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STUDIES ON THE GENUS TRYPOXYLON LATHEILLE
OF THE ORIENTAL AND AUSTRALIAN REGIONS
(HYMENOPTERA SPHECIDAE)

VIII. SPECIES FROM NEW GUINEA AND
SOUTH PACIFIC ISLANDS

IX. SPECIES FROM AUSTRALIA

By K. TSUNEGI

M I S H I M A

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SOUTH PACIFIC ISLANDS

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S y n o p s i s

Forty-five species including 30 new species and 6 new subspecies are recorded, of which one from the Society Islands belongs to subgenus Trypargilum. Of the species occurring in New Guinea and the eastern adjacent islands only a few are in common with the western regions already treated in the present paper and most of such species are the inhabitants of the eastern part of the Sunda Islands.

The material used in the present Part are the collections of Bernice P. Bishop Museum, Honolulu, Imperial Museum of Natural History, Leiden, British Museum (Natural History), London, American Entomological Institute, Ann Arbor, California Academy of Sciences, San Francisco, United States National Museum of Natural History, Washington, Zoological Museum of University of Copenhagen, Copenhagen, and Hungarian National Museum of Natural History, Budapest. To the Directors and Curators of these Museums I express my cordial thanks. Besides the above, a considerable number of the specimens that were assembled by Dr. Karl V. Krombein, Washington, for his own investigation of the South Pacific Sphecidae were turned to me from him for the present work, to whom I express also my especial thanks.

The distribution of the species of the present genus in New Guinea and its eastern Archipelagoes makes no exception to the concept of the Zoogeographical Regions. Those which are common with the Indian Subcontinent are but two, schmiedeknechti Kohl and flavipes m., of which the former belongs to a different subspecies. Trypoxylon petiolatum Smith and T. errans Saussure, the widely spread Oriental species, are listed also in the present Part, but they occur in reality on the comparatively northern Pacific Islands only, Guam, Hawaii (introduced) and Ogasawaras, and not in New Guinea and its eastern Islands. Trypoxylon placidum Smith, eximium Smith and bituberculatum m. that are treated here and that are also listed in Pt. VI of the present paper occur there, except eximium, on the island belonging to the Australian Region, namely Island Misoöl (Mysol), while Trypoxylon ferox Smith, wallacei m., obiense m., gracillescens Smith, elegantulum Smith, meluccana m. and wegeneri m. that are known from Celebes or its eastern Islands have not as yet been collected in New Guinea. They may respectively be endemic to the island they occur.

As to the zoogeographical assignment of Celebes, viewed from the distribution of the species of the present genus, it should be included within the range of the Oriental Region, because it has no common species with New Guinea and, on the contrary, it has such widely spread Oriental species as T. petiolatum and errans.

On the other hand, one of the New Guinean species occurs also in Borneo (eximium Smith) and one of the Philippine and Bornean species (minda-naonis m.) is collected in New Guinea. Possibly the two species may have strayed out respectively. While, as to the two Papuan and Solomon species that are also recorded from Luzon (papuanum m. and solomonense m.) it seems to me that the specimens might be mislabelled, because the two distributional areas are remotely separated from each other without any record from the intermediate localities and the collectors are the same professional persons. At any rate, in order to accept the occurrence of the two species in Luzon the reconfirmation is necessary.

There are three noteworthy facts regarding the species of the areas covered by the present Part. The first is that there is no golden-haired species. The second is the abundance of such a species as that which has the markedly roundly elevated swellings on both sides of the frontal furrow. The third and the most important fact is that there are some minor species groups in each of which the species are distinctly separated from each other in the male by the structure of the genital organs and/or the eighth sternite of the gaster, yet externally they are very closely similar to each other and to distinguish them we must rely upon some trivial differences, e.g. colouration of the legs and punctuation of the scutum or propodeum, that fall, under usual standard of classification, within the range of variation of a species. Accordingly the sex combination is very difficult among them. When the material is rich we can examine the range of variation in each species and can find out the specific characters, however slight they may appear. When the material is scarce and without the male, however, the separation of the species is frequently very difficult and those that were erected under such a condition are only provisional and need the reconfirmation upon the basis of the male. There are some such species among those that are described in the present paper.

As to the division of New Guinea Island eastern half of the Island (=New Guinea s. str. + Papua) is called, for convenience, "Eastern New Guinea" and is abbreviated to E.N.G. "New Guinea" is used, as a rule, sensu New Guinea Island and not as New Guinea of the administrative Division.

ABBREVIATIONS

- Al, A2 and so on ... Antennal joint 1, Antennal joint 2 ...
Al0-12 ... Al0+Al1+Al2.
ASR ... Antennal socket rim (raised upper part of antennal socket)
AW ... Apical width or Width at apex (always maximum width, in case of A3 very frequently in lateral view).
BW ... Basal width or Width at base (always maximum width near base).
CV1, CV2 ... Abscissa 1 of cubital vein, Abscissa 2 of cubital vein ... (see p. 10).
G1, G2 ... Gastral segment 1, Gastral segment 2 ...
GSR ... Gastral socket rim, really the dorsal rim of socket of lifting muscle of gaster (sometimes simple and not raised, but frequently highly, roundly or subtriangularly raised).
HL ... Head length at inner orbit in dorsal view (not in middle where particularly longer due to SAT).
HW ... Head width in dorsal view (always maximum width).
IAA ... Interantennal area.
IAF ... Interantennal furrow.
IOD ... Interoocular distance or distance between eyes.
IODc ... Minimum IOD at about base of clypeus (frontal view).
IODv ... Minimum IOD at vertex (dorsal view).
IODs ... Ratio of IODv to IODc, usually shown by IODv as 10.
L/W ... Ratio of length to width.
Ma ... Maximum width (in case of gastral petiole dorsal view).
Mi ... Minimum width (ditto, usually just behind basal condyle, but sometimes in front of apical swelling).
2(Ma), 3(Ma) ... Length of G2 (Maximum width of G2), ditto of G3.
OOD (or OD) ... Ocellular distance, namely the distance between inner margin of compound eye and outer margin of hind ocellus.
Od ... Ocellar diameter (transversely measured).
P ... Petiole = G1
PAF ... Post antennal furrow, transverse or oblique furrow between ASR and SAT.
PD ... Puncture diameter.
PIS ... Puncture interspace.
POD ... Postocellar distance, distance between inner margins of hind ocelli.
RC ... Radial cell of fore wing (see p. 12).
RI ... Apical produced part of RI beyond the meeting point with Rs, often very long.
SAT ... Supraantennal tubercle, nasiform or tuberiform, characteristic to species.
TCV ... Transverse cubital vein (see p. 12).
T1, T2 ... Tarsal joint 1, tarsal joint 2 ...
W:L ... Ratio of Width to Length.

FORMULAE

Formulae always show the relative length.

- HW, HL, IODv, A3, Al3, P= ... measured under the standard of HW as 100.
P, Ma, Mi, 2(Ma), 3(Ma)= ... measured under the standard of P as 100.
A3, 4, 5=...measured under the standard of A3 as 10.

On the KEY TO THE SPECIES

1. When a character is variable or intermediate and fits for both of the couplet the species is put under both of the couplet.
2. AW of A3 and BW of Al3 are always measured from the widest side.
3. Length of gastral petiole (P or G1) is the total length, measured from the extreme base of basal condyle to the apex.

KEY TO THE SPECIES

- 1 Frons without SAT, but with a triangular elevation at the centre, ASR shortly extended upwards (Fig. 1), propodeum not stretched posteriorly, with dorsal and posterior aspects forming a distinct angle in lateral view (Fig. 6) (body, antenna and legs black, spurs ferruginous, hair on clypeus silvery, on frons brassy, metapleural flange horizontally expanded, GSR vertically roundly raised - in Fig. 6 -, frons microreticulate and coarsely rugoso-punctate, propodeum without lateral carinae, area dorsalis without lateral furrows, intercoxal carina highly roundly upcurved), 13 mm, Society Is. (*Trypargilum nitidum mooreaense* ssp. nov., ♀) 2
- Frons with SAT-ASR, propodeum stretched posteriorly ... (*Trypexylon*) 2
- 2 Frons with shield-shaped enclosure, sometimes marginal carinae of the enclosure partly obtuse (see Part I) 3
- Frons without such an enclosure 4
- 3 The enclosure medianly constricted, with carina of upper part not acute, 10 mm or so, New Guinea, Australia, Solomon Is. (Philippines ... doubtful) *papuanum* Tsuneki, 1977
- The enclosure not constricted, lower carinae straight, all carinae acute and distinct, 10 mm or so, New Guinea, Australia, Bismarck Archipelago *schmiedeknechti connexum* Turner, 1908
- 4 Gastral petiole clavate, gradually widening apically, as long as, or shorter than G2+3 5
- Gastral petiole flask-shaped, apical swelling rather sudden, with parallel-sided stalk area before swelling, usually longer than, sometimes as long as, G2+3 10
- 5 G1, 2, 3 each with a fovea at apex in middle, subalar area without pentroof structure (head thick, subquadrate from above, frontal elevation as a whole longer than wide, collar thick, anterior part roughly trituberculate, propodeal sternite present, lateral furrows of area dorsalis indistinct, R1 longer than TCV, G4 ferruginous at base) 6
- G1, 2, 3 each without fovea, subalar area with pentroof structure (head transverse, frontal elevation as a whole wider than long, collar thin, narrow ridge-like, propodeal sternite absent, lateral furrows of area dorsalis distinct, R1 = or shorter than TCV) 7
- 6 Frons and mesoscutum microcoriaceous and fairly closely superimposed with fine distinct punctures (medio-apical prominence of clypeus minutely incised, metapleural flange long, ante-coxal tubercle of prosternum without tooth on inner margin), 8-9 mm, New Guinea, Australia (Laos, Ceylon, Borneo, Philippines) *flavipes* Tsuneki, 1979
- Frons and mesoscutum without microsculpture, finely, fairly closely punctured (medio-apical prominence of clypeus smaller, without incision in middle, metapleural flange shorter, ante-coxal tubercle of prosternum with a tooth on inner margin), 8 mm, Bismarck Archipelago *pinguiceps* Tsuneki, 1976
- 7 Antenna, clypeus and mid leg completely black, mesoscutum deeply furrowed till apex (IODs≐3:1, gaster and hind leg black, fore leg partly brown, pentroof structure somewhat incomplete), 6.5 mm, New Guinea *karimui* sp. nov., ♂
- Antenna basally beneath, clypeus apically, fore and mid legs largely ferruginous or yellow, mesoscutum shallowly impressed in middle, but impression not reaching apex (IODs≐3:1, pent-roof structure complete) 8
- 8 ♂, mesoscutum shining, finely closely punctured, fore and mid coxae largely yellow, apical margin of clypeus: Fig. 24 (A3≐AW×3.5, A13 slightly longer than wide at base, shorter than A11+12, mid femur brown, fore and mid tibiae yellow, mid T1 yellow except apex), 7.5 mm, New Guinea *straatmani* sp. nov.
- ♀, mesoscutum nearly mat, more finely and more closely punctured, fore and mid coxae largely black, clypeus different in the apical form 9
- 9 Apical margin of clypeus broadly truncate; Fig. 27 (parapsidal sutures of mesoscutum distinctly impressed), presumably 10-11 mm, New Guinea *owrichardsi* sp. nov.
- Apical margin of clypeus gently rounded out and medianly bluntly bidentate (parapsidal sutures in raised lines), 11 mm, Solomon Is. (Choiseul I.) *choiseulense* sp. nov.
- 10 Hair on clypeus golden or brassy none
- Hair on clypeus silvery 11

11	Propodeum with lateral carinae, carinae sometimes incomplete or weak	12
—	Propodeum without lateral carinae	46
12	Mesoscutum microcoriaceous and superimposed with fine punctures, but surface not mat (gaster completely black)	13
—	Mesoscutum without microsculpture, simply punctured	14
13	Legs completely black, RC=B (microsculpture on mesoscutum distinct, PAF deep, ASR with a hollow on posterior wall, IODs=1:1, SAT nearly flat, medianly carinate, apical margin triangular, acutely edged, area dorsalis indistinctly enclosed with shallow furrow, posteriorly transversely striate), 9 mm New Guinea (Philippines, Borneo and Java) <u>mindanaonis</u> Tsuneki, 1976	
—	Fore tarsus ferruginous, RC=C, clypeus with medio-apical incision (microsculpture on mesoscutum weak, PAF shallow, down-curved in cross section, ASR almost without posterior wall, IODs=10:9, SAT tuberiform, anteriorly not triangularly edged, area dorsalis similar, but posteriorly with only a few weak striae), 11 mm, Bonin Is. <u>chichidzimaense</u> Tsuneki, 1973	
14	Frons on each side of medial furrow markedly roundly swollen	15
—	Frontal elevations not so strong	32
15	♀	16
—	♂ (gaster nearly completely black)	30
16	G1-3 ferruginous (legs also broadly ferruginous, IODs=10:5, clypeus simply rounded out, SAT nasiform, PAF moderately deep, bottom line upcurved, frontal elevations and mesoscutum polished, sparsely punctured, lateral furrows of area dorsalis shallow and weak), 10-11 mm, Myssol and New Guinea <u>placidum</u> Smith, 1864	
—	G1 black	17
17	All tarsi except arolia completely white (frontal elevations comparatively low, clypeus: Fig. 99, IODs=10:7, SAT high narrow nasiform, gaster medianly reddish except dorsal side, lateral carinae of propodeum weak, sometimes almost indistinct, lateral furrows of area dorsalis distinct), 13-14 mm, New Guinea <u>tengu</u> sp. nov.	
—	At least hind T1 black	18
18	Mid tarsus completely black (clypeus: Fig. 103, IODs=10:8.5, dorsal and posterior aspect of propodeum except area dorsalis transversely finely and closely striate), 13 mm, New Guinea <u>oriomonis</u> sp. nov.	
—	Mid tarsus at least T1 whitish or ferruginous	19
19	Punctures on frontal elevations strong and close, usually microsculpture also strong, surface nearly mat (rarely somewhat shining), propodeum nearly wholly transversely strongly and closely striate (clypeus: Fig. 53, punctures on mesoscutum also strong and close), 11-13 mm, New Guinea <u>angoramum</u> sp. nov.	
—	Punctures on top areas of frontal elevations not so close, propodeum not so broadly striate	20
20	IODs=A3 (CV1=CV2×3.5, punctures on lateral areas of mesoscutum strong, irregular in distribution), 10 mm, New Guinea <u>chimbusum</u> sp. nov.	
—	IODc about 2/3 - 3/4 of A3	21
21	Frontal elevations especially high, median furrow very deep, SAT also higher than usual (Fig. 63-65) (typically surface of frontal elevations smooth and polished, with sparse strong punctures, median produced part of clypeus with surface medianly depressed - Fig. 66), 11-13 mm, New Guinea <u>popondettae</u> sp. nov. ...	22
—	Frontal elevations not so particularly high	23
22	A3=AW×4 (sometimes weak microsculpture defined on frons, usually G2-3 with narrow reddish area) <u>nominate</u> form	
—	A3=AW×4.5 (frontal elevations slightly lower than in typical form and weakly microcoriaceous, G2-3 broadly reddish), Is. Woodlark <u>ssp. woodlarkense</u> ssp. nov.	
23	Propodeum on posterior inclination at least, broadly but not always completely transversely striate (apical margin of clypeus mostly: Fig. 37, more or less varied: Figs. 39-43), 11-14 mm, New Guinea <u>bituberculatum</u> Tsuneki, 1977 ..	24
—	Propodeum on posterior inclination broadly smooth and polished	25
24	G1 appr. 5 times as long as wide at apical swelling, gaster medianly reddish, at least beneath <u>typical</u> form	
—	G1 appr. 3.3 times as long as wide at apical swelling, otherwise as in <u>form biroi</u> Tsuneki, 1977	
25	Frontal elevations comparatively large, reaching anteriorly level of upper	

- end of SAT and very sparsely punctured (frontal median furrow deep) 26
- Frontal elevations comparatively small, not reaching level of upper end of SAT and sparsely punctured 28
- 26 Frontal elevations half mat, median furrow comparatively less acute (A3=AW×4.7, clypeus: Fig. 86, CV1≠CV2×4, TCV≠CV2, hind T3-5 pale ferruginous, T3 medianly marked with brown), 10 mm, New Guinea olthofi sp. nov.
- Frontal elevations fairly shining, median furrow comparatively more acute than in above species 27
- 27 A3 slender, ≠AW×4.5 (gaster medianly on sides alone dark red, clypeus with apical margin not bevelled in middle, mesoscutum sparsely punctured, lateral furrows of area dorsalis not striate), 12 mm, New Guinea warisum sp. nov.
- A3 robust, ≠AW×4.0 (gaster medianly on sides and beneath bright red, clypeus with apical margin bevelled, mesoscutum more closely punctured, lateral furrows of area dorsalis striate), 12 mm or so, New Guinea hollandiae sp. nov.
- 28 Apical margin of clypeus subtriangular, apex rounded and impressed on produced area - Fig. 89 (punctures on frontal elevations strong and sparse, G2 and 3 except dorsal side broadly red), 11 mm, New Guinea mafuluense sp. nov.
- Apical margin of clypeus not so narrow at apex and gently emarginate in middle - Figs. 93 and 95 (gaster medianly comparatively broadly red) kaitum sp. nov. .. 29
- 29 A3=AW×4 (frontal elevations fairly shining, with punctures comparatively close, PIS mostly 1-2 times PD), 9.5 mm, New Guinea nominate form
- A3=AW×4.5 (frontal elevations less shining, punctures comparatively sparser, PIS mostly 2-3 times PD), 11 mm, Is. Umboi ssp. umboiense sp. nov.
- 30 A3≠I0Dc in length, median furrow of frons very shallow, mid T2-5 brown or dark brown (apical split of paramere of genitalia shallow), 7.5 mm, New Guinea warisum sp. nov.
- A3 < I0Dc, median furrow of frons deep, mid T5 only brown or dark brown (apical split of paramere of genitalia deep, Al3: Fig. 46) 31
- 31 Sternite 8: Fig. 50 (genitalia in ventral view: Fig. 48, notice A!) angoramum sp. nov.
- Sternite 8: Fig. 62 (genitalia in ventral view: Fig. 58, separation by external characters impossible) popondettae sp. nov.
- 32 Gaster medianly with reddish area 33
- Gaster completely black 39
- 33 ♀ 34
- ♂ 36
- 34 All trochanters ferruginous or whitish, often somewhat brownish above (clypeus with medio-apical margin recurved and minutely impressed just behind margin, PAF deep, flat-bottomed, mesoscutum comparatively strongly punctured), 8-9 mm, Guam and Hawaii (introduced), widely in Oriental Region errans Saussure, 1867
- All trochanters black, over 10 mm 35
- 35 All tarsi except arolia white (clypeus rounded out, frons broadly flat, area dorsalis without lateral furrows), 13-17 mm, New Guinea, Is. Mysol albitarsatum huonense Tsuneki, 1977
- Mid tarsus largely and hind tarsus on T1 and 5 more or less darkened (pale part of tibiae and tarsi not white, but yellow), 15 mm, Woodlark Island albitarsatum muruanum ssp. nov.
- 36 All tarsi white (sometimes mid T5 brownish, Al3 very long, =A7-12, rarely ≠8-12), 11-13 mm, New Guinea, Misoöl I. albitarsatum huonense Tsuneki, 1977
- At least hind T1 darkened (Al3 A7-12) 37
- 37 All trochanters largely whitish, at least pale brown, hind tarsus at least largely dark brown (Al3≠A8-12), 8-9 mm, Guam and Hawaii (introduced), widely spread over Oriental Region errans Saussure, 1867
- All trochanters black, hind tarsus largely whitish, 13-15 mm 38
- 38 SAT moderately high nasiform, acutely carinated in middle, Al3=A9-12 (lateral carinae of propodeum consist of intermittent rugae, incomplete), New Ireland, New Britain, Lavongai I. New Pommern, Woodlark I., New Guinea

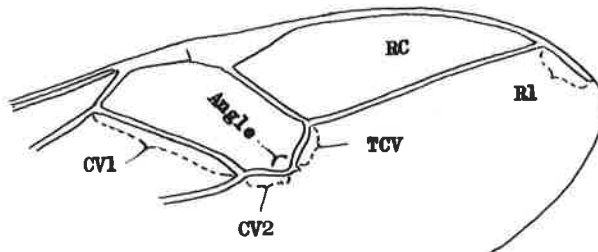
- widely, Australia, Sarawak and I. Obi
- SAT low, tuberiform, gently carinated in middle, $Al_3=A_7-12$ (mid T1 at apical half and T2-5 somewhat dark), 11-12 mm, Woodlark Is. *eximium* Smith, 1859
- 39 Length 8 mm, IODs=5:2 (punctures on mesoscutum at antero-lateral area comparatively large, strong and fairly close, fore and mid tibiae except folded side and all tarsi ivory white, SAT moderately high broad nasiform, PAF moderately deep, upcurved, frontal rounded elevations gentle, large, oval in outline and obliquely inclined towards medial line which is not shining, clypeus: Fig. 125, $A_3=AW \times 3.7$), New Guinea *albitarsatum muruanum* ssp. nov.
- Much larger, 10-15 mm, IODs=2:1 - 1:1 *sedlaceki* sp. nov., ♀ 40
- 40 Legs black, but fore tarsus ferruginous (mesoscutum under high magnification delicately microcoriaceous, see also couplet 13) *chichidzimaense* Tsuneki, 1973, ♀
- Legs different in colour 41
- 41 IODs=2:1 - 5:3, hind T1 wholly or largely black, punctures on frons weak and indistinct, those on mesoscutum weak and sparse (apical margin of clypeus medianly minutely incised, SAT nasiform, frontal furrow with bottom line shining, fore and mid tarsi white) 42
- IODs=5:4 - 5:5, hind T1 white, punctures on frons strong and distinct, on mesoscutum distinct, fairly close (apical margin of clypeus entire, medianly incrassate, SAT rather tuberiform, frontal furrow with bottom line not shining) 43
- 42 $A_3=AW \times 5$, 11-13 mm, New Ireland, New Guinea *eburneipes* Tsuneki, 1977, ♀
- $A_3=AW \times 4$, 11 mm, New Guinea (West Irian) *eburneipes* Tsuneki, aberratio, ♀
- 43 ♀ 44
- ♂ 45
- 44 Fore and mid tibiae and tarsi brown or pale brown ($A_3=AW \times 4$, hind tarsus white and T1 with a series of 3-4 small black spots on outer side, apical margin of clypeus rounded out, medianly incrassate), 18 mm, New Britain *albitarsatum* Tsuneki, 1977
- Fore and mid tibiae and tarsus white ($A_3=AW \times 4-4.5$, hind T1 without a row of black spots, often mid T5 with a brown mark), 14-15 mm, New Guinea and Is. Mysol *albitarsatum huonense* Tsuneki, 1977 (black gastered form)
- 45 $Al_3=A_7-12$ or nearly (area dorsalis distinctly but sparsely punctured, sides of propodeum on dorsal half closely covered with indistinctly outlined comparatively large punctures), 11-12 mm, New Guinea *albitarsatum huonense* Tsuneki, 1977 (black gastered form)
- $Al_3=A_8-12$, or $=A_9-12$ (area dorsalis smooth, sides of propodeum very finely, fairly closely punctured except anterior femoral sinus), 11-12 mm, New Guinea *albitarsatum huonense* Tsuneki, aberratio
- 46 Subalar area of mesopleuron with well developed pent-roof structure (IODs=10:8 - 10:9, $Al_3=A_{10-12}$, clypeus: Figs. 142, ♀ and 148, ♂, SAT low nasiform, PAF shallow, V-shaped in cross section, all tarsi completely white), 11-13 mm, New Guinea *longicorne* Tsuneki, 1977
- Subalar area of mesopleuron without pent-roof structure 47
- 47 IODs=3:1 (less than 8 mm, head thick, subquadrate in frontal view, femora of legs remarkably incrassate, gaster medianly reddish beneath, antenna basally, fore and mid legs largely yellowish, mesoscutum under high magnification feebly microcoriaceous) *crassipes* sp. nov., ♀
- IODs=2:1 or larger, over 10 mm 48
- 48 IODs=2:1 - 5:3 (clypeus rounded out and medianly minutely emarginate, PAF V-shaped in cross section, mesoscutum finely sparsely punctured, area dorsalis largely obliquely striate, tarsi except hind T1 pale yellow, often T5 slightly brownish, gaster black and slightly brownish on median area beneath, lateral carinae of propodeum anteriorly weakly defined), 12-13 mm, New Ireland and New Guinea *eburneipes* Tsuneki, 1977, ♀
- IODs=10:7 or larger 49
- 49 Gaster medianly red or reddish, sometimes on ventral side only, at least a part of mid and/or hind legs whitish 50
- Gaster completely black, mid and hind legs completely black (spurs more or less brownish) 67
- 50 Hind T1 completely yellow or white 51
- Hind T1 more or less dusky 55
- 51 ♀ (fore and mid tibiae largely yellowish, clypeus with apical margin medi-

- only broadly truncate and without median tooth, SAT moderately high nasiform, PAF down-curved in cross section, area dorsalis with weak lateral furrows, sometimes the furrow indistinct, gaster medianly red) 52
- ♂ (fore tibia broadly brown or dark brown, mid tibia nearly wholly black, apical margin of clypeus rounded, SAT-ASR and area dorsalis similar to those of ♀, gaster medianly reddish) 53
- 52 Mesoscutum somewhat strongly and fairly closely punctured, PIS mostly 1-2 times PD, 14-17 mm, Papua morobense sp. nov.
- Mesoscutum very finely and much more sparsely punctured, 14-15 mm, Papua wauense sp. nov.
- 53 Punctures on mesoscutum very fine and sparse, rather indistinct (8th sternite: Fig. 170), about 15 mm, New Guinea sacinasium sp. nov.
- Punctures on mesoscutum comparatively large, distinct but sparse 54
- 54 GSR not raised at apical margin, Al3=BWx3.3 (apical margin of clypeus medianly not incrassate, sternite 8: Fig. 177), 13.5 mm, Papua hibou sp. nov.
- GSR distinctly roundly elevated, Al3=BWx3 (apical margin of clypeus medianly distinctly incrassate, sternite 8: Fig. 184), 13 mm, Papua kokodaense sp. nov.
- 55 ♀ 56
- ♂ 63
- 56 G2 and 3 black, only on ventral side red or brown 57
- G2 and 3 wholly red, sometimes black marked above 59
- 57 Apical margin of clypeus even in fresh specimen rounded, without medial prominence: Fig. 197, hind tarsus black or dark brown, T2-4 on dorsal side only so (PAF almost down-curved in cross section, mid tarsus on apices of T1 and 2 and whole of T3-5 dark brown, rest pale yellow, frontal furrow broad and fairly deep, punctures on frons medium-sized and fairly close, those on mesoscutum fine and sparse, fore tibia except ferruginous base and fore side and mid tibia except base and apex black), 19-21 mm, NW region of West Irian lieftincki sp. nov.
- Apical margin of clypeus broadly truncate and medianly produced in fresh specimen, hind T3-4 pale brown or pale yellow (mid tarsus different in colour) 58
- 58 Frons fairly shining, with punctures large and markedly close (apical margin of clypeus: Fig. 191, PAF V-shaped in cross section, deeper than in eximium, mesoscutum strongly punctured, PIS on latero-anterior area mostly 1-1.5 times PD, ASR transversely closely striate, fore and mid tibiae broadly pale brown, mid T1-4 pale yellow, on T1 and 2 partly slightly darkened in some light), 20 mm, Papua (Morobe Dist.) townesi sp. nov.
- Frons mat, with punctures medium-sized and comparatively sparse, PIS 1-3 times PD (apical margin of clypeus truncate and medianly toothed, PAF wide V-shaped in cross section, mesoscutum strongly and more closely punctured, PIS mostly ≠PD, ASR broad and smooth, often weakly striate), 17-20 mm, NW region of West Irian and Is. Schoutan and Misool eximium gracillimum Smith, 1864
- 59 Fore and mid tibiae broadly dusky, hind tarsus black or dark brown (apical margin of clypeus rounded or subtruncate, without medial prominence) 60
- Fore and mid tibiae except folded side broadly ferruginous or yellowish, mid tibia often brown, hind tarsus at least T3-4 ferruginous or yellow (apical margin of clypeus truncate, in fresh specimen with a prominence in middle) 62
- 60 Antennal flagellum brownish beneath (mid tarsus except brownish T5 ferruginous or pale yellow, apical margin of SAT bluntly edged, PAF fairly deep, V-shaped in cross section, punctures on mesoscutum fine and sparse), 13-15 mm, Hawaii and Bonin Is. (widely spread over Oriental Region and East Asia) petiolatum Smith, 1857
- Antenna completely black (mid tarsus broadly black, SAT smoothly inclined to IAA and PAF, PAF small shallow V-shaped, nearly down-curved in cross section) 61
- 61 Punctures on mesoscutum fine and sparse, on antero-lateral area PIS 2-4 times PD (G2-3 dark red, broadly black above, sometimes ventral side only red (see also couplet 57) lieftincki sp. nov.
- Punctures on mesoscutum medium-sized, closer, PIS 1-2 times (mostly as large as) PD (G2-3 bright red, with brown mark above, apical margin of clypeus: Figs. 218-220, mid T1 pale yellow, from its apex to T5 black or dark

- brown, hind tarsus except underside of T4 black, frontal furrow somewhat deeper, elevations on both sides more distinctly rounded), 13-17 mm, Papua novaguineae sp. nov.
- 62 Apical margin of clypeus truncate in fresh specimen, medianly distinctly toothed, PAF shallow, broad, nearly down-curved in cross section (punctures on mesoscutum comparatively stronger and closer, on antero-lateral areas PIS mostly 1-1.5 times PD), 15-20 mm, New Guinea, Bismarck Archipelago (Aru and Kai, Borneo and Australia) eximium Smith, 1859, s. str.
- Apical margin of clypeus in fresh specimen: Fig. 204, PAF deeper, small V-shaped in cross section (punctures on mesoscutum comparatively slightly smaller and slightly sparser, on the said area PIS mostly 1.5-2 times PD), 14-17 mm, Papua lae sp. nov.
- 63 Mid and hind tarsi wholly dark brown or black (SAT anteriorly margined with a blunt edge, PAF deep, flat-bottomed, U-shaped in cross section, IODs=10:8, A3=A10-12, punctures on mesoscutum fine and sparse, G2-3 red, each with a dusky mark above), 10-13 mm, Hawaii and Bonin Islands (widely in Oriental Region and East Asia), petiolatum Smith, 1859
- Mid and hind tarsi not completely brown or black (SAT smoothly inclined to IAA and PAF, PAF shallow, broad V-shaped or down-curved in cross section, A13 ÷ A10-12) 64
- 64 A3=AW×2.7, frons very finely and indistinctly microcoriaceous and sparsely superimposed with medium-sized flat-bottomed punctures (punctures on mesoscutum strong and close, on antero-lateral area PIS mostly as large as PD, 8th sternite: Fig. 186, volsella of genitalia comparatively broad; Fig. 184), 15-17 mm, New Guinea, Bismarck Archipelago, Australia (Aru, Kai and Borneo) eximium Smith, 1859, s. l. ... 65
- A3=AW×2-2.3, frons distinctly microcoriaceous and more closely superimposed with comparatively larger punctures (punctures on mesoscutum similar in size and strength, but somewhat sparser, PIS mostly 1.5-2 times PD, 8th sternite: Fig. 207, volsella much slenderer; Fig. 208), 12-15 mm, Papua lae sp. nov. .. 66
- 65 Gaster medianly red, more or less black marked above eximium Smith, s. str.
- Gaster black and feebly reddish or brownish medianly beneath, 13-15 mm, NW district of West Irian and Mysol eximium gracillimum Smith, 1864
- 66 Fore T1 pale yellow, mid and hind T1 broadly dusky, T5 sometimes brownish (frontal furrow comparatively shallow, elevations on both sides comparatively less rounded), Papua, lowland area lae sp. nov., s. str.
- Fore T1 and mid and hind T1, 2, 5 broadly dusky (frontal furrow comparatively deeper, with elevations on both sides appearing more rounded), Papua, highland area lae baiyerum ssp. nov.
- 67 ♀ 68
- ♂ 72
- 68 PAF deep, flat-bottomed, ASR highly bicarinate, hind carina strongly reflected (fore leg partly brown, area dorsalis distinctly enclosed with furrow, apical margin of clypeus truncate, broadly bevelled and emarginate, IODs=10:9, A3=AW×5, pronotal lamina toothed, genal process only slightly developed), 17-18 mm, New Britain bismarckianum Tsuneki, 1977
- PAF shallow or moderately deep, bottom line up-curved, hind carina of ASR not or not so strongly reflected 69
- 69 Fore tarsus brown, T1 and all spurs pale brown or whitish (usually fore tibia at base and in front ferruginous, frontal furrow moderately deep, elevations on both sides as much marked, PAF moderately deep, V-shaped in cross section, genal process only moderately developed, smoothly lowering posteriorly to turn into buccal carina, area dorsalis practically without lateral furrows), 13-16 mm, Solomon Is. malaitae sp. nov.
- Fore leg completely black 70
- 70 SAT with a transverse carina anteriorly which is connected on each end with hind carina of ASR (frontal furrow somewhat deeper than in solomonense otherwise very similar to this species), 17 mm, Solomon Is. guadalense sp. nov.
- SAT smoothly inclined anteriorly (PAF shallow and broad, down-curved or nearly in cross section) 71
- 71 Genal process well developed, markedly lengthened and flattened, posteriorly strongly lowering to turn into buccal carina (lamina on side of pro-

notum triangularly produced, apex toothed, lateral series of striae on dorsal aspect of propodeum strong and distinct), 15-20 mm, Solomon Is.

- solomonense sp. nov.
- Genal process moderately developed, only slightly lengthened, flattened and gently inclined posteriorly to turn into buccal carina (pronotal lamina triangularly produced, but with apex not toothed, lateral series of the striae of propodeum weak, anteriorly broadly obsolete), 18-19 mm, New Britain
kalilicum sp. nov.
- 72 Genal process strongly developed, lengthened and flattened, lamellate and markedly produced than level of buccal carina with which it is connected posteriorly (pronotal lamina triangularly produced, with apex toothed, lateral series of striae on propodeum strong and distinct), 13-17 mm, Solomon Is.
solomonense sp. nov.
- Genal process only moderately developed, posteriorly gently inclined and lowered to turn into buccal carina (pronotal lamina triangular, with apex not toothed, lateral series of striae on propodeum weak, anteriorly broadly obsolete), 17 mm, New Ireland
kalilicum sp. nov.



A figure to show the named parts of veins of fore wing.

