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ONE NEW GENUS AND FOUR NEW SPECIES OF  
THE GASTRACANTHUS-COMPLEX  
(HYMENOPTERA: PTEROMALIDAE)

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In this paper one new species of *Janssoniella* Kerrich, two new species of *Gastracanthus* Westwood, and one new species of *Hebestephus* (gen. nov.) are described from Japan. These genera are closely related to one another, belonging to the *Trigonoderus*-group of Cleonyminae. The types are deposited in the collection of the Entomological Institute, Hokkaido University, except where otherwise stated.

I am deeply indebted to Prof. T. Uchida and Prof. C. Watanabe for their constant help and advice. I wish to thank Prof. K. Yasumatsu and Mr. Y. Hirose, Entomological Laboratory, Kyushu University, for the loan of specimens.

*Janssoniella notata* sp. nov.

Female. Length including ovipositor sheath, 5.6–6.2 mm. Head seen from above twice as wide as its median length, a little wider than thorax, with temples not sharply narrowed behind eyes. Occiput rather shallowly emarginate. Vertex moderately convex; postocellar line a little longer than ocellocular line. Eyes 1.3 times as long as wide, separated by 1.2 times their own length. Malar space two-fifths length of eye. Head in front view about 1.2 times as wide as high; genae roundly and less strongly narrowed towards mouth. Head densely reticulate, except lower face feebly reticulate with sparse punctures below. Distance between centers of antennal toruli shorter than distance between one of them and adjacent eye (8 : 11.5). Antennal scrobe shallow; antennae inserted a little above lower margins of eyes; scape scarcely dilated, nearly reaching median ocellus, slightly shorter than first and second funicle segments combined; pedicel rather slender, half as long as first funicle segment; flagellum 1.6 times as long as width of head, nearly as long as thorax, not increasing in width distally; second anellus much thicker than first, but strongly anelliform; first funicle segment about three times as long as wide, sixth much shorter than first, about twice as long as wide; club as wide as funicle, strongly pointed at apex, without any distinct area of micropilosity, first and second segments not oblique apically. Sensillae short and sparse, irregularly disposed in three rows upon basal funicle segments, two rows upon apical segments.

Thorax (including propodeum) in dorsal view about twice as long as wide. Pronotum 1.7 to 1.9 times as wide as long. Mid lobe of mesoscutum flattened posteriorly, rather

coarsely reticulate, more densely so anteriorly. Scutellum 1.3 times as long as wide, weakly convex, broadly and roundly truncate anteriorly, more densely reticulate than posterior area of mesoscutum; frenal furrow hardly sinuate. Metascutellum a little longer than frenum. Propodeum rather long, nearly twice as long as metascutellum or as long as frenum and metascutellum combined, strongly emarginate at apex; spiracular sulci shallow; spiracles separated from posterior margin of metanotum by about twice their own length, situated at midway of propodeum; distance between inner edges of spiracles 2.3 times as long as median length of propodeum.

Fore wing: basal cell with sparse hairs in anterior half, entirely closed below by a row of hairs on cubital vein; costal cell narrow, its upper surface with hairs before parastigma, its lower surface with three or four rows of hairs in basal three-fifths, hairy beyond; speculum well developed; relative lengths of  $sm:m:p:s$  as  $64:34:42:18$ ; stigmal vein emitted at about  $45^\circ$ ; disc with a faint, fuscous cloud below stigma.

Petiolar segment strongly transverse, one-fourth as long as wide or less. Gaster much longer than head and thorax combined, sunken dorsally; seventh tergite not strongly elongate, about two-thirds length of sixth, measured dorsally; ovipositor sheath half to two-thirds length of seventh tergite.

Bluish green with bronzy reflections: scape brownish yellow; pedicel and flagellum blackish. Legs pale brownish yellow: coxae concolorous with thorax; femora in greater part and tarsal apices darkened. Gaster blackish dorsally, with a purplish tinge posteriorly.

