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**NEW SPECIES OF THE GENERA *TRYPOXYLON* AND *OXYBELUS* IN
JAPAN, WITH SOME BIOLOGICAL NOTES (HYM., SPHECIDAE)**

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NEW SPECIES OF THE GENERA *TRYPOXYLON* AND *OXYBELUS* IN JAPAN, WITH SOME BIOLOGICAL NOTES (HYM., SPHECIDAE)

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Recently I received some interesting specimens of the genus *Trypoxylon* from Mr. T. Nambu, Saitama Prefecture, and of the genus *Oxybelus* from Dr. K. Baba and Mr. H. Itami, both Niigata Prefecture, for identification. The taxonomic study revealed that both belonged to undescribed species and that the latter was the same one as that which was long preserved in my cabinet without being described. In the present paper I described the two species as new and added the biological observations on the latter species which had been recorded on my note book more than 30 years ago. I further added on this occasion the description of a new species of *Oxybelus* the specimen of which has also long been left untouched in my collection.

Trypoxylon nambui sp. nov.

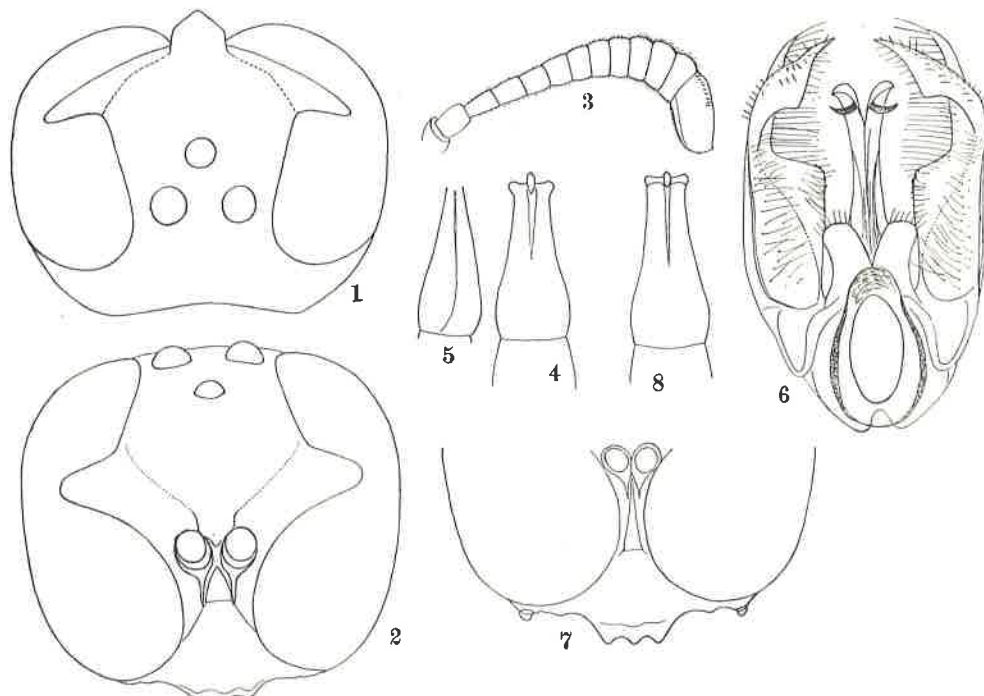
The new species belongs to the group of *T. varipes* Pérez and resembles in general characters this species. It is, however, much smaller in the body size, having the inner orbital lines more strongly convergent towards the clypeus, the supra-antennal tubercles more flattened, the clypeus tridentate on the anterior margin and the antennae comparatively much shorter. The structure of the male genital organ is also somewhat different.

♂. Length 4.4 mm (paratype 5.0 mm). Black with the following portions ferruginous to pale yellow: Anterior margin of clypeus broadly (extreme margin darker), mandibles, antennal joints 1 wholly, 2 except a brownish spot above, 3 beneath broadly, humeral angles (at base brownish), tegulae of wings, greater part of front and mid legs (base of coxae and front femora beneath, apical half externally of mid femora and terminal tarsal joints brown), hind legs on apical half of coxae, trochanters, base of tibiae, apex narrowly of femora and of tibiae, both ends of tarsal joints 1, 2 and 3, and 4 wholly. Antennal joints 4-10 beneath and apical joints of mid and hind tarsi dark brown. Arolia of all legs black. Wings hyaline, apically slightly clouded, veins and stigma dark brown. Pubescence on clypeus, eye-incisions and lower temples silvery.