DESCRIPTIONS AND RECORDS OF THE SPECIES

1. TRYPOXYLON (TRYPARGILUM) NITIDUM MOOREAENSE SSP. NOV.

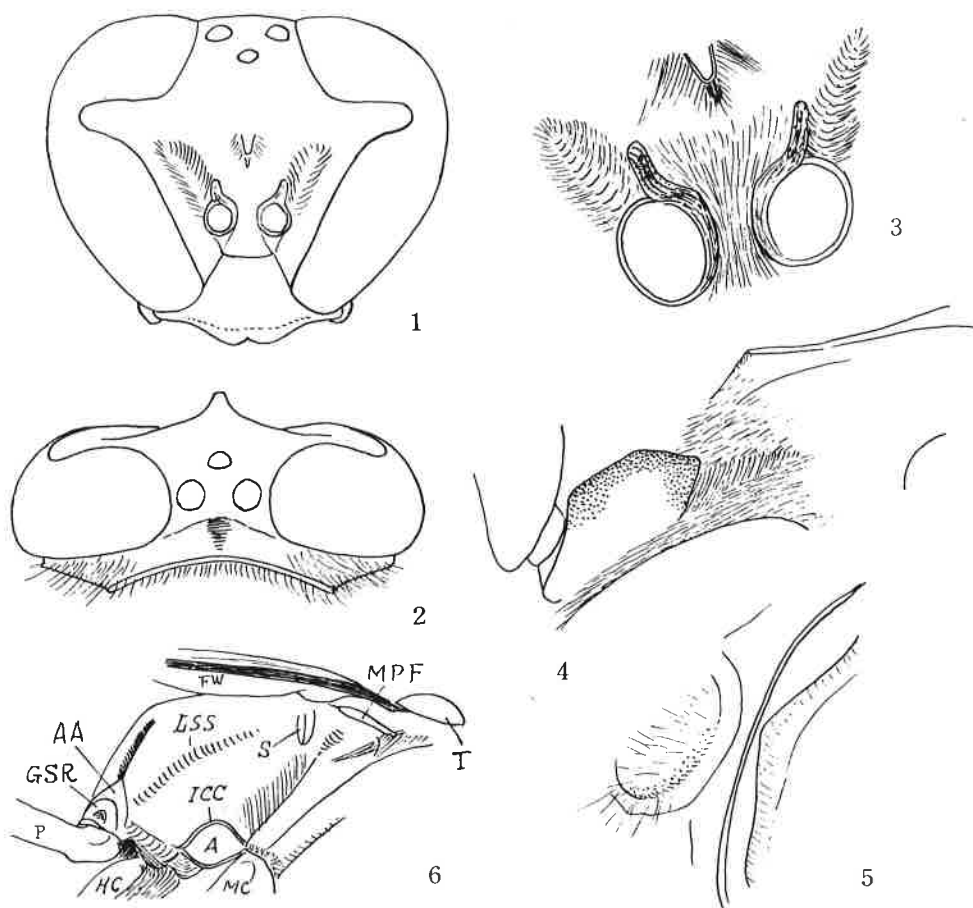
(Trypoxylon nitidum Smith, Cat. Hym. Brit. Mus., 4: 379, 1856 - ♀, Brazil)

(Trypoxylon (Trypargilum) nitidum: Richards, Trans. Ent. Soc. Lond., 82: 276, 1934
(key, synon., redeser., variat., distr. and biol., but with no fig. - Central and South America).

Trypoxylon nitidum: Menke, Proc. Ent. Soc. Wash., 81 (12): 303, 1979 (Tahiti).

The present specimens differ considerably from the typical form in the structure and sculpture of the frons and in the relative length of A3 and of hind femur and are treated as a geographical race. Possibly the specimen recorded by Menke from Tahiti belongs to the present subspecies.

♀. 13-14 mm. Black, mandible on basal half honey yellow, apically glossy reddish brown, maxillary pulp sparrow brown, apically slightly pale, posterior part of collar discoloured, yellowish, tegula semitransparent castaneous, basal plates, stigma and veins of wing almost black, very slightly brownish, gaster black, but on side and



Figs. 1-6. Trypoxylon (Trypargilum) nitidum mooreaense ssp. nov., ♀.

Abbreviations of Fig. 6: A...Intercoxal area. AA .. Area apicalis. FW .. Fore wing. GSR .. Gastral socket rim. ICC .. Intercoxal carina. HC .. Hind coxa. SS Lateral series of striae. MC .. Mid coxa. MPF .. Metapleural flange. P .. Petiole. S .. Spiracle. T .. Tegula.

underside of G2 and 3 somewhat glossy reddish, legs black, spurs, claws and spots at base of claws ferruginous. Hair around bases of antennae and on inner orbits brassy, nearly golden, but on clypeus silvery and very fine. Wings hyaline, RC along costa narrowly infuscated.

Head in frontal view (Fig. 1) with lateral margins roundly, strongly convergent towards clypeus, $W:L=100:82$, vertex only slightly depressed, tops of hind ocelli somewhat above level of tops of eyes, eye incision comparatively broad and shallow, subparallel-sided, with bottom broadly rounded, dorsal margin nearly horizontal, lower inner orbits nearly straightly convergent towards mid points of lateral margins of clypeus, frons weakly raised, median furrow shallow, with outline indistinct, heavily disturbed by strong close and confluent punctures, at the anterior end of furrow and slightly below middle of frons there is a minute elevation, dorsal surface of which longitudinally excavated and margined with carina like a short trough, from the rounded apex of elevation a short shining carina runs anteriorly tapering and soon disappeared. SAT lacking, the corresponding area flat and margined on both sides with a sort of ASR which extend thickly and divergently upwards for short distance, outside of which is scapal hollow which is very deep (Fig. 3, vertical view, somewhat from right side). Supraantennal flat area smoothly, gently obliquely inclined, through IAA to base of supraclypeal area. The structure in frontal view: Fig. 1, strange ASR and frontal tubercle seen from left side: Fig. 4, clypeus as given in Fig. 1, at base broadly roundly, considerably highly elevated (but with hair not convergent towards medial line), disc anteriorly tectate, apical marginal area completely black, glabrous and slightly reflected. Both palpi considerably moniliformed, ultimate joints somewhat elongate. Vertex on posterior inclination behind hind ocelli medianly longitudinally impressed (Fig. 2), the area without microsculpture, simply sparsely punctured and strongly shining, markedly contrasted with subopaque frons and eye incisions due to microsculpture and close contiguous punctures. Head seen from above: Fig. 2, remarkable is that the temples are very poorly developed, occipital carina strong, which on head beneath connected with postero-lateral part of buccal carina.

Measurements (within parentheses paratype): HW,HL,IODv,A3,P=100,46,23,22,86 (100,45,25,22,86). IODs=10:9.5 (10:9). OOD,Od,POD=1,4.5,4 (ditto). A3=AWx3 (AWx3.3). A3,4,5=10,7,6,5 (10,7.5,7.5). P,Ma,Mi,2(Ma),3(Ma)=100,38,19,60(48),62(76) (100,30,18,64(40),60(64)).

A3-6 each strongly incrassate towards apex, collar transverse, with anterior part in middle slightly shorter than posterior part, the latter discoloured and covered with dense brassy hair, anterior margin rather acutely edged and roundly incrassate towards sides, lamina: Fig. 5 (together with ante-coxal tubercle - pubescent - and lateral margin of pronotum - shown with doubled line), mesoscutum shorter than wide, scutellum transverse, lateral excavation small and shallow, mesopleuron with scrobe very minute and deep, mesopleural suture vertical and straight, mesoepisternal furrow weak, subalar area without pent-roof structure, prepectus with epicnemial carina only on dorsal half well developed, accompanied with crenate furrow, metapleural flange well developed, seen from above somewhat horizontally expanded laterally, with margin slightly rounded, discoloured and fringed with pubescence. Propodeum not markedly elongated posteriorly, forming dorsal and posterior aspects, in lateral view (Fig. 6, from right side) showing distinct angle between them, without lateral carinae, without area dorsalis and dorsal aspect without median furrow, but posterior aspect with a deep medial furrow which reach posteriorly area apicalis, interrupting dorsal marginal carina of the area, GSR broadly roundly vertically raised in touch with the wall of area apicalis (not obliquely, separately raised as in *Trypoxylon* s. str.), posterior surface of GSR slightly roundly excavated, with surface arcuately striate, intercoxal carina strongly up-curved (ICC in Fig. 6). G1 clavate, short and robust, basal condyle (apophysis) well developed, spiracles at about 1/5 from base. In fore wing $RC=B$, but with apex more remotely separated from wing apex than in usual B in *Trypoxylon* s. str., R1 very short, tapering, $CV1=CV2 \times 5.5$, $TCV:CV2=3:2$, TCV gently sinuate, angle about 130° , vestigial cubital cell 2 fairly distinct, also discoidal cell (in paratype quite the same). In hind leg coxal organ not well developed, tibia somewhat clavate, densely covered with short hair, appearing lustreless grey, with a series of 5 pits on outer surface (basal one very minute and far apart) and of 2 pits on postero-outer blunt edge.

On eye incision microsculpture weak, punctures finer and weaker than on frons, disc of clypeus, besides close hair-bearing points, some large punctures sparsely scattered, mesoscutum finely, but distinctly punctured, PIS shining and 2-3 times PD. Propodeum with lateral series of striae strong and distinct, on posterior aspect the striae extended inwards till the sides of medial furrow, area dorsalis more finely, closely and weakly punctured than on scutum, sides of propodeum closely covered with fine punctures, on femoral sinus punctures finer, but distinct, posterior part trans-

versely finely closely striate, gastral sternites smooth and polished, except posterolateral setiferous punctures.
♂, not collected.

Comparison with a specimen from Brazil

In this Brazilian specimen (♀, Belem, Para, 1924, leg. F. X. Williams) femora much more coarsely sculptured, with the impression or furrow on and above the tubercle not so long and not so enlarged upwards as in the Society specimens, and as a whole much more heavily disturbed with the punctures and rather indistinct; hair on head and thorax apparently somewhat longer and more abundant. A3 much longer and more markedly thickened apically, hind femur generally similar in form, but not so strongly incrassate apically and the legs, especially fore leg, without ferruginous coloration (according to Richards, 1934, however, this species markedly varies in colour of hair and legs). The body of this specimen are much larger than mooreaense.

Holotype: ♀, Moorea, Afareaitu, VII. 1959, J. Ragueau (BMNH)*.

Paratype: 1 ♀, Society Is., Raiatea, Uturoa, 0-100 m, III. 1971, N.L.H. Krauss (HPBM).

Remarks. The subgenus Trypargilum is in general form, especially in that of the thorax and propodeum, close to genus Pison, can be separated from Trypoxylon s.str. by the characters of the supraantennal area, hind wing hamuli and GSR. The members of the subgenus are the inhabitants of the New World and Tahiti and the Society Is. are the exception to their distribution. T. nitidum is the type species of the subgenus and common in Central and South America.

2. TRYPOXYLON PAPUANUM TSUNEKI, 1977

Trypoxylon papuanum Tsuneki, SPJHA, 6: 2, 1977 (6 ♀, New Guinea, 11 figs.).

Trypoxylon papuanum: Tsuneki, Ibid., 7: 12, 1978 (♀ ♂, New Guinea, Solomon Is., Australia and Luzon?, redescr., variation, 37 figs.).

Specimens newly examined:

1 ♀, Solomon Is. (Florida Is.), Siota, III. 1945, G. M. Bohart (CAS); 1 ♀, Solomon Is. Tulagi, Jungle, collecting mtd, 16. XII. 1934, H. T. Pagden (BMNH); 1 ♀, Solomon Is. (New Georgia Is.), Munda Pt area, 1. XII. 1943, J. G. Franclemont (USNM); 2 ♀, New Guinea, Saruwaged Mts., 500 m, 22. I. - 16. II. 1979, J. Sedlacek (AEI); 1 ♀, New Guinea, Markham River valley, Nadzab, 14. V. 1944, K. V. Krombein (USNM); 1 ♀, E.N.G., Morobe Prov., coast, Buse, 13-16. X. 1979 (Malaise trap), J. H. Martin (BMNH); 1 ♀, E.N.G., Morobe Prov., coast, Lasanga I., 21.X.-2.XI. 1979 (Malaise trap) J. H. Martin (BMNH).

3. TRYPOXYLON SCHMIEDEKNECHTI CONNEKUM TURNER, 1908

Trypoxylon connexum Turner, Proc. Zool. Soc. Lond., 30: 522, 1908 (♀ ♂, Australia).

Trypoxylon schmiedeknechti connexum: Tsuneki, SPJHA, 7: 40, 1978 (♀ ♂, Australia, New Guinea, Bismarck Is. Sumba Is.).

Specimens newly examined:

3 ♀, E.N.G., Morobe Prov., Wau, 1000 m, X. 1979, I. Gauld (BMNH).

4. TRYPOXYLON FLAVIPES TSUNEKI, 1979

Trypoxylon flavipes Tsuneki, SPJHA, 9: 24, 1979 (2 ♀, Laos)

Trypoxylon flavipes: Tsuneki, Ibid., 10: 8, 1979 (1 ♀, Ceylon).

Trypoxylon flavipes: Tsuneki, Ibid., 12: 17, 1980 (1 ♀ 1 ♂, Borneo).

Trypoxylon flavipes breve Tsuneki, Ibid., 13: 23, 1980 (1 ♀, Philippines).

Specimens examined: 6 ♀, New Guinea;

* Moorea is the island about 10 miles west of Tahiti and Afareaitu is on its east side facing Tahiti.

1 ♀, NW region, Biak Is., 25 km NE of Biak Town, about 150 m, 18. III. 1963, R. Straatman (Malaise trap) (HPBM); 3 ♀, SE region, Mamai Pltn., east of Port Glasse, 150 m, 31. I., 3. II. 1965, R. Straatman (light trap) (HPBM); 1 ♀, SE region, Milne Bay, about 10 m, III. 1965, R. Straatman (HPBM); 1 ♀, Bulolo, 13. II - 13. III. 1979, 800 m, J. Sedlacek (AEI).

Remarks. In the specimens above listed A3, 4, 5 are always =10, 9, 8 as in the typical and Bornean specimens and different from ssp. *breve* occurring on Is. Samar. IODs=10:3 (Biak), :3 (Bulolo), :3 (Milne) and :3.3 (all Mamai Plantation). There are two styles of sculpture of mesoscutum. In one of them surface finely, very closely punctured and microstriae (impressed lines) connecting punctures with each other are very feeble and not conspicuous (Bulolo) as in holotype from Laos (in holotype similar punctuation is observed till antero-lateral corners, but here punctures finer and sparser and weaker towards the corners). While in the other style punctures somewhat sparser and PIS more strongly covered with micronetwork of striae and surface appears less glossy, and often (in Bias specimen) nearly mat.

In the specimens from Biak and bulolo fore femur completely yellow, while in those from Mamai Plantation and Milne Bay it carries a considerably large elongate brown mark above and beneath. Mid femur in Biak specimen very feebly brownish above, in the others always distinctly brown above and beneath. Fore tibia, tarsus, mid tibia with



part of T1 and hind tibia at base always yellow, mid T1 in Bulolo specimen completely, in others till half or till 2/3 from base yellow. Colouration of the legs in the New Guinean specimens is considerably different from that of the typical form and rather closer to the Bornean specimens except one from Biak Island which is rather

close to the holotype in this respect. Metapleural flange usually raised obliquely upwards, but sometimes more or less expanded horizontally, always lamellate, usually anterior part black and the rest amber yellow, but sometimes completely black.

Apical margin of clypeus: Fig. 7, similar to that of the Bornean female, but somewhat different from the typical form. Measurements with one of the Mamai specimens:

HW, HL, IODv, A3, P=100, 64, 29, 22, 14.5. IODs=10:3.3. OOD, Od, POD=1, 18, 12 (OOD markedly narrow). A3=AWx2.5. A3, 4, 5=10, 8, 7. P, Ma, Mi, 2(Ma), 3(Ma)=100, 19, 11, 56(22), 46(28).

5. TRYPOXYLON PINGUICEPS TSUNEKI, 1977

Trypoxylon pinguiceps Tsuneki, SPJHA, 6: 12, 1977 (1 ♀, Bismarck Is.).

Specimen reexamined:

1 ♀ (holotype), Lavongai Is. (New Hanover Is), banatam, 25. III. 1962, Noona Dan Exp. 61-62. (ZMUC).

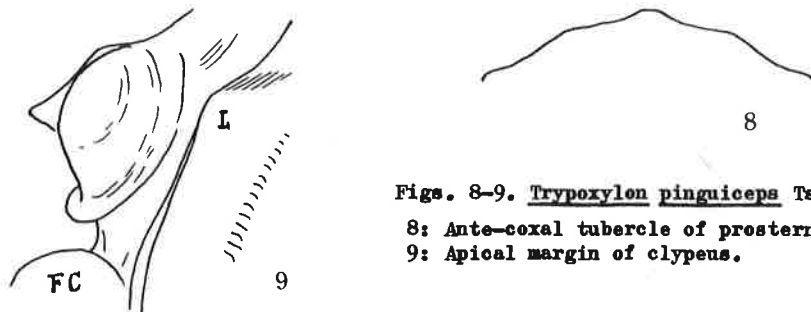
Very closely resembles *flavipes* and may be considered one of the geographical races of the species. However, as the differences are considerable and some of them concern with the important characters it is treated as a separate species. The differences from *flavipes*:

1. Metapleural flange shorter, at anterior part swollen out, with top horizontally flattened, posterior part amber-yellow, vertically raised, very narrow and quite indistinct.
2. Ante-coxal tubercle of prosternum at inner basal area provided with a distinct tooth (Fig. 9). Peripheral brim of the tubercle appears like a tooth seen from the side in both species, but the tooth here treated is quite different from it.
3. Frons and mesoscutum without microsculpture, simply finely and fairly closely punctured.
4. Apical margin of clypeus: Fig. 8.
5. Fore and mid coxae broadly dark brown (in *flavipes* nearly completely yellow).

Colour of other parts of legs as in some of the compared specimens. Fore and mid femora broadly brown, mid T1 completely yellow, T4-5 brown. Measurements:

HW, HL, IODv, A3, P=100, 64, 30, 20, 14.2. IODs=10:3.5. OOD, Od, POD=1, 16, 10. A3=AWx2.8. A3, 4, 5=10, 8, 7. P, Ma, Mi, 2(Ma), 3(Ma)=100, 22, 12, 56(23), 50(30).

The values are practically the same as in *flavipes*.



Figs. 8-9. Trypoxylon pinguiceps Tsuneki, ♀.

8: Ante-coxal tubercle of prosternum.

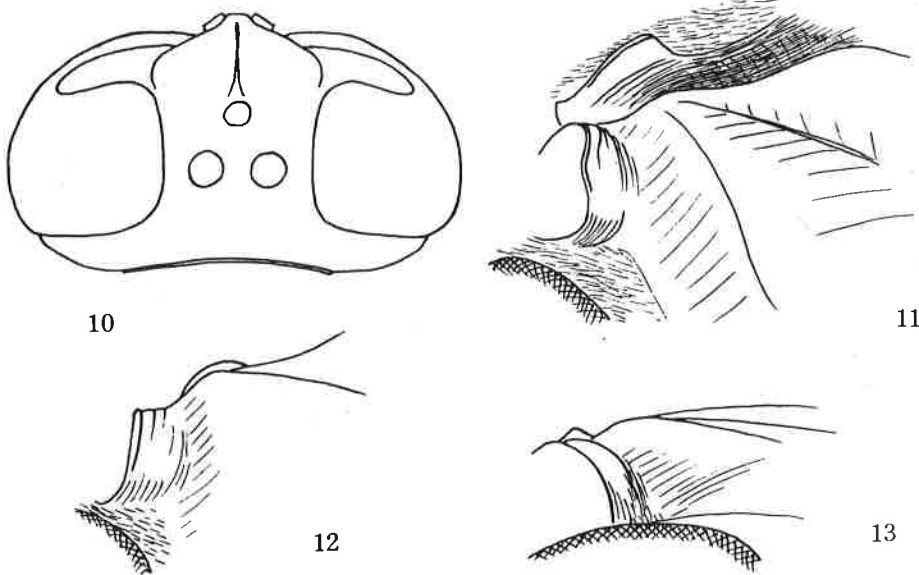
9: Apical margin of clypeus.

6. TRYPOXYLON KARIMUI SP. NOV.

Diagnosis. ♂, 6.5 mm. Fore leg broadly brown, hair silvery, G1 clavate, only somewhat longer than G2, G2 slender, mesoscutum without microsculpture, medianly markedly furrowed, propodeum with lateral carinae, mesopleuron with pentroof structure, IODs=3:1, A3=AW×4, A13=BW×1, RC=C-M, R1=CV2, reaching close to wing apex, antecoxal tubercle of prosternum triangularly extended below.

Black, antenna, clypeus without ferruginous or yellowish colour, mandible brownish yellow, apically brown, semitransparent, palpi also brownish, fore femur except above and beneath, fore tibia and tarsus pale brown, mid and hind legs and gaster lustreless dark brown, due to covering dense short hair, spurs slightly pale. Hair silvery, on clypeus parallel.

Head in dorsal view; Fig. 10, curvature of temples characteristic, in frontal view with sides rounded and slightly convergent towards clypeus, vertex slightly depressed, tops of hind ocelli in a line with tops of eyes, W:L=100:84, eye incision broad and strongly narrowed towards sinus, sinus minutely rounded, dorsal margin weakly inclined outwards. Frons gently raised, anteriorly rather abruptly narrowed to connect with SAT, median furrow broad and rather shallow, in wide V-shaped in cross section, bottom line shining and running from fore ocellus to upper end of SAT

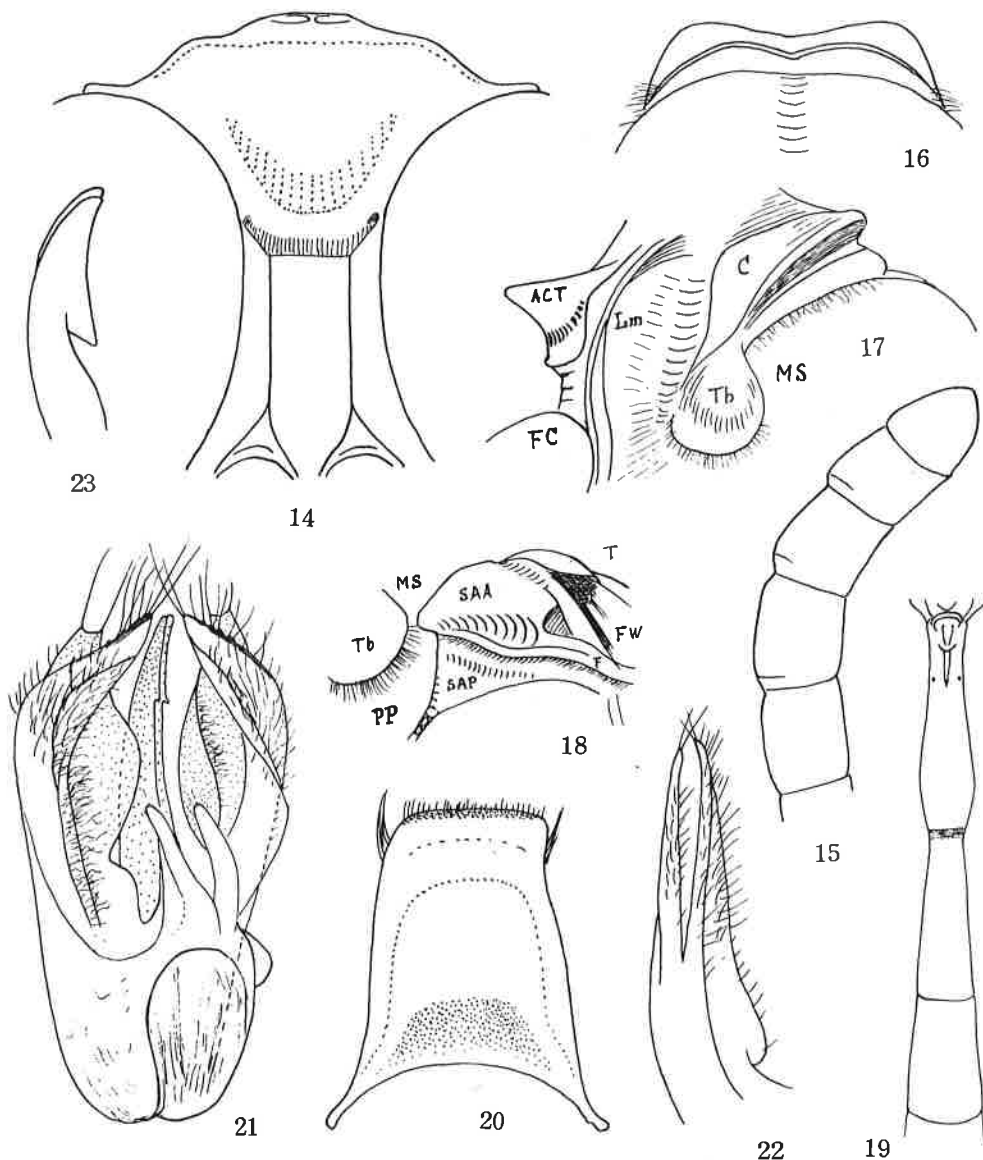


Figs. 10-13. Trypoxylon karimui sp. nov., ♂

SAT low tuberiform, without median carina, but with a raised spot at the centre, from the raised spot anteriorly flatly inclined towards IAA, ASR short, PAF shallow, up-curved, in cross section downcurved, the structure in dorsal view: in Fig. 10, in oblique dorso-lateral view: Fig. 11, in dorsal view to see through PAF: Fig. 12, in lateral view: Fig. 13. Clypeus: Fig. 14, disc at base depressed and gradually raised anteriorly, top of the gentle rounded elevation is below middle of its length, apical glabrous area smooth and shining, somewhat swollen and appears slightly reflected. Occipital carina very low, almost lacking behind buccal cavity.

HW, HL, IODv, A3, A13, P=100, 52, 33, 21, 10, 84. IODs=10:3.7. OOD, Od, POD=3, 5, 3.5. A3=AWx4. A13=BWx1. A3, 4, 5=10, 6, 6. P, Ma, M1, 2(Ma), 3(Ma)=100, 26, 17, 80(34), 60(46).

Flagellum without excavation on any joint, characteristic is that A3 is long, with width at base and at apex $\approx 2:3$ in all direction and A13 remarkably short, shorter than A11+12 (Fig. 15), nearly equal to A12. Collar of pronotum medianly short and



Figs. 14-23. *Trypoxylon karimui* sp. nov., ♂

laterally widened, anterior margin strongly emarginate (Fig. 16), posterior part discoloured, dusky yellow, lamina on side simply rounded, or rather there is no lamina (Fig. 17 - left side, seen obliquely from above. MS - mesoscutum, C - collar, Tb - tubercle, Im - lamina, FC - fore coxa, ACT - antecoxal tubercle), characteristic is the form of antecoxal tubercle of prosternum!. Mesoscutum medianly broadly and fairly strongly impressed till its apex, parapsidal sutures distinctly impressed, shorter than 1/3 of the segment, scutellum subquadrate, slightly wider than long and strongly roundly elevated, lateral hollows very deep and large, the hollows on sides of post-scutellum also very deep and covered with a row of bristles arising from the anterior ridge, subalar area of mesopleuron with pent-roof structure, but it is quite abnormal, lateral expansion at apical area depressed longitudinally and margin alone horizontally produced over subalar pit and amber yellow in colour (Fig. 18, seen from left side, MS - mesoscutum, T - tegula, FW - fore wing, SAA - subalar area, F - meso- and metapleural flange, SAP - subalar pit, Tb - pronotal tubercle, PP - prepectus). lateral carinae of propodeum long, originating from behind spiracle and reaching in front of lateral carina of area apicalis, area dorsalis enclosed with distinct furrow, subquadrate in form, slightly narrowed posteriorly, the area and posterior inclination almost equal in length, median furrow of the area broad and fairly deep, that of posterior inclination elongated triangular in outline, acutely edged at margins, reaching near the apex of the segment, lateral carinae of area apicalis not turned inwards at anterior ends. GSR highly elevated, rounded, but not discoloured, posterior part of the sides of propodeum depressed and margined anteriorly with a fine ridge, intercoxal carina gently up-curved. Gastral petiole characteristic in form as given in Fig. 19. In fore wing $RC=C$, somewhat close to M , Rl moderately long, appr. as long as $CV2$ and reaching close to wing apex, $CV1=CV2 \times 5.5$, $TCV:CV2 \approx 3:2$, TCV nearly straight, angle about 120° . Hind coxal organ indistinct.

Genitalia seen from beneath and somewhat from left side: Fig. 21; paramere deeply bifid at apex into two lobiform layers (Fig. 22, left paramere seen from left side), dorsal lobe shortly truncate at apex (Fig. 21), widely expanded and half rolled as usual, ventral lobe pointed at apex, with inner side half folded and densely covered with frizzled pubescence (Fig. 21), volsella narrowed apically, with ventral side flattened and with apex sparsely fringed with hair, penis valve without shoulder and without sickle-shaped appendages, but with a hook-shaped process on its ventral side (Fig. 23, apical part seen from left side). Sternite 8: Fig. 20, the form and state of hair characteristic.

Microsculpture on frons very minute and very sparsely superimposed with fine punctures, mesoscutum without microsculpture under $64\times$ magnification and finely (but more largely than on frons) fairly closely punctured, $PIS = PD \times 1-2$, area dorsalis smooth and polished, but on lateral furrows and at base crenate and on outer part of disc sparsely punctured, lateral series of striae on posterior half defined, strong, posterior inclination transversely striate, sides smooth and polished, but posterior area depressed and rugulose, the area margined anteriorly with a carina and in front of it transversely striate.

♀, unknown.

Holotype: ♂, New Guinea (NE), Karimui, 1080 m, 14.VII.1963, N. Sedlacek (BPBM).

7. TRYPOXYLON STRAATMANI SP. NOV.

♂. Very closely resembles the preceding species, but antenna, clypeus and legs are different in colour, clypeus also different in the form of apical margin and the pent-roof structure at subalar area complete.

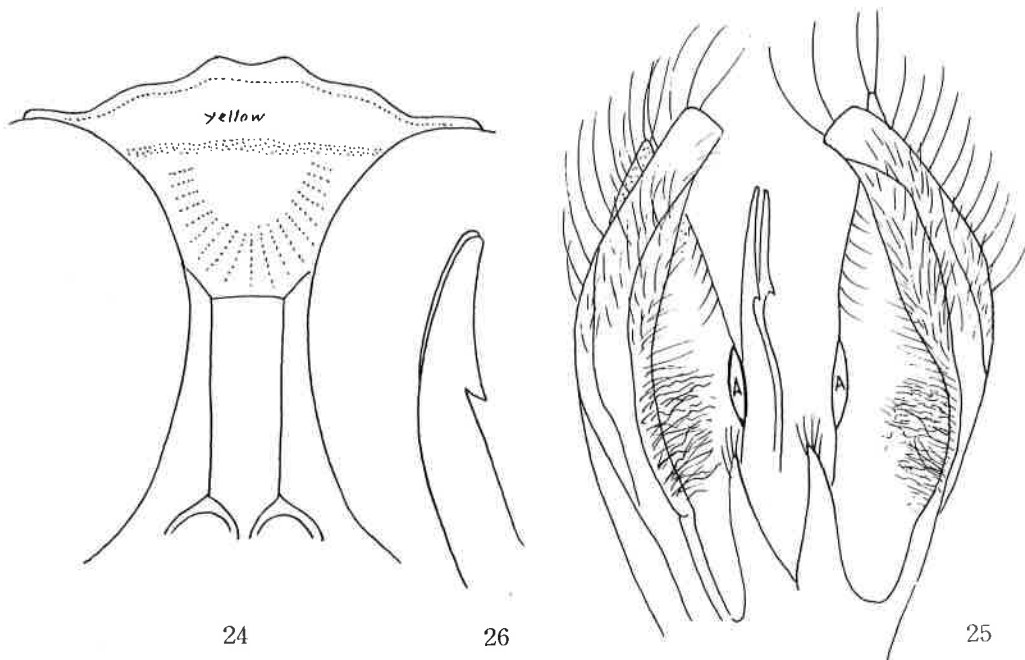
Length 7.5 mm. Black, antenna dark brown, $A1$ and 2 ferruginous beneath, $A13$ paler apically, apical part of clypeus broadly yellow, mandible amber yellow, palpi yellowish ferruginous, pronotal tubercle yellow, tegula and basal plates of wing brown, ground colour of fore and mid legs yellow, ferruginous are fore coxa, femur beneath, tibia in front and apical part of mid tibia, brown are fore femur above, mid femur wholly and mid tarsus from apex of $T1$ to $T5$, hind leg dark brown, but at base of tibia yellow and tarsus apically somewhat paler, arolia black (all appendages are presumed to be strongly turned into brown due to preserving medium). Gaster also dark brown and partly somewhat pale. Hair silvery on clypeus and at base parallel, gaster and legs closely covered with greyish pubescence.

Head in frontal view with lateral margins rounded, not convergent below, vertex not depressed, tops of hind ocelli slightly above level of tops of eyes, $W:L=100:80$,

eye incision comparatively narrow and narrowed towards bottom, dorsal margin slightly inclined outwards. Structure of frons and SAT-ASR very similar to that of the preceding species (cf. Figs. 11-13). Form of head in dorsal view and structure of antenna also very similar, but clypeus distinctly different in the apical form and colouration and IODv comparatively narrower.

HW, HL, IODv, A3, Al3, P=100, 53, 29, 21, 10, 90. IODs=10:3.8. OOD, Od, POD=1, 3, 2. A3=AW×3.5. A3, 4, 5=10, 6, 5, 6. Al3=BW×1 (in some condition appears slightly longer than wide) P, Ma, Mi, 2(Ma), 3(Ma)=100, 23, 13, 80(32), 62(41).

OOD:POD is here 1:2, in *karimui* subequal (this seems to be due to abbreviation of OOD due to narrower IODv). Occipital carina low, but complete, depressed behind buccal cavity, but not becoming indistinct. Collar of pronotum transverse, anterior part short, narrow ridge-like, anterior margin straight, not emarginate and lateral ends not so swollen as in *karimui*, lamina on side and ante-coxal tubercle of prosternum similar (cf. Fig. 17), median furrow of mesoscutum shallower and shorter, disappearing at about mid point of scutum, parapsidal sutures also shallower, scutellum and postscutellum as in *karimui*, but pent-roof structure of mesopleuron well developed, roundly expanded laterally, not depressed along outer margin and marginal area comparatively more broadly colourless transparent, the structure posteriorly turning to usual mesopleural flange, yellow in colour, subalar pit deeply roundly hollowed as in *karimui*, with inner wall not flattened as in most of other pent-roofed species, but strange is that a triangular tooth-like process stood out from pleural wall at the posterior part of the hollow and reaching close to the roof, metapleural flange first horizontally flattened round area (metapleuron incrassate at upper end and flat-



Figs. 24-26. *Trypoxylon straatmani* sp. nov., ♂

tened on top to give rise to the area), not simply stretched out lamella, but thence posteriorly turning to semitransparent lamellate flange and connected with posterior ridge of lateral hollow of postscutellum. Structure of propodeum similar to that of *karimui*, except that lateral carinae reach near apex, almost connected with lateral carinae of area apicalis and that marginal carina of posterior area of the sides is lacking (but this may vary individually). Fore wing venation also similar in pattern, RC=C, R1 moderate in length, =CV2 and reaching close to wing apex, but CV1=CV2×4,

TCV:CV2=5:4, TCV gently incurved, angle about 110°. The form of gastral petiole similar, coxal organ of hind leg not developed as in *karimui*.

Genitalia closely resembles those of *karimui*, differing in that the ventral one of apical two lobes of paramere is at apex broadly truncate and its outer margin at apical part not incrassate (Fig. 25, in *karimui* incrassate, dusky brown in colour as given in Fig. 21) and that dorsal lobe is pointed at apex and bears an elongate thickened area at the inner margin of its expanded lamella (A in Fig. 25), further apical part of penis valve is somewhat slenderer (Fig. 26). Otherwise similar, especially in the folded structure of inner margin of ventral lobe of paramere with covering hair and in the structure of volsella and of penis valve; sternite 8 also generally similar.

Frons microcoriaceous, punctures very small, sparse and weak, almost indistinct, mesoscutum without microsculpture, very finely, somewhat sparsely covered with piliferous punctures, PIS 2-4 times PD (this is due to smallness of the punctures, absolute number is possibly similar to that of *karimui*). Area dorsalis of propodeum obliquely weakly sparsely striate, otherwise surface sculpture and punctuation similar in pattern, but the series of striae along lateral carinae weaker.