Male.—unknown.

Holotype (♀).—Sapporo, Hokkaido, 30. V. 1956, K. Kamijo. Paratype (♀).—Sapporo, Hokkaido, 7. VII. 1952, T. Tomioka.

Host.—unknown.

This species is closely allied to *J. major* Kerrich, from which it may be distinguished by the more transverse petiolar segment, by the rather short and inconspicuous metascutellum, and by the fore wing with a fuscous cloud on the disc. From *J. caudata* Kerrich it may be separated by the shallowly emarginate occiput, by the more strongly hairy costal cell, and by the fore wing with a fuscous cloud.

#### *Gastracanthus japonicus* sp. nov.

Female. Length including ovipositor sheath, 4.9–5.4 mm. Head seen from above transverse, 2.6 times as wide as long, with temples strongly narrowed behind eyes; occiput moderately emarginate. Vertex hardly convex; postocellar line about as long as ocellular line. Eyes 1.24 times as long as wide, separated by 1.1 times their length. Malar space about 0.28 times as long as eye. Head seen in front triangular, 1.4 times as wide as high, with genae strongly narrowed towards mouth, about as in fig. 3. Anterior margin of clypeus subtruncate. Distance between centers of antennal toruli nearly as long as distance between one of them and adjacent eye (11:12). Antennae inserted a little above lower margins of eyes; scape a little longer than first and half of second funicle segments combined, almost reaching median ocellus; pedicel nearly half as long as first funicle segment. Flagellum 1.5 times as long as width of head, slightly increasing in

width; first funicle segment about three times as long as wide, sixth shorter than first (11:14), about twice as long as wide; club wider and a little shorter than two preceding segments combined, apex of first segment distinctly oblique, of second more strongly so, third segment not pointed at apex, with a band of micropilosity extending to the base. Sensillae rather sparse, irregularly disposed in three rows upon each funicle segment.

Thorax a little more than twice as long as wide. Pronotum 1.5 times as wide as long, parallel-sided; the posterior margin depressed. Mesoscutum about 1.6 times as wide as long, with mid lobe coarsely reticulate. Scutellum roundly truncate on anterior margin, finely reticulate medially, more coarsely so laterally; frenum coarsely reticulate, with a deep, longitudinal median furrow. Metascutellum as long as frenum. Propodeum about half as long as scutellum, or equal to combined lengths of metascutellum and frenum, weakly but distinctly produced beyond insertions of hind coxae, more finely reticulate than mid lobe of mesoscutum, deeply emarginate at apex; median carina conspicuous; spiracles separated from posterior margin of metanotum by their own length; distance between inner edges of spiracles 1.7 times as long as median length of propodeum; spiracular sulci deep.

Wings weakly infusate. Fore wing: basal cell hairy anteriorly and distally, closed below; upper surface of costal cell with a row of hairs distally, the lower surface with irregular three or four rows in basal two-thirds, hairy beyond; speculum of moderate size on upper surface, more developed on lower surface; relative lengths of  $sm:m:p:s$  as 52:30:35:14; stigmal vein emitted at  $42^\circ$ .

Gaster as long as thorax and head combined, narrower than thorax, sunken dorsally. Petiolar segment about half as long as wide; first to third tergites broadly and roundly produced at apex; seventh tergite half as long as sixth, triangular in lateral view. Ovipositor sheath about two-thirds length of seventh tergite, measured dorsally.

Dark green with a strong bronzy tinge: head darker with scape and pedicel yellowish brown; flagellum blackish. Legs brownish yellow: fore coxae in greater part and hind coxae at base metallic black. Gaster mainly blackish with purplish reflections.

Male.—unknown.

Holotype (♀).—Mt. Tebako, Kochi Pref., Shikoku, 7. VIII. 1957, K. Morimoto. Paratype (♀).—with same data as holotype.