Head from above: Fig. 1, apparently sudquadrate, OOD:POD = 2:1, postocelli slightly larger in diameter than POD and also than anterior one, with latero-posterior areas slightly impressed and interspace slightly raised; frontal medial furrow broad and shallow, with both sides gently raised. Head seen in front (Fig. 2) quadrate, interocular distance at vertex and at base of clypeus relatively 11:6, oculo-antennal distance slightly less than half as wide as antennal socket, supra-antennal tubercle nearly rounded or subpentagonal in outline, very slightly roundly raised (nearly flattened), with a very short glittering carina on top. Clypeus broadly and gently raised in middle, with apical margin medianly shortly produced and tridentate (Fig. 2); antennae (Fig. 3) comparatively short, clavate, with ultimate joint slightly curved, wedge-shaped in the lateral view and as long as three preceding joints united. Pronotum similar in form and structure to that of *T. varipes*, with posterior margin broadly discoloured; mesonotum medio-anteriorly longitudinally feebly impressed, its medial scutal lines weakly carinate and parapsidal sutures in impressed lines, both slightly less than a third as long as scutum; scutellum slightly wider than long, postscutellum half as long as scutellum. On mesopleuron anterior oblique furrow distinct, crenulate and attenuate below, episternal scrobe large and deep. Propo-

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deum with area cordata distinctly margined by crenulate groove and medianly comparatively broadly furrowed, posterior inclination deeply furrowed in middle, with lateral carinae weak but distinct, not reaching base of the segment. Basal segment of abdomen : Fig. 4, slightly less than as long as two following segments united, about twice as long as wide at its maximum width, its lateral view : Fig. 5, segments 1-4 dorsally markedly swollen before apex, in the lateral view intersegmental areas strongly constricted (more strongly so than in *varipes*). Structure of legs as in *varipes*, but the hind legs comparatively slightly shorter than in this species, with each segment apparently slightly thicker. In wing venation similar to the compared species, but the vestigial 2nd cubital cell higher than wide, with upper vein less than as long as 1st transverse cubital vein and more than half as wide as lower vein (in *varipes* upper vein as long as 1st transverse cubital vein and half as long as lower vein). Genitalia : Fig. 6, generally similar to that of *varipes*, but distinctly differing from it in the form of the basal appendages.



Figs. 1-8. *Trypoxylon nambui* sp. nov. (1-6, ♂; 7, 8, ♀)
1, 2, 7, head, 3, antenna, 4, 5, 8, first abdominal segment (5, lateral view).
6, male genitalia.

Frons finely, comparatively sparsely punctured with rounded shallow points, with intervals on an average as broad as points and microscopically minutely and weakly wrinkled, but the surface fairly glossy; vertex around ocelli with punctures sparser and finer, nearly shining. Mesonotum, scutellum, postscutellum with punctures closer, but the surface not always opaque, posterior margin of mesonotum crenate; on mesopleuron, ventrally and anteriorly, punctures fine and sparse with surface fairly shining, dorsally and posteriorly impunctate and nearly polished; metapleuron without sculpture, highly polished. Propodeum on basal half obliquely, on posterior half and median furrow transversely finely, rather sparsely striate, posterior inclination with only scattered very minute hair points, furrows along the lateral carinae crenate, sides of the segment smooth and highly polished, with a few fine sparse points dorso-posteriorly. Abdomen

closely covered with hair-bearing minute points, but fairly shining.

♀. Similar in general to the male, but slightly larger (5.2-5.7 mm), with inner orbits much more strongly convergent towards clypeus (Fig. 7), ratio of interocular distance at vertex and at base of clypeus approximately 4 : 1, clypeus slightly more produced anteriorly and more strongly tridentate at apex. Antennae with ultimate joints not deformed, about as long as two preceding joints taken together. Abdominal segment 1 relatively slightly longer (Fig. 8). Sculpture similar, but propodeum at base more narrowly obliquely striate, the area not reaching middle of the area cordata.