♀, unknown.

Holotype: ♂, New Guinea, Mamai Plantation, east of Port Glasgow, 150 m, 31. I. 1965, Light trap, R. Straatman (BPBM).

8. TRYPOXYLON OWRICHARDSI SP. NOV.

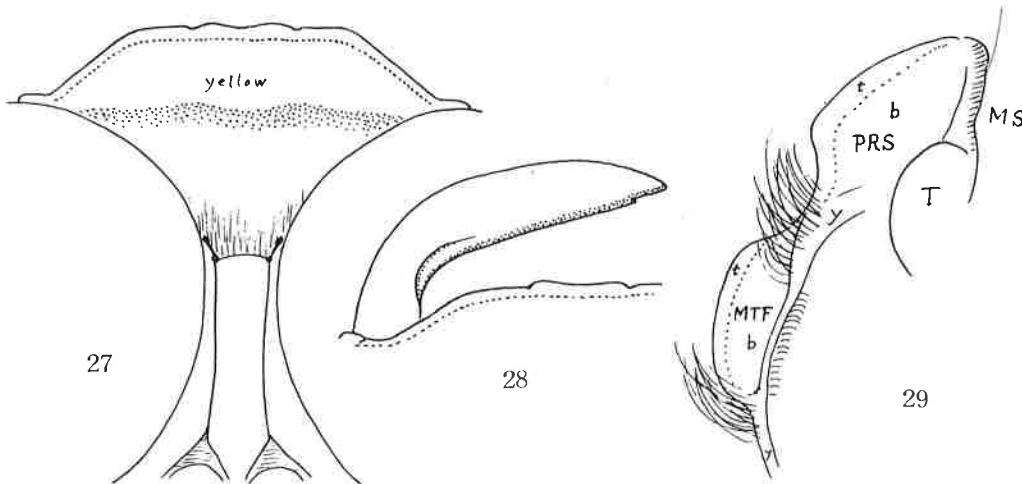
♀. Closely resembles the preceding male in general characters and we are tempted to combine them together, but the form of the apical margin of the clypeus is not coincident with the general rule of the sexual difference in this genus and it is treated here as distinct. Differences from *straatmani*:

1. Non-sexual characters:

(a) Clypeus: Fig. 27, the form of apical margin is fundamentally different from that of *straatmani*, apical margin broadly ferruginous yellow, disc from base gently roundly tectate, apical area not reflected. (b) Mesoscutum lustreless, this is due to three factors, namely, plumbeous tone, finer and much closer punctules and dense short hairs arising from the punctules. (c) Metapleural flange horizontally expanded, lamellate, but black in colour, only peripheral area narrowly transparent, posteriorly vertically erected, turning to ferruginous and connected with posterolateral ridge of postscutellum (Fig. 29, left side in dorsal view, MS - mesoscutum, T - pronotal tubercle, PRS - pent-roof structure, MTF - metapleural flange, b - black t - transparent, y - yellow; hairs are white).

2. Sexual characters:

(a) Head in frontal view longer, with sides slightly roundly convergent below.



Figs. 27-29. Trypoxylon owrichardsi sp. nov., ♀

(b) Eye incision narrower (subparallel-sided, attenuate at apical area, apex bluntly pointed - this is rather non-sexual), dorsal margin almost horizontal. (c) IODc much narrower (cf. Figs. 27 and 24). (d) Antenna and gaster as well known, besides flagellar joints much longer.

Measurements: HW:HL in frontal view 100:84. HW,HL,IODv,A3,P=100,53,28,22,112. IODs=10:3. OOD,Od,POD=2,5,5,5. A3=AW×3.7. A3,4,5=10,8,7. P,Ma,Mi,2(Ma),3(Ma)=100,22,12,-(-),-(-), (gaster from G2 apically lacking). RC=C, Rl moderately long, reaching fairly close to wing apex, CV1=CV2×5. TCV:CV2=3:2, TCV nearly straight, angle about 100°.

On some characters.

Colouration. Al and 2 at apices and beneath ferruginous. Yellow are apical margin of clypeus broadly, mandible except brown inner margin, mouth parts except black basal area, pronotal tubercle, mesopleural flange, posterior part of metapleural one, apices of coxae, fore trochanter wholly, both ends of mid and hind ones, both ends of all femora, fore tibia except pale brown stripe on outer side, fore tarsus except black arolium, both ends of mid tibia (rest brown), base of hind tibia, fore and mid spurs, base of mid T1, hind T2 largely and T3-4 (rest of mid tarsus and hind T5 and hind T1 black). Tegula semitransparent brown, basal plates of wing dark brown, femora black, but fore femur pale brown beneath. The colour of hind tarsus distinctly differs from that of straatmani (wholly brown), but this may more or less vary geographically.

Mandible strange in form (Fig. 28), inner margin with a minute incision (as a result with a minute tooth) before apex (in closely allied 3 other species mandible can not fully be observed).

Sculpture of frons, structure of collar with lamina, ante-coxal tubercle of prosternum, pent-roof at subalar area (with similar tooth-like process within the hollow covered by the roof), general structure of propodeum and form of G1 (widest at about 4/5 from base) similar to those of the compared species, parapsidal sutures of mesoscutum in impressed lines, medio-apical part of the scutum depressed as in straatmani and basal margin of postscutellum at verge to anterior furrow similarly acutely edged.

Area dorsalis at base obliquely, very weakly striate, bottom line of median furrow strongly crenate, disc smooth and polished.

♂, unknown.

Holotype: ♀, New Guinea, Morobe Distr. Wau, 24. XII. 1972, O. W. Richards (BMNH).

Remarks. By the same reason as mentioned in regard to straatmani the present species can not also be combined with T. karimui.

9. TRYPOXYLON CHOISEULENSE SP. NOV.

♀. 11 mm. Very similar to the preceding species, but the clypeus is different in the form of apical margin, parapsidal sutures are in the raised lines, metapleural flange similar in form in dorsal view, but thicker and gradually thinner towards margin (marginal area membranous and transparent as in owrichardsi), hind tarsi concolourous dark brown and RC M-type, with Rl reaching very close to wing apex.

Clypeus: Fig. 30, disc at base deeply impressed along basal line, thence anteriorly flattened for some distance (f in the figure) and then gently roundly elevated as given with dotted lines in the figure; supra-clypeal area depressed below level of lateral areas that are inclined inwards and further impressed along upper lateral lines (hatched area in the figure). IODc relatively wider than in owrichardsi.

Head in frontal view with sides rounded, slightly convergent towards clypeus, vertex slightly depressed, tops of hind ocelli in a line with tops of eyes, eye incision slightly wider than in compared species, subparallel-sided and rounded at the sinus (not pointed as in this species). Structure of frons and SAT-ASR similar to other closely allied species, occipital carina weak, but unobservable regarding the state beneath head. Structure of collar, lamina, ante-coxal tubercle of prosternum, and pent-roof structure with the tooth-like process in subalar pit are also similar.

Median furrow of area dorsalis transversely striate, the striae slightly extended outwards on to disc. G1 similar in form.

HW,HL,IODv,A3,P=100,51,30,21,110. IODs=10:3.3. OOD,Od,POD=2,5,3.5. A3=AW×3.7. A3,4,5=10,7.5,7. P,Ma,Mi,2(Ma),3(Ma)=100,21,11,66(21),58(28). RC=M, Rl moderately long, but reaching very close to wing apex, CV1=CV2×4.5, TCV:CV2=5:4, both nearly

straight, angle about 95°.

Colouration also similar except hind tarsus. Punctures on the frons stronger and more distinct and close on the areas that are inclined towards medial line, while those on mesoscutum similar.

♂, unknown.

Holotype: ♀, Solomon Is. Choiseul I., Kolombangara R., 80 m, 20.III. 1964, — (HPBM).

Remarks. In order to combine the present species with *karimui* the structure of pent-roof at subalar area is inconsistent, and to do so with *straatmani* the difference of the metapleural flange becomes an obstacle. At any rate, to clarify the relationships among these closely allied species the ample material is necessary.

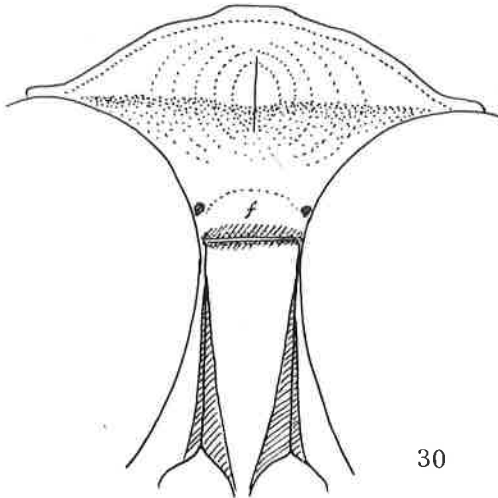


Fig. 30. *Trypoxylon choiseulense* sp. nov. ♀

10. TRYPOXYLON MINDANAONIS TSUNEKI, 1976

Trypoxylon mindanaonis Tsuneki, Steenstrupia, 4: 84, 1976 (♀, Mindanao, figs.).

Trypoxylon bakerianum Tsuneki, SPJHA, 9: 135, 1979 (♀, Singapore, figs.).

Trypoxylon bakerianum (ssp. *fortius*) Tsuneki, Ibid., 11: 33, 1979 (♀ ♂, Java, figs.).

Trypoxylon mindanaonis (ssp. *mulu*) Tsuneki, Ibid., 12: 72, 1980 (♀ ♂, Borneo, figs.).

Trypoxylon mindanaonis (spp. *mindanaonis* and *fortius*): Tsuneki, Ibid., 13: 103 (redescr. holotype, variations).

Trypoxylon mindanaonis bakerianum: Tsuneki, Ibid., p. 108 (♂, Singapore).

Specimens examined:

1 ♀, New Guinea (NE), Sepik, Maprikarea, 160 m, 27. VII. 1957, D. Elmo Hardy (BMNH); 1 ♀, Hawaii (from Philippine intercepted Honolulu T. H., 17. V. 1932, on *Dendrobium Taurinum*).

Remarks. The New Guinean specimen is close in characters to ssp. *mulu* known from Borneo, while the specimen of Philippine that was strayed to Hawaii and intercepted at Honolulu is close to *mindanaonis* s. str. (cf. Table 6 of Pt. VI).

Measurements of the New Guinean specimen:

HW, HL, IODv, A3, P=100, 52, 28, 22, 164. IODs=10:9.5. OOD, Od, POD=1, 5.5, 4.5. A3=AW×3.5. A5=AW×2. A3, 4, 5=10, 7, 6.5. P, Ma, Mi, 2(Ma), 3(Ma)=100, 17, 6, 27(22), 33(29). RC=B, somewhat close to C, Rl short, CV1=CV2×3.5. TCV:CV2≅5:4, angle about 95°.

According to the measurements the values are generally similar to those of *m. mulu*, but IODv is slightly wider and RC is somewhat longer.

11. TRYPOXYLON PLACIDUM SMITH, 1864

Trypoxylon placidum Smith, J. Proc. Linn. Soc. London, Zool., 7: 35, 1864 (♀, Mysol).

Trypoxylon placidum: Tsuneki, SPJHA, 8: 23 (redescr. holotype, figs.), 77 (key), 81 (correction), 1978.

Trypoxylon placidum: Tsuneki, Ibid., 12: 10, 90, 1980 (on lectotype).

Specimen newly examined:

2 ♀, New Guinea (West Irian), Wogelkop, Bomberi, 700-900 m, 4-6. VI. 1959, T. C. Maa (sweeping) (HPBM).

The lectotype specimen (♀) of this species collected on the Island of Mysol (Mi-

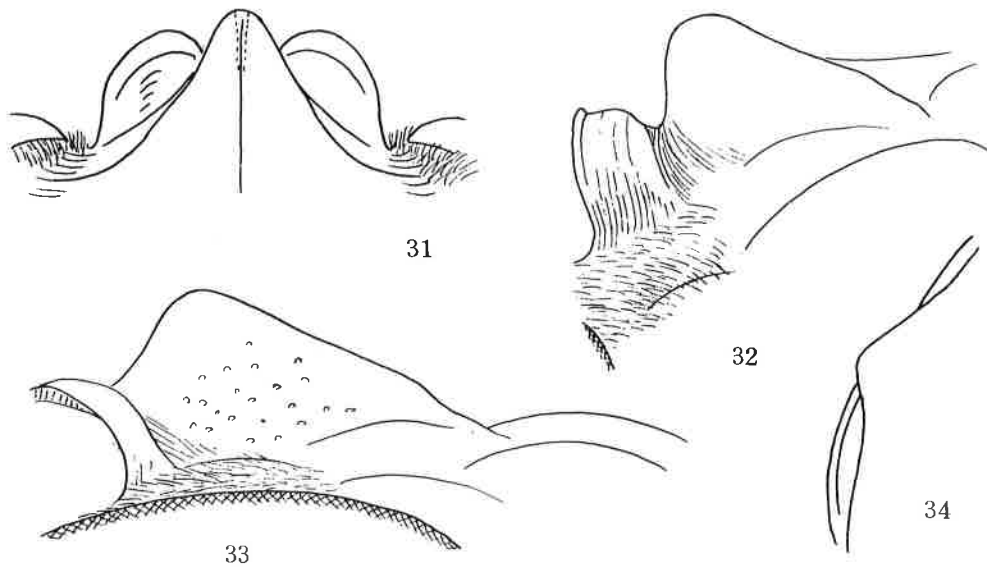
soel, Miscel) by A. R. Wallace is at present considerably damaged, lacking parts of antenna and legs and whole of the gaster (cf. Pt. II of the present paper).

In my first key to this species in Pt. II it is erroneously presumed and later corrected in postscriptum. In Pt. VI it is correctly keyed. In the following the characters of the species is supplementally given in detail:

♀. Length 10 and 10.5 mm. Black; mandible ferruginous, on basal part yellowish, palpi amber yellow; bright ferruginous are apical margin of pronotal lamina, tegula (semitransparent), G1 and 2, base of 3 and legs except the following black: Fore leg from coxa till apex of femur except articulations and arolium, mid coxa, mid femur except fore side and both ends, hind femur partly beneath. In one of the specimens mid and hind T1-3 dusky above and hind femur more broadly darkened beneath. Antenna dark brown to black, A1 and 2 partly ferruginous. Hair brassy, on clypeus markedly convergent towards medial line.

The present species is characteristic in the large, highly rounded frontal elevations on both sides of medial furrow, with surface smooth and polished and sparsely scattered with medium-sized punctures. SAT high nasiform, ASR much below top level of SAT, usually bicarinate, apical carina stronger, PAF moderately deep, V-shaped in cross section, with bottom line upcurved. SAT anteriorly acutely inclined, medianly ridged and falls to deeply excavated upper part of IAA. SAT-ASR in dorsal view: Fig. 31, in dorso-lateral view to see through PAF: Fig. 32, in lateral view: Fig. 33, clypeus simply rounded out, at base gently roundly raised and bluntly tectate till base of apical reflection which is fairly marked. Head in frontal view with sides roundly, weakly convergent towards clypeus, W:L=100:85, vertex not depressed, tops of hind ocelli above level of tops of eyes, eye incision comparatively broad and distinctly narrowed towards bottom, dorsal margin horizontal, occipital carina shortly interrupted and depressed behind buccal cavity. Measurements in two specimens:

HW,HL,IODv,A3,P=100,58,28,22,145. =100,56,26,22,150. IODs=10:5.5. 10:5.5. OOD, Od,POD=2,5,5,5. =2,5.5,5. A3=AWx3.7. AWx3.8. A3,4,5=10,7,6. =10,7,6. P,Ma,Mi,2 (Ma),3(Ma)=100,20,7,34(21),40(28). =100,20,6,33(22),38(28).



Figs. 31-34. Trypoxylon placidum Smith, ♀.

Collar in dorsal view transverse, anterior part very short in middle and strongly widened towards sides, anterior margin markedly emarginate accordingly, posterior part incompletely discoloured, lamina on side: Fig. 34, collar in frontal view dorsal margin triangularly raised and weakly tuberculate in middle, scutellum wider than long, subalar area without pent-roof structure; propodeum with length ratio of dorsal and posterior part appr. 2:3, in lateral view curved, with top angle about 150°, lateral

carinae distinct, originating a short distance from spiracle, ending below and before anterior end of lateral carinae of area apicalis, this carina not turned inwards, area dorsalis enclosed with feeble furrow, at base just behind postscutellum with a transverse flat shining area behind which transversely impressed as usual, medial furrow broad and deep. GSR roundly elevated as a whole, elevation at posterior margin not conspicuous, not discoloured. G1 distinctly flask-shaped, basal condyle broadly expanded laterally and depressed along margin, spiracles at 1/5 from base, the segment till there slightly widened and thence narrowed till 3/5 from base where it is narrowest, whence it begins to swell.

In fore wing $RC=C$, R_1 short, $CV_1=CV_2 \times 6$ ($\times 5$), $TCV:CV_2 \approx 9:5$ (9:6), TCV weakly sinuate, angle about 105° .

Frons smooth and polished, punctures very sparse, but near medial bottom line somewhat close, on SAT piliferous punctures also very sparse and SAT well visible, vertex under high magnification feebly microcoriaceous, mesoscutum smooth, punctures comparatively large, PIS on antero-lateral area 1-2 times, on median area 2-5 times PD. Propodeum with strong lateral series of striae, area dorsalis at base transversely furrowed and obliquely shortly striated there, rest of the area smooth and polished, in one specimen, however, median furrow feebly transversely crenate in middle.

On the species described in the following from No. 12 to 22

The female specimens of the following 11 species are very close in characters to each other and according to the usual method of classification we are tempted to treat them as variations within a single species, namely, bituberculatum m., the earliest species.

However, three male specimens are, although apparently similar to each other and to the females above mentioned except sexual characters, distinctly different from each other in the structure of the genital organs and the 8th sternite and they must be separated at the species rank. On this account, the sympatric female specimens having common non-sexual characters with one of the males are combined with the male respectively and are to be treated as separate species.

In order to separate the males in question from each other with the external characters very slight and sometimes unimportant (usually considered fairly variable) characters must be employed. The same is also the case with the females that are combined with the males.

According to the standard of classification thus given rise to it becomes inevitable to treat forms that are separated from each other only by trivial differences as distinct species, although a set of characters are used as far as possible and very slight differences are considered to be specific variations and, further, some deviations are taken as aberration.

Among the species thus determined rather provisionally there are certainly some doubtful ones and to give final conclusion the examination of the sympatric males is necessary.

12. TRYPOXYLON BITUBERCULATUM TSUNEKI, 1977

- Trypoxylon bituberculatum Tsuneki, SPJHA, 6: 17, 1977 (♀, New Guinea, figs.).
Trypoxylon bituberculatum biroi Tsuneki, Ibid., 6:18, 1977 (♀, New Guinea, fig.).
Trypoxylon bituberculatum var. Tsuneki, Ibid., 8:28, 1978 (♀, Mysol).
Trypoxylon bituberculatum mysolense Tsuneki, Ibid., 12: 114, 1980 (♀, Mysol, figs.).

closely related to T. placidum Smith, can be distinguished from this by the difference in the form of the clypeus and in the colour of the gaster and the legs.

Characters of holotype.

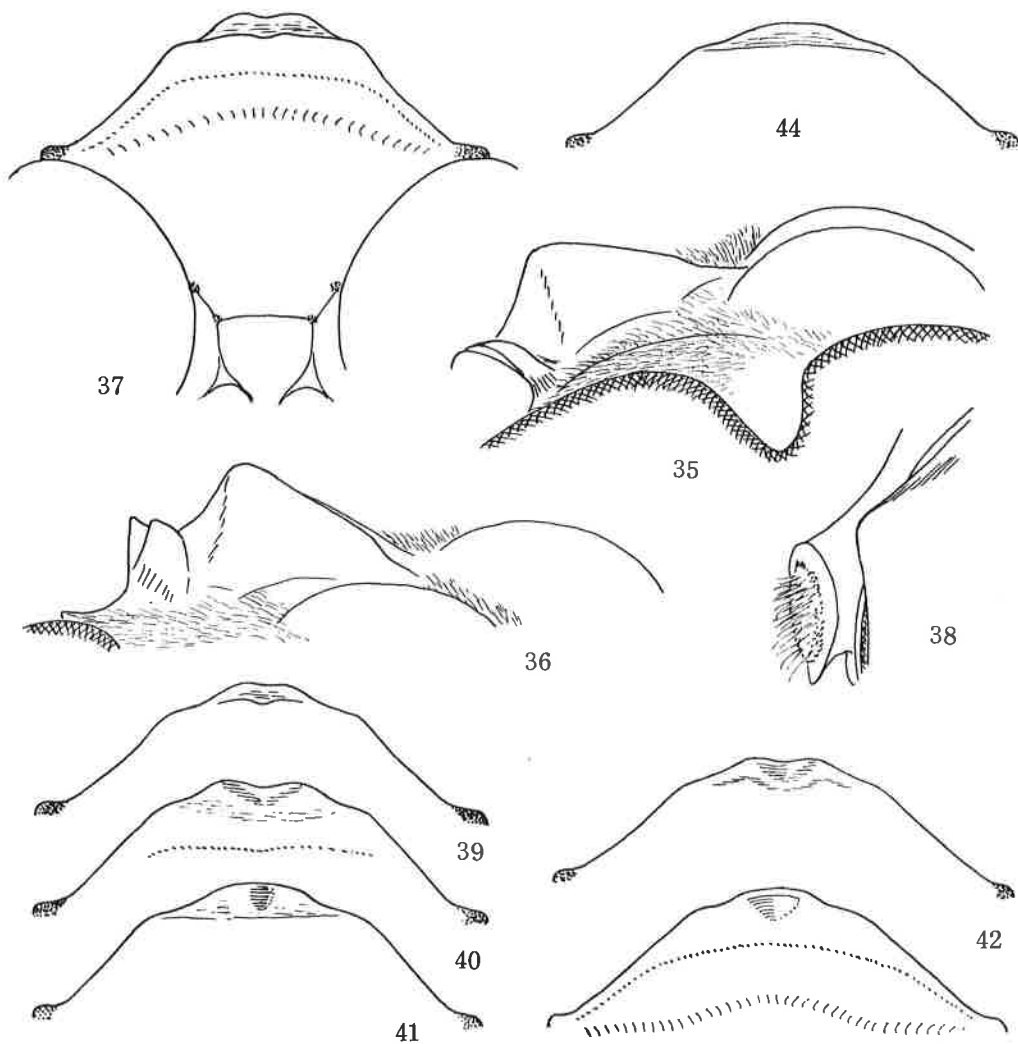
♀, about 12 mm. G1 flask-shaped, hair silvery, mesoscutum without microsculpture, propodeum with lateral carinae, frontal elevations markedly high, rounded, median furrow deep, at the same level with inner orbits, SAT high nasiform, ASR much below top level of SAT, PAF moderately deep, bottom line upcurved, V-shaped in cross section, SAT-ASR in lateral view: Fig. 35, in dorso-lateral view to see through PAF: Fig. 36, IODs=10:7, clypeus in holotype: Fig. 37, as to pronotum and propodeum see the account on Variation, lateral furrows of area dorsalis broad and shallow, but distinct, gaster from apical swelling of G1 to G3 reddish beneath, fore tibia brown and ferruginous in

front, mid tibia on both ends narrowly pale brown, hind tibia at base yellowish, fore tarsus wholly, mid T1 and basal half of T2 yellowish white, T3-4 pale brown, T5 brown, hind tarsus completely dark brown.

Microsculpture on frontal elevations moderate in strength, surface somewhat shining, punctures strong and sparse, irregular in distribution, PIS 1-3 times PD, punctures on mesoscutum similar in size to those of frons, fairly close, on antero-lateral area PIS 1-1.5 times PD, on median area somewhat sparse and on posterior area much finer and sparser. Propodeum on dorsal and posterior aspects transversely closely striate except disc of area dorsalis and just outside of it, striae on dorsal aspect comparatively weaker and on posterior aspect stronger, sides except antero-ventral femoral sinus finely closely covered with fine piliferous punctures.

HW:HL in frontal view 100:94. HW,HL,IODv,A3,P=100,52,25,24,152. IODs=10:6,5. A3=AWx4. A3:IODc=10:6,8. OOD,Od,POD=2,5,5. A3,4,5=10,6,5,6. P,Ma,M1,2(Ma),3(Ma)=100,19,7,35(20),40(30). RC=C, somewhat close to B, R1 very short, CV1=CV2 6, TCV:CV2 =5:3, angle about 120°.

Specimens examined: 20 ♀:



Figs. 35-44. 35-43. Trypoxylon bituberculatum Tsuneki, ♀.
44. Trypoxylon bituberculatum biroi Tsuneki, ♀.

West Irian.

1 ♀, Nabire, south of Geelvink Bay, 0-30 m, 2-9. VII. 1962, J. L. Gressitt & J. Se lacek (BPBM); 1 ♀, Hollandia, Netherland, India and American New Guinean Expedition, 1938-39, VII. 1938, L. J. Toxopeus (RMNH).

E.NG.

Madang Dist. 3 ♀, Wanuma, 600-720 m, VIII. 1968, N.L.H. Krauss (BPBM).
 Western Highland Dist. 3 ♀, Baiyer R., 26. II. - 9. III. 1970, 1100 m, J. Sedlacek (BPBM).
 Morobe Dist. (12 ♀). 1 ♀, Huon Golf, Satterberg, 1899, Biro (holotype - HNHM).
 5 ♀, Wau: 1 ♀, 1100-1200 m, VI. 1968, N.L.H. Krauss (BPBM); 1 ♀, Kunai Ck., 1250 m, 26. VIII. 1963, Malaise trap, J. Sedlacek (BPBM); 1 ♀, 1250 m, 13. X. 1962, Malaise trap, J. Sedlacek (BPBM); 1 ♀, Hospital Ck., 1150-1250 m, 9. I. 1966, Malaise trap, J. Sedlacek (BPBM); 1 ♀, McAdam Park, 1500 m, 10. IX. 1972, J. van der Vecht (RMNH).
 2 ♀, Bulolo, 13. II. - 13. III. 1979, 800 m, J. Sedlacek (AEI). 2 ♀, Huon Peninsula, Finschhafen, 80 m, 13, 16. IV. 1968, J. Sedlacek, Malaise trap (BPBM). 2 ♀, Markham River Valley, Nadzab, 18. VI., 13. VIII. 1944 (along E fork Ngafir Creek), K. V. Krombein (USNM).
 Central Dist. 1 ♀, Brown River, 1 mile DASF "Block", 31. V. 1966, in large numbers on moist road in rain forest, J. J. H. Szent-Ivany (Ex. Coll. Dept. Agr. Port Moresby, No. - Acelig (RMNH).

Table 1. Measurements.

Loco	HL	IODv	A3(W/L)	P	IODs	ODOdPD	A4	A5	MaMi	2(Ma)	3(Ma)	CV1	T:C	Angl
Huon Golf	52	25	24(4.0)	152	6.5	6 5 5	6.5	6.0	19 7 35	20(40)	30(30)	6	5:3	120
Madang	50	25	24(4.3)	160	7.0	2 6 5	6.5	6.0	17 6 30	24(24)	34(27)	6	7:4	120
Wau	53	25	24(4.2)	162	7.0	2 5 5	6.5	6.0	20 6 36	24(24)	32(31)	7	2:1	120
Wau	53	24	24(4.0)	160	7.5	2 8 5	6.5	6.5	19 6 40	20(20)	36(23)	7	2:1	120
Wau	52	26	23(3.8)	128	7.0	2 5 5	6.5	6.5	22 8 38	28(28)	40(38)	6	7:4	115
F.W.Haf.*	54	24	24(4.0)	112	7.0	2 6 6	6.5	6.0	31 9 46	32(32)	52(41)	6	5:3	105
Baiyer R.	50	25	25(4.3)	162	7.0	2 5 5	6.0	5.5	19 6 34	24(24)	36(30)	6	5:3	110
Brown R.	53	24	22(4.0)	152	7.0	2 6 5	6.5	6.5	20 7 36	21(21)	38(32)	5	3:2	120
Hollandia	54	24	25(4.2)	148	7.0	2 6 5	6.5	6.0	20 7 32	24(24)	36(29)	6	5:3	110

Remarks. HW=100 is omitted as to HL - P. ODOdPD = OOD,Od,POD. A3=10 is omitted as to A4 - A5. P=100 is omitted as to Ma - 3(Ma).
 CV1... CV1=CV2 . T:C= TCV:CV2.

* Holotype of ssp. biroi Tsuneki, ♀.

As for the results there is certainly a more or less variations in all the values obtained. But notice the marked deviation in ssp. biroi ! (its locality is marked with an asterisk - Friedlich Wilhelm Hafen). Placing this specimen out of account the values of IODv, A3, OOD:POD, IODs, T:C and angle are comparatively constant, while those regarding the gastral segments, relative width of Od (hind ocellar diameter) and CV1 are considerably or markedly variable.

Variation in characters.

(1) Frontal elevations. Variation in degrees of the elevation and size and form of them are rather slight, the elevation ranges from sides of fore ocellus to basal level of SAT; microsculpture usually strong and distinct, surface lustreless, but sometimes microsculpture weak and the surface fairly strongly shining, but never smooth and polished; punctures strong and sparse on the broad top areas, irregular in distribution, considerably variable in averaged density, PIS 1-4 times PD, but on the inner inclined areas punctures somewhat finer and closer.

(2) SAT-ASR. SAT high nasiform, but its relative length is considerably varied, usually reaching upwards about 1/3 or 2/5 of the length of the frons (from fore ocellus to ASR), but sometimes it reaches about mid point of the distance. The form of SAT in lateral view usually with dorsal margin smoothly inclined upwards, but sometimes abruptly inclined near upper end.

(3) Clypeus. Always roundly raised at base and thence roundly tectate till reflection of apical margin (in the figures given the place of reflection is shown with crenae, the dotted line indicates the apical margin of the punctured area, hairs strongly convergent towards medial line. The form of apical margin varies consider-

ably, apart from the change by use (Figs. 39-43, specimen from Madang, Wau, Wau, Baiyer River and Brown River respectively), mostly however, in the style of the holotype or close to it; medio-apical area usually bevelled and weakly transversely rugoso-striate, but sometimes gently swollen and not bevelled, and without medial emargination.

(4) Pronotum. Collar is comparatively constant in structure. Anterior part is slightly shorter in middle than discoloured posterior part and gradually widening laterally and rounded at the ends, hence anterior margin in dorsal view roundly emarginate, in frontal view dorsal margin gently roundly elevated in holotype and not tuberculate in middle, but in most other specimens it is subtriangularly raised and more or less tuberculate at the top and the degrees of elevation, namely the angle at the top is considerably variable. Lamina on side (Fig. 38, in holotype) is rather constant in form, only slightly variable in the degrees of excavation of the posterior margin (under natural condition convergent bundle of pubescence at the top of the lamina makes it appear as if much more pointed).

(5) Punctures on mesoscutum. Strong and fairly close, nearly as large as those on top area of frontal elevations, mixed with more or less smaller ones, PIS on antero-lateral area mostly 1-1.5 times PD and the density and size of punctures are partly different as mentioned earlier. Important is that variation in relative density and regularity in distribution at certain areas are rather slight. So that when markedly different it suggests that the specimen may belong to other species.

(6) Propodeum. Basal transverse elevation is about $\frac{2}{3}$ the length of postscutellum in middle, usually the surface smooth and from just behind it area dorsalis begins, but sometimes it has a transverse carina or impressed line on top and rarely the surface gently roundly swollen as if it were a second postscutellum. Lateral carinae distinct, originating at some distance from spiracles and ending obliquely before the anterior end of lateral carina of area apicalis, the state is rather constant; lateral furrows of area dorsalis is smooth and finely sparsely punctured, but medial and lateral furrows are transversely striate. Relative width of smooth area at outsides of area dorsalis more or less varied, it sometimes extended to posterior inclination. GSR roundly elevated at its posterior margin and usually not discoloured, but rarely (in specimen from Madang) very highly raised and discoloured to amber yellow.

(7) Wing venation. Type of RC and relative length of R1 are constant, but relative length of CV1, CV2 and TCV considerably varied, while angle between TCV and CV2 rather constant as given in Table 2. Usually the relative lengths are similar in both wings to each other, but sometimes more or less different between them (Table 2).

(8) Colour of gaster. In the holotype the gaster is black and from apical swelling of G1 to G3 reddish beneath. Of the other 20 specimens 10 have the similar colour pattern as the holotype, while the remaining 10 have the segments similar beneath, but reddish above also and black or dark brown maculated there. The maculae not covering whole the dorsal surface. In two of this group (from Wau) apical swelling of G1 is broadly red above and black maculated at the centre. The brightness of the gastral colouration seems to have connection with locality. The specimens from Morobe and Central Districts all belong to the bright form, while those from West Irian (NW) and Western Highland- and Madang Districts belong to the melanic form.

(9) Colour of legs. Fore tibia ferruginous and on folded side wholly and on outer side except base in variable length black (7/21 including holotype), or on folded side only black (14/21). In many of the latter group the gaster is comparatively broadly red, but not always so. For tarsus except arolium always ferruginous or yellowish white. Mid tibia except ferruginous base and apex always black or dark brown and mid tarsus except brownish T5 ferruginous or whitish. This is very constant.

Hind tibia black and at base yellowish or pale brownish as a rule, but often the bright ring becomes obscure. Hind tarsus black and complicatedly variegated with various grades of kite-brown and ferruginous, but never with white. Articulations always more or less pale. The variation in width and in colour tone at articulations complicates the general colouration of the tarsus as much. Results of rough classification:

T1-5 black (including partly dark brown) ... 3. T4 alone paler (brown or ferruginous) than others ... 8. T3-4 paler than others (do.) ... 8. T2-4 paler than others (do.) ... 1. T3-5 paler than others (do) ... 1. T2-5 paler than others ... 1.

Trypoxylon bituberculatum biroi Tsuneki, 1977

Trypoxylon bituberculatum
 biroi Tsuneki, SPJHA, 6:
 18, 1977 (♀, New Guinea)

Specimen examined: 1 ♀
 (holotype), Friedrich Wilhelm
 Hafen, 30. IV. 1901, Biro (HN
 HM).

Remarks. The present sub-
 species differs from the typi-
 cal form in that the gastral
 petiole is markedly shorter
 (Table 1). It may be, how-
 ever, a simple aberration of
 the species, because the gas-
 tral petiole often strongly
 varies in length locally with-
 in a species (cf. Trypoxylon
errans Saussure). But, here
 the specimen is but single
 and it can not be determined
 whether it is a local form or
 an aberratio of bituberculat-
um and here the original sta-
 tus is retained with a query.

In the specimen the cly-
 peus is already considerably
 abraded.

Measurements:

HW:HL in frontal view
 100:90. HW, HL, IODv, A3, P=100,
 54, 24, 24, 112. IODs=10:7.
 OOD, Od, POD=1, 3, 3. A3=AWX4.
 A3, 4, 5=10, 6, 5, 6. P, Ma, Mi, 2
 (Ma), 3(Ma)=100, 31, 10, 46(32),
 52(41). RC=B, but close to
 C, Rl short, CV1=CV2X6, TCV
 weakly sinuate, TCV:CV2÷5:3,
 angle about 105°.

Table 2. Variation in wing venation.

