, 0.481; thickness of head, 0.213; width of vertex at anterior ocellus, 0.224; length of antenna, 0.969; length of scape (excluding radicle), 0.239; width of scape, 0.094; width of mesoscutum, 0.496; length of fore wing, 1.13; width of fore wing, 0.468 mm.

&.-Head about ordinary in shape for males of Anagyrus, subrotund as seen from in front and slightly broader than long. Frontovertex about one and one-half times wider than long. Ocelli forming a right angle, with the posterior pair very close to occipital margin and nearly twice their diameter from margin of eyes. Eyes broadly oval, less than twice as long as wide and broader at lower end. Cheeks in frontal view nearly continuous th outline of eyes and about as long as width of eyes. Face with a broad, w, rounded, median ridge extending from clypeal margin to a little above the antennal sockets. The latter situated slightly above the ocular line, with their lower margins approximately tangent to this line, their distance apart subequal to the distance from either to the eye margin. Scrobes very short, shallow and uniting above in a broad curve. Scape short, and including radicle only slightly longer than pedicel and first funicle joint combined, narrowly oval, and slightly expanded beneath. Pedicel hardly longer than thick and about one-third as long as following joint. Flagellum elongate filiform, with rather long scattered hairs. First funicle joint nearly four times as long as thick. The following joints subequal and about two-thirds as long as first funicle joint. Club slightly longer than the last two funicle joints combined. Sixth funicle joint armed beneath with a row of six conidium-like setae and base of club with one similar seta. Thorax depressed and similar in structure to that of female. Abdomen depressed, considerably shorter than thorax and narrowly truncate at apex. Cercal plates retracted to the basal third of the length, the setae very long. Wings much shorter and broader than in the female. Speculum also much broader and reaching from stigmal vein to opposite margin of disk, except for a slight interruption which cuts off a rounded area touching the posterior margin of wing. Basal area of disk with the setae sparser and somewhat coarser than those beyond the speculum. Costal cell broader than in the temale, with one marginal and one incomplete submarginal row of setae. Venation practically as in the female.

Sculpture extremely fine and alutaceous, producing an opaque effect, but the axillae, extreme apical margin of scutellum, pleura, propodeum and abdomen somewhat shining. Face with sparse, very short, appressed whitish setae. Frontovertex and mesoscutum with similar more erect, dusky setae, which are hardly visible except in profile view. Scutellum with very

sparse, rather long setae and an apical pair of longer bristles. Eyes with sparser and slightly shorter pile than in the female.

Duil black, the face on each side of the median ridge ferruginous or orange brown. Scape blackish, with the base, excluding radicle, and ventral margin broadly white. Flagellum dilute fuscous. Legs, including coxae, yellowish white, with apex of last joint of tarsi dusky. Wings hyaline, the veins dilute fuscous.

Length, 0.71 to 1.09 mm. Length of head (in specimen 0.97 mm. long), 0.317; width of head, 0.376; width of frontovertex, 0.209; width of mesoscutum, 0.396; length of fore wing, 0.865; width of fore wing, 0.399 mm.

Described from 6 females, 5 males (holotype 9, allotype and paratypes) reared from *Trionymus sacchari* (Cockerell), collected at Serdang, Selangor, Federated Malay States, Nov. 11, 1930 (C. E. Pemberton), and 13 females, 14 males (paratypes) reared from the same host, collected at Los Banos, Luzon, Philippine Islands, August 27, 1930 (F. C. Hadden). Also a series of 6 females, 2 males (paratypes) reared from an unidentified mealybug, collected at the Tsetse-fly Laboratory, Zululand, Natal, December 10, 1925 (E. W. Rust).