Holotype : ♂, Saitama Pref. (Hodosan), 26. VIII. 1966, T. Nambu leg. (Coll. Tsuneki)

Paratypes : 1 ♂, Idem, 27. VIII. 1966; 5 ♀♀, Idem, 8, 24, 26, 27. VIII. 1966, T. Nambu leg. (Coll. Tsuneki); 2 ♀♀, Idem, 26. VIII. 1966, T. Nambu (Coll. Nambu).

Oxybelus nipponicus sp. nov.

In the present species the end tergite of the abdomen is reddish brown and the tibiae of legs yellow maculated. By these characters it can easily be separated from the known congeners* of Japan. Among the European species it is similar in the form of the propodeal mucro to *O. victor* Lepeletier (in ♀ solely), but differs from it at least in the punctuation of the 2nd sternite of the abdomen and in the colour of the legs. In these respects it resembles rather *O. quatuordecimnotatus* Olivier, but is separable from it in the form of the clypeus and the mucro. From the commonest Japanese species, *O. strandi* Yasumatsu, this species can be distinguished, besides the colour of the caudal segment, by the relatively narrower frons and by the much more developed yellow maculae on the body and legs.

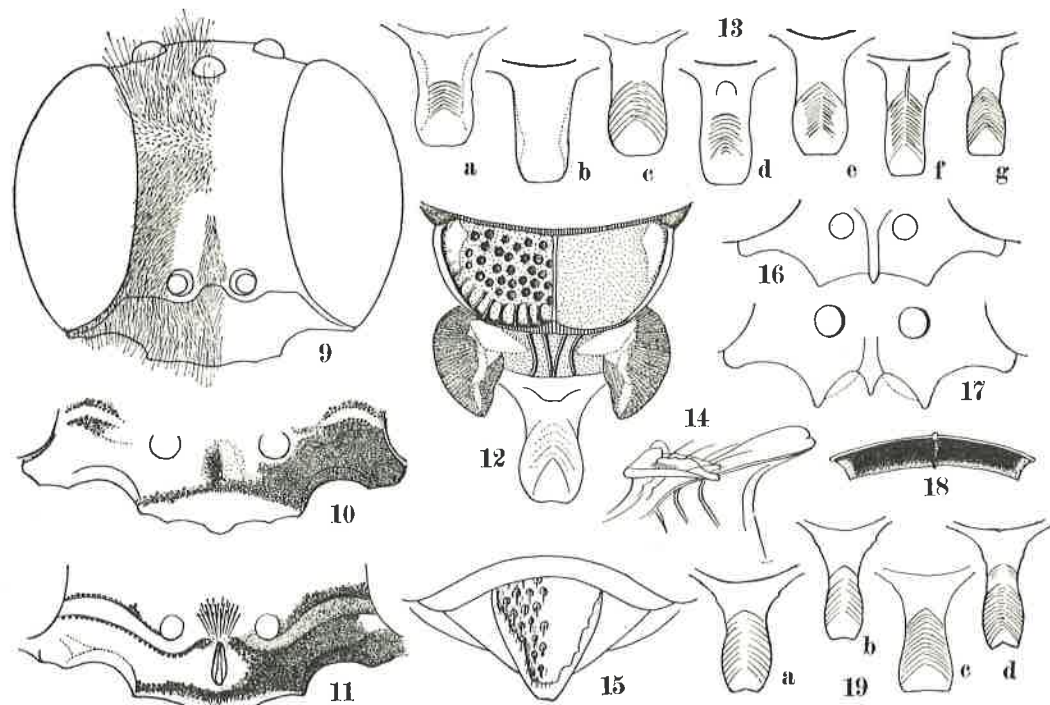
♀. Length 5.5 mm. Black. Cream yellow : Mandibles except apex, medianly interrupted band on collar of pronotum, humeral angles, tegulae of wings externally, bases of wings, two spots on scutellum, posterior margin of the lateral areas of scutellum and of postscutellum, a transverse macula on each side of abdominal tergites 1-4, posteriorly reducing in size, and legs with the following portions : Front legs : Apical half externally of femora, tibiae except pale brown inner aspect and tarsi (slightly pale brownish, apically somewhat strongly so) ; mid legs : Apical half of under and outer side of femora and tibiae externally; hind legs : Outer side of tibiae except apex. Reddish brown : Apex of mandibles, apical half of antennal flagella (extending more broadly beneath), caudal segment of abdomen, mid and hind tarsi. Wings hyaline, apically slightly clouded, with veins and stigma brown, veins posteriorly and basally much paler. Pilosity of frons and clypeus silvery (in *strandi* slightly brassy), longer and closer than in *strandi*, hairs on posterior part of vertex, occiput, and thorax and abdomen above somewhat yellowish.