Locality	CV2	CV1	R.L.	TCV	CV2	Angle
Geelrink B.	5	28	5.6	8 : 5	115°	
Hollandia	5	30	6.0	8 : 5	115°	
Baiyer R.	5	28	5.6	8 : 5	110°	
Baiyer R.	5	27	5.4	7 : 5	110°	
Baiyer R.	5	30	6.0	8 : 5	115°	
Huon G.Holo.	5	31	6.2	9 : 5	115°	
	5	32	6.4	9 : 5	115°	
Wau	5	37	7.4	11 : 5	115°	
Wau	5	37	7.4	11 : 5	115°	
Wau	5	33	6.6	9 : 5	120°	
Wau	5	35	7.0	10 : 5	115°	
	5	33	6.6	10 : 5	115°	
Wau	5	28	5.6	9 : 5	110°	
Bulolo	5	29	5.8	8 : 5	115°	
	5	34	6.8	9 : 5	115°	
Bulolo	5	43	8.6	12 : 5	115°	
Madang	5	28	5.6	8 : 5	110°	
Madang	5	30	6.0	8 : 5	115°	
Madang	5	28	5.6	8 : 5	115°	
Huon Pen.	5	34	6.8	9 : 5	115°	
Huon Pen	5	32	6.4	9 : 5	120°	
Brown R.	5	27	5.4	8 : 5	115°	
Markham R.	5	30	6.0	8 : 5	120°	
	5	32	6.4	8 : 5	120°	
Markham R.	5	46	9.2	13 : 5	115°	
	5	41	8.2	11 : 5	115°	

Remarks. R.L. Relative length of CV1 to CV2,
 namely =CV1/CV2.

In the specimen with one measurement the
 values of both wings are same, while in
 that with two measurements the values are
 different between them (upper is left).

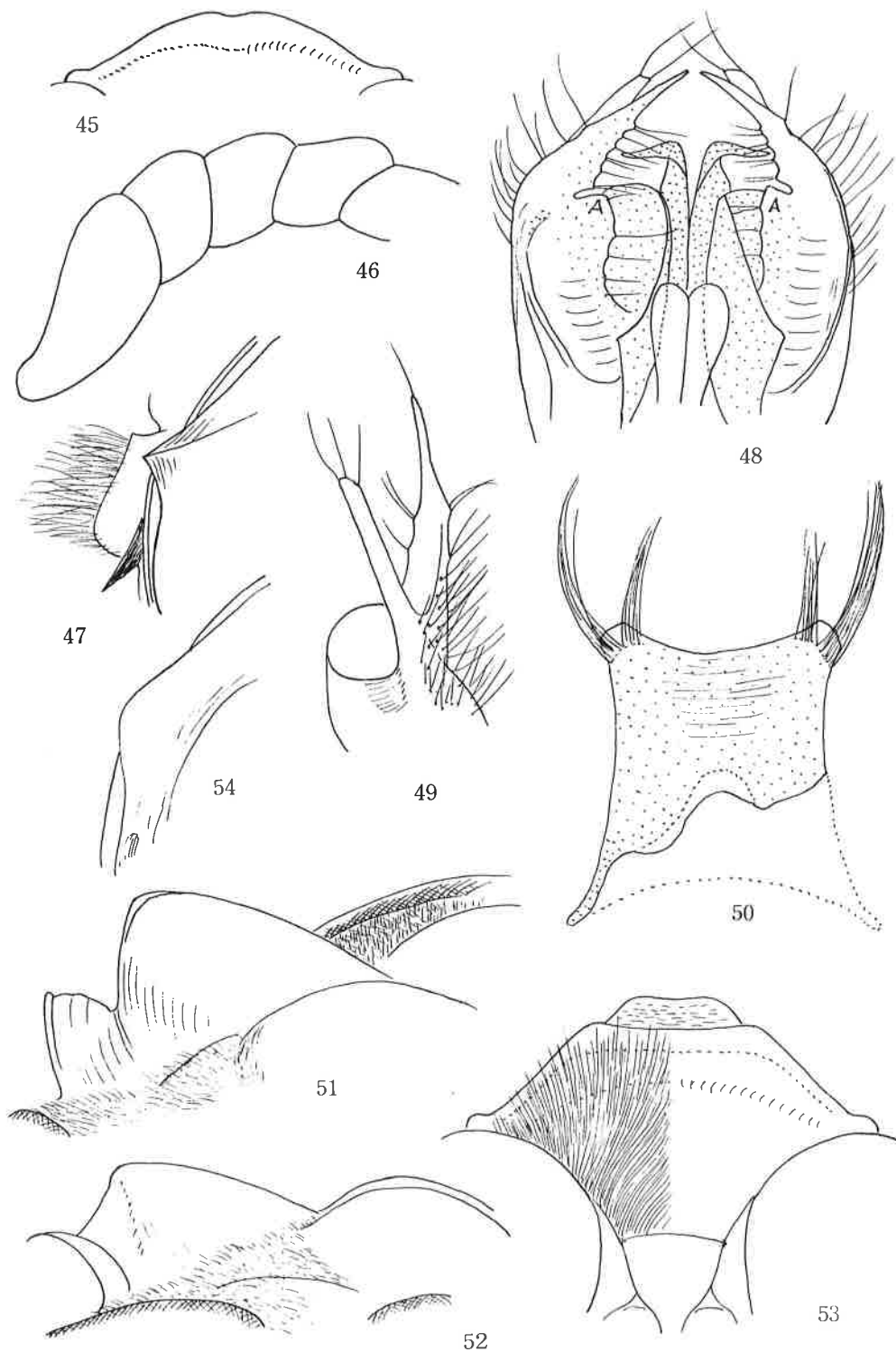
13. TRYPOXYLON ANGORAMUM SP. NOV.

The female of the present species differs from bituberculatum in that the apical margin of the clypeus is much more broadly and distinctly truncate, with produced and bevelled area anteriorly and the posterior margin of the bevelled area is distinctly transversely edged (Fig. 53), frontal elevations are very strongly microcoriaceous and more closely punctured, punctures on mesoscutum also much closer and propodeum on dorsal and posterior aspects much more strongly and much more broadly striate.

♂. About 10 mm. Similar in general non-sexual characters to some form of bitu-
berculatum ♀, except colour of gaster and sculpture on some parts of body.

Clypeus till apex black, mandible yellow, apically brown to brownish red, palpi yellow, legs till apex of fore femur and till apices of mid and hind tibiae black, except pale brown articulations and yellowish basal ring of hind tibiae. Fore tibia except folded side and an obscure apical streak on outer side ferruginous, fore tarsus wholly, mid T1-4 and hind T3-4 pale ferruginous, rest of tarsi brown or dark brown, arolia always black, tibial spurs pale brown or yellowish. Posterior part of collar discoloured, somewhat yellowish, tegula semitransparent brown, gaster complete-black. Hair silvery.

Head in frontal view with sides rounded, not convergent towards clypeus, vertex not depressed, but each ocellus in a hollow, eye incision broad and strongly narrowed towards bottom, rather triangular, apex almost pointed, dorsal margin distinctly inclined outwards, frontal elevations roundly high as in bituberculatum ♀, but median furrow appears slightly shallower (as a result frontal elevations appearing somewhat



Figs. 45-54. *Trypoxylon angoramum* sp. nov. 45-50 ... ♂, 51-54 ... ♀.

low), surface of elevations rather weakly microcoriaceous and strongly punctured, punctures on top areas sparse, with PIS larger than PD, but on the inclined areas $PIS \leq PD$ and on lower areas closer and smaller. SAT-ASR similar to that of compared species ♀, in lateral view with apical margin obliquely inclined to IAA. A3:IODc=10:12.7. Clypeus with apical margin slightly incrassate towards middle, medio-apical area slightly depressed (Fig. 45), apical part of antenna: Fig. 46, occipital carina complete.

Measurements: HW, HL, IODv, A3, Al3, P=100, 54, 27, 16, 20, 122. IODs=10:7.5. OOD, Od, POD=2, 6, 5. A3=AWx3. A3, 4, 5=10, 6, 7. Al3=3BWx2. P, Ma, Mi, 2(Ma), 3(Ma)=100, 25, 9, 37(34), 36(44). RC=B-C, RL short, CV1=CV2x6, TCV:CV2=5:3, angle about 110°.

Collar as in bituberculatum, lamina on side: Fig. 47, extreme apical area shortly reflected.

Punctures on mesoscutum almost as large as those on frons and fairly close, rather regular in distribution but sparser on median area, in this respect differs from holotype of popondettae below described, subalar area normal, metapleural flange shortly horizontally expanded; transverse raised area at base of propodeum with surface flat and shining, about 2/3 the length of postscutellum in middle, area dorsalis enclosed with broad and fairly deep furrow, this and medial furrow transversely striate, raised disc comparatively narrowly smooth, shining and sparsely punctured, rest of dorsal and posterior aspects transversely strongly closely striate. Gl, 2-3: see measurements above given.

Genitalia seen from beneath: Fig. 48 (basal part is omitted). Apical part of paramere split into two lobes, dorsal one flattened till apex, ventral one markedly attenuate apically (Fig. 49, apical part of left paramere in lateral view), with inner margin strongly serrate, especially remarkable is that the serrate margin bears a deep incision and a rounded protuberance at about mid point of its length (shown with A in Fig. 48). Volsella spatulate, penis valve simply attenuate apically and bent ventrally before apex (in Fig. 48), Sternite 8 is very characteristic (Fig. 50), without complete fringe of hair at apical margin, only with tuft of hair on each side at apex.

♀. Similar in colour to some form of bituberculatum, medio-apical bevelled area of clypeus brown, mandible, mouth parts, posterior part of collar, tegula and fore leg as in typical form of bituberculatum; gaster with apical sides of Gl and G2 and 3 at each base reddish brown, rest completely black, mid tarsus ferruginous yellow, with T3 and 4 weakly and 5 distinctly brown, hind tarsus completely dark brown.

General structure as in bituberculatum. Head in frontal view with sides rounded and slightly convergent towards clypeus, W:L=100:90, vertex not depressed, median furrow of frons somewhat shallower than in typical form of the compared species (as in ♂) and the elevation appears somewhat less marked, eye incision narrow, and narrowed towards sinus, sinus nearly pointed, frontal surface strongly microcoriaceous and mat, with punctures strong and close, on top areas of elevations $PIS=PD$. SAT-ASR: Figs. 51 (dorso-lateral) and 52 (lateral), very similar to that of bituberculatum; clypeus: Fig. 53, apex truncate and with produced bevelled area, upper border of which distinctly edged.

HW, HL, IODv, A3, P=100, 52, 27, 23, 160. IODs=10:6.7. A3=AWx4. A3:IODc=10:8. OOD, Od, POD=1, 5, 5. A 3, 4, 5=10, 7, 6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 30(19), 31(26).

Structure of collar as in compared species, lamina on side: Fig. 54.

Punctures on mesoscutum in size as those on frons, on antero-lateral area $PIS=PD$, but on median area sparser and on posterior area finer, propodeum on dorsal and posterior aspects, except central part of disc of area dorsalis, completely transversely strongly and closely striate.

In fore wing RC=B, somewhat close to C, RL short, CV1=CV2x5, TCV:CV2=5:3, TCV gently sinuate, angle about 110°.

Holotype: ♂, New Guinea, East Sepik, Angoram, 20-30 m, 14. VIII. 1969, J. L. Gressitt (BPBM).

Paratype: ♀, the same place and date, by the same collector (BPBM).

Other specimens. 3 ♀, Netherland, India and American New Guinean Expedition, Bernhard Camp, XI. 1938, J. Olthof (RMNH).

Remarks. The paratype female could be combined with the holotype male by the same collecting data, otherwise it might have been treated as one of the forms of T. bituberculatum. Two of other female specimens from Bernhard Camp are determined by the agreement of apical character of clypeus and surface condition of frontal elevations and propodeum. In the first of them hind tarsus completely dark brown as in the paratype, while in the second hind T2-5 pale brown, though T2 somewhat darkened apically. In both gaster is medianly broadly reddish beneath, especially brightly so in the second. The third female from Bernhard is very close to the second of the above two (including colour of gaster and hind tarsus), except that the bevelled area

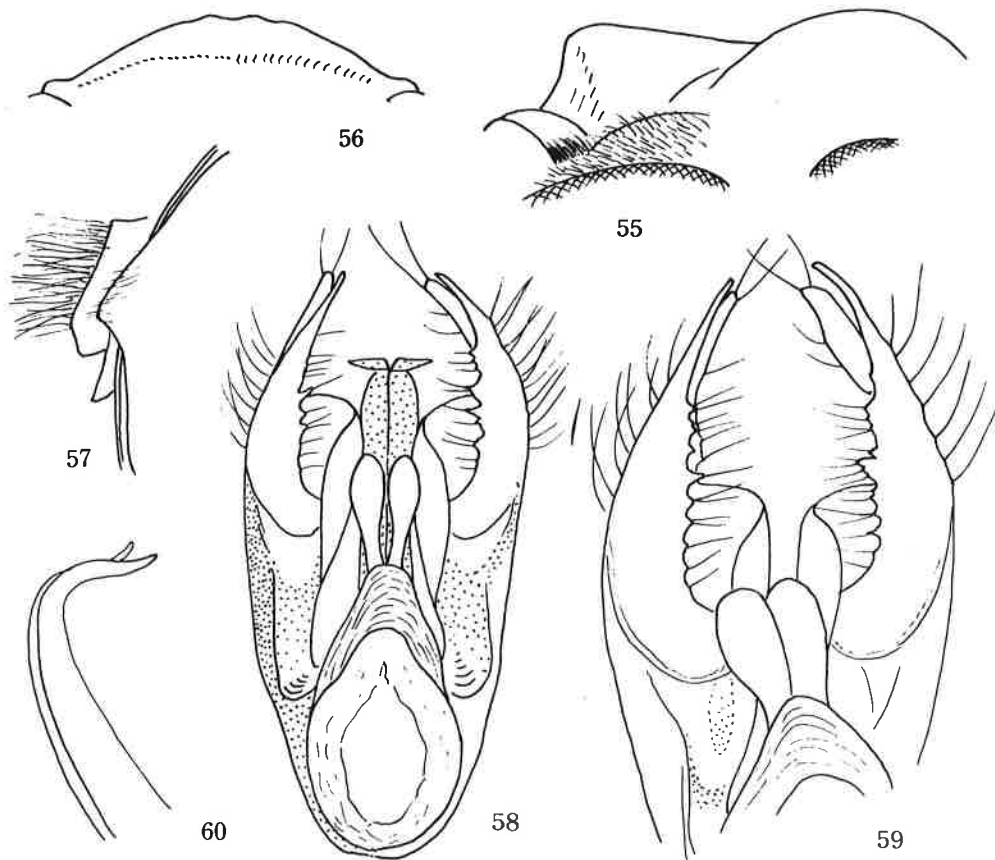
of clypeus is more weakly edged above and the microsculpture of frontal elevations is weaker, with surface more shining. However, the apical truncate area of clypeus is broad, punctures on frons and mesoscutum close and propodeum broadly striate as in the paratype of angoramum.

On the other hand, the three Bernhard specimens are considerably close to the holotype of bituberculatum, especially the third one, and they may be a local race of this species. On this account, the specimens from Bernhard were not designated as the paratypes.

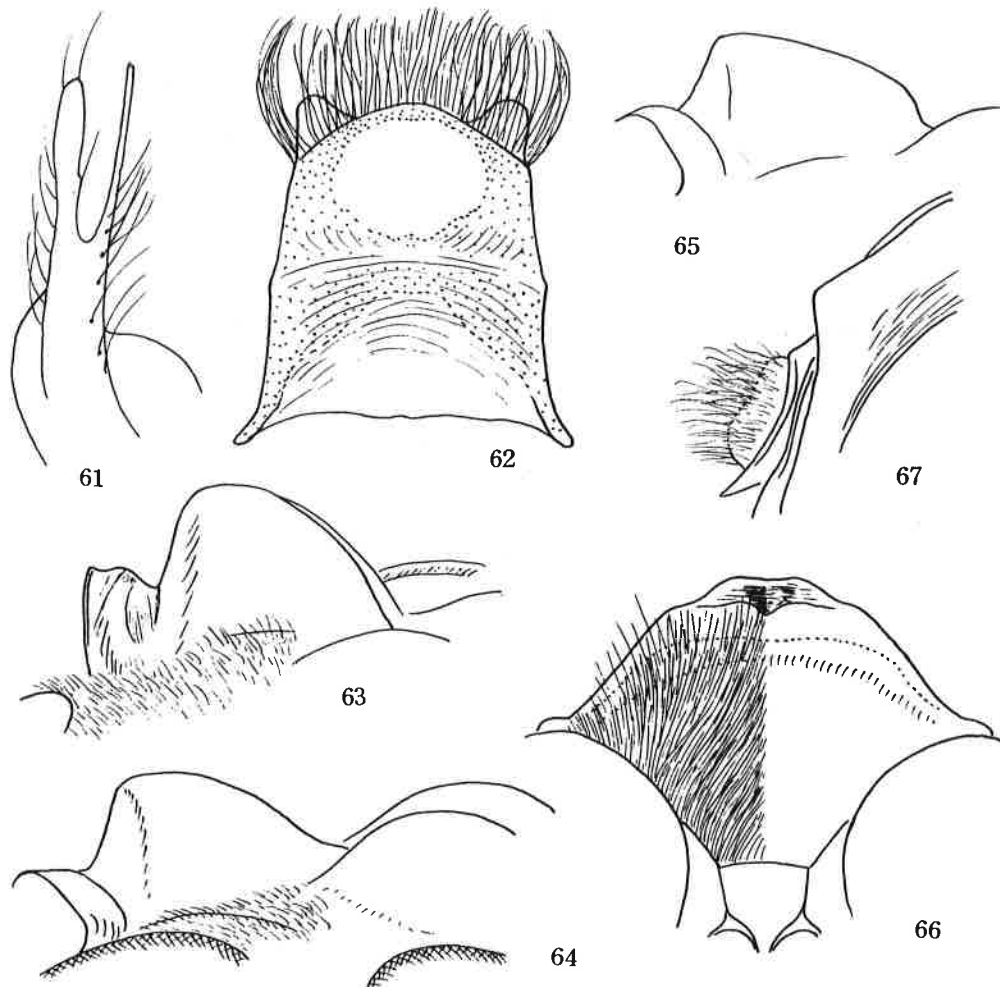
Finally it must be mentioned that, taking into consideration of the intermediate characters of the Bernhard specimens, T. angoramum may be also a local race of T. bituberculatum. In order to solve this problem future investigation of the male specimen of bituberculatum collected from Morobe District, especially from the coastal area of Haon Golf.

14. TRYPOXYLON POPONDETTAE SP. NOV.

♂. Very closely resembles the male of the preceding species in external characters (including the form of Al3 and measured values), but punctures on mesoscutum are very much sparser and more irregular in size and distribution, propodeum on dorsal aspect and posterior inclination broadly without striae and SAT in lateral view with apical margin obliquely inclined to IAA; moreover, frontal elevations with microsculpture somewhat weaker and punctures slightly sparser and hind T2 and 5 darker. However, these differences may fall within the range of specific variations when the



Figs. 55-60. Trypoxylon popondettae sp. nov., ♂



Figs. 61-67. *Trypoxylon popondettae* sp. nov. 61-62 ... ♂. 63-67 ... ♀.

characters are examined with abundant material. But the difference between them in the structure of the 8th sternite is very marked (Fig. 62, cf. Fig. 50) and in that of the genitalia is considerable (Figs. 58-59, cf. Fig. 48, notice the inner margin of ventral one of apical lobes of paramere) and there is no doubt that they belong to separate species.

♂. Length 9.5 mm. Black, clypeus without ferruginous area, mandible yellow and apically brown to reddish brown, palpi yellow, posterior part of collar discoloured, yellowish, tegula semitransparent castaneous, basal plate of wing dark brown, gaster completely black; yellow on legs: fore tibia, except folded side (greyish brown) and an apical vague streak on outer side, fore tarsus, mid tarsus except brownish T5 and basal ring of hind tibia; hind T1,2 and 5 dark brown, T3-4 pale brown, articulations of other parts of legs ferruginous and arolia black. Hair silvery, on clypeus convergent towards medial line.

Head seen in front with sides rounded, not convergent below, W:L=100:86, vertex almost not depressed, eye incision wider than in ♀ and strongly narrowed towards the sinus, sinus in some light appears pointed. Frontal elevations as in *bituberculatum*, median furrow deep, microsculpture on elevations moderate in strength, with punctures comparatively large and sparse, SAT-ASR: Fig. 55, apical part of A13 as in Fig. 46, distinctly curved at apex, appr. as long as 3 preceding joints united, clypeus: Fig.

56, disc medianly gently tectate till basal line of apical reflection, apical marginal area gradually incrassate towards middle and gently trisinate as shown in the figure. Lamina on side of pronotum: Fig. 57, mesoscutum strongly (as on frons), irregularly, but sparsely punctured, propodeum as in *bituberculatum*, lateral furrows of area dorsalis broad, shallow, but distinct and transversely striate, striae somewhat extended inwards on to raised and smooth disc, median furrow broad and comparatively deep, smooth, only on posterior margin striate, outsides of the area polished, sparsely punctured, lateral series of striae strong and on posterior part extended inwards into transverse arcuate striae covering in front of area apicalis.

HW, HL, IODv, A3, A13, P=100, 54, 27, 17, 20, 136. IODs=10:7.5. OOD, Od, POD=2, 5, 5. A3=AW×2.8. A3, 4, 5=10, 6.5, 7. A13=BW×2. A3:IODs=10:12. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 34(20) 34(24). RC=C, R1 short, CV1=CV2×6, TCV:CV2=5:3, angle about 120°.

Genitalia in ventral view: Fig. 58, enlarged apical half (somewhat from left side penis omitted): Fig. 59, apical part of left paramere in lateral view: Fig. 61, penis valve: in Fig. 58 and Fig. 60 (lateral), ventral lobe of paramere at basal area flattened, curved inwards and at its outer margin edged, at inner margin serrate and fringed with hair, volsella spatulate. Of the apical two lobes of paramere the ventral one slender and attenuate apically, while the dorsal one lamellate. Sternite 8: Fig. 62 (inner or dorsal view), it is transversely edged across middle, basal and apical parts separated by the ridge gently roundly hollowed.

♀. 12-13 mm. Closely resembles *bituberculatum*, differing from this in that: frontal elevation is somewhat higher, with surface almost smooth and polished (under high magnification very feeble microreticulation defined) and very sparsely scattered with strong punctures, punctures on mesoscutum similar in size to those of frons but much sparser and propodeum on disc of area dorsalis and outsides of the area broadly without striae.

Gaster medianly broadly reddish except dorsal side, but in one of the specimens almost completely black; mid tarsus variable in colour, in one of the 5 specimens from middle of T2 apically dark brown (rest yellowish white), in two T1-4 pale yellow with apices slightly brownish and T5 alone dark brown; hind tarsus also variable in colour, in three specimens T1, 2 and 5 dark brown, T3 brown and T4 pale brown, in the remaining two T1-3 and nearly black and T4 alone brown or pale brown.

Head in frontal view with sides rounded, slightly narrowed below, W:L=100:92, vertex slightly depressed, tops of hind ocelli in a line with tops of eyes, eye incision moderate in width and distinctly narrowed towards bottom, bottom shortly pointed, dorsal margin horizontal. SAT-ASR: Figs. 63 (dorso-lateral), 64 (lateral), generally similar to that of *bituberculatum*, dorsal margin in lateral view frequently abruptly acutely inclined at the upper end (Fig. 65). Clypeus: Fig. 66, also very similar to that of *bituberculatum*. Occipital carina complete, but very weak beneath head. Measurements: Table 3.

Table 3. Measurements on *Trypoxylon popondettae* sp. nov., ♀

Loco	HL	IODv	A3(W/L)	P	IODs	OOD	PD	A4	A5	MaMi	2(Ma)	3(Ma)	CV1	T:C	Angle
Popondetta	52	24	24(4.0)	162	7.0	2	9	8	6.5	6.0	18	6	34(20)38(26)	7	2:1 120°
"	52	24	24(4.0)	160	7.2	2	8	7	6.5	6.0	19	6	35(21)38(28)	6	2:1 120°
"	52	25	25(4.0)	160	7.0	2	9	8	6.5	6.0	17	6	34(20)36(28)	6	9:5 120°
P. Moresby	52	23	23(4.0)	152	7.5	2	9	7	6.5	6.0	20	7	33(21)36(26)	7	2:1 120°
Woodlark It	52	24	24(4.5)	152	7.0	1	6	5	6.0	5.5	19	7	36(22)40(30)	7	2:1 110°
"	* 50	24	24(4.6)	162	7.0	1	6	4	6.0	5.5	18	7	37(18)40(26)	7	9:5 110°

Remarks. Omission as in Table 1. * ssp. *woodlarkense*.

Collar similar in structure to that of the allied species, lamina on side: Fig. 67, apex rounded, but under natural condition appears more pointed, due to convergent pubescence covering there, apical area thin and slightly reflected. Transverse raised area at base of propodeum somewhat roundly swollen, about 2/3 the length of post-scutellum in middle, roundly swollen in saggital section and appears to be a second metanotum, lateral carinae of the segment distinct, always accompanied inside with the series of short striae, lateral furrows of area dorsalis broad and shallow, usually transversely striate, medial furrow sometimes without striae, sometimes striate, posterior part of posterior inclination transversely arcuately striate, area apicalis incomplete, but surface smooth and shining.

In fore wing BC intermediate between B and C, R1 short, TCV weakly sinuate.

Holotype: ♂, New Guinea, Papua, Northern District, Popondetta, 60 m, 2. IX. 1963 Malaise trap, J. Sedlacek (HPBM).

Paratypes: 3 ♀, the same place, 30-31. VIII. 1963, Malaise trap, J. Sedlacek (HPBM); 1 ♀, New Guinea (SE), Cape Rodney, 4.XI. 1960, L and M. Gressitt (HPBM); 1 ♀, the same region, Mamai Plantation, east of Port Glasgow, 150 m, 30. I. 1965, Light trap, R. Straatman (HPBM); 1 ♀, Papua, Central Dist., Port Moresby, 13. XII. 1947, R. F. Riek (CSIRO).

Other specimens: 1 ♀, Papua, Milne Bay Distr. K. R. Mission Milne Bay, about 10 m, III. 1965, Light trap, R. Straatman (HPBM); 1 ♀, same locality, 1-14. IV. 1944, K. V. Krombein (USNM).

Remarks. In the specimen from Port Moresby the medio-apical prominence of the clypeus is weak, but with a distinct impression just behind the margin, hind T2 brown and at base ferruginous and T3 and 4 are also ferruginous.

The specimens from Milne Bay have the frontal elevations covered with microsculpture of weak or moderate strength and not typical, but otherwise well agree with the typical specimens in characters; gastral red is better developed, only dorsal side of G2-3 narrowly brownish (apical sides of G1 and rest of G2-3 yellowish red).

Trypoxylon pepondettae woodlarkense ssp. nov.

Two female specimens from Is. Woodlark are close in characters to those of Milne Bay, but differs from them in that A3 relatively slender and longer, frontal elevation a little lower, with microsculpture slightly stronger and G2 and 3 more broadly reddish.

General characters as in typical specimen. SAT with dorsal margin in lateral view straightly inclined posteriorly, ASR in holotype strongly bicarinate, in paratype weakly tricarinate on top. Mid tarsus in holotype pale yellow with apex of each joint slightly brownish, in paratype apical half of T1, 2 and 4 brown, base of T1 yellowish white and 3-4 pale brown; hind tarsus in both completely black, only T4 and articulations narrowly somewhat pale.

♂, unknown.

Holotype: ♀, Papua, Woodlark Is. (Murua), Kulumadon Hill, 12. III. 1957, W. W. Brandt (HPBM).

Paratype: 1 ♀, same locality, 23-30. III. 1957, W. W. Brandt (HPBM)

Remarks Judging from the longer A3 this form, when the male is examined, may be raised to a distinct species.

15. TRYPOXYLON WARISUM SP. NOV.

The specimen lacks the greater part of the antenna and the character of A13 can not be observed and sternite 8 is lost during dissection, but judging from the structure of the apical part of paramere of the genitalia there is no doubt that it is different from both of angoramum and popondettae in which the male has been investigated. The specimen of this species can be separated from any of them by the form of the apical margin of the clypeus also.

♂. About 9 mm. Antenna, clypeus and gaster completely black, mandible yellow and apically reddish brown, palpi yellow, posterior part of pronotal collar discoloured, with apical half yellowish, tegula brown, fore tibia yellowish ferruginous, slightly dark on outer side and on folded side, spurs and T1 white, T2-5 pale ferruginous yellow, mid tibia at apex with spur and T1 yellowish white, T2,3,5 brown, 4 somewhat pale, hind tibia at base brownish, spurs dark brown, tarsus nearly completely black, only T4 somewhat pale. Hair silvery, on clypeus parallel.

Head in frontal view with sides rounded, not convergent towards clypeus, W:L=100:84, vertex slightly depressed, but tops of hind ocelli slightly above level of tops of eyes, eye incision broad and strongly narrowed towards apex, apex narrowly rounded, dorsal margin slightly inclined outwards, frontal elevations marked, but much less high as compared with other relatives, moreover medial furrow broad and comparatively shallow and broadly enlarged below into flat (somewhat concave) area at above SAT. On this account round elevation on both sides of the furrow becoming much less strong (Fig. 68, lateral view), SAT comparatively short and high (Figs. 68 and 69 - dorso-

lateral); clypeus; Fig. 70. Occipital carina complete, triangularly depressed behind buccal cavity.

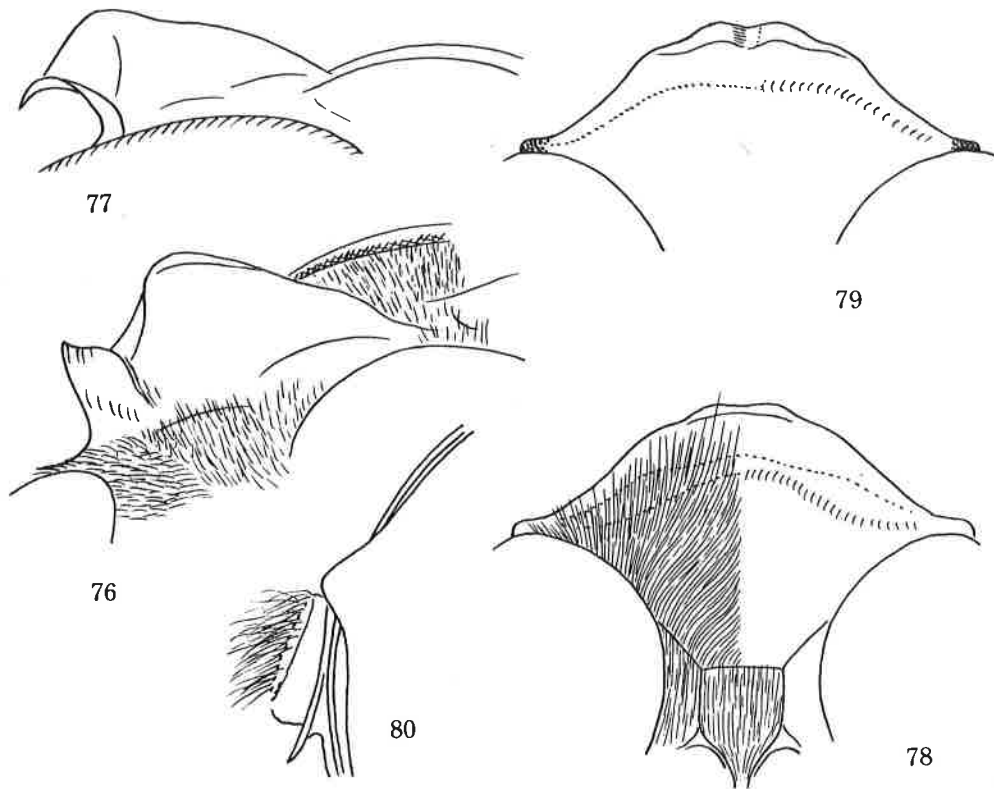
HW, HL, IODv, A3, Al3, P=100, 53, 28, 19, —, 133. IODs=10:7. OOD, Od, POD=1, 2, 2. A3=AW × 3.2. A3, 4, 5=10, 6.5, 6.5. A3:IODs=10:10.3. Al3=EW × ?. P, Ma, M1, 2(Ma), 3(Ma)=100, 20, 6, 32(26), 33(28). BC=B-C. R1 short, CV1=CV2 × 4.2. TCV:CV2=5:4. Angle about 120°, characteristic is that CV2 is comparatively long.

Prenotal collar as in allied species, lamina on side: Fig. 71; subalar area normal. Lateral carinae of propodeum distinct, but not strong, lateral furrows of area dorsalis fine but distinct, medial furrow broad and shallow, GSR raised at apical margin.

Genitalia seen somewhat obliquely from beneath: Fig. 72, apical part seen in profile: Fig. 73, paramere split into two lobes at apex, but the split much shallower than in the two allied species compared, the serrate inner margin of its ventral lobe



Figs. 68-75. *Trypoxylon varisum* sp. nov., ♂



Figs. 76-80. *Trypoxylon warisum* sp. nov., ♀

as in *pepondettae*, without deep incision, but with a short prominence at base of apical slender part whence a tuft of hair arisen (s in Fig. 72), volsella and penis valve similar in structure to the compared species. A remarkable fact is that the dorsal one of apical two branches of paramere is different in form (Fig. 74, d, right side branches, dorso-lateral and Fig. 75, d, left-side ones, ditto), shewing that the genitalia can show specific character in such a minor detail.

Miresculpture on frontal elevations feeble, surface fairly well shining, punctures moderate in size, deep, distinct and sparsely scattered, PIS 1-3 times PD, but on median furrow and on anterior broad subflattened area closer, PIS < PD; mesoscutum slightly more finely but sparsely punctured, PIS mostly 2-3 times PD and on median area somewhat finer, sparser and weaker. Lateral series of striae on propodeum very weak and incomplete, on posterior half only defined, lateral and medial furrow of area dorsalis smooth, without striae, dorsal and posterior aspect of the segment almost completely smooth and polished, sides also smooth and polished, with very fine piliferous punctures scattered, practically without punctures.

♀. 10.5 mm. Closely resembles *pepondettae* ♀, differs from this in the form of apical margin of clypeus, the grade of elevation of frontal swelling and in the colour of the gaster.

Clypeus with apical margin dark brown, nearly black, mandible yellow, apical half gradually reddish brown, posterior part of collar incompletely discoloured, marginal area brown, tegula semitransparent castaneous brown, gaster black, sides of apical swelling of G1 and bases of G1 and 2 dark red, under low magnification apparently completely black (possibly due partly to postmortem change), fore tibia except dark folded side yellowish ferruginous, fore and mid tarsi yellowish white, apically very slightly brownish, hind tarsus except articulations dark brown, T₄ alone pale brown or yellowish.

Head in frontal view with sides rounded, almost not convergent below, $W:L=100:90$, vertex not depressed, tops of hind ocelli distinctly above level of tops of eyes, without longitudinal ridge between them, each not in a hollow, eye incision comparatively narrow and narrowed towards bottom, dorsal margin slightly inclined outwards, frontal elevations marked, highly raised, but comparatively somewhat lower than in *pependetae*, but median furrow not shallow (in this respect differs from δ), surface almost smooth and shining (under high magnification microsculpture observed) and sparsely scattered with strong punctures, SAT-ASR in dorso-lateral view: Fig. 76, apical margin of SAT seen in profile obliquely inclined to IAA (Fig. 77, also differs from δ , but the character may be variable). Clypeus: Fig. 78 (in specimen from Hollandia), Fig. 79 (in one from Saruwaged Mts.), lamina on side of pronotum: Fig. 80, just as in δ , triangularly produced and nearly pointed at apex. GSR more highly and roundly raised than in δ , half discoloured.