Host.—unknown.

The paratype is in the collection of the Entomological Laboratory, Kyushu University.

This species seems to be close to *G. conicus* (Girault), but may be separated from the latter by the sharply narrowed genae and by the shorter gaster. It can be also readily distinguished from *G. pulcherrimus* Westwood by the shorter petiolar segment, by the shorter pronotum and gaster, and by the non-maculate fore wing.

#### *Gastracanthus nigrescens* sp. nov.

Female. Length including ovipositor sheath, 4.8–5.1 mm. Head seen from above 2.7 times as wide as long, much wider than thorax, with temples rather sharply converging behind eyes; occiput moderately emarginate. Vertex weakly convex; postocellar line as

long as ocellular line. Eyes bare, 1.3 times as long as wide, separated by slightly more than their own length, with inner orbits slightly divergent below. Malar space 0.26–0.32 times as long as eye. Head seen in front about 1.4 times as wide as high. Genae sharply narrowed towards mouth. Clypeus smooth, with anterior margin roundly produced (fig. 1); distinct sulcus connecting tentorial pits which are large and conspicuous. Right mandible with four, left with three teeth. Distance between centers of antennal toruli shorter than distance between one of them and adjacent eye. (9:12). Head with dense and typical reticulation. Antennal scrobe shallow; antennae inserted a little above lower margins of eyes; scape not reaching median ocellus, equal to combined lengths of first and second funicle segments; pedicel 1.4 times as long as wide in dorsal view, half as long as first funicle segment. Flagellum filiform, a little shorter than thorax (83:95), increasing very slightly in width distally; first anellus narrower and as long as second; funicle segments progressively decreasing in length; the first 2.5 times as long as wide, sixth a little shorter than first (9:11), 1.4 times as long as wide; club about as in fig. 5, wider and as long as two preceding segments combined, with first and second segments not oblique apically, last segment roundly truncate, with a large, circular tuft of micropilosity at apex. Sensillae short, sparse, irregularly disposed in three rows upon basal funicle segments, in two rows upon apical segments.

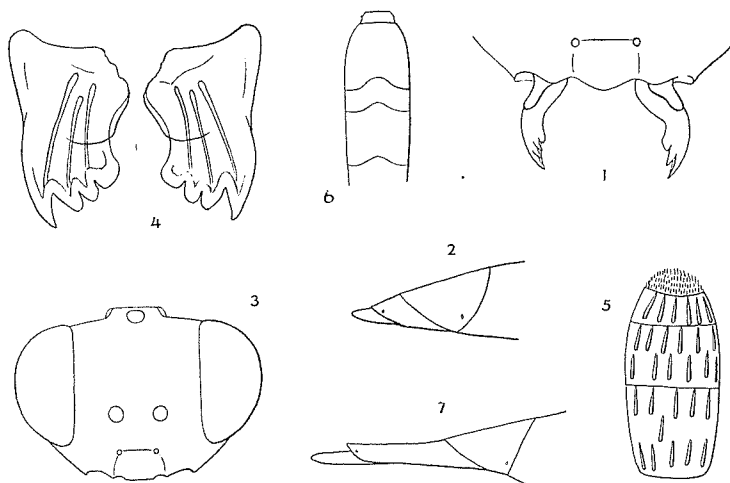
Thorax 2.2 times as long as wide. Pronotum 1.5 times as wide as long, steeply declived in front of obtuse collar ridge, with hind margin narrowly depressed. Mesoscutum about 1.5 times as wide as long, moderately reticulate; notaulices deep. Scutellum 1.3 times as long as wide, rather strongly convex, much narrowed and rounded on anterior margin; frenal furrow not sinuate; frenum more strongly reticulate than area before frenal furrow. Metascutellum as long as frenum. Propodeum half as long as scutellum and much longer than combined lengths of metascutellum and frenum (16:12), reticulate as in mesoscutum; fovea between median carina and spiracle large and deep, touching anterior margin of propodeum; median carina distinct; plicae strong, restricted to posterior half of propodeum; spiracles small, short-oval, separated from posterior margin of metanotum by more than 1.5 times their own length. Prepectus large, reticulate as in mesoscutum, with a median shield behind fore coxae, marked off by a transcostate furrow; the upper margin nearly twice as long as tegula.