Head seen from above with upper inner orbits markedly divergent posteriorly (in *strandi* subparallel), OOD : POD = 1 : 2, ocelli uniform in size, larger than the interspace between anterior and posterior ocelli (in *strandi* smaller). Head seen in front (Fig. 9), with frons relatively much narrower than in *strandi*, ratio of interocular distance to the width of eye 21 : 17 (apparently subequal, in *strandi* 37 : 19, that is to say 2 : 1), ratio of interocular distance to the length of face (from anterior margin of median ocellus to the apex of clypeus) 21 : 41 (about 1 : 2, while in *strandi* 37 : 50, that is to say, about 3 : 4). Clypeal structure in the worn out specimens appears subequal to that of *strandi*, in the fresh specimens the form of the anterior margin distinctly different (Fig. 10, cf. Fig. 11, that of *strandi*), anterior margin broad, impunctate and polished

* *O. strandi* Yasum., *victor* Lep. (reported under the name, *melancholicus* Chev.), *bipunctatus* Oliv. and *lewisi* Cam. (The occurrence of the last mentioned species is doubtful.)

(in *strandii* impunctate area much narrower), the glabrous upper border also different in structure (Fig. 10, cf. Fig. 11). Head seen in profile with eye as broad as temple (in *strandii* less than as broad as temple). Antennae with each joint relatively shorter than in *strandii*, joint 3 (dorsal view) 1.3 times as long as broad at apex (in *strandii* 1.7 times), joint 5 wider than long (in *strandii* longer than wide). Pronotum anteriorly strongly carinate, with lateral corners angulated, but less strongly so than in *strandii*, mesonotum medially longitudinally broadly impressed, not distinctly crenate on apical margin (in *strandii* distinctly crenate), only with a short strong medial carina; scutellum with median and marginal carinae as usual, squamae on postscutellum (Fig. 12), generally wider than in *strandii*, with opaque yellow portion more broadly extended inward (but not connected with each other); mucro (Fig. 12, lateral view : Fig. 14), generally broader and shorter than in *strandii*, though varied considerably among paratypes (Fig. 13, a-g). Pygidial area (Fig. 15) in a broader triangle than in the compared species. Legs normal, apparently slightly slenderer as compared with those of *strandii*, metatarsal spines on the anterior margin of front legs generally 5 (including the apical one), rarely 6. In cubital cell of fore wing the vestigial upper nervure of discoidal cell completely discoloured, only very faintly observed (in *strandii* partly pale brownish).

Punctures on vertex and upper frons with more or less interspace, not reticulate-punctate as in *strandii*, on ocellular area and along upper inner orbits very sparse, with surface shining; supra-antennal glabrous polished area higher than wide; clypeus with anterior bevel impunctate and polished. Mesonotum closely punctured, subreticulate, but posteriorly slightly sparse; scutellum sparsely punctured (Fig. 12), with marginal foveae, much larger and longer than other



Eigs. 9-19 (except 11, 17). *Oxybelus nipponicus* sp. nov.
 11, 17, *Oxybelus strandii* Yasum. (9-15, ♀; 16-19, ♂)
 9, head, 10, 11, 16, 17, clypeus. 12, scutellum, squamae and mucro.
 13 a-g, 19 a-d, variation in the form of mucro. 14, squama and mucro in the lateral view. 15, pygidial area. 18, Clypeus seen from beneath.