HW, HL, IODv, A3, P=100, 53, 24, 26, 166. IODs=10:6.7. OOD, Od, POD=1, 6, 4. A3=AW \times 4.5. A3, 4, 5=10, 6.5, 6. A3:IODc=10:6.2. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 33(22), 32(26). RC=B but close to C, Rl somewhat longer than usual in this group, about half the length of CV2 and till apex thick (usually apex pointed), CV2 comparatively long, about 4/5 of CV1 and 1/5 of CVI.

Punctures on mesoscutum strong, somewhat sparse, on antero-lateral area PIS 1-2 times PD, on median area sparser and posteriorly very finer. Basal transverse elevation of propodeum distinctly separated from postscutellum with a furrow, about 2/3 the length of it, but in middle excavated from behind by depression, lateral carinae of the segment rather weak, but posteriorly well-defined, accompanied inside with a distinct series of striae, lateral furrows of area dorsalis broad and shallow, but distinct, medial furrow deep, both partly ornamented with feeble striae, area apicalis incomplete, medianly keeled and transversely arcuately sparsely striate on dorsal area.

Holotype: δ , West Irian, Waris, south of Hollandia, 400-500 m, 17. VIII. 1959, Sweeping, T. C. Maa (HPBM).

Paratypes: 1 δ , New Guinea, Humboldt Bay, Hollandia, sea level, II. 1936, —, (BMNH); 1 δ , New Guinea, Saruwaged Mts., 500 m, 22. I.-16. II. 1979, J. Sedlacek (AEI).

16. TRYPOXYLON HOLLANDIAE SP. NOV.

Diagnosis. δ , 13 mm. Gl flask-shaped, mesoscutum without microsculpture, propodeum with lateral carinae, IODs=3:2, frons markedly roundly elevated on each side of medial furrow, fairly shining, SAT high nasiform, PAF moderately deep, V-shaped in cross section, clypeus rounded out, apical part bevelled, propodeum largely smooth and shining, gaster medianly red, black maculated above, fore and mid tarsi whitish or brownish, hind tarsus black.

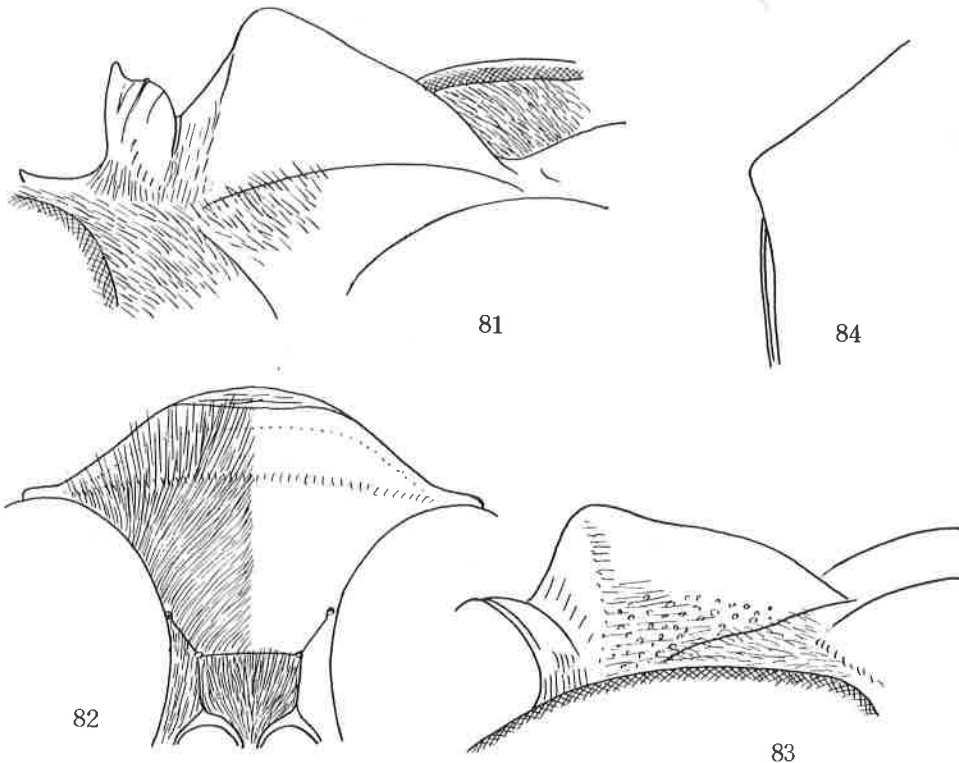
Black; mandible ferruginous, at base yellow and at apex brownish red, palpi yellow, posterior part of collar discoloured, posterior margin of pronotal tubercle narrowly brown, tegula semitransparent brown, Gl at apex and on apical sides, G2-3 except dusky marks above red. Fore tibia except folded side, fore tarsus, mid T1 except apical brown and hind tibia at base narrowly yellow or ferruginous yellow, spurs yellowish white, articulations of rest of legs and mid T2-5 pale brown, arolia black. Hair silvery, on clypeus convergent towards medial line.

Head in frontal view with sides rounded, very slightly narrowed below, $W:L=100:90$, vertex feebly depressed, tops of hind ocelli above level of tops of eyes, eye incision narrow and gently narrowed towards sinus, dorsal margin horizontal. Frontal elevations rounded and high as in allied species, surface weakly microcoriaceous and fairly shining, SAT-ASR similar in pattern to *placidum* Smith, in dorso-lateral view: Fig. 81, in lateral view: Fig. 82. Clypeus: Fig. 83, at base gently raised and thence apically medianly tectate till base of apical reflection which is fairly marked, medio-apical rounded protuberance bevelled and sparsely rugosed. Occipital carina complete, but slightly depressed behind buccal cavity.

HW, HL, IODv, A3, P=100, 52, 23, 25, 152. IODs=10:7.5. A3=AW \times 4.3. A3:IODc=10:7. A3, 4, 5=10, 6.5, 6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 21, 7, 32(23), 34(30). RC=C, but somewhat close to B, Rl short, CVI=CV2 6.3. TCV weakly sinuate, TCV:CV2=5:3, angle about 110°.

Structure of collar as in allied species, lamina on side: Fig. 84, with apical area reflected, parapsidal sutures normally impressed, subalar area normal, basal elevation of propodeum slightly shorter than postscutellum, much below level of it, with two transverse carinae, posterior one at the margin (the state may vary), lateral car-

inae of propodeum distinct, but not reaching apex, lateral furrows of area dorsalis broad and shallow, medial furrow deep and broad, that of posterior inclination deeper and broader, area apicalis only with curved lateral carinae, widely open upwards, GSR slightly roundly raised at posterior margin.



Figs. 81-84. *Trypoxylon hollandiae* sp. nov., ♀

Frontal elevations almost without microsculpture (under high magnification feebly defined), shining and strongly sparsely punctured, punctures on the inclination to medial furrow finer and closer, SAT finely closely punctured, but top area on both sides of median ridge smooth and shining, mesoscutum strongly, somewhat sparsely punctured, punctures similar in size to those of frons and PIS 1-2 times PD, but medianly sparser and posteriorly finer and much sparser, propodeum with distinct series of striae along lateral carinae, striae on posterior inclination extended inwards to cover the greater part of the area, area dorsalis smooth and polished, median furrow feebly crenate in middle and lateral furrows transversely striate on posterior parts, outside the area surface anteriorly smooth and posteriorly distinctly punctured; side closely covered with fine piliferous punctures except anterior femoral sinus, posteriormost area strongly striate.

♂, unknown.

Holotype: ♀, New Guinea, Humboldt Bay, Hollandia, sea level, II. 1936, — (BMNH).

Remarks. The specimen carries the same data label as that of one of the paratypes of the preceding species. But differs from it in the following distinctions:

1. Clypeus (though somewhat abraded judging from the condition of the mandible) with apical marginal area distinctly bevelled (Fig. 83).
2. CV2 markedly shorter.

3. Apical margin of G1, lower half of G2 and basal sides of G3 distinctly red.
4. Hind tarsus nearly completely black, bright areas of articulations very narrow and T4 alone somewhat brownish.
5. Area dorsalis posteriorly transversely striate.

However, the differences are very slight and may belong to the variation of a species.

17. TRYPOXYLON OLTHOFI SP. NOV.

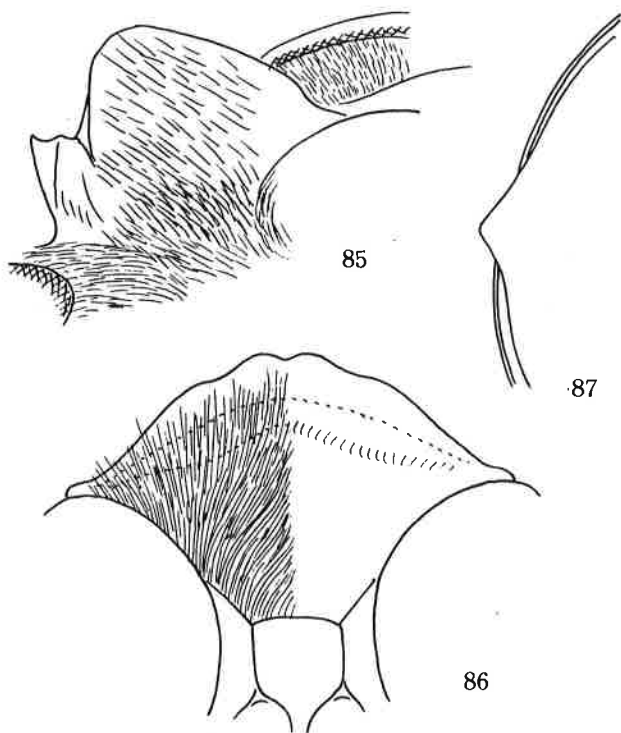
Closely resembles varisum, especially in the comparatively long A3, medio-apically non-bevelled clypeus, relative length of CV2 and in the colouration of the legs, differs from it, however, in the form of apical margin of the clypeus (Fig. 86, cf. Fig. 78) and much larger and more strongly microsculptured frontal elevations.

♀. 10 mm. Black; fore tibia except brownish folded side and hind T2-5 ferruginous, the latter with T2,3 and 5 medianly somewhat brownish, fore and mid tarsi except pale brownish mid T5 pale yellowish white, gaster on apical sides of G1, sides and underside of G2 and sides and underside at base of G3 dark red. Hair silvery.

Head in frontal view with sides rounded, very slightly narrowed towards clypeus, W:L=100:90, tops of hind ocelli slightly above level of tops of eyes, hind ocellus

not in a hollow, interspace not ridged, eye incision comparatively broad and strongly narrowed towards apex, frontal elevations larger than in T varisum, beginning to raise from level of upper margin of fore ocellus and reaching the level of upper end of SAT (in varisum distinctly raised area begins from level of mid point of fore ocellus), surface distinctly microcoriaceous, not shining, punctures on broad top area very sparse mostly PIS 3-4 times PD, at inclined areas closer, at lower space between elevations and SAT finer and close.

SAT-ASR in dorso-lateral view: Fig. 85 (hair not removed). Clypeus: Fig. 86, medio-apical area not bevelled and not impressed. Collar same in structure as in allied species, lamina on side: Fig. 87. Punctures on mesoscutum at anterior half of lateral area strong and fairly close, PIS 1-2 times PD and sparser towards median area and finer and much sparser posteriorly, subalar area normal, without impressed line on mesosternum on each side of medial line (in varisum present), basal transverse elevation at base of propodeum about half the length of postscutellum, transversely carinated across



Figs. 85-87. Trypoxylon olthofi sp. nov. ♀

middle, lateral carinae distinct, accompanied with the series of striae, the striae extended inwards in front of area apicalis which is incomplete. GSR roundly, highly elevated, not completely discoloured. Area dorsalis smooth and polished, with distinct lateral furrows, medial furrow deep, posteriorly enlarged and shallowed, with

weak striae on anterior portion, outsides of the area and posterior inclination also smooth.

HW, HL, IODv, A3, P=100, 52, 24, 24, 156. IODs=10:7. OOD, Od, POD=2, 7, 4.5. A3=AW×4.7. A3, 4, 5=10, 6, 6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 32(20), 34(30). RC=C, RI short, CV1=CV2×4, CV2≠TCV, angle about 110°.

♂, unknown.

Holotype: ♀, Netherland, India and American New Guinea Expedition, Bernhard Camp, 50 m, VII-IX. 1938, J. Olthof (RANH).

18. TRYPOXYLON CHIMBUM SP. NOV.

♀, about 11 mm, similar in general to T. bituberculatum, differs from it in that CV2 is relatively much longer, as long as TCV and about one third the length of CV1, wing veins are markedly pale in colour (constant?), IODv and IODs are comparatively greater (A3:IODv=10:12, A3:IODs=10:9.7, in bituberculatum 10:10.5 and 10:7 respectively), A3 is relatively somewhat shorter and propodeum more broadly smooth and shining.

On some characters. G1 on apical sides, G2 largely and base of G3 red, G2 carries obscurely margined lengthened brown marks on sides, above and beneath (possibly variable). Fore leg as in bituberculatum, mid T1-4 ferruginous, T5 brown, hind tibia brownish at base, tarsus dark brown and T4 ferruginous, all spurs ferruginous and all arolia black.

Head in frontal view similar in form to bituberculatum, vertex and eye incision similar, frontal medial furrow somewhat shallower, SAT-ASR as in compared species, but nasiform SAT is distinctly lower than in popondettae and angeramm, with apical inclination oblique in lateral view and dorsal margin smoothly inclined posteriorly, ASR distinctly bicarinate on top. Clypeus with apical margin already abraded and smoothly rounded, but relief of disc as in bituberculatum.

HW, HL, IODv, A3, P=100, 55, 26, 22, 146. IODs=10:7.5. OOD, Od, POD=1, 5, 4.5. A3=AW×3.4. A3, 4, 5=10, 7, 6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 7, 34(21), 42(32). RC=B, but somewhat close to C, RI short, CV1=CV2×3.4. TCV≠CV2, TCV nearly straight, angle about 110°.

Collar similar, lamina on side:

Fig. 88. Punctures on mesoscutum fairly close, on antero-lateral area PIS 0.5-1 times PD, along parapsidal sutures rather dense, but on median area sparser and slightly smaller, on posterior area markedly finer and sparser.

Lateral carinae of propodeum distinct, accompanied inside with series of striae, striae fine and close and on posterior inclination extended on to disc, but not into median furrow, area dorsalis with lateral furrows broad and shallow, but distinct, median furrow comparatively deep, both weakly transversely striate, disc and outer sides of the area smooth and polished.

♂, unknown.

Holotype: ♀, Chimbu District, Kundiawa, 1-4. I. 1965, J. Sedlacek, Malaise trap (EPBM).

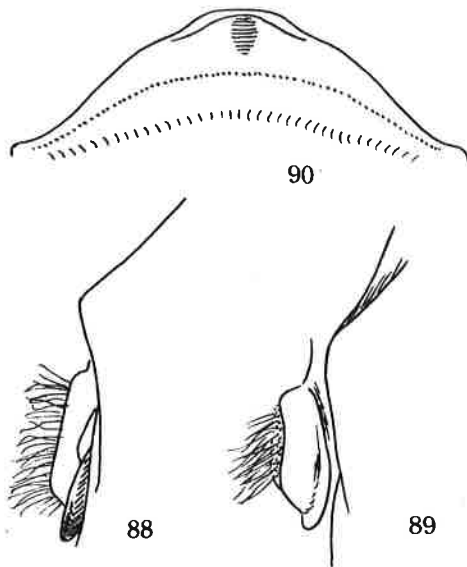


Fig. 88. T. chimum sp. nov., ♀.

Figs. 89-90. T. mafuluense sp. nov., ♀

19. TRYPOXYLON MAFULUENSE SP. NOV.

♀, 10.5 mm. Intermediate between bituberculatum and chimbus in the relative length of A3 (=AW 3.6) and CV2 (CV1=CV2 4.2 and TCV:CV2=5:4) and in the colour of wing veins, but in the relative length of between A3 and IODc (A3:IODc=10:7) similar to bituberculatum.

In this specimen, however, apical margin of clypeus is more narrowed apically than in bituberculatum and marginal area is markedly excavated in middle (Fig. 89), IODc is much narrower than both of them (IODs=10:6) and pronotal lamina is much blunter at apex (Fig. 90).

Character of SAT-ASR, mesoscutal punctuation and characters of propodeum similar to those of T. chimbus.

Fore tibia ferruginous, on folded side dusky and on outer apical area longitudinally somewhat darkened, mid tibia on both ends and hind tibia at base, fore tarsus wholly and mid T1-4 ferruginous, mid T1 brown, hind tarsus black, but T3 largely and T4 wholly ferruginous, G1 at apex and on apical sides, G2 except dorsal brown and G3 except apical ring and dorsal side yellowish red.

HW, HL, IODv, A3, P=100, 52, 26, 22, 168. IODs=10:6. OOD, Od, POD=2, 7, 6. A3, 4, 5=10, 6, 6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 19, 5, 26(22), 32(24). RC=C, somewhat close to B, Rl short and angle about 110°.

♂, unknown.

Holotype: ♀, E.N.G., Mafulu, 4000 ft. I. 1934, L. C. Cheesman (BMNH - 1934-321).

20. TRYPOXYLON KAITUM SP. NOV.

♀, 13.5 mm. Closely resembles the preceding species and may be in the subspecific relationships. Clypeus (Fig. 93) similar, but less narrowed apically, SAT-ASR generally similar (Figs. 91 lateral, 92 dorso-lateral), but dorsal margin of SAT near upper end somewhat strongly inclined (but possibly within variation range), frontal elevations as in mafuluense (not particularly high, somewhat small, median furrow deep, but microsculpture slightly weaker, with surface more shining and punctures sparse).

Colour of legs similar to that of mafuluense, only mid T5 and hind T3 more darkened; G1 at apex and on apical sides, G2 at base narrowly and on sides broadly, G3 at base and broadly beneath and G4 at base beneath red, but the red parts are semitransparent and seem to be due to postmortem change.

Head in frontal view with sides rounded, slightly convergent towards clypeus, W: L=100:90, eye incision comparatively broad and strongly narrowed towards sinus, vertex only slightly depressed, tops of hind ocelli above level of tops of eyes. IODc relatively somewhat broader, IODs=3:2, A3:IODc=10:8. Pronotum generally similar, but lamina on side more produced (Fig. 94), slightly incrassate at apex.

HW, HL, IODv, A3, P=100, 55, 26, 22, 154. IODs=10:6.7. OOD, Od, POD=2, 6, 5. A3=AW×4. A3, 4, 5=10, 6.5, 6.5. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 32(20), 38(32). RC=C, Rl short, CV1=CV2×5.6. TCV:CV2=3:2. Angle about 100°.

CV2 relatively shorter (but within the specific range of bituberculatum) and the angle between CV2 and TCV much closer to 90°.

Punctures on mesoscutum slightly smaller and slightly sparser than in bituberculatum, on antero-lateral area PIS mostly 1-2 times PD, on median area finer and sparser and on posterior area much finer and sparser. Propodeum broadly smooth, but lateral and medial furrows of area dorsalis feebly crenate, series of striae along lateral carinae weak, but on posterior portion extended inwards to form transverse striae in front of area apicalis which is incomplete, GSR only gently roundly raised, pale brown in colour.

♂, unknown.

Holotype: ♀, New Guinea (SW), "Camp Bishop", 12 km up Kait River, 240 m, 9. VII. 1956, E. J. Ford Jr. (EPBM).

Remarks. The taxonomic status of the present specimen is quite doubtful, but as its male is unknown and as it shows considerable distinctions it is provisionally dealt with as a separate species.

Trypoxylon kaitum umboiense ssp. nov.

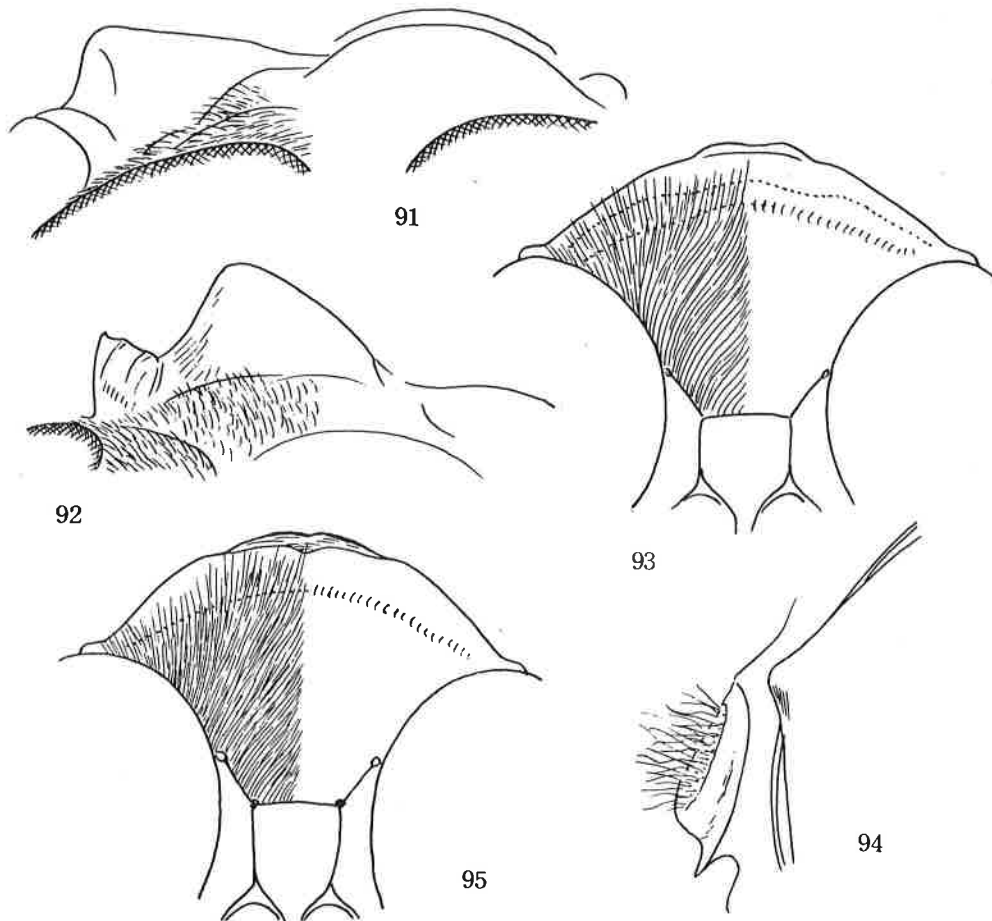
♀, 11 mm. A specimen from Is. Umboi lying between New Guinea and New Britain differs from the typical form in that body is smaller, A3 relatively longer, frontal elevations somewhat weaker and smaller, with surface distinctly microcoriaceous and not shining, median furrow more widely opened, a considerable space present between elevations and SAT and this space closely punctured (in nominate race the space narrow, rather wide furrow-like and without puncture), clypeus somewhat different in the form of apical margin and medio-apical rounded prominence bevelled (Fig. 95, cf. Fig. 93), basal transverse elevation of area dorsalis shorter, about a third the length of postscutellum, lateral series of striae on propodeum weaker; G2-3 more broadly red, mid tibia at base and in front and hind tibia at base ferruginous.

Measurements: HW, HL, IODv, A3, P=100, 52, 24, 24, 154. IODs=10:6.5. OOD, Od, POD=2, 7, 5. A3=AW×4.7. A3:IODc=10:6.5. A3, 4, 5=10, 6, 6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 19, 6, 30(20), 38(28). RC=C, Rl short, CV1=CV2×5.4, TCV:CV2=5:3, angle about 110°.

Fore leg similar in colour; mid T2 and 3 except each base and T5 dark brown, hind tarsus completely black. Gaster with G1 on apical sides, G2 and 3, both except dorsal brown mark (not reaching base) bright red.

♂, unknown.

Holotype: ♀, Is. Umboi, 1 km north of Awelkom, 600 m, 21-28. II. 1967, Malaise trap, G. A. Sammelson (RPBM).



Figs. 91-95. Trypoxylon kaitum sp. nov., ♀ (95 ... ssp. umboiense nov., ♀)

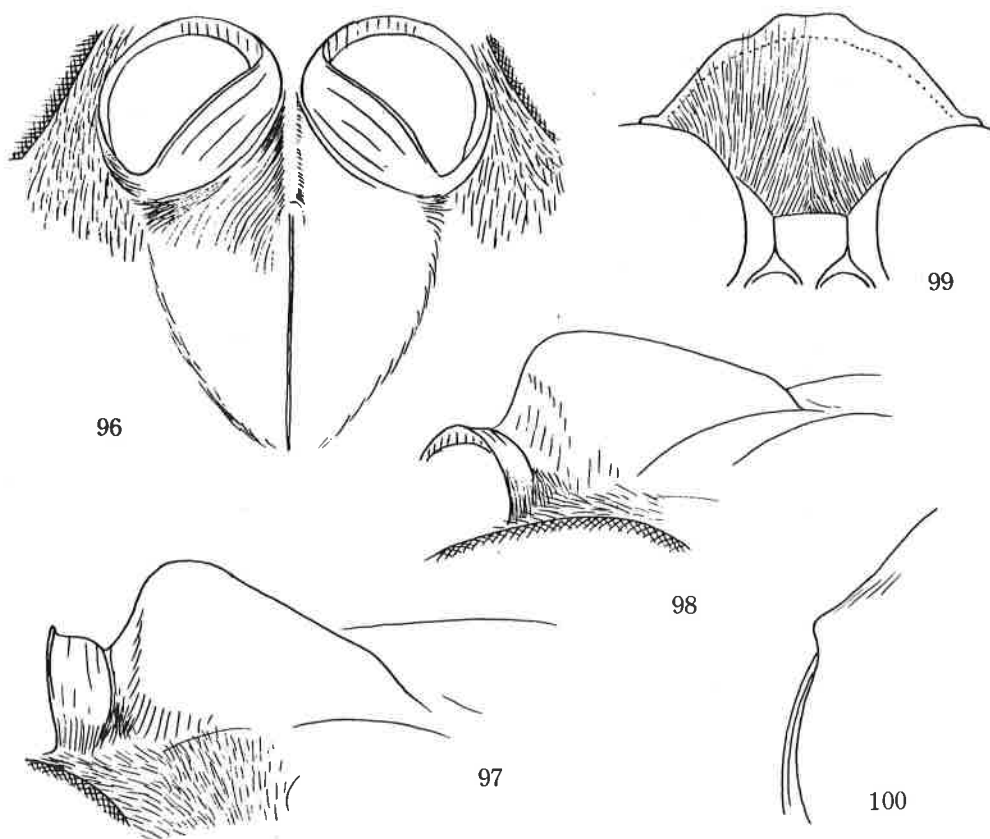
21. TRYPOXYLON TENGU SP. NOV.

Allied to bituberculatum, easily distinguished from this and other allies by that all tarsi are ivory white.

Diagnosis. ♀, 10-13 mm. Black, often gaster medianly beneath reddish or brownish, fore tibia nearly wholly, mid and hind tibiae partly, all spurs and tarsi except arelia yellowish white. Head from above transverse, $IODs=10:7$, frontal elevations considerably high, SAT high acute nasiform, markedly higher than level of ASR, PAF moderately deep, clypeus: Fig. 99, mesoscutum without microsculpture, propodeum with lateral carinae, area dorsalis with lateral furrows, G1 flask-shaped, $BC=C$.

Supplement. Al and 2 at apices and discoloured posterior part of pronotal collar yellowish, mandible at base yellow, apically castaneous, palpi yellow, posterior margin of pronotal tubercle narrowly and tegula and basal plates of wings light brown articulations of fore coxa-trochanter-femur-tibia, tibia wholly except folded side, mid and hind tibiae at base and apex, and spurs and tarsi completely yellowish white, arelia black. Hair silvery, on clypeus convergent towards medial line.

Head in frontal view with lateral margins rounded, almost not convergent below, vertex not depressed, eye incision comparatively broad and distinctly narrowed towards rounded sinus, dorsal margin slightly inclined outwards, frontal elevations considerably high (but not so high and so conspicuous as in placidum or bituberculatum), while median furrow only moderately deep (on this account elevations appear not so marked). SAT-ASR similar in structure to that of the compared species, SAT usually short and acutely carinated or ridged in middle, PAF moderately deep, bottom line upcurved, V-shaped in cross section, in dorsal view similar to the case of bitu-



Figs. 96-100. Trypoxylon tengu sp. nov., ♀

berculatum, in vertical view: Fig. 96, in dorso-lateral view: Fig. 97, in lateral view: Fig. 98. Clypeus: Fig. 99, disc not markedly raised at base, but gently tectate in middle and hair convergent towards medial ridge, apical area broadly, fairly strongly reflected. Occipital carina complete, higher above than below and somewhat depressed behind buccal cavity. Measurements in two specimens (holotype and Bernhard specimen):

HW:HL in frontal view 100:94, 100:93. HW,HL,IODv,A3,P=100,56,28,24,160. 100, 53,26,23,161. IODs=10:7.5. 10:7. OOD,Od,POD=2,4.5,5. 2,5,5. A3=AWx4. AWx4. A3, 4,5=10,7,6.5. 10,6.5,6. P,Ma,Mi,2(Ma),3(Ma)=100,19,7,34(22),35(29). 100,20,7,32(22),35(29). RC=C, but close to B (do.), RI short (do.), CV1=CV2x4.5. =CV2x5. TCV nearly straight (gently sinuate), TCV:CV2=5:4 (10:7), angle about 100° (95°).

Collar similar in structure to that of placidum or bituberculatum, but incrasation towards sides somewhat less strong and elevation towards middle in frontal view somewhat stronger, posterior part discoloured, yellowish brown, lamina on side: Fig. 100. Transverse elevation at base of propodeum flat and shining, smoothly obliquely inclined to area dorsalis, lateral carinae of the segment not strong, curved in lateral view, broadly vanished on both ends, lateral furrows of area dorsalis shallow and broad, but distinct, medial furrow fairly deep and broader and shallower towards apex, lateral carinae of area apicalis curved inwards at anterior ends, but the area widely open dorsally, GSR upcurved as a whole, not particularly expanded in middle.

Frons distinctly microcoriaceous and strongly sparsely superimposed with large punctures, punctures anteriorly smaller and denser, on SAT small, weak, close, each each bearing a hair that covers and conceals SAT (different from the state in the compared species), mesoscutum smooth and polished, punctures similar in size to those of frons, somewhat closer, PIS 1-2 times PD. Propodeum with lateral series of striae, striae anteriorly weak and indistinct, posteriorly strong and long, in front of area apicalis completely covering posterior inclination, area dorsalis smooth and shining, on median furrow only transversely feebly striate, outsides of the area and dorsal half of the sides sparsely covered with fine piliferous punctules, gaster without pubescence beneath.

♂, unknown.

Holotype: ♀, New Guinea, Morobe Dist. Busu River, 60 km east of Lae, 20 m, 13. I. 10. III. 1979, J. Sedlacek (AEI).

Paratype: 1 ♀, New Guinea, Bernhard Camp, 50 m, Netherland, India and American New Guinea Expedition, VII.-XI. 1938, J. Olthof (RMNH); 1 ♀, New Guinea, Dumpu, 250 m, 16-23. II. 1979, J. Sedlacek. (AEI).

22. TRYPOXYLON ORIOMONIS SP. NOV.

In the structure of frons and SAT-ASR similar to bituberculatum and its allies, differs from any of them in the form of apical margin of clypeus and in the colour of mid leg.

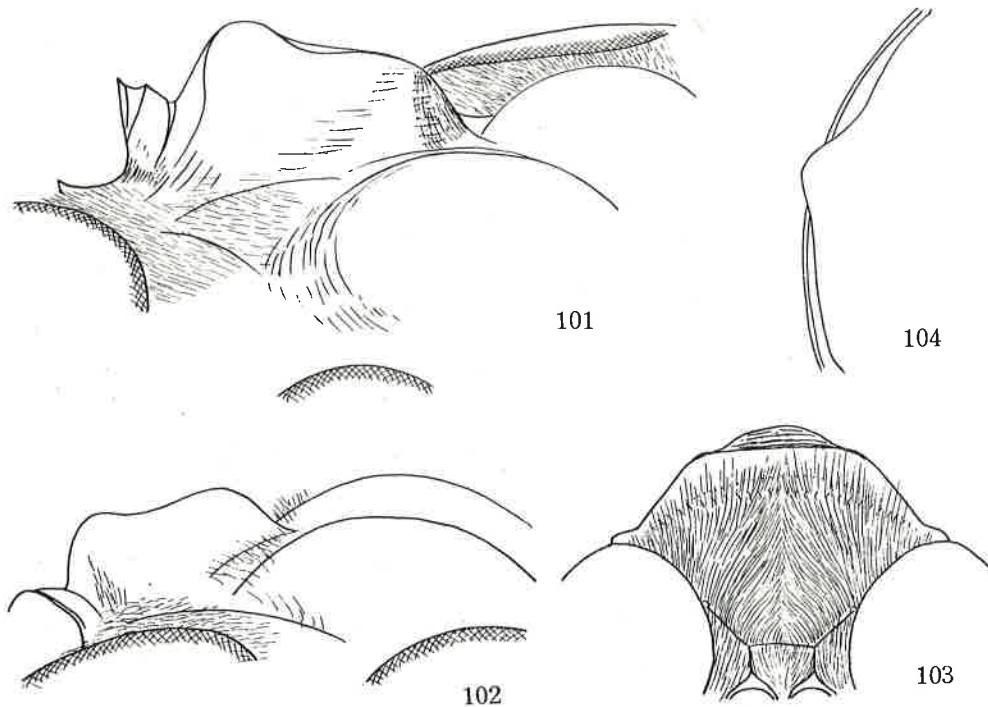
Diagnosis. ♀, 13 mm. Gaster flask-shaped, mesoscutum without microsculpture, propodeum with lateral carinae, frontal rounded elevations markedly high, SAT high nasiform, PAF V-shaped in cross section, up-curved, clypeus: Fig. 103, gaster black, somewhat reddish on median area beneath, mid and hind legs black.

Black; A1 and 2 at apices brownish, mandible at base yellow and turning ferruginous - dark reddish brown apically, greater part of mouth parts including palpi ferruginous, posterior part of collar incompletely discoloured, marginal area alone brownish yellow, tegula semitransparent castaneous, basal plates of wings dark brown, gaster from apex of G1 to base of G3 reddish beneath, fore tibia brown, paler in front tarsus pale brown except black areolium. Hair silvery on clypeus strongly curved towards medial line.

Head in frontal view with sides rounded, not convergent towards clypeus, W:L=100:88, vertex not depressed, only slightly impressed around each ocellus, tops of hind ocelli in a line with tops of eyes, eye incision narrow and narrowed towards sinus, dorsal margin horizontal, frontal elevations large and high, ranging from sides of fore ocellus to below level of upper end of SAT, occupying full width of frons, except eye incisions and lower inner orbits, median furrow deep as in placidum. SAT-ASR in dorso-lateral view to see through PAF: Fig. 101, in lateral view: Fig. 102 (curvature of dorsal margin may vary), clypeus: Fig. 103, disc at base gently raised and gently tectate till base of apical reflection, apical margin broadly truncate and provided with round prominence which is bevelled and sparsely rugosed. Occipital carina

strong and complete.

HW, HL, IODv, A3, P=100, 54, 24, 24, 166. IODs=10:8.5. OOD, Od, POD=2, 5, 4. A3=AWx4.3. A3, 4, 5=10, 7, 6.5. P, Ma, Mi, 2(Ma), 3(Ma)=100, 19, 6, 30(22), 32(30). RC=B, Rl short, CV1=CV2x4.5. TCV:CV2=6:5, TCV nearly straight, angle about 100°.