Fore wing: basal cell hairy anteriorly, bare posteriorly, entirely closed below by hairs on cubital vein; costal cell narrow, its upper surface with sparse hairs distally, lower surface hairy throughout except basal two-thirds bare posteriorly; speculum well developed, closed below; disc with two large fuscous clouds below marginal and post-marginal veins; relative lengths of sm:m:p:s as 63:36:48:15; stigmal vein emitted at about 45°.

Gaster much longer than head and thorax combined (1.4:1), half as wide as thorax, compressed. Petiole a little wider than long (9:7), longitudinally and weakly sculptured; hind margins of first three tergites straight dorsally; sixth tergite longer than third to fifth tergites combined; seventh short (fig. 2). Ovipositor sheath projecting by about half length of seventh tergite, measured dorsally.

Black: scape yellowish brown; pedicel darker; funicle segments blackish; club at apex or in greater part yellowish brown. Legs yellowish brown: fore and hind coxae blackish in greater part; fore femora darker at middle. Veins dark brown. Gaster with a purplish tinge.

Male differs as follows. Length 3.0 mm. Scape a little shorter than first funicle segment, weakly dilated in apical two-thirds; pedicel short, nearly one-third of first funicle segment; flagellum longer than thorax (75:65), almost regularly cylindrical and not with conspicuous rugose sculpture, bearing outstanding hairs which are slightly shorter than the width of the segment; first funicle segment three times as long as wide; sixth nearly twice as long as wide; club equal to combined lengths of two preceding segments, strongly pointed at apex, lacking a tuft of micropilosity. Sensillae sparse, usually disposed on apical area of each funicle segment. Wings hyaline, without clouds. Gaster a little



Figs. 1-2. *Gastracanthus nigrescens* sp. nov., female.

1, clypeus and mandibles; 2, apex of gaster in lateral view.

Figs. 3-7. *Hebestephus acutus* gen. et sp. nov., female.

3, head in front view; 4, mandibles; 5, antennal club; 6, gaster in dorsal view; 7, apex of gaster in lateral view.

shorter than thorax and head combined, depressed, with petiole a little longer than wide.

Black; antennae brownish black, with scape lighter below. Legs yellowish brown to dark brown: coxae and fore femora blackish; fore tibiae and all tarsi paler.

Holotype (♀).—Mt. Apoi, Hokkaido, 22. VI. 1959, K. Kamiyo. Paratypes (1♀ 2♂♂).—HOKKAIDO: Mt. Daisetsu, ♀ 4. VIII. 1956, K. Kamiyo; Sapporo, ♂ 27. V. 1958, K. Kamiyo; Esashi, Hiyama Prov., ♂ 11. VII. 1958, K. Kamiyo.

Host.—unknown.

This species is of considerable interest, as not only does it possess the roundly produced anterior margin of the clypeus, but also the truncate hind margins of the first to third tergites. These characters do not fit the diagnosis of the genus *Gastracanthus*

Westwood given by Kerrich and Graham\*. However, I prefer to place it in the genus until further examinations are satisfactorily given.

Genus *Hebestephus* nov.

Head with genae sharply narrowed towards mouth (fig. 3); clypeus apically truncate, edentate, with tentorial pits large, conspicuous; both mandibles with four teeth (fig. 4); occiput not margined. Antennae inserted below middle of face but above ventral edge of eyes, thirteen-segmented (11263); scape of female slender, of male short and stouter but not distinctly broadened; flagellum filiform, with long outstanding hairs in male; club of female roundly truncate at apex, with a large, circular tuft of micropilosity at apex (fig. 5), of male pointed at apex with first segment distinctly separated from second.