punctures, postscutellum with 2 or 3 longitudinal striae between squamae, usually the medial one much stronger. Mesopleuron irregularly punctured-reticulate, partly rugoso-punctate, sculpture posteriorly much weaker; metapleuron longitudinally coarsely striate. Propodeum with lateral oblique zones and medial triangular area distinctly bordered by carinae, the former transversely coarsely and very distinctly striate (in part coarsely reticulate), the latter posteriorly transversely comparatively finely, anteriorly obliquely coarsely striate, sides of propodeum longitudinally, fairly closely striate. Abdominal tergites closely punctured, with interspace slightly narrower than points, punctures closer than in *strandii*. Pygidium with marginal areas comparatively broadly impunctate (differing from *strandii*), rest of the area rather sparsely covered with coarse hair-bearing punctures (much sparser than in *strandii*), with interspace generally slightly larger than punctures. Sternite 2 of abdomen closely punctured, on ante-apical margin punctures sparser, apical discoloured marginal area of each sternite impunctate and glossy, remaining area punctured as on 2, all with a transverse line of somewhat coarse hair-bearing punctures before apex.

♂. Length about 5.0 mm (one of the paratypes 3.7 mm). Similar to the female in general. But, yellow maculae more broadly extended: Mandibular and scutellar maculae much larger, abdominal maculae observable on tergites 1-5, each maculae larger and the apical two turning into medianly narrowed bands, maculae on front and mid femora larger, hind femora with apex yellow, front tibiae wholly, mid and hind tibiae except inside yellow, all tarsi basally yellow, apically progressively turning into pale brown. Clypeus apically slightly brownish. Apical half of caudal segment ferruginous. Anterior margin of clypeus tridentate as usual (Fig. 16), but the apical emargination shallower, medial tooth shorter and apices of the teeth located in a line (in *strandii* medial tooth much longer, but as the emargination is deeper the apex does not reach the supposed line connecting the apices of the lateral teeth . . . Fig. 17), structure of apical margin seen from beneath (Fig. 18) also different (Fig. 27 . . . *strandii*). Mucro comparatively narrower than in ♀, but the general trend of structure similar, slightly constricted toward middle and slightly roundly expanded on apical portion, with the apex truncate, rarely shallowly triangularly incised (Fig. 19, a-d), the surface longitudinally concave and the sides curved up; squama in profile with apex not distinctly bifid, but not simple, but just as in *trispinosus*, ♂. Postero-lateral lamellar tubercles on abdominal tergites 4 and 5 short, yellowish; on 6 located slightly more dorsally, also short, but dark brown. Punctuation generally closer and coarser than in the female, vertex and upper inner orbits without the impunctate area. Pilosity on abdominal sternite normal, without basal fringe of hairs on 3-6.

Holotype: ♀, northern coastal region (次第浜) of Niigata Prefecture, 24. VII. 1965, H. Itami leg. (coll. Tsuneki).

Paratypes: 1 ♂, coastal sand plane of Niigata city, 23. VI. 1936, K. Baba leg.; 5 ♀♀, coastal region of Chiba city, 9. VII. 1932, K. Tsuneki leg.; 2 ♀♀, Shidaihaman, Niigata Pref.; 18. VIII. 1964, 13. VIII. 1966, H. Itami leg.; 8 ♂♂, The same place, 17. VI. 1962, 18. VIII. 1964, 27. VI. 1965, 13. VII. 1966, H. Itami leg. (Coll. Tsuneki). 2 ♀♀, Shidaihaman, Niigata Pref., 26. VI. 1964, 1. VIII. 1965, H. Itami leg.; 3 ♂♂, The same place, 17. VI. 1962, 27. VI. 1965, 13. VII. 1966, H. Itami leg. (Coll. Itami).