Figs. 101-104. Trypoxylon oriomonis sp. nov., ♀

Structure of collar as in two species compared, lamina on side: Fig. 104, subalar area of mesopleuron without pent-roof structure, propodeum at base with a transverse shining area as in compared species, here it is below level of postscutellum and flat, slightly shorter than this, lateral carinae of propodeum distinct, originating just behind spiracle, in lateral view up-curved and ending far before reaching apex of the segment, area dorsalis enclosed with shallow broad and striated furrow, medial furrow fairly deep and enlarged posteriorly, area apicalis with only short lateral carinae, GSR subtriangularly raised at apical margin, with apex rounded, Gl with spiracles at about 1/5 from base.

Frons distinctly microcoriaceous and somewhat sparsely covered with large strong punctures, punctures not abundant, but PIS on the elevations 1-2 times PD, on inclined areas, especially towards medial furrow, punctures gradually finer and closer. SAT except median ridged area covered closely with fine piliferous punctules, mesoscutum smooth and polished and fairly closely covered with deep punctures, punctures smaller than those on frons and PIS 1-1.5 times PD, but at anterior part much closer and on median area sparser. Area dorsalis transversely weakly striate on median furrow, on disc finely sparsely punctured, on lateral furrow, outsides of the area and posterior inclination completely covered with transverse strong and close striae, sides strongly closely punctured, but punctures anteriorly finer and on femoral sinus lacking, on posterior area transversely rugoso-punctate and striate.

♂, unknown.

Holotype: ♀, New Guinea, Papua, Western Dist., Oriomo Govt. Sta., 26-28. X. 1960. Malaise trap, J. L. Gressitt (BPIM).

23. TRYPOXYLON ERRANS SAUSSURE, 1867

Trypoxylon errans: Tsuneki, SPJHA, 13: 115-116, 1980 (all synonyms are listed, with known localities).

Trypoxylon philippinense: Krombein, Proc. Hawn. Ent. Soc., 13(3): 381, 400, 1949 (Guam).

Trypoxylon philippinense: Yashimoto, Pac. Ins., 2 (3): 333, 1960 (Hawaii).

Specimens examined:

1 ♀, Guam, 25. VIII. 1938, R. G. Oakley (USNM); 4 ♀, Hawaii, Oahu, Honolulu, 14. XI. 1914 (Coll. J. van der Vecht, BMNH); 20. VIII. 1915, Swezey Coll. (USNM); 14. X. 1916, Coll. O. H. S. (USNM); VIII. 1915, in bolls cotton, A. Busck (USNM). 2 ♂, Same loco, 22. IX. 1914, Swezey Coll. (USNM); 3. I. 1916, Coll. O. H. S. (BMNH). 2 ♀, Hawaii, Oahu, Kaimuli, 3. I. 1916, Coll. O. H. S. (BMNH); 12. X. 1914, Swezey Coll. (USNM).

Remarks. In two male specimens from Oahu all trochanters are markedly brownish, yet in one of them (having short G1) fore trochanter is broadly ferruginous beneath and others are narrowly so in front, while in the other all ones are completely brown, the same colour as femora and tibiae of all legs that are no doubt strongly faded by time. In the former specimen the gastral petiole is markedly shortened as frequently the case in this species. Measurements of the two specimens:

HW, HL, IODv, A3, Al3, P=100, 52, 33, 15, 30, 92. =100, 54, 34, 15, 32, 142. IODs=10:6.5. =6.7. OOD, Od, POD=2, 4, 4. =2, 2.5, 3. A3=AW×2.7. =2.8. A3:IODc=10:15. =10:14. A3, 4, 5=10, 6, 5.5. =10, 7, 6. Al3=BW×2.7. =BW×3.1. P, Ma, Mi, 2(Ma), 3(Ma)=100, 30, 11, 42(40) 48(60). =100, 17, 6, 28(23), 34(32). RC=C. =C. Rl short (do.). CV1=CV2×4.3. =CV2×3.7 TCV:CV2≐3:2. ≐4:3. Angle=105°. =100°.

Compare the measured values of the gastral segments!

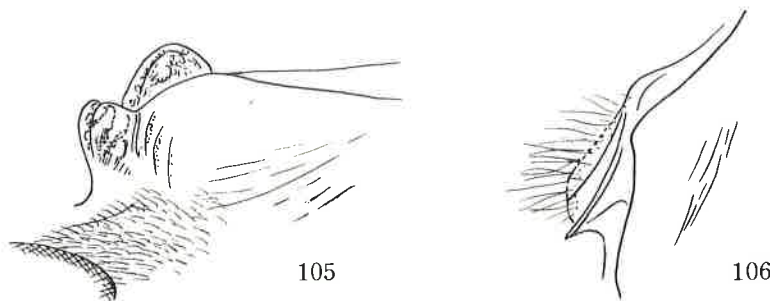
24. TRYPOXYLON ALBITARSATUM TSUNEKI, 1977

Trypoxylon albitarsatum Tsuneki, SPJHA, 6 : 8, 1977 (♀).

Specimen examined: 1 ♀ (holotype), New Ireland, Dana, Kalili Bay, 30. IV. 1962 Noona Dan Exped., 1961-62 (ZMUC).

Some supplements (♀, about 18 mm in length).

Gaster completely black, with spiracles strongly impressed and well defined. Fore and mid tibiae dark brown, at base greyish yellow, on fore tibia, further, anterior and posterior sides appear pale yellowish in some light, hind tibia at base broadly and at apex narrowly whitish, rest dark brown, tibial spurs all white, fore and mid tarsi dark brown, densely covered with whitish hair and in some light appearing pale brown, hind tarsus ivory white, T1 bearing a longitudinal series of 3 or 4 minute black spots on outer side (constant?).



SAT-ASR in dorso-lateral view: Fig. 105, ASR coarsely sculptured, SAT large tu-beriform, medianly carinate, carina anteriorly ending at the top of SAT, leaving fore side of it broadly flattened and smoothly inclined to IAA, SAT at the inclination to PAF arcuately and coarsely punctate-striate, PAF shallow, wide-V-shaped in cross section, with bottom line up-curved, clypeus broadly rounded out anteriorly (Fig. 28 in

original description), disc at base roundly raised, with hair convergent towards medial line, but the hair convergence restricted to the basal elevated area only and on anterior half of the disc hair parallel, this is due to that disc is not tectate as a whole as done in bituberculatum. Lamina on side of pronotum: Fig. 106. Propodeum at base without transverse raised area, instead a distinct furrow which is margined posteriorly with a strong carina, area dorsalis practically without lateral furrows, but in oblique light lateral marginal areas broadly shallowly depressed, median furrow distinct till apex, moderately deep, short spatulate in form, with the glittering bottom line in middle, which is feebly crenate except apical part, disc covered with fine piliferous punctures. GSR highly, subtriangularly elevated, apex rounded and discoloured, in lateral view distinctly curved posteriorly.

HW, HL, IODv, A3, P=100, 48, 24, 24, 134. IODs=10:9. OOD, Od, POD=2, 6, 3. A3=AWx4.2. A3, 4, 5=10, 7, 6.5. A3:IODc=10:9. P, Ma, Mi, 2(Ma), 3(Ma)=100, 23, 8, 38(26), 46(34). RC=C. Rl short, CV1=CV2x7.7 (right wing), =CV2x6.7 (left wing). TCV:CV2=10:5, =10:6. TCV nearly straight, angle about 100° (in both).

Frons distinctly microcoriaceous and closely superimposed with comparatively large punctures, PIS mostly 1-1.5 times PD.

Trypoxylon albitarsatum huonense Tsuneki, 1977 (STATUS NOV.)

Trypoxylon huonense Tsuneki, SPJHA, 6: 14, 1977 (♂ ♀, Huon Golf, 7 figs.).

By examining rich material of huonense it was made clear that huonense is only a geographical race of T. albitarsatum m., differing mainly in the colour of gaster and partly of the legs. Because of the fact that this form is rather common in New Guinea main characters of it is given below (in phylogenetic albitarsatum is obviously a derivative of huonense, but taxonomically it has the page priority):

11-15 mm, Gl flask-shaped, head not thick, propodeum with lateral carinae, mesoscutum simply punctured, gaster medianly more or less red, often nearly completely black, fore and mid tibiae and all tarsi white, IODs=10:8 (♀), 10:9 (♂), frons widely flat, SAT low, gently tectate, PAF very wide triangular in cross section, clypeus simply rounded out (in ♂ less produced), area dorsalis without lateral furrows in ♀, with very feeble furrows in ♂, area apicalis incomplete, widely opened upwards, GSR roundly, highly elevated, RC=C, somewhat close to M, Rl short, CV1=CV2 6, angle mostly about 110 (in ♂ mostly about 100 or so). In male genitalia penis valve with shoulder and sickle-shaped appendages, paramere deeply bifid at apex.

Specimens examined:

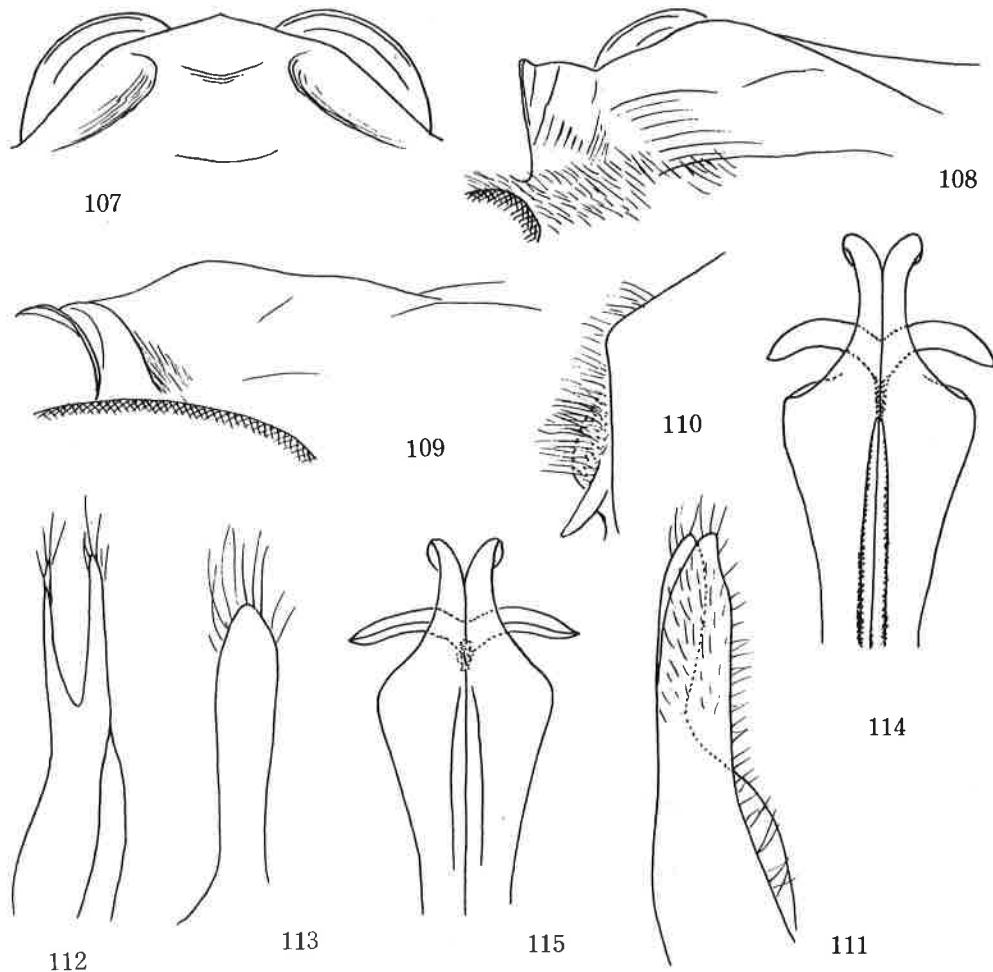
1 ♂ (holotype) 1 ♀ (paratype), New Guinea, Morobe Dist., Huon Golf, Simbang, 1898, Biro leg. (HNIM). 2 ♀, Morobe Dist., Huon Peninsula, Finschhafen, 80 m, 13, 16, IV. 1963, J. Sedlacek, Malaise trap (BPBM). 6 ♀, Morobe Dist., Wau, IV. 1968 (BPBM); Wau, 1200 m, 17. VIII. 1961, J. & M. Sedlacek, Light trap (BPBM); Wau, 1500m, 13. III. 1970, M. Sedlacek (BPBM); Wau, 1200, 1-10. V. 1963, J. Sedlacek, Malaise trap (BPBM); 6. V. 1963, J. & M. Sedlacek (BPBM). 1 ♂, Wau, 1250 m, 18. VIII. 1964, M. Sedlacek (BPBM). 1 ♀ 1 ♂, New Guinea, Nadzab Terr., 5. I, 23. VII. 1944, U. N. Lanham (Coll. K. V. Krombein, USNM). 1 ♀, Morobe Dist. Nadzab, Markham River Valley, 18. VI. 1944, K. V. Krombein (along E. fork Ngafir Creek, USNM). 1 ♀, Morobe Dist., Lae-Zenag Road 200 m, 14-19. I. 1979, J. Sedlacek (AEI).
1 ♀, Umboi I. about 8 km WNW of Lab Lab, 300 m, 8-19. II. 1967, S. L. Samuelson (BPBM).
1 ♀, New Guinea (SE), Cape Rodney, 2.XI. 1960, Malaise trap, J. L. Gressitt (BPBM); 1 ♀, New Guinea (SE), Green River, Sepik River Junction, 200 m, 27-28. VI. 1963, R. Straatman, Light trap (BPBM); 1 ♀, New Guinea (SE), Mamai Plateau, east of Port Grasse, 150 m, 27. I. 1965, R. Straatman (BPBM).
1 ♀, Milne Bay Dist., Milne Bay, about 10 m, III. 1965, R. Straatman, Light trap (BPBM).
3 ♀, Central Dist., Brown River, 1 mile DASF "Block" Papua, 31. V. 1966, in large numbers on moist road in rain forest, J. J. H. Szent-Ivaney (RMNH).
1 ♀ 6 ♂, New Guinea, Western Highland Dist., Baiyer R., 26. XII. 1978 - 25. I. 1979 (2 ♂); 6-25. II. 1979; 25. I. - 6. II. 1979, all 1100 m, J. Sedlacek (AEI).
1 ♂, New Guinea, Jimmi Valley, 27. XII. 1978 - 26. I. 1979, J. Sedlacek (AEI); 1 ♀, New Guinea, Gent River, Jimmi Valley, 650 m, 7-26. II. 1976, J. Sedlacek (AEI).
1 ♀, New Guinea (NE), Sepik: Maprik area, 160 m, 23. VIII. 1957, D. Elmo Hardy (BPBM).

- 1 ♀, New Guinea, Inonda, Horanda District, Papua, 6. I. 1944, W. C. Bodenstein (K. V. Krombein Coll. USNM).
 1 ♀, New Guinea, Sarwaged Mts., 500 m, 22. I. - 16. II. 1979, J. Sedlacek (AEI).
 4 ♀, Netherland, India and American New Guinea Expedition, Bernhard Camp, 50 m, VII. - XI. 1938, J. Olthof (RMNH); 1 ♂, ditto, 14. IX. 1939, J. L. Toxopeus (RMNH).
 1 ♀, New Guinea, West Irian, Ifar, 300-600 m, 20. VI. 1959, T. C. Maa (BFBM).
 1 ♀, New Guinea, West Irian (NW), Sorong, 24. VI. 1948, M. A. Lieftinck (RMNH).
 1 ♀, I. Misool, 0-75 m, Pahal, 8. IX. - 20. X. 1948, M. A. Lieftinck (RMNH).

Some supplements.

Measurements of holotype ♂ (within parentheses paratype ♀):

HW, HL, IODv, A3, Al3, P=100, 46, 24, 15, 39, 138 (100, 50, 22, 22, —, 138). IODs=10:8.5 (10:8). OOD, Od, POD=3, 8, 5 (3, 11, 5). A3=AW×2.3 (AW×4.1). A3, 4, 5=10, 7, 7 (10, 7, 6). A3:IODc=10:14 (10:8.5). Al3=BW×4 and ≠A7-12. P, Ma, Mi, 2(Ma), 3(Ma)=100, 20, 7, 32(25), 34(34) (100, 18, 7, 25(24), 40(32)). RC=C, Rl short.



Figs. 107-115. Trypoxylon albitarsatum huonense Tsuneki

SAT-ASR in dorsal view: Fig. 107, in dorso-lateral view to see through PAF: Fig. 108, in lateral view: Fig. 109, lamina on side of pronotum: Fig. 110. (in SPJHA, 6: 15 are given the following: clypeus ♂ and ♀, Al3, posterior part of propodeum in posterior view, 8th sternite, male genitalia in ventral view, apical part of penis valve in dorsal view). Apical part of left paramere in ventral view: Fig. 111, in

lateral view: Fig. 112, left volsella in ventral view: Fig. 113, apical part of penis valve in dorsal view: Fig. 114 (holotype), ditto in Finschhafen specimen: Fig. 115.

Frons strongly microcoriaceous and closely superimposed with strong punctures, punctures on mesoscutum finer than on frons, fairly close, usually PIS 1-2 times PD, generally punctures on frons and mesoscutum are sparser in ♂ than in ♀, on mesoscutum, further, finer, but rarely as large and as close as in ♀.

Transverse raised area at base of propodeum practically lacking, it becomes a transverse raised line or some carinae and of no use of special mention.

Variation in some characters.

(1) Antennal joints.

In ♀ usually $A_3 = AW \times 4.0-4.2$, but frequently it becomes longer and $= AW \times 4.5$, the ratio of $HW:A_3$, $IODv:A_3$ and $A_3:IODc$ varies accordingly. In ♂ $Al_3 = BW \times 4$ and $\neq A_7-12$. Among the males examined, however, there are 4 exceptions, in 3 of which $Al_3 = BW \times 3.5$ and $\neq A_8-12$ and in the remaining one $Al_3 = BW \times 3.1$ and $\neq A_9-12$.

The differences were so marked that it was considered that the two forms might belong to different species respectively. However, in other external characters no note-worthy difference could be discovered between the specimens and the normal ones. So the genital organs and the 8th sternite of the two forms were examined. But here also no special character could be found out on both of the organs. Certainly they are simple variations or rather aberration in the relative length of the ultimate joint of the antenna. The specimens (first three are the first form and the 4th is the second form):

1 ♂, Morobe Dist., Wau, 1200 m, 1. XII. 1960, M. Sedlacek (HPBM).

1 ♂, Morobe Dist., Bulolo, 15. I. - 14. II. 1979, 800 m, J. Sedlacek (AEI).

1 ♂, Northern Dist., Popondetta, 60 m, 2. IX. 1963, J. Sedlacek, Malaise trap (HPBM).

1 ♂, Morobe Dist., Huon Peninsula, Finschhafen, 80 m, 16. IV. 1963, J. Sedlacek (HPBM).

Measurements in the most remarkable 4th specimen:

Length 10.5 mm, head in frontal view $W:L=100:90$. $HW,HL,IODv,A_3,Al_3,P=100,50,24,15,25,118$. $IODs=10:9$. $OOD,Od,POD=2,6,3$. $A_3=AW \times 2.1$. $A_3:IODc=10:15$. $A_3,4,5 \neq 10,7,8$. $Al_3 = BW \times 3.1$ and slightly shorter than A_9-12 but longer than Al_0-12 . $P, Ma, Mi, 2(Ma), \bar{3}(Ma)=100,25,8,44(29),50(44)$. $RC=C$, $CV1=CV2 \times 4.7$, $TCV:CV2 \neq 4:3$, TCV gently incurved, not sinuate, angle about 110° .

(2) Apical margin of clypeus in ♂.

In ♂ clypeus is less produced anteriorly than in ♀ and rounded at apex. But sometimes it is broadly subtruncate in middle and rarely more or less angulated at the ends of the truncate area.

(3) Colour of gaster.

Usually G_1 on apical sides, G_2 and 3 each except a dark brown mark above covering posterior half and G_4 at base beneath red. Dark marks on G_2 and 3 varied in extension sometimes much larger and sometimes much smaller. In the specimens from northern and northwestern parts of the Island black marks cover the greater part of the segments, leaving only bases of G_2 and 3 narrowly dark reddish. In the extreme case the gaster becomes completely black as in the typical form of the species. (sometimes posterior margins of $G_2,3,4$ discolour and appears somewhat yellowish).

The relation of the gastral colouration with the localities is as follows:

a. G_2 and 3 broadly red (dorsal marks small and brownish, ♀ ♂):

Brown River valley (all), Mamai Plateau, Cape Rodney, Milne Bay, Inonde Horanda Distr., Popondetta, Wau (all without exception), Bulolo, Nadzab, Huon Peninsula and Umbel Is.

b. Each considerably broadly red (dorsal side dark brown):

Nadzab and Huon Golf.

c. $G_2,3$ at base narrowly dark red:

Bernhard (all), Soron, Is. Misool, Sepik, Huon Pen.

d. Black, $G_2,3,4$ with apex discoloured:

Jimmi Valley, Baiyer R (all), Sarwaged Mts.

e. Completely black:

Ifar and Misool.

According to the result variation in the colouration of the gaster is certainly connected with the geographical situation of the localities, but the change is gradual and the subspecific treatment is difficult.

(4) Colour of legs.

Whitish colour of fore and mid tibiae and all tarsi is rather constant, but sometimes the bibiae on folded side and mid T_5 somewhat darkened. Besides the above, hind tibia at base broadly and all spurs white; fore and mid femora broadly brown. The tone

and extent of brown colour are considerably variable.

(5) Plumbeous shine on thorax.

In the holotype of *albitarsatum* thorax shows a strong plumbeous shine, while in most of *huonense* the lustre is completely lacking, but in the specimens from north-western regions of New Guinea (Vogelkop) and those of brown river (Central Distr.) the thorax has a considerable (sometimes blunt and sometimes clear) plumbeous shine.

(6) Wing venation.

In the female $CV1:CV2$ is rather constant, $CV1=CV2 \times 6 \pm 0.5$, while in the male sometimes it becomes 4 or 5 and rarely even 7. $TCV:CV2$ usually $=5:3$, but in the aberrant males both become subequal in length.

Remarks. The specimen from Umboi Island, lying close to New Britain, agrees in characters completely with the New Guinean form, ssp. *huonense*. This seems strange, but the specimens from the Island and New Britain are too scanty.

Trypoxylon albitarsatum muruanum ssp. nov.

A female specimen from Is. Woodlark, lying eastwards about 500 km off the coast of southeastern part of Papua differs from the nominate form in that gaster is medianly broadly red, tarsi of legs partly infuscated, clypeus at medio-apical margin more strongly incrassate and punctures on frons somewhat sparser. It differs from the New Guinean population as follows:

(1) Fore T2-5 slightly brownish, mid tarsi from middle of G1 apically and hind T1 and T5 distinctly brown and ground colour of all tarsi not white, but ferruginous.

(2) G1 at apical area (laterally broader), G2 and 3 each except a small dusky mark above and base of G4 broadly bright red.

(3) Clypeus at medio-apical margin more strongly incrassate.

(4) Punctures on frons somewhat sparser and those on mesoscutum much finer and sparser than the Papuan specimens.

Based upon the above differences the specimen is dealt with as a local race.

Measurements:

HW, HL, IODv, A3, P=100, 46, 22, 24, 140. IODs=10:9. OOD, Od, POD=2, 8, 3. A3=AW \times 4.2. A3, 4, 5=10, 7, 6. A3:IODc=10:8.5. P, Ma, Mi, 2(Ma), 3(Ma)=100, 22, 7.5, 34(28), 40(34). RC=C, R1 short, CV1=CV2 \times 6.1, TCV:CV2=3:2(right), 5:3(left). Angle about 110°. δ , unknown.

Holotype: Papua, Milne Bay Dist., Woodlark Island (Marua), Kulumalau Hill, 23-30. III. 1957, —? (BPBM).

Remarks. This form is distinctly a derivative from the Papuan population, but taxonomically it must be treated as subspecies of the New Britain form.

From the specimen the left antenna from A5 apically, the right from A4 apically and the right mid leg and the left hind leg are lost.

25. *TRYPOXYLON EBURNEIPES* TSUNEKI, 1977

Trypoxylon eburneipes Tsuneki, SPJHA, 6: 11, 1977 (♀, New Ireland, figs.).

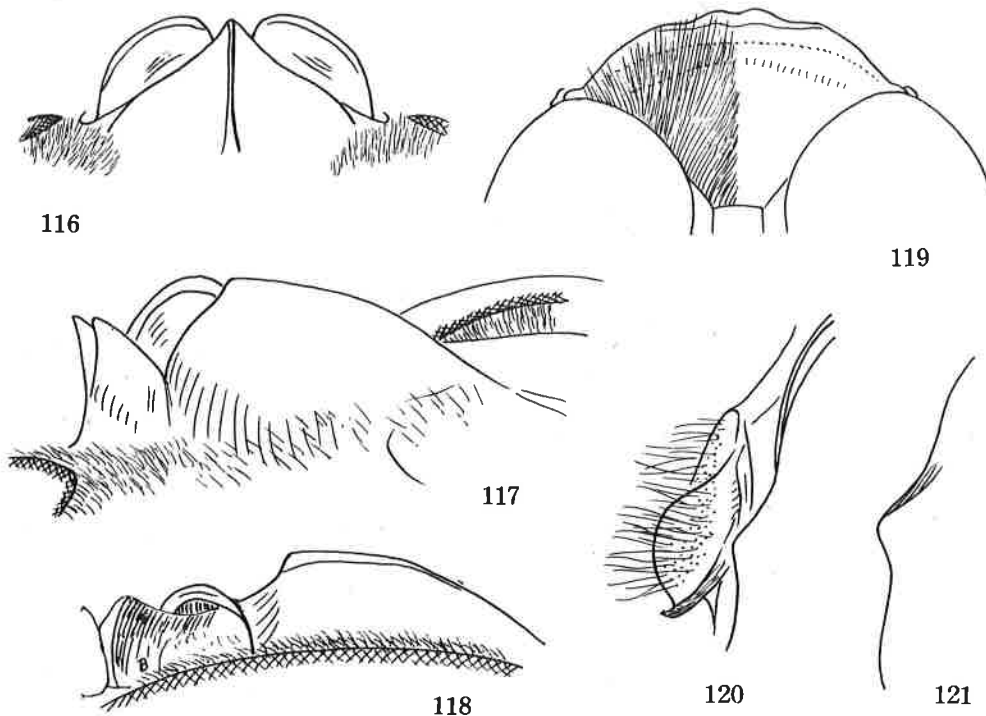
(Erratum in the comparative notes of the original description: Propodeal lateral carinae lacking — " present. But the carinae are sometimes very weak and indistinct, likely to be overlooked).

Specimens examined:

1 ♀ (holotype), New Ireland, Dana, Kalili Bay, 30. IV. 1962, Noona Dan Exp. 1961-62 (ZMUC); 1 ♀, New Guinea, Morobe Dist., Busu River, 20 m, 60 km east of Lae, 13. I. -10. III. 1979, J. Sedlacek (AEI); 1 ♀, New Guinea, East Sepik Dist., Dreikilir, 350 m, 23. VI. 1961, Malaise trap, J. L. & M. Gressitt (BPBM); 1 ♀, Papua, Central Dist., Brown River, 1 mile DASF "block", 31. V. 1966, in large numbers on moist road in rain forest, J. J. H. Szent-Ivany (RMNH); 1 ♀, West Irian, Netherl., Ind. - Amer. New Guinean Exp. 1938-39, Hollandia, VII. 1938, L. J. Toxopeus (RMNH); 1 ♀, New Guinea, West Irian (NW), Schouten Is., Biak I., Kampong Landbouw, 50-100 m, 27. V. 1959, J. L. Gressitt (BPBM); 1 ♀, New Guinea, West Irian (CNW), Vogelkop, Keber Valley, west of Manokwari, 550 m, 4-31. I. 1962, L. W. Quate (BPBM).

Some supplements to the original description.

Frontal elevations comparatively small, oval in outline, gently roundly raised, SAT-ASR in dorsal view: Fig. 116 (holotype), in dorso-lateral view: Fig. 117, in lateral view: Fig. 118, clypeus: Fig. 119, pronotal lamina: Fig. 120 (holotype), Fig. 121 (Biak I. specimen). (B in Fig. 118 is the basal condyle of A1).



Figs. 116-121. *Trypoxylon eburneipes* Tsuneki, ♀

Measurements (holotype).

W:L of head in frontal view 100:86. HW, HL, IODv, A3, P=100, 50, 24, 24, 140. IODs=10:5.5 (usually 10:6). OOD, Od, POD=2, 7, 3. A3=AW×5. A3:IODc=10:5.5. A3, 4, 5=10, 6.5, 6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 22, 8, 31(27), 32(36). RC=C, R1 short, CV1=CV2×6. TCV:CV2=7:4. TCV nearly straight, place of CV2 strongly depressed (as usual) and CV2 appears shorter. Angle about 90°.

Collar of pronotum in dorsal view with anterior part very narrow, round ridge-like, only slightly widened laterally, posterior part broader, incompletely discoloured, with posterior margin narrowly brownish, subalar area normal, outer margin only at posterior part acutely edged and slightly produced laterally, but not expanded, metapleural flange raised and narrowly flattened laterally at the top and carrying a lunate elevation at posterior area. Propodeum at base transversely narrowly raised as usual, but not particularly enlarged, lateral carinae originating at a short distance behind spiracle and on about posterior third strongly disturbed by a series of transverse striae and almost disappeared, the striae are the posterior ones of the series of striae along and inside the lateral carinae of the segment and there extended inwards on to front of area apicalis, the striae further extended outwards on to sides of the segment; the series of striae often on anterior part also extended inwards, finely and closely crossing the shallow, rather indistinct lateral furrow of area dorsalis.

Variation.

(1) Colouration. Fore tibia except folded side yellowish white (abbreviated to y.g. below), sometimes (in 2 specimens out of 6 - 2/6) slightly dusky on outer side, fore tarsus except black arolium always completely y.w. Mid tarsus at base and apex

y.w., rest dark brown (4/6) or pale brown (2/6), extent of y.w. area more or less variable; mid tarsus except arolium: completely y.w. (3/6), do but apically slightly brownish (1/6), 5 alone dark brown (1/6 .. type), T1 greyish brown and T5 dark brown (1/6). Hind tibia always white at base, T1 except base and apex always black, T2 and 5 largely brown (1/6), black (2/6), T2 and 3 largely black (1/6 .. type) and T2-5 completely y.w. (3/6). Fore tibial spurs y.w., others somewhat brownish.

Gaster always completely black.

Apical marginal area of clypeus black and only slightly brownish (3/6), narrowly pale brown (1/6) and broadly pale brown (2/6).

(2) Form of apical margin of clypeus. In fresh specimens it is comparatively constant. Mostly it is as given in Fig. 119.

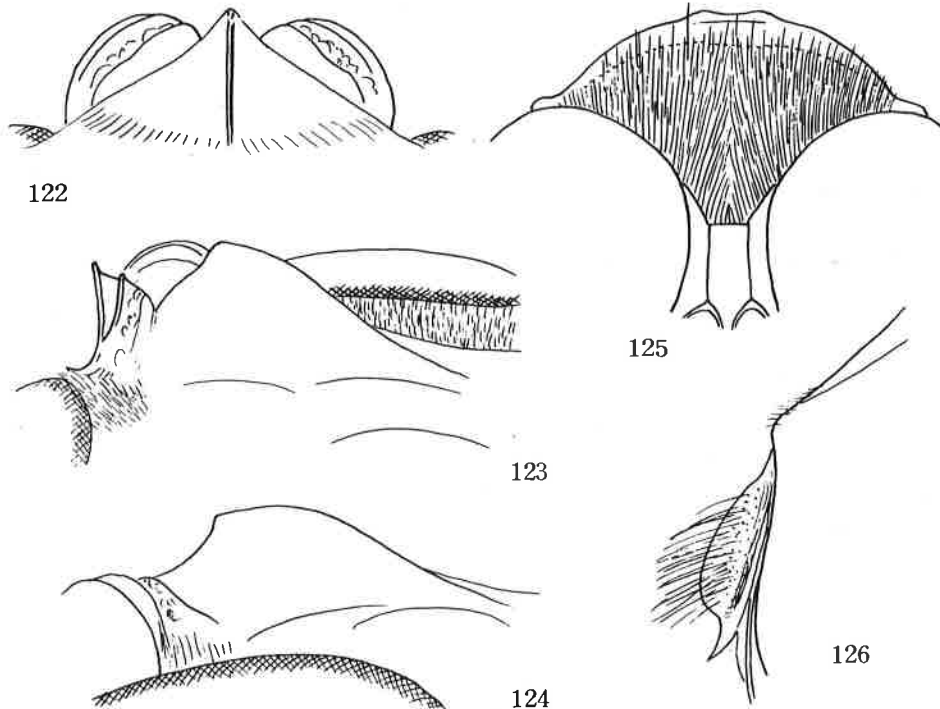
(3) Relative length of A3. It is usually AW 5 or nearly, in one aberrant specimen from Hollandia it is only AW 4.

(4) Lateral carinae of propodeum. On the anterior half it is usually distinct, but variable in extent, sometimes very short and somewhat weak, in such a case it is likely to be taken as absent.

26. TRYPOXYLON SEDLACEKI SP. NOV.

Diagnosis. ♀, 8 mm. G1 flask-shaped, propodeum with lateral carinae, mesoscutum simply punctured, IODs=2:1, frontal elevations gentle, SAT moderately high nasiform, PAF wide V-shaped in cross section, clypeus rounded out, apical margin minutely emarginate in middle, gaster black, fore and mid tibiae largely and all tarsi ivory white, hair silvery, RC=B.

Similar in general to eburneipes, but much smaller in body size, with A3 shorter, hind tarsus completely white and in form of apical margin of clypeus somewhat different.



Figs. 122-126. Trypoxylon sedlaceki sp. nov., ♀

Mandible yellow, apically castaneous, palpi white, posterior part of collar not completely discoloured, in some light marginal area appears brownish, fore and mid tibiae on folded side brown or dark brown, mid one on outer side with a brown streak, hind tibia at base broadly white, spurs white, but in some light slightly brownish.

Head in frontal view with sides rounded, not convergent towards clypeus, W:L=100:90, vertex not depressed, tops of hind ocelli above level of tops of eyes, eye incision moderately broad and narrowed towards apex, dorsal margin horizontal. Frontal elevations large, but only gently raised, medial furrow broad and shallow, SAT-ASR in dorsal view: Fig. 122, in dorso-lateral view: Fig. 123, in lateral view: Fig. 124, with dorsal and apical margins very similar to those of *eburneipes*. Clypeus: Fig. 125 with hair largely parallel, on at base slightly convergent towards medial line, apical margin weakly reflected (in *eburneipes* apical margin minutely emarginate on each side of medial emargination, namely trisinate, with disc gently tectate and hair more broadly and distinctly convergent towards medial line).

HW,HL,IODv,A3,p=100,56,25,22,120. IODs=10:4.5. OOD,Od,POD=1,6,4. A3=AWx4. A3:IODc=10:5. A3,4,5=10,7,6. P,Ma,M1,2(Ma),3(Ma)=100,22,8,36(30),40(41). RC=C, somewhat close to B, R1 short, CV1=CV2x4.3. TCV:CV2=7:6, TCV nearly straight, area of CV2 depressed, strongly downcurved, angle about 90°.