Pronotum elongate, clearly more than half as long as its greatest width, with collar hardly margined; prosternum without a median sulcus; prepectus large, with no sharply delimited triangular area before tegulae, and with a median shield behind fore coxae, marked off by a transcostate furrow. Notaulices complete, deep; scutellum acute anteriorly with distinct frenal furrow in the normal position. Propodeum elongate, but hardly produced beyond insertions of hind coxae, distinctly reticulate, with hind margin strongly emarginate between plicae; spiracular sulci deep; spiracles separated from posterior margin of metanotum by slightly more than their own length. Hind tibiae with two spurs. Fore wing non-maculate; speculum well developed; costal cell of hind wing without hairs.

Gaster of female much longer than head and thorax combined, not sunken dorsally; petiolar segment strongly transverse; first three tergites medially emarginate at apex (fig. 6); seventh tergite very elongate, cylindrical in profile (fig. 7). Gaster of male depressed, with petiolar segment slightly longer than wide, and first tergite emarginate at apex.

Type species.—*Hebestephus acutus* sp. nov.

This genus is closely related to *Gastracanthus* Westwood and *Janssoniella* Kerrich. It may be distinguished from *Gastracanthus* by the four-dentate mandibles, by the emarginate first three tergites, and by the club of the male with the free first segment. From *Janssoniella* it may be separated by the prepectus with a median shield behind the fore coxae, by the longer pronotum, by the emarginate first three tergites and by the flagellum of male bearing outstanding hairs, with the free first segment of the club.

*Hebestephus acutus* sp. nov.

Female. Length including ovipositor sheath, 4.7–7.2 mm. Head much wider than thorax (61 : 43), transverse in dorsal view, with occiput moderately emarginate; temples sharply narrowed behind eyes. Vertex slightly convex, with ocellar area raised; ocelli in a triangle of 95°; postocellar line slightly longer than ocellocular line. Eyes bare, prominent, 1.24 times as long as wide, separated by their own length, with inner orbits parallel. Malar space one-fourth length of eye. Head seen in front 1.4 times as wide as high,

\* Trans. Soc. British Ent., 12 : 309, 1957.

with genae sharply narrowed towards mouth. Tentorial pits large and conspicuous, connected by a distinct sulcus. Distance between centers of antennal toruli as long as distance between one of them and adjacent eye. Lower face raised between antennal toruli and upper margin of clypeus. Head finely reticulate, covered with short, rather dense hairs. Antennal scrobe shallow; scape reaching median ocellus, equal to combined lengths of first and half of second funicle segments; pedicel nearly as wide as long in dorsal view, 2.5 to 3 times shorter than first funicle segment. Flagellum elongate, about as long as thorax; second anellus as wide as and slightly thicker than first; funicle segments progressively decreasing in length and hardly increasing in width; first segment three times as long as wide, sixth much shorter than first (16:11), nearly twice as long as wide; club wider and about as long as two preceding segments combined, with first and second segments not oblique apically, last segment roundly truncate, with a large, circular tuft of micropilosity at apex. Sensillae short, rather sparse, disposed in three rows upon each funicle segment.

Thorax slender, 2.4 times as long as wide. Pronotum seen from above transverse, widest at anterior one-fourth, 1.7 times as wide as long, gently declived in front of collar; the posterior margin depressed. Mesoscutum 1.3 times as wide as long, with hind margin moderately sinuate; the mid lobe reticulate, middle area of the side lobes transversely and finely reticulate; notaulices deep. Scutellum elongate, 1.4 times as long as wide, much narrowed and acute anteriorly, finely granulate-reticulate; frenal furrow sinuate; frenum more strongly reticulate than mesoscutum. Metascutellum as long as frenum. Propodeum half as long as scutellum, reticulate as in mesoscutum; fovea between median carina and spiracle large, with a few transcostae, continuing to lateral depression along posterior margin of metanotum; median carina strong, sinuate medially; plicae very strong, restricted to posterior half of propodeum. Upper margin of prepectus much longer than tegula (18:11). Hind coxae rather slender.