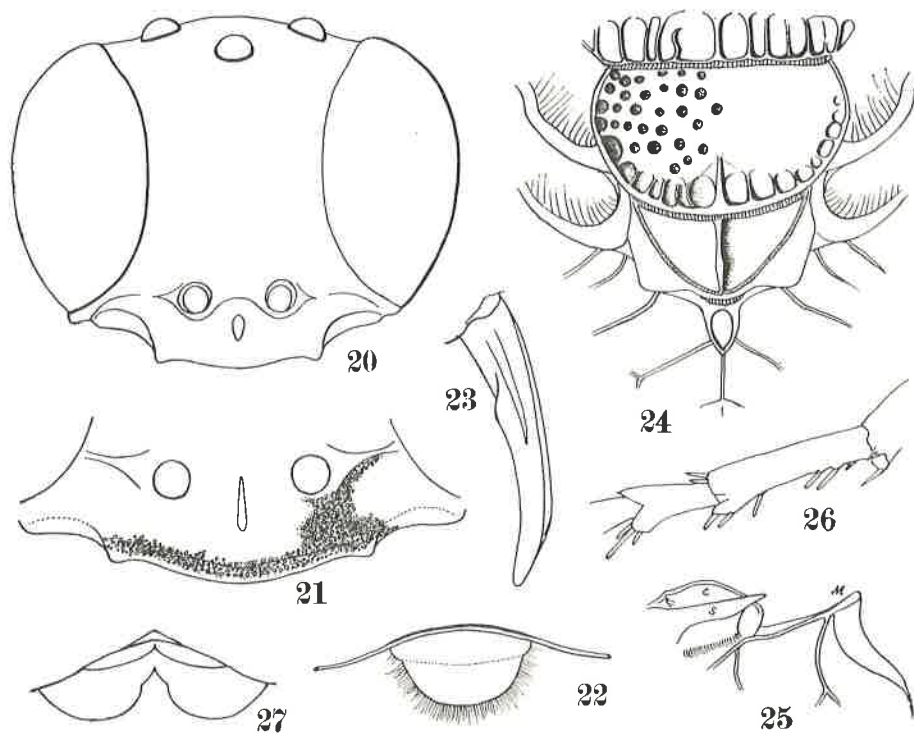
Biology. The nesting habits of this species were observed more than 30 years ago (1932) when I was in Chiba as a soldier of the military service. The notes were not detailed and without the figure. The prey of the hunters were not identified and not preserved. But it seems worth while to translate the old notes, since this species is not common.

On July 9, on the hard ground of sandy soil at the sea-shore of the city of Chiba I found a

number of small openings of the nests of this species scattered among the nests of *Cerceris* spp. and *Bembix niponica* which was the main object of my observation. I dug up some of them. Most of the tunnels of the nests were dug perpendicularly, but some of them in a more or less slope and some even drew a curve. About 7~8 cm below the surface the tunnels were slightly enlarged and ended, each including an abandoned cocoon which was made of fine grains of sand and broadly cut open at the wider end. I took notice of a wasp entering her nest with a prey under her body. It was at once dug up. The burrow penetrated into the earth in a gentle inclination and had a larval cell about 10 cm apart from the entrance and 7 cm below the earth surface. It was already provisioned with 4 Dipterous insects, 2 being small (less than 3 mm), apparently gnat-like flies and 2 being slightly larger (about 4 mm) Anthomyid-like flies. No egg could be discovered on any of them.

June 17. After the rain. Newly dug burrows were abundant, but many of them were in the coarse of construction. One of them was dug obliquely and at a depth of 8 cm had small cell containing 8 small gnat-like flies without the wasp's egg. The other went in the earth nearly perpendicularly and at about 7 cm below the opening had 3 cells, all laid horizontal, somewhat different in both depth and direction. Contents: (1), 7 small gnat-like flies and 1 somewhat larger fly, (2) 15 small gnat-like flies only, (3) 6 small, 2 large flies. The eggs of the wasp must have been, but were missed in the course of digging.

June 23. The tunnels of all the nests went in the earth perpendicularly as far as observed from outside. One of them was dug up. The cells were at 10 cm below and I obtained 34 small



Figs. 20-25. *Oxybelus sakuranus* sp. nov. (♀).
 20, head. 21, clypeus. 22, idem from beneath. 23, mandible. 24, scutellum,
 squamae and mucro. 25, mucro in the lateral view. 26, front basitarsi.
 27, *Oxybelus strandi* ♂, clypeus from beneath.

flies, probably from 2 or 3 cells which were failed to be observed individually (on account of the inappropriate tool). One of the prey carried the wasp's egg. It was laid on the neck of the fly, slightly deviated from the median line and with the other end stretched beyond the wing base of the other side. The egg was comparatively large, approximately 3 mm, slightly curved and wax white in colour.

***Oxybelus sakuranus* sp. nov.**

This species is characteristic in the structure of the postscutellar squamae, especially of their interspace. But the combined characters of the structure of the propodeal mucro and the clypeus, the general punctuation and the colour of the caudal segment of the abdomen and the legs are also useful for separating this species from other known congeners.