Collar seen from above with anterior part narrow, transverse ridge-like, not enlarged laterally, posterior part much broader, seen in front dorsal margin gently roundly elevated and minutely weakly tuberculate in middle, the structure fundamentally agrees with that of *eburneipes*, but in the latter dorsal margin subtriangularly raised, lamina on side: Fig. 126. Mesoscutum with parapsidal sutures strongly impressed, subalar area of mesopleuron normal, but outer margin posteriorly distinctly edged and slightly produced outwards, metapleural flange medianly roundly raised, with margin semitransparent (in *eburneipes* posteriorly raised, without transparent margin) propodeum with a narrow basal elevation, depressed much below level of postscutellum and not marked, with a transverse impressed line across middle and at median area flatly expanded posteriorly into a small triangular shining area, area dorsalis with lateral furrows very shallow and indistinct, median furrow only distinct, widely enlarged posteriorly, with median bottom line crenate, lateral carinae of the segment indistinct, originating a short distance behind spiracle, but on posterior third disturbed with close transverse striae and indistinct, area apicalis with strong curved lateral carinae, but widely open upwards, GSR roundly raised, somewhat brownish.

Frons distinctly microcoriaceous and sparsely and weakly superimposed with comparatively fine and shallow punctures, under low magnification punctures not well defined, mesoscutum fairly closely (PIS 1-1.5 times PD) covered with medium-sized, deep distinct punctures (punctures not round and not flat-bottomed). Area dorsalis at base behind triangular expansion shortly obliquely striate, disc near median furrow smooth, shining and sparsely punctured, on lateral area covered with comparatively strong transverse striae that are extended from lateral series of striae, the striae on posterior part also extended inwards in front of area apicalis, median furrow of posterior inclination also covered with striae, sides finely punctured, but anterior femoral sinus smooth and polished and posteriormost area transversely rugoso-striate. ♂, unknown.

Holotype: ♀, New Guinea, Morobe Dist. Bulolo, 15. I. - 14. II. 1979, 800 m, J. Sedlacek (AEI).

27. TRYPOXYLON CHICHIDZIMAENSE TSUNEKI, 1973

Trypoxylon chichidzimaense Tsuneki, Etizenia, 65: 12, 1973 (♀, Bonin Islands).

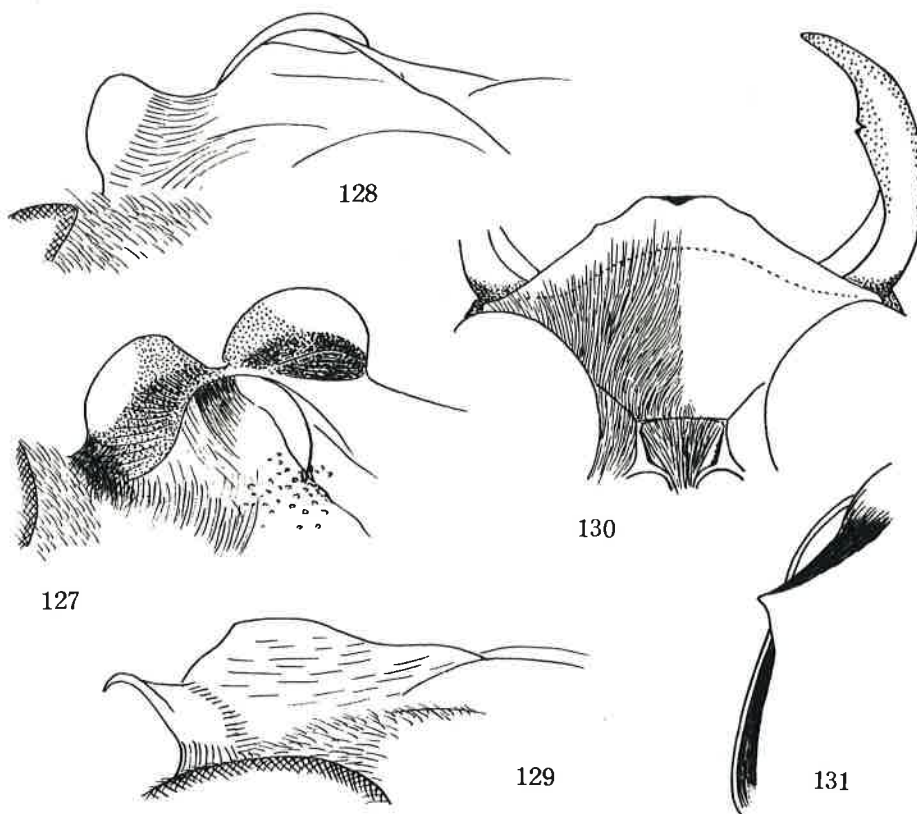
Specimens: 2 ♀, Bonin Is., Chichidzima, 16. VIII. 1972, Y. Haneda (holo- and paratypes).

Diagnosis. ♀, about 11 mm. Gl flask-shaped, mesoscutum under 30 magnification distinctly microcoriaceous, propodeum with lateral carinae, area dorsalis with lateral furrows, pronotal lamina toothed, subalar area acutely edged on outer margin, but not expanded, gaster, antenna, legs except fore tibial spurs and tarsus black, SAT tuberiform, with medial carina, PAF down-curved in cross section, clypeus with apical margin incised in middle, RC=M-C, angle about 110°.

Black, mesoscutum without plumbeous shine, clypeus at apical margin brown, mandible bright ferruginous, at extreme base black and dark brown at apex, palpi pale yellow, with one or two basal joints black striped on outer side, posterior part of

pronotal collar discoloured, tegula transparent amber yellow, fore tibia often at base narrowly brown, fore tibial spurs and fore tarsus ferruginous, but tarsus brownish on outer side. Hair silvery, on clypeus appressed, mixed sparsely with long erect hairs and at base distinctly convergent towards medial line.

Head in frontal view with sides rounded and slightly convergent towards clypeus, W:L=100:87, vertex not depressed, eye incision comparatively broad and narrowed towards bottom, dorsal margin horizontal, frontal elevations gentle, median furrow wide and shallow, anteriorly surface nearly flat, SAT roundly, not strongly raised, median carina broad and short, ASR obliquely broadly expanded, greater part smooth, polished



Figs. 127-131. *Trypoxylon chichidzimaense* Tsuneki, ♀

and outer half semitransparent brown, PAF broad and shallow. SAT-ASR in oblique dorso-lateral view: Fig. 127, dorso-lateral view to see through PAF: Fig. 128, lateral view: Fig. 129, scapal hollow near antennal socket markedly deep, clypeus: Fig. 130, mandible on inner margin minutely incised near middle (Fig. 130), clypeus at base gently roundly elevated, apical marginal area broadly (about a quarter of the length) glabrous, smooth and polished and the area reflected, occipital carina shortly interrupted behind buccal cavity where surface depressed.

Measurements on two specimens (first ... holotype):

HW, HL, IODv, A3, P=100, 50, 24, 24, 148. 100, 54, 26, 25, 140. IODs=10:9. 10:9. A3=AWx 4. AWx4. A3:IODc=10:9. 10:9.3. A3, 4, 5=10, 7.5, 6.5. 10, 7, 6.5. P, Ma, Mi, 2(Ma), 3(Ma) =100, 20, 7, 34(25), 34(32). 100, 18, 7, 32(22), 36(31).

Collar transverse, anterior part narrow in middle and gently enlarged towards sides, in frontal view dorsal margin broad triangularly elevated and weakly tuberculate in middle, posterior part discoloured, lamina on side: Fig. 131. Parapsidal sutures in fine impressed lines, subalar area on outer margin acutely edged and slightly produced, but not expanded into pent-roof structure. Lateral carinae of propodeum not strong, originating slightly behind spiracle and not reaching apex of the segment

posterior part disturbed by transverse striae, area dorsalis enclosed with distinct furrow, the furrow narrowed anteriorly, medial furrow moderately deep, enlarged toward apex, basal elevation in a transverse ridge-like, less than half the length of post-scutellum, area apicalis complete, margined above with one or two strong carinae, GSR not elevated at apical margin.

In fore wing $RC=C$, but very close to M , R_1 short, yet reaching close to wing apex, $CV_1=CV_2 \times 5$ (in paratype $=CV_2 \times 6$), $TCV:CV_2=3:2$, TCV gently sinuate, CV_2 downcurved near apex, angle about 110° .

Hind coxal organ well developed, cone-shaped, with top roundly hollowed like a crater and acutely edged at its margin.

Frons distinctly microcoriaceous and superimposed with medium-sized flat-bottomed punctures, PIS 1-2 times PD , punctures anteriorly finer and closer, mesoscutum under 20 magnification microsculpture can be seen only with difficulty, but under 30 magnification it is distinct, punctures comparatively large, nearly as large as those on frons and similarly sparse, sparser on median area, mesopleuron with somewhat weaker microsculpture and more uniformly, somewhat more closely superimposed with similar but slightly elongate piliferous punctures. Propodeum with lateral series of striae only on sides of posterior inclination, area dorsalis at base obliquely coarsely and shortly striate, disc finely sparsely punctured, median and lateral furrows weakly transversely striate, outsides of the area and posterior inclination finely sparsely punctured, posterior portion, in front of area apicalis transversely, arcuately striate, sides except anterior femoral sinus fairly closely covered with comparatively large hair-bearing punctures, on posterior narrow area transversely striate.

Remarks. The present species somewhat resembles T. kinabalum known from North Borneo, but is different from this in the colour of legs (slightly of antenna and of mandible also), in the form of SAT , pronotal lamina and GSR , in the state of lateral furrows of area dorsalis and markedly in the relative length of gastral petiole.

28. TRYPOXYLON CRASSIPES SP. NOV.

Diagnosis. ♀, 7-8 mm. Gastral petiole flask-shaped, propodeum lacks lateral carinae, gaster medianly red, black maculated above, antenna basally and fore and mid legs largely yellow, hind leg largely black, head thick, in frontal view subquadrate, in dorsal view subrectangular, $W:L=3:2$, $IODs=3:1$, femora of legs remarkably incrassate, area dorsalis without lateral furrows, clypeus rounded out, medianly minutely emarginate, SAT rounded nasiform, PAF shallow, V-shaped in cross section, mesoscutum finely somewhat sparsely punctured, under high magnification feebly microcoriaceous, R_1 moderately long, $TCV=CV_2$.

Black. Al , 2 and base of 3 ferruginous, more or less brownish above, mandible yellow, apically reddish brown, palpi ochre yellow, pronotal tubercle on marginal area yellow, tegula amber yellow, G_1 at extreme apex and on apical sides, G_2 , 3 except dusky mark above and G_4 at base and beneath reddish yellow, fore and mid legs except black coxae and arolia amber yellow, but femora slightly brownish and dark brown above sometimes broadly dark brown, hind leg black, trochanter, base and apex of femur narrowly and base broadly of tibia yellow, spurs all yellow. Hair on clypeus silvery, almost completely parallel.

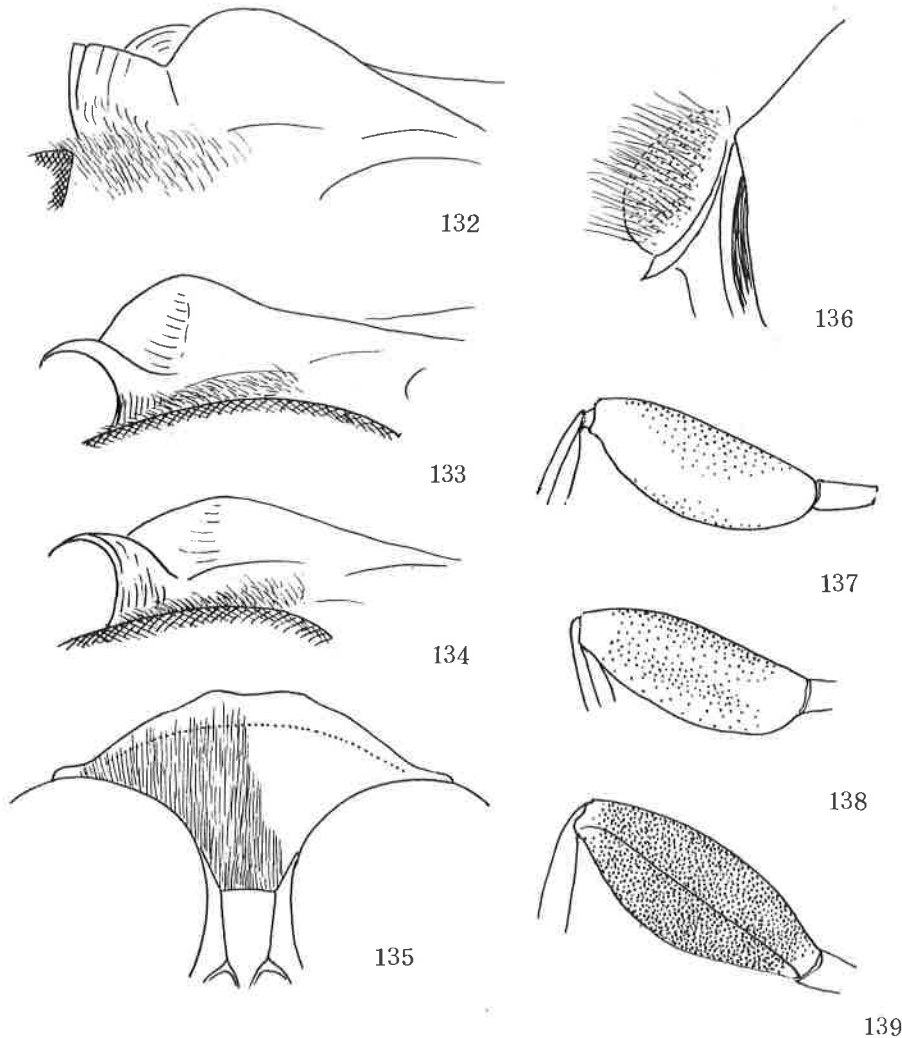
Vertex not depressed, fore ocellus in a hollow, frontal elevations gentle, median furrow distinct, but shallow, SAT low narrow nasiform, variable in relative length, in dorso-lateral view to see through PAF : Fig. 132, in lateral view: Fig. 133 or Fig. 134, curvature of dorsal margin variable; clypeus: Fig. 135, medio-apical emargination sometimes much smaller, sometimes almost unobservable; occipital carina complete and minutely incised behind mouth.

Head in frontal view with $W:L=100:99$. $HW, HL, IODv, A_3, P=100, 62, 32, 21, 164$. $IODs=10:3.3$. $OOD, Od, POD=2, 5, 4*$. $A_3=AW \times 4$. $A_3, 4, 5=10, 5.5, 5$. $A_3:IODc=10:3.7$. $P, Ma, Mi, 2 (Ma), 3 (Ma)=100, 18, 6, 32(20), 34(27)$. $RC=B$, somewhat close to C , R_1 moderately long, but slightly shorter than TCV , $TCV=CV_2$, $CV_1=CV_2 \times 3.5$, TCV nearly straight, angle 100° .

Collar of pronotum not thick, transverse, both parts similar in length, anterior and posterior margins parallel, not incrassate laterally, posterior part incompletely

* In one specimen in which hind ocelli are black and margined with yellow it is 1,6,3, while in two others in which the ocelli are wholly ferruginous it is 2,4,5,4,5. Thus the values are, according to the marginal condition of eye and ocelli appear to be different. Moreover, under eye measurement Od is likely to be estimated smaller than real.

discoloured, marginal area narrowly brown in some light, lamina on side; Fig. 136, parapsidal sutures distinctly impressed, subalar area normal, but subalar pit very deeply excavated, metapleural flange obliquely raised, posteriorly somewhat roundly widened and discoloured; propodeum at base transversely raised, separated from post-scutellum by a deep furrow, but sometimes this furrow becomes linear and indistinct, lateral carinae absent, but those of area apicalis present, short, low, not curved



Figs. 132-139. *Trypoxylon crassipes* sp. nov., ♀

inwards, area dorsalis practically without lateral furrows (often very feeble ones defined), medial furrow shallow and enlarged towards apex, GSE roundly elevated, not discoloured, Gl markedly long, slightly widened at spiracles and flatly depressed in front of apical swelling. Fore, mid and hind femora: Figs. 137, 138 and 139 (all in posterior view).

Fross distinctly microcoriaceous and somewhat sparsely superimposed with fine punctures, mesoscutum more finely and similarly closely punctured, PIS very indistinctly microcoriaceous under high magnification, propodeum at base obliquely, median furrow transversely striate, basal striae finely extended on to anterior part of disc, lateral series of striae lacking, but often on posterior part weakly defined, rest of the surface very finely, very sparsely punctulate, sides polished, only on posterior

part densely covered with fine hair-bearing points.

♂, unknown.

Holotype: ♀, New Guinea, Sarwaged Mts., 500 m, 22. I. - 16. II. 1979, J. Sedlacek (AEI).

Paratypes: 1 ♀, Papua, Northern Dist., Kokoda, 1200 ft. X. 1933, B. M. Cheesman (BMNH); 1 ♀, New Guinea, Morobe Dist., Hnon Peninsula, Finschhafen, 60 m, 13. IV. 1963, J. & M. Sedlacek (BPBM).

Other specimen. 1 ♀, New Guinea, Western Highland Dist., Baiyer R., 26. XII. 1978 - 25. I. 1979, 1100 m, J. Sedlacek (AEI) (gaster from G2 apically lacking).

29. TRYPOXYLON LONGICORNE TSUNEKI, 1977

Trypoxylon longicorne Tsuneki, SPJHA, 6: 18, 20, 1977 (♀ New Guinea, Madang Distr.).

(With figures of head seen in front, SAT-ASR in dorso-lateral view, collar in frontal view, pronotal lamina and subalar area).

Specimens examined:

West Irian: 1 ♀, Cyclops Mts., Sabcon Camp, 2000 ft, V. 1936, L. E. Cheesman (BMNH); 4 ♀, Japen Is. Mts. Baduri, 1000 ft, VIII. 1938, L. E. Cheesman (BMNH); 1 ♀, Bodem, 100 m, 11 km SE of Oerberfaren, 7-17. VII. 1959, J. C. Maa (BPBM); 1 ♀, Netherland, India and American New Guinean Expedition, mountain slope above Bernhard Camp 100 m, IV. 1939, L. J. Toxopeus (BMNH).

New Guinea. 1 ♀ (holotype), Madang Dist., Astrolabe Bay, Erima, 1896, Biró (INHM); 1 ♀ 1 ♂, Western Highland Dist., Baiyer R., 1100 m, 25. I - 6. II. 1979, J. Sedlacek (AEI); 1 ♀, Morobe Dist., Wau, Maele Plantation, 3800 ft, 29. IV. 1969, Mrs. J. E. Benson (BMNH); 1 ♀, Morobe Dist., Wau, 1200 m, 10. V. 1963, Malaise trap, J. Sedlacek (BPBM); 2 ♀ 1 ♂, Mamai Plantation, east of Port Glasgow, 150 m, Light trap, 3, 6, 13. II. 1965, R. Straatman (BPBM).

♀. Main characters. 13-15 mm, exceptionally 18 mm. G1 flask-shaped, mesoscutum without microsculpture, subalar area of mesopleuron with well developed pent-roof structure, propodeum without distinct lateral carinae, area dorsalis with weak lateral furrows, sometimes rather indistinct, GSR highly raised, curved in lateral view, not discoloured, frontal elevations large, gently rounded, median furrow broad and shallow, SAT moderately high nasiform, PAF fairly deep, V-shaped in cross section, bottom line up-curved, ASR anteriorly discoloured, transversely striate, clypeus with apical margin medianly trisinate, antenna long, IODs=1:1, pronotal lamina strongly toothed, CV2 markedly short, $1/7 - 1/8$ the length of CV1. Gaster black, sometimes medianly brownish or reddish beneath, fore tibia broadly, mid tibia somewhat more narrowly, hind tibia at base and all spurs whitish ferruginous, longer one of hind spurs in some light appears somewhat brownish, all tarsi ivory white, but T4 and 5 somewhat ferruginous. Hair silvery, on clypeus nearly parallel.

Some supplements. Head in frontal view with sides rounded and distinctly convergent towards clypeus, vertex depressed, tops of hind ocelli below level of tops of eyes, eye incision narrow, subparallel-sided, roundly narrowed at apical area. Measurements on holotype specimen:

HW, HL, IODv, A3, P=100, 50, 21, 30, 172. IODs=10:10. OOD, Od, POD=1, 10, 4 (OOD very narrow). A3=AW×5.5. A3, 4, 5=10, 6, 6. A3:IODc=3:2, P, Ma, M1, 2(Ma), 3(Ma)=100, 16, 5, 36(17), 38(23). RC=C. R1 slightly longer than usual short, =CV2 and reaching close to wing apex, CV1=CV2×8.4 (both wings), TCV:CV2=2:1, TCV very gently sinuate, nearly straight.

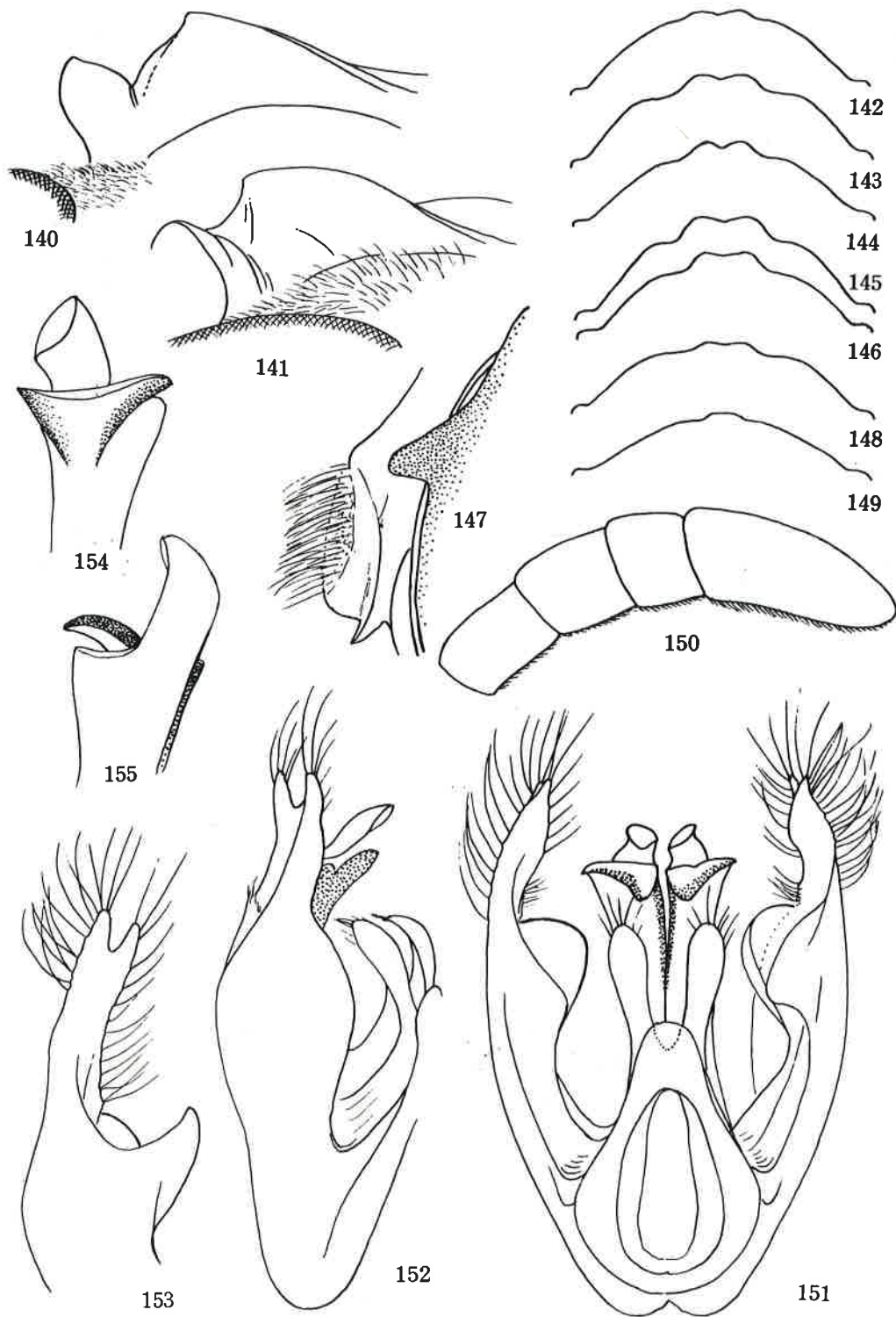
SAT-ASR in dorso-lateral view to see through PAF: Fig. 140, in nearly lateral view: Fig. 141, lamina on side of pronotum: Fig. 147 (very characteristic and very constant). Subalar area with well developed pent-roof structure, the vertical wall of subalar pit covered with the pent-roof flat and irregularly rugoso-carinate, frequently with one high transverse lamellate and rugosed carina on the rugoso-striate surface, sometimes two such high rugosed carinae present; metapleural flange also strongly roundly expanded laterally (horizontally) and very marked.

Variations.

(1) Colour of gaster.

Usually black, but in a considerable number of specimens G2-3 brown beneath, sometimes more or less reddish, but this may be due to postmortem change. In two specimens from Mamai Plantation the area is fairly distinctly reddish beneath, this may be a local variation.

(2) Apical margin of clypeus.



Figs. 140-156. *Trypoxylon longicorne* Tsuneki, 140-147: ♀, 148-155: ♂.

The form of apical margin more or less variable. Fig. 142 (holotype, Astrolabe Bay), Figs. 143 (Baiyer R. and Wau), 144 (Wau), 145 and 146 (Japan I.). All the specimens from Japan Island show the medio-apical prominence broader than that of others. Forward protuberance of the clypeus as a whole is also more or less variable.

(3) Depression on vertex.

The grade of depression is more or less variable, in frontal view usually the tops of hind ocelli are distinctly below level of tops of eyes as in the holotype. But sometimes they are on the same level with that of eyes and rarely (in the specimen from Baiyer R.) slightly above level of tops of eyes.

(4) Dark areas of fore and mid legs.

Usually the tibiae of both legs are on the folded side brown or dark brown, but sometimes on outer side also more or less dark, especially mid tibia becomes frequently broadly dark brown except base and apex.

(5) Fore wing venation.

Generally the venation is more or less (sometimes considerably) variable in any species. It is true here also. CV1 is usually 6-7 times as long as CV2, but it is rarely over 8 times (as in holotype) or only 5 times so. In one specimen from Japan Island CV1 is in the left wing 8.5 times and in the right 5.3 times as long as CV2. This is of course abnormal. R1 is in this species moderately long, appr. as long as CV2 and reaching close to the wing apex, rarely it completely reaches the apex of the wing.

Description of ♂

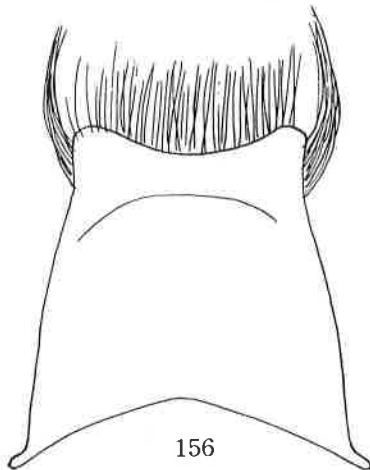
Length 11-12 mm. Similar in general to ♀, but head in frontal view relatively much wider, with forward convergence of lateral margins less strong, vertex less depressed, eye incision somewhat wider and more distinctly narrowed towards apex, antennal joints shorter except A13, clypeus less produced anteriorly (Figs. 148, 149) and CV2 relatively much longer (in all the 3 specimens).

Colouration in Western Highland specimen (as Mamai specimen is more melanic it is given within parenthesis when necessary):

Mandible yellow, apically reddish brown (at base black, then amber yellow, apically reddish brown), palpi ivory white (pale yellow, basally darkened), fore and mid tibiae pale ferruginous (dark brown - obscured by whitish hair - , but fore tibia on front and rear sides and mid tibia at base yellow), hind tibia on basal half and at apex white (brownish black except narrow whitish base), all tarsi ivory white, T5 sometimes with pale brownish fleck, arolia black (fore tarsus whitish, T5 with brown fleck, mid T1 white, 2-5 brown, hind tarsus white, T5 brown, arolia always black).

In frontal elevations and SAT-ASR generally similar to ♀, with slight variation, apical margin of clypeus: Figs. 148 (Western Highland specimen - Baiyer R.) and 149

(Mamai specimen), apical part of antenna: Fig. 150, lamina on side of pronotum similar in pattern (cf. Fig. 147), but much more strongly produced, pent-roof structure at subalar area of mesopleuron also similar. Measurements (within parentheses ... Mamai specimen): HW:HL in frontal view 100:84 (100:83). HW, HL, IODv, A3, A13, P=100, 48, 25, 19, 22, 156 (100, 48, 25, 20, 22, 156). IODs=10:8.5 (10:8). OOD, Od, POD=2, 5, 3.5. (2, 6, 3). A3=AW×3.7. (AW×3.8). A3: IODc=10:11 (10:10). A3, 4, 5=10, 6, 6. (10, 6, 6). P, Ma, M1, 2(Ma), 3(Ma)=100, 14, 5.5, 34(16), 36(21). (100, 13, 5, 31(15), 34(21)). RC=C, R1 moderately long, about 2/3 the length of CV2, not reaching (but fairly close to) wing apex, CV1=CV2×4.8 (in both wings), TCV:CV2=5:4, TCV gently sinuate, angle about 115°. (RC=C, somewhat close to M, R1 short, slightly shorter than Baiyer specimen, but reaching close to wing apex, CV1=CV2×5.6 (left), ×4.3 (right), TCV gently sinuate nearly straight, TCV:CV2=10:6 (left), 10:8.5 (right), angle about 100° in both).



T. longicorne Tsuneki, ♂
The 8th sternite.

Structure of pronotal collar as in ♀ (cf. Fig. 51 of original description), lateral carinae of propodeum always distinctly absent (in ♀ often very faint elevation defined), lateral furrows of area dorsalis broad and shallow, but

sometimes fairly well defined, GSR roundly, highly elevated, discoloured.

Genitalia comparatively thick and robust, seen from beneath: Fig. 151, seen from left side: Fig. 152, paramere shortly bifid at apex, dorso-interior and ventro-exterior margins expanded and rolled, the right one in dorso-lateral view: Fig. 153, volsella spatulate, penis valve with shoulder and sickle-appendages, the latter robust and characteristic in form, the right one (together with shoulder and apical part) in ventral view: Fig. 154, in dorsal view: Fig. 155. Sternite 8: Fig. 156.

Frons distinctly microcoriaceous and somewhat sparsely superimposed with fine punctures, punctures on top areas of elevations sparser; mesoscutum smooth and polished, finely, distinctly, fairly closely punctured, PIS 1-2 times PD (in Mamai specimen punctures finer and weaker); propodeum with distinct lateral series of striae, area dorsalis at base shortly and obliquely, on lateral and median furrows and posterior portion transversely striate, disc smooth and shining, sides sparsely punctured, except anterior femoral sinus.

Remarks. The present species is characteristic in the well developed pronotal lamina and pent-roof structure at subalar area and can easily be distinguished from other congeners. The population occurring in the northwestern - northern region of the Island shows a considerable difference in some characters from that of the south-eastern region, but the changes are gradual and connected with each other by the populations of the intermediate areas and the separation at the subspecies level is difficult.

30. TRYPOXYLON MOROBENSE SP. NOV.

♀, apparently very similar to T. petiolatum Smith, but IODs=4:3 - 5:4, mesoscutum distinctly punctured, tarsi completely white, antennal flagellum not ferruginous beneath and clypeus much more acutely truncate at apex.

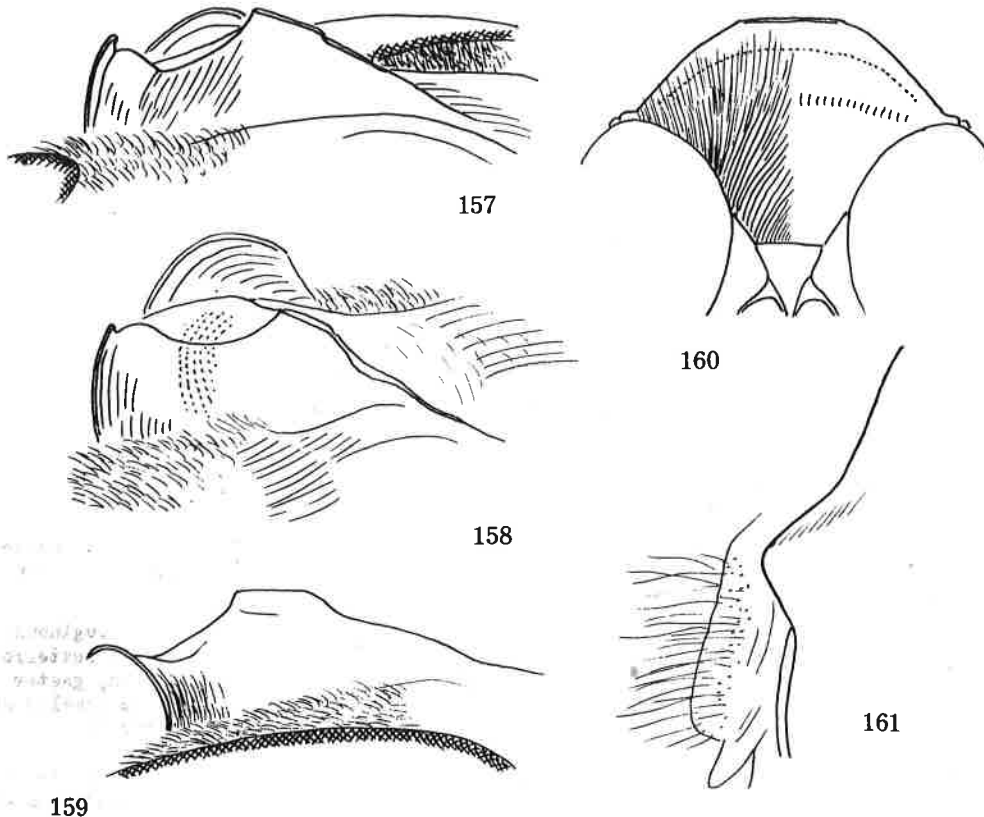
14-17 mm. Black; mandible yellow, apically dark red, mouth parts ferruginous, palpi white, pronotal collar with posterior part incompletely discoloured, posterior margin brownish, tegula transparent brown, basal plates of wing dark brown, gaster from extreme apex and apical sides of G1 to G4 yellowish red, usually G2 (small) and G4 (large) with black mark above, sometimes G2 completely red, all femora on both ends narrowly, fore and mid tibiae except brownish folded side, hind tibia at base, all tibial spurs and all tarsi except arolia yellowish white, T5 of all legs usually more or less brownish. Hair silvery, on clypeus at base strongly convergent towards median line.

Head in frontal view with sides roundly convergent towards clypeus as in petiolatum, vertex distinctly depressed, tops of hind ocelli much below level of tops of eyes, eye incision narrow, deep, subparallel-sided and minutely rounded at apex, dorsal margin horizontal, frontal elevations comparatively small and low, but median furrow distinct, SAT (under natural condition densely covered with pubescence and not well visible) rather low nasiform, stoutly keeled in middle, SAT-ASR in dorso-lateral view to see through PAF: Fig. 157, the same seen from somewhat more above: Fig. 158, in lateral view: Fig. 159, median keel begins slightly before central point and runs inclining posteriorly, apical area in front of the keel broadly flattened, ASR bicarinate on top, anterior carina locating at apex higher, PAF very shallow, down-curved in cross section (Fig. 157, in this respect also differing from petiolatum). Clypeus: Fig. 160, at base (till middle of its length) gently roundly elevated, apical area broadly (about a third of its length) reflected, apical margin distinctly truncate even in fresh specimens (in this case shortly bevelled), occipital carina complete, not incised nor depressed behind buccal cavity.