Wings slightly infusate. Fore wing: basal cell hairy throughout; costal cell narrow, the upper surface with a row of hairs before parastigma, the lower surface with two or three rows in basal two-thirds, almost hairy beyond; speculum well developed, closed below; relative lengths of  $sm:m:p:s$  as 80:47:55:21; stigmal vein slightly curved, emitted at about  $35^\circ$ .

Gaster much longer than head and thorax combined, about 1.4:1, compressed laterally, about half as wide as thorax. Petiole strongly transverse, about three times as wide as long. First three tergites medially emarginate at apex; seventh tergite elongate, sometimes longer than sixth. Ovipositor sheath nearly half as long as seventh tergite seen from above.

Blackish with bronzy reflections: scape pale brownish yellow; pedicel and flagellum blackish. Legs brownish yellow.

Male. Length 2.6-4.1 mm. Vertex more strongly convex. Eyes less prominent, separated by 1.2 to 1.3 times their own length. Malar space about one-third length of eye. Distance between centers of antennal toruli sometimes a little shorter than distance between one of them and adjacent eye. Scape short, not reaching median ocellus, a little shorter



than first funicle segment (13:15); pedicel small, rounded, about one-fourth length of first funicle segment. Flagellum slender, longer than head and thorax combined, roughly sculptured, covered with rather long, dense hairs, which are nearly as long as width of flagellum in smaller specimens, shorter in larger specimens; first funicle segment three or four times as long as wide, sixth about 2.5 times as long as wide; first segment of club as wide as and slightly shorter than preceding segment, combined lengths of second and third segments a little shorter than first funicle segment. Fore wing with speculum smaller. Gaster as long as thorax and head combined, petiole about two-thirds length of propodeum, slightly longer than wide, longitudinally striate anteriorly, smooth posteriorly; first tergite deeply emarginate at apex.

Dark green, sometimes darker with bronzy reflections: scape brownish black. Legs brownish yellow to dark brown: coxae in greater part blackish with a purplish tinge. Gaster blackish with a purplish tinge.

Holotype (♀).—Sapporo, Hokkaido, 20. X. 1959, K. Kamijo. Paratypes (9♀♀ 19♂♂). —HOKKAIDO: Rebun, ♂ 2. VIII. 1958, K. Kamijo; Rishiri, ♂ 4. VIII. 1958, K. Kamijo; Mt. Daisetsu, ♂ 24. VII. 1957, K. Kamijo; Sounkyo, ♂ 6. VIII. 1960, K. Kamijo; Shikaribetsu-ko, ♂ 29. VII. 1931, C. Watanabe; Nukabira, 3♂♂ 14. VII. 1959, K. Kamijo; Ashoro, 2♀♀ 31. V., 8. VI. 1957, M. Takahashi; Sapporo, 2♂♂ 30. V. 1956, ♂ 16. VII. 1956, ♂ 8. VII. 1959, ♀ 3♂♂ 26. V. 1960, ♂ 1. VI. 1960, ♀ 12. VI. 1960, K. Kamijo; Sapporo, ♀ 30. V. 1957, 2♀♀ 12. VIII. 1958, S. Momoi; Sapporo, ♂ 20. V. 1959, ♂ 8. VII. 1959, S. Takagi; Sapporo, ♂ 6. VI. 1959, T. Kumata; Jozankei, ♀ IX., S. Matsumura; Mt. Apoi, ♀ 26. VIII. 1956, K. Kamijo.

The female paratypes collected at Ashoro are in the Entomological Laboratory, Kyushu University.

Host.—unknown.