♀. Length about 5.5 mm. Black with the following portions yellow : Mandibles (somewhat brownish) except base and apex, two small spots on pronotum, humeral angles, tegulae of wings (basally brownish), posterior margin of lateral areas of scutellum and of postscutellum (both semitransparent), squamae and the triangular area between them, lateral maculae on abdominal tergites 1-4, apex of femora and tibiae except inside, of all legs. Yellow of front femora broad, in other two pairs narrow. Front tarsi yellowish brown. Mandibles at apex, mid tarsi and wing veins brown to dark brown. Antennae slightly purplish dark brown, beneath partly ferruginous brown. Apical margins of abdominal segments 1-5, dorsally and ventrally, semitransparent yellow. Vestiture comparatively close, on clypeus and frons long, fairly dense and silvery.

Head seen from above with ocelli in a curve, anterior ocellus slightly smaller and surrounded by the impression which is extended to interspace between postocelli, antero-internal area of each postocellus and vertex medio-posteriorly slightly raised, while oculocellar areas somewhat impressed, OOD slightly less than half as great as POD (11 : 4.5 postocellus relatively 4). Head seen in front (Fig. 20) wider than long (52 : 41), inner orbits markedly roundly divergent in both directions, minimum interocular distance slightly wider than eye (21 : 16), clypeus (Fig. 21) strongly raised in middle, with medial produced area comparatively broader than in *O. strandi* (cf. Fig. 11), seen from beneath with labrum rounded (Fig. 22), mandible (Fig. 23) long, with a blunt triangular tooth on inner margin before middle. Antennae comparatively long, joint 3 approximately 2.3 times as long as broad at apex (dorsal view). Pronotum anteriorly carinate, with lateral corners rounded, mesonotum very feebly impressed on median area. Scutellum, postscutellum with squamae and propodeal mucro : Fig. 24; squamae lamellar, semitransparent yellow, the interspace broad triangular with apex rounded, ambur yellow in colour and marginated with fine dark brown carinae, the contrast very conspicuous. This area medianly longitudinally carinate, the carina roundly raised upward in the lateral view (Fig. 25, c), mucro short, triangular, excavated above by an elongate hollow, its lateral view : Fig. 25, m. Posterior inclination of propodeum laterally strongly carinate, the enclosed area below mucro elongate quadrangular, with apical attenuating half wholly excavated by a large polished impression. Pygidial area broad triangular, with apex showing an angle of about 60°. Front metatarsal spines less developed (Fig. 26, but constant ?).

Punctures on upper frons mediocre, close, longitudinally confluent, on vertex somewhat sparse, with interspace generally as large as punctures, on lower frons slightly smaller and close, supra-antennal area also punctate, only a narrow longitudinal impunctate line observed above each antennal base; clypeus finely closely punctured up to near the apical margin. Mesonotum with punctures somewhat larger, sparser, intervals as large as punctures, on posterior margin coarsely crenate, partly foveolate, the median stria the strongest and distinct; scutellum punctured as on

mesonotum, with margins carinate, accompanying coarsely crenate shallow furrow inside, the medio-posterior carina longer and stronger, but not reaching middle of the disc, disc polished, triangular area between postscutellar squamae with surface uneven. Propodeum on posterior inclination with interspace between oblique carinae transversely coarsely striate, with intervals finely wrinkled, only the medial impression polished (but on extreme apical portion with some feeble striae). Abdominal tergites finely punctate, punctures comparatively sparse, with intervals as large as points on tergite 2, slightly broader on tergite 3; sternite 2 closely punctured up to the end of the segment except the apical membranous margin, the punctures shallow, only the anterior outline distinct.

Holotype : ♀, Saitama Prefecture (Yorii:Sakurazawa), VIII, 1930, K. Tsuneki leg.

Remarks. The specimen was observed some 30 years ago to enter the burrow which opened on the sand plane of the river Arakawa and captured when it came out of the nest. Since that time it was kept in a bottle, but has been missed among other specimens in the course of my removals. Quite recently I could rediscovered it mingled among other specimens and in the slightly damaged state—one of the antennae and one of the front and mid legs were lost. It appeared in some time to be immersed in alcohol and the colour is certainly somewhat changed. In the above description the fact was taken into consideration.

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