HW, HL, IODv, A3, P=100, 48, 24, 28, 168. IODs=10:7.5. OOD, Od, POD=2, 6, 3. A3=AN×5.4. A3, 4, 5=10, 6, 6. A3:IODc=10:6.5. P, Ma, Mi, 2(Ma), 3(Ma)=100, 16, 6, 28(21), 30(27). RC=B, RL very short, CV1=CV2×7, TCV:CV2=3:2, TCV very gently sinuate, nearly straight, angle about 100°.

Anterior part of collar narrow ridge-like, considerably widened laterally, sides rounded, in frontal view with dorsal margin roundly, subtriangularly raised, weakly tuberculate in middle, lamina on side triangular, distinctly produced (Fig. 161), subalar area normal. Propodeum without lateral carinae, basal transverse elevation narrow, not conspicuous, area dorsalis practically without lateral furrows, sometimes in oblique light feeble broadly furrows defined, lateral carinae of area apicalis curved inwards, but no complete dorsally, where interrupted by medial furrow of posterior inclination. GSR slightly roundly elevated, not discoloured. G1 slender,

its enlargement at spiracle weak, apical swelling covers a fifth of total length. Hind coxal process well developed, distinctly toothed.



Figs. 157-161. *Trypoxylon morobense* sp. nov., ♀

Frons very minutely microcoriaceous and irregularly superimposed with medium-sized punctures, punctures partly contiguous and on top areas of elevations sparser, mesoscutum with punctures slightly smaller than those of frons, but strong and fairly close, on antero-lateral areas PIS 1-2 times PD, but posteriorly sparser, area dorsalis at base crenate, disc and median furrow usually without striae, finely, somewhat sparsely punctured, outsides of the area similarly punctured, but lateral series of striae strong and distinct, on posterior portion the striae extended inwards, covering the surface as transverse striae, sides finely and sparsely punctured, on anterior femoral sinus smooth and polished, on posteriormost area transversely rugo-striate.

♂, unknown.

Holotype: ♀, New Guinea, Morobe District, Wau, 1200 m, 19. VIII. 1961, Malaise trap, J. Sedlacek (BPBM).

Paratypes: 1 ♀, New Guinea, Mt. Missim, 1400 m, 24. IX. 1964, Malaise trap, M. Sedlacek (BPBM); 4 ♀, Huon Peninsula, Finschhafen, 80 m - 200 m, 13,13. IV. 1963, J. Sedlacek (BPBM); 1 ♀, Papua, Central Dist., Brown River, 1 mile DASF "block", 31. V. 1966, in large numbers on moist road on rain forest, Coll. J. J. H. Szent-Ivany Ex. Coll. Dept. Agr. Port Moresby (RMNH).

Remarks. The present species is also close to *T. eximium* Smith, differing therefrom in that the apical margin of the clypeus is not provided with a tooth in middle even in the fresh specimens (rather slightly emarginate), hind T1 completely white and punctures on mesoscutum are sparser.

Length ratio of CV1:CV2 is considerably variable among the specimens, sometimes even between the right and the left wings of the same individual. Most usually it is 7:1 - 8:1, but sometimes it becomes 10:1, that of TCV:CV2 also variable accordingly. While the angle formed by TCV and CV2 is comparatively constant, it varies only between about 95° - 110°.

31. TRYPOXYLON WAUENSE SP. NOV.

♀, about 15 mm. Very similar to the preceding species, differing mainly in the punctuation of mesoscutum and propodeum. In the present species punctures on mesoscutum fine and sparse, on antero-lateral area in front of parapsidal suture PIS 2-4 times PD (in morobense punctures large and close, on the area mentioned PIS 1-2 times PD), area dorsalis smooth and polished, without striae, only very fine piliferous points sparsely scattered on disc, lateral series of striae of the segment defined only on posterior inclination and only in front of area apicalis extended inwards to turn to transverse striae. Moreover, relative length of CV1:CV2:TCV is markedly different, in the present species CV1=CV2×4.7 and TCV:CV2=6:5, in the compared species CV1=CV2×7-10 and TCV:CV2=2:1 - 3:2. At the first observation we are tempted to consider it as an aberratio of morobense, because it is not a local race, since it is sympatric with morobense. In this species punctures on thorax and propodeum are very constant and there is no intermediate instance among the specimens from Wau. The same is also true with wing venation, when the variation range is taken into consideration.

On the other hand, in some New Guinean species the difference in the punctuation is the sole clue to separate the species in the female sex, although the species are easily and distinctly separable from each other by other important characters in the male. Basing upon such a reason, the present specimen is treated as a distinct species. But the final determination must be done with the male in future.

Measurements:

HW, HL, IODv, A3, P=100, 46, 24, 28, 162. IODs=10:7.3. OOD, Od, POD=2, 5, 3. A3=AW×5. A3, 4, 5=10, 6.5, 6. A3:IODc=10:6. P, Ma, M1, 2(Ma), 3(Ma)=100, 18, 6, 31(20), 32(26). RC=C, but somewhat close to B, RI short, angle about 110°.

Colouration.

A3-12 brown - rather pale brown - (? constant), mandible at base yellow, apically ferruginous. Ferruginous are mouth parts, fore and mid tibiae except folded side narrowly, hind tibia at base (rest brown, on outer side paler), all spurs and all tarsi (paler than tibiae). Posterior part of collar almost not discoloured, in some light appears slightly brownish, tegula and basal plates of wing brown and dark brown. Gaster from apex of G1 to G4 red, G2 and 3 each with a obscure brown mark on posterior portion above, G4 posteriorly broadly black above and on sides.

♂, unknown.

Holotype: ♀, New Guinea, Morobe Dist., Wau, 1200 m, Malaise trap, 10. V. 1963, J. Sedlacek (BPBM).

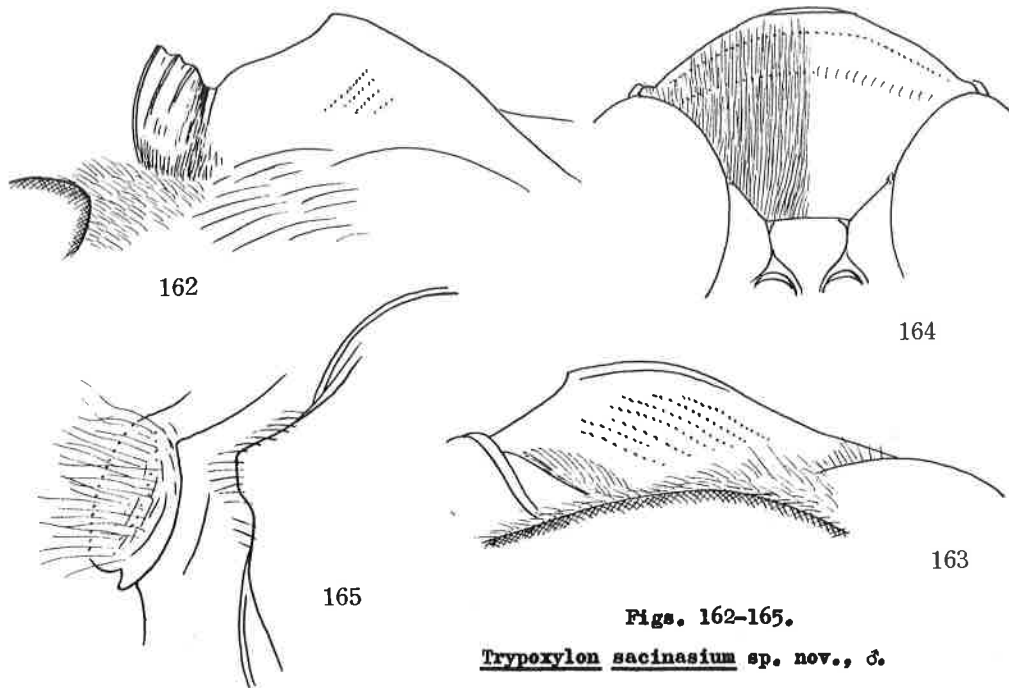
32. TRYPOXYLON SACINASIUM SP. NOV.

In the specimen the antenna and gaster are incomplete and can not afford the clue of sexing. The eye incision is comparatively narrow and deep as if to be that of the female, but the structure of A3-7 shows distinctly the male character and, moreover, possible G6 is not keeled above. Based on such characters it was judged to be a male.

♂. Possibly about 15-16 mm. Black; apex and apical sides of G1 and G2 (G3 lacking) reddish brown, mandible yellow, at apex brownish red, clypeus black till apex, but carrying a yellowish fleck at apical margin near each side, posterior part of collar incompletely discoloured, in some light appears partly castaneous, tegula and basal plates of wing brown; fore tibia except dark brown inner and outer sides, hind tibia at base broadly, tibial spurs and all tarsi whitish yellow, but T5 somewhat brownish. Hair on clypeus silvery, dense and parallel.

Head in frontal view with sides roundly convergent below, vertex depressed, tops of hind ocelli below level of tops of eyes, W:L=100:84, eye incision comparatively narrow, gently narrowed towards bottom, dorsal margin horizontal, ocelli in a broad

depression, its posterior margin transversely raised to join to posterior margins of eyes, each hind ocellus in a further shallow depression and fore one in a deep depression, deeper than level of inner orbit and runs as a narrow groove to SAT, keeping its depth and obliquely enlarged above SAT, as a result elevations on both sides appear considerably marked, although their absolute elevation is only gentle, the elevations are not regularly round, but with tops located rather near outer side and thence flatly inclined towards medial furrow. SAT moderately high nasiform, long carinated in



Figs. 162-165.

Trypoxylon sacinasium sp. nov., ♂.

middle, ASR weakly tricarinate, SAT-ASR in dorso-lateral view to see through PAF: Fig. 162, SAT in vertical view nearly round in outline, with top of median carina located slightly before central point and anteriorly widely (rhombic in outline) and flatly inclined to IAA, seen in profile: Fig. 163. Clypeus: Fig. 164, disc at base gently, rather abruptly raised, apical third reflected; occipital carina complete, not depressed behind buccal cavity.

HW, HL, IODv, A3, AL3, P=100, 46*, 23, 19, —, 163. (* occipital margin strongly emarginate). IODs=10:10. OOD, Od, POD=2, 5, 4. A3=AW×3. A3, 4, 5=10, 8, 7.5. A3:IODc=10:12. AL3 lacking. P, Ma, Mi, 2(Ma), 3(Ma)=100, 15, 6, 32(18), —(—). RC=B, Rl very short, CV1=CV2×5, TCV:CV2±3:2, TCV strongly incurved, angle less than 90°.

Collar of pronotum with anterior part medianly short and strongly swollen laterally, in frontal view dorsal margin in an obtused triangle, on top minutely swollen, lamina on side; Fig. 165. Parapsidal suture very finely impressed, quite indistinct, subalar area normal, propodeum without lateral carinae, but with strong lateral series of striae, area dorsalis enclosed with very feeble furrow, median furrow broad, subparallel-sided, area apicalis roundly enclosed with carina, carina laterally high and dorsally low and shortly interrupted by the apex of medial furrow of posterior inclination, GSR slightly roundly raised, not discoloured, Gl slender, only gently swollen on spiracular area.

Frons very delicately microcoriaceous and strongly and fairly closely punctured, but on top area of elevations punctures sparser, mesoscutum very finely and very sparsely punctured, almost without puncture, area dorsalis at base longitudinally shortly and sparsely striate, medial furrow very indistinctly transversely striate,

disc, outer sides of the area and posterior inclination, except transverse striae in front of area apicalis, smooth and shining and very sparsely scattered with fine hair-bearing punctules, sides distinctly, but sparsely punctured, mixed with transverse weak striae.

♀, unknown.

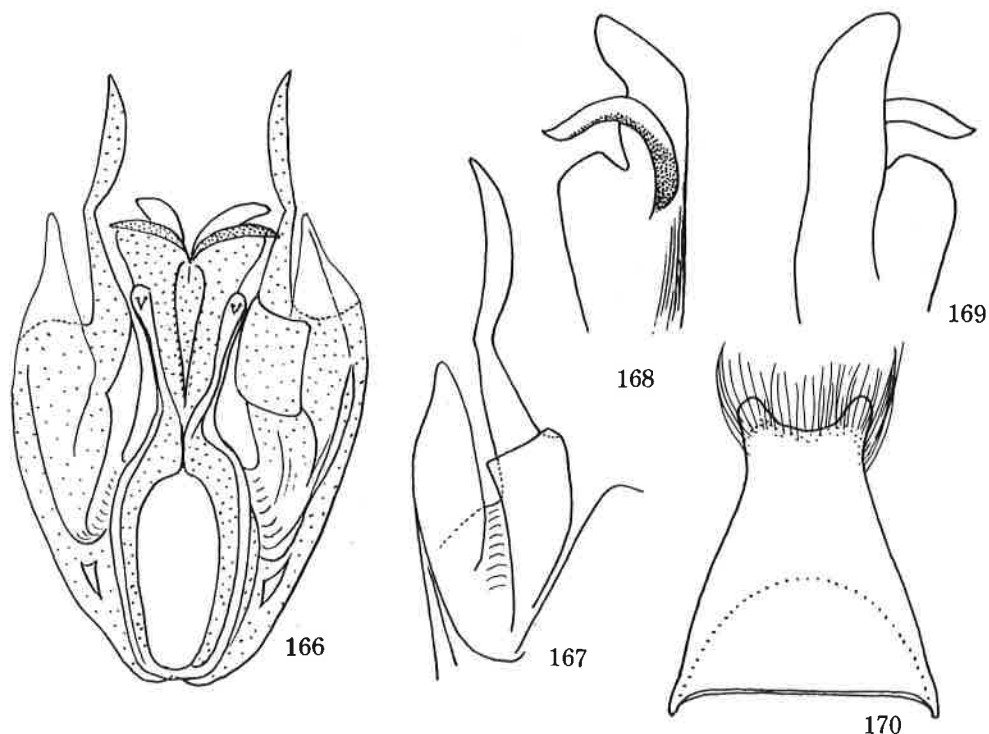
Holotype: ♂, New Guinea (5 mm round label, as always used by A. R. Wallace).
(attached Museum label: B.M. 1977, under gracillimum Smith).

Remarks. From the specimen A7-13 of the left antenna and A8-13 of the right are lacking, also fore and hind T5 of left legs and hind T2-5 of the right leg are lost. The specimen is pinned on a slit of card paper and a mass of G4-6 is glued on to posterior part of this paper. G1-2 are in situ, but G3 is missing.

This species is closely resembles T. eximium Smith ♂ (=gracillimum Smith), but differs from this species in the structure of frons, in the punctuation of mesoscutum, in the state of parapsidal sutures, in the relative length of A3 and in the colour of hind tarsus.

Postscriptum.

Later when I reexamined the specimen I happened to discover the 8th sternite and genitalia that were taken out (as I presumed) and glued on to a small slit of card paper and attached to the pin. It was just below the slit of card paper carrying the specimen and completely covered by it. The genitalia were glued with dorsal side up and it was rearranged by me to show the ventral side upward (because the dorsal side is simple and less characteristic).



Trypoxylon sacinasium sp. nov., ♂

Genitalia: Fig. 166 (ventral view, hairs are all lost). The structure is very similar to that of eximium ♂ (=gracillimum), but in the present species the dorsal longer one of apical two lobes of prarmere is slenderer and constricted and elbowed in middle and ventral shorter one is much narrower, triangularly extended apically and semitransparent pale brown in colour (Figs. 166 and 167 - ventro-basal view to see the shorter lobe vertically)(cf. Figs. 184 and 185 in eximium); structure of penis valve: Fig. 168 (ventral) and Fig. 169 (dorsal). Sternite 8 (Fig. 170) is more

distinctly different from that of eximium in the form of the apical area (cf. Figs. 186 and 187).

33. TRYPOXYLON BIBOU SP. NOV.

♂. 13.5 mm. Similar in general characters to eximium Smith, but can be separated from it by that tarsi are completely yellowish white, frontal median furrow is much narrower and deeper, A13 distinctly shorter than A9-12 and punctures on mesoscutum much sparser. The present species is much closer to preceding sacinasium, but is separable therefrom by the stronger punctuation on mesoscutum (and by the different structure of genitalia). It is closest to the subsequent species, kokoda, but is different from this in some detailed characters as given in the key and will be given in more detail in the section dealing with this species.

Black; mandible yellow, apically brown to dark brown, mouth parts pale brown, palpi amber yellow except brown basal 1-2 segments, posterior part of collar discoloured, brownish, gaster on G2 and 3 yellowish red, each carrying a large black mark above; fore tibia except outer side ferruginous, mid tibia completely and hind tibia except brownish base black, spurs and all tarsi whitish ferruginous, but mid and hind T5 brown above and arolia black. Hair silvery, on clypeus at base in middle slightly convergent towards medial line, but as a whole almost completely parallel.

Head in frontal view with sides roundly, fairly strongly convergent towards clypeus, W:L=100:82, vertex depressed, tops of hind ocelli somewhat below level of tops of eyes, each ocellus in a hollow, in fore ocellus the hollow broader and deeper and smoothly runs down as a median furrow, elevations on both sides higher than in sacinasium and by the deep median furrow more conspicuous than in eximium, eye incision moderate in width and narrowed apically, apex minutely rounded, dorsal margin horizontal, SAT moderately high nasiform, in vertical view iso-sceles triangle having top angle about 70° in outline, median carina acute, but its apex not reaching level of upper margins of ASR, apical area smoothly obliquely inclined to IAA, SAT-ASR in dorso-lateral view to see through PAF: Fig. 171, from somewhat more above: Fig. 172, in lateral view: Fig. 173; clypeus: Fig. 174. Occipital carina complete. Apical 5 joints of antenna: Fig. 175. Measurements:

HW,HL,IODv,A3,A13,P=100,46,24,19,26,146. IODs=10:8.5. OOD,Od,POD=2,4.5,3. A3=AWx2.7. A3:IODc=10:11. A3,4,5=10,8,8. A13=BWx3.3 and >A10-12, but <A9-12. P, Ma, M1,2(Ma),3(Ma)=100,18,7,30(20),34(28). RC=B. RI short. CV1=CV2x7 (in both wings). TCV:CV2=9:5, TCV gently incurved, angle about 90°.

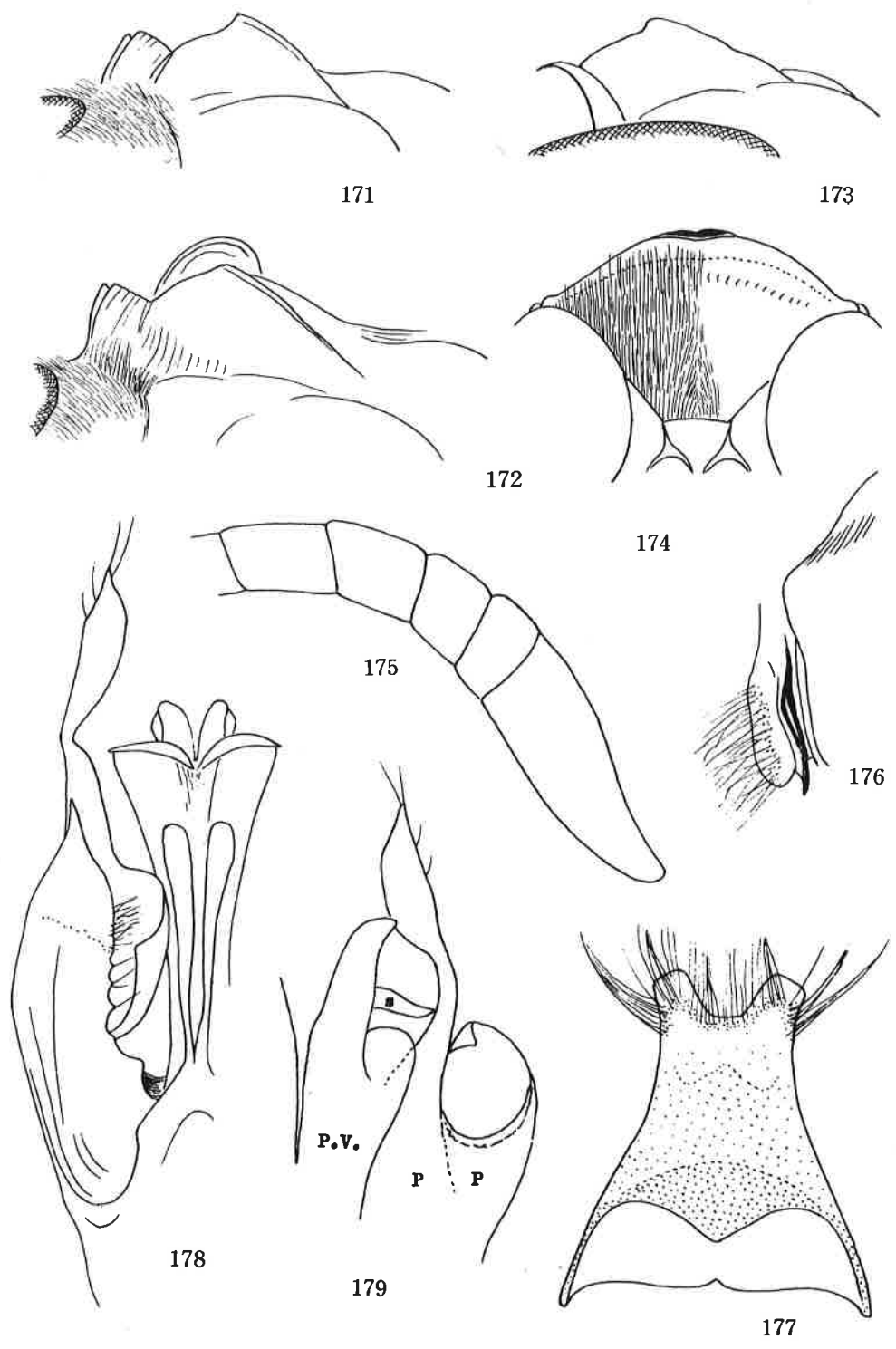
Anterior part of collar shorter in middle than posterior part, considerably enlarged towards sides, apical margin roundly emarginate in dorsal view, lamina on side as Fig. 176; parapsidal sutures and subalar area normal. Propodeum without lateral carinae, area dorsalis with weak lateral furrows, basal transverse elevation about half the length of postscutellum in middle, medianly triangularly and flatly expanded posteriorly, area apicalis completely enclosed with carina, GSR band-like, not roundly elevated on posterior margin.

Sternite 8: Fig. 177. Genitalia seen from beneath (right half is omitted): Fig. 178, very similar to those of sacinasium, but longer one of apical two lobes of paramere distinctly wider than in this, on the contrary, apical lobe of penis valve comparatively somewhat narrower (Fig. 178, apical half of genitalia in dorso-apical view right half is omitted, P .. paramere, P.V. .. penis valve).

Frons very minutely microcoriaceous and closely superimposed with comparatively large punctures, punctures anteriorly arranged in oblique lines and on tops of elevations sparse, mesoscutum sparsely punctured, punctures distinctly smaller than those on frons, PIS mostly 3-4 times PD. Propodeum with distinct lateral series of striae, area dorsalis at base crenate, on median and lateral furrows weakly transversely striate, disc and outsides of the area finely, sparsely punctured, sides strongly, somewhat sparsely (PIS 1-3 times PD) punctured, punctures on posterior part sparser and on femoral sinus lacking.

♂, unknown.

Holotype: ♀, New Guinea, Papua, SE, Mamai Plantation, east of Port Glasgow, 450 m, 27. II. 1965, R. Straatman (BPBM).



Figs. 171-179. *Trypoxylon bibou* sp. nov., ♂

A male specimen captured at Kokoda resembles very closely the preceding species, bibou, including the general structure of the genital organs, but differs from this in the following distinctions:

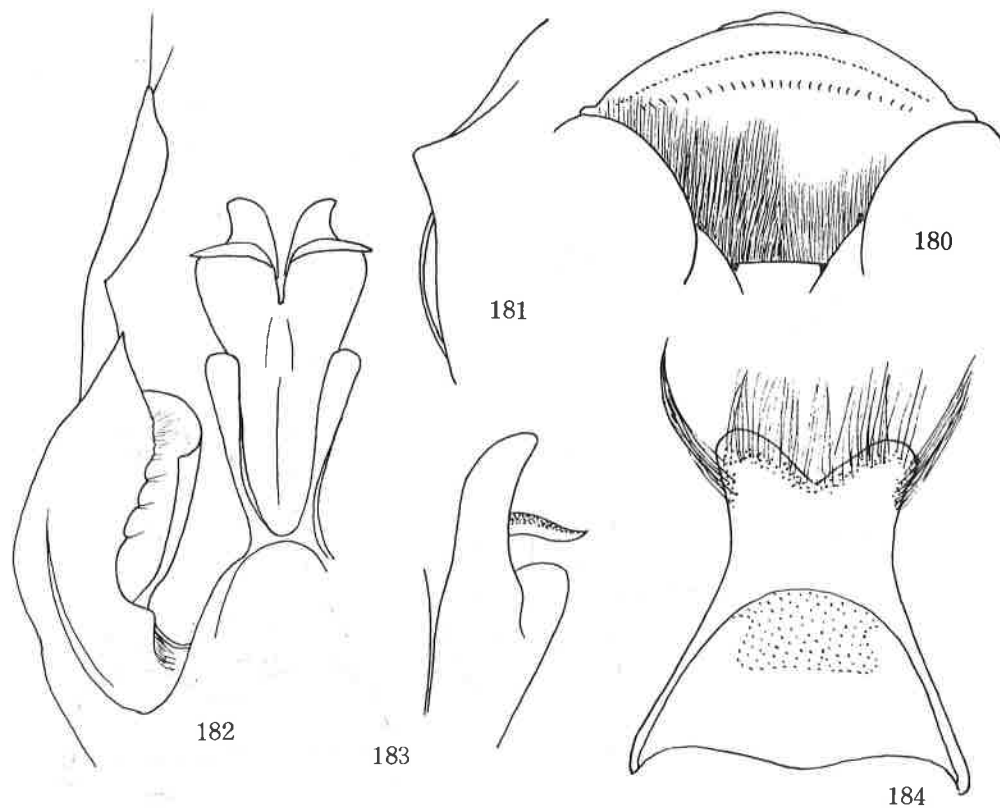
- (1) AL3 is shorter and relatively thicker.
- (2) Clypeus (Fig. 180) at medio-apical area distinctly incrassate (in Fig. 80 dotted line shows the border of punctuation and hool line the place of reflection).
- (3) Lamina on side of pronotum acutely pointed at apex (Fig. 181, cf. Fig. 176).
- (4) In genitalia longer one of apical two lobes of paramere somewhat slenderer (Fig. 182, cf. Fig. 178, 179), and apical lobes of penis valve slightly different in form (Fig. 183, cf. Fig. 177).
- (5) Sternite 8 much robuster and distinctly different in form at apical margin (Fig. 184, cf. Fig. 177).

♂. Length 13 mm. G1 at apical sides and G2-3 yellowish red, G2-3 brown marked above, fore tibia, all tibial spurs and all tarsi as in bibou, mid tibia at base pale brown and hind tibia at base more broadly and distinctly ferruginous.

Frons similarly microcoriaceous, but with punctures much closer, PIS≠PD or less and more uniform in distribution (though somewhat closer on the inclination towards median line and on the anterior flattened area).

Measurements:

HW, HL, IODv, A3, AL3, P=100, 50, 23, 18, 25, 156. HW:HL in frontal view 100:84. IODs=10:8. OOD, Od, POD=2, 8, 5. A3=AWX2.5. A3, 4, 5=10, 8, 8. A3:IODc=10:12. AL3=BWX3 and ≠AL10-12. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 28(21), 30(26). RC=B. Rl short, CV1=CV2×5. TCV fairly strongly incurved, TCV:CV2=10:8 or 10:9, angle about 90°.



Figs. 180-184. Trypoxylon kokodaense sp. nov., ♂

As the material is too scanty it is uncertain whether the characters above mentioned are really the specific ones, or geographical ones or mere variations of T. bibou, because the differences are comparatively slight. But, here the specimen is treated as a separate species, since some of the differences concern with the structure of genital organs and the 8th sternite.

♀, unknown.

Holotype: ♂, Papua, Northern District, Kokoda, 1200 ft., VII. 1933, L. E. Cheesman (BMNH).

35. TRYPOXYLON EXIMIUM SMITH, 1859

Trypoxylon eximium Smith, J. Proc. Linn. Soc. London, 3 (11-12): 161, 1859 (♀, Aru and Key).

Trypoxylon eximium: Smith, Ibid., 5 (Suppl.): 84, 1860 (Makassar and Key)

Trypoxylon gracillimum Smith, Ibid., Zool., 7: 35, 1864 (♂, Mysol).

Trypoxylon dorsale Tsuneki, SPJHA, 6: 5, 1977 (nec bicolor dorsale Tsuneki, Akitu N. S., 9: 4, 1977).

Trypoxylon eximium: Tsuneki, SPJHA, 8: 9, 1978 (redescr. types, figs.).

Trypoxylon gracillimum: Tsuneki, Ibid., 8: 24 (ditto, figs.).

Trypoxylon eximium: Tsuneki (♂ = gracillimum), Ibid., 12: 104, 1980 (syn., n. spp. obicola, ♀, Sarawak, Obi).

Specimens examined:

- 1 ♀, New Pommern, Kinignang, date? C. Ribbe (HNHM).
1 ♀, New Hanover (Lavongai I.), Banatam, 19. III. 1962, Noona Dan Exp., (ZMUC).
1 ♀, New Ireland, Knogogo road near Karu Plateau, 40 km north of Namatanai, 10-11. XII. 1969, J. E. Tobler (CAS).
1 ♀, New Britain, Gazelle Penins., Baining, St. Paul's, 350 m, 5. IX. 1955, J. L. Gressitt (BPBM); 4 ♀, New Britain, Baining Mts., Puktas, 22. XI. 1957, J. Smart (BMNH); 1 ♀, New Britain, Gazelle Penins., Yalom, 1000 m, 21. V. 1962, Noona Dan Exp., (ZMUC); 4 ♀ 2 ♂, New Britain, Gazelle Penins., 130 m, 28. X. 1962, J. Sedlacek (BPBM); 1 ♀, New Britain, Vaisisi, 9. VII. 1962, Noona Dan Exp. (ZMUC).
12 ♀, Papua, Woodlark Is. (Murna), Kulumadaul Hill, 12 (3♀), 23-30 (9♀). III. 1957, W. W. Brandt (BPBM); 1 ♀, Milne Bay, —, — (HNHM); 1 ♀, SE Papua, Mt. Giluwe, 2250 m, 27. V. -6. VI. 1963, Malaise trap, J. Sedlacek (BPBM); 1 ♀, Papua, Northern Dist., Kokoda, 1200 ft, IV. 1933, L. E. Cheesman (BMNH); 1 ♀, Papua, Western Dist., Oriomo Government Station, 26-28. X. 1960, J. L. Gressitt (BPBM); 1 ♀, Papua, West. Dist., Morehead, 23-30. IX. 1972, J. N. L. Stibick (AEI); 1 ♀, Saruwaged Mts., 500 m, 22. I. - 16. II. 1979, J. Sedlacek (AEI); 1 ♀, Inonda, Horanda Distr., 6. I. 19-44, W. G. Bodenstern (USNM); 1 ♀, Cairus, Hartleys Creek, 24. IV. 1957, W. W. Wirth (USNM).
2 ♀, New Guinea, Morobe Dist., Wau, 1250 m, 13. X. 1962, 14. II. 1963 (Malaise trap), J. Sedlacek (BPBM); 1 ♀, Wau, 1200 m, 1. IV. 1970, M. Sedlacek (BPBM); 2 ♀, Morobe Dist., Bulolo, 800 m, 13. II. - 13. III. 1979, J. Sedlacek (AEI); 1 ♀, Morobe Dist., Lae, sea level, 4. VII. 1961, J. & J. H. Sedlacek (BPBM); 1 ♀, West Sepik Dist., Green River - Sepik River junction, 200 m, Light trap, 22. VI. 1963, R. Straatman (BPBM).
1 ♀, Is. Graged, —, Riro (HNHM). 1 ♀, New Guinea, Minika River, A. F. R., Wallaton (BMNH); 1 ♀ (head and G4-6 only in capsule), —, — (BMNH).
13 ♀, Netherl.-Ind.-Amer. New Guinea Exp., Bernhard Camp, 50 m, VII-XI. 1938, J. Oithof (RMNH); 1 ♀, Hollandia (140° E long. 3°10' S lat.), 300-600 m, I. 1937-38, W. Stüber (BMNH); 1 ♀, Genjam, 40 km west of Hollandia, 100-200 m, 1-10. III. 1960, T. C. Maa (BPBM); 4 ♀, Netherl.-Ind.-Amer. New Guinea Exp. 1938-39, Hollandia, VII. 1938, L. J. Toxopeus (RMNH); 1 ♀, Macclner Gulf, Bintoeni Bay, Babo, 22. VIII. 1942 E. Lundquist (RMNH); 1 ♂, Vogelkop: Kebar Valley, west of Manokwari, 550 m, 4-31. I. 1962, Malaise trap, S. Quate & L. Quate (BPBM); 1 ♀, Ifar, 1. III. 1969, J. v.d. Asssem (RMNH); 1 ♀, Ifar (NW West Irian), Cyclops Mts., 300-500 m, 26-28. VI. 1962, J. Sedlacek (BPBM); 1 ♀, Maffen, 22 km east of Sarmi, 18. VII. 1959, T. C. Maa (BPBM).

Main characters

15-18 mm. Gaster medianly more or less red, frequently on ventral side only, fore tibia and fore and mid tarsi largely, rest of tibiae and tarsi partly ferruginous, G1 flask-shaped, propodeum without lateral carinae, IODs=5:4 or nearly (♀ ♂), frontal elevations gentle, microcoriaceous and sparsely punctured, SAT nasiform, PAF

V-shaped, up-curved, A3=AW 5 (♀), AW 2.7 (♂), A13=BW 3.2 and =A9-12, clypeus apically truncate and toothed in middle, mesoscutum closely, distinctly punctured, rarely very feebly microcoriaceous under high magnification, lamina on side of pronotum triangularly produced, subalar area normal, area dorsalis with weak lateral furrows, RC=B. As to male genitalia and sternite 8 see Remarks.

Variation in characters

(1) Colour of gaster.

Variable from 'medianly broadly red' (from apex of G1 to apex of G4) to completely black (ssp. *obicola*), with various intermediate forms. As to black-gastered form see the next section. Variation in colour of gaster has close connection with the locality.

* Bismarck Archipelago specimens (12 ♀ 3 ♂).

Always from apex of G1 (on sides broadly extended forwards) to apex of G4 bright red, without dusky mark above, without exception.

* Woodlark Island specimens (12 ♀)

Similar to the above, but always G4 on posterior half black above.

* South-Southeastern-Eastern parts of the Island (New Guinea - Morobe Distr.; Papua - Western, Central, Milne Bay and Northern Distr.) (13 ♀).

1 ♀ (Mt. Giluwe) as in Bismarck Arch. specimens, 5 ♀ as in Woodlark Is. specimens, while in remaining 7 ♀, in addition to G4 posteriorly above, G2 has a brown mark above.

* Northern Central area specimens (Sepik and Western Highland Distr.) (5 ♀).

G2, 3 and 4 variably brown- or black-marked above, mark on G4 usually covering full length, rarely full segment, on G3 small and on G2 large, varying in colour, sometimes dorsal side completely black.

* West Irian - Bernhard specimens (13 ♀).

G4 black, sometimes base beneath only red, G2 and 3 always carrying dusky mark above, on G2 usually covering full length.

* West Irian - Hollandia specimens (6 ♀)

From apex of G1 to base of G4 or to apex of G3, always on ventral half only red or dark red, dorsal side varied from brown, dark brown to black.

* West Irian - Northwestern - Western parts (4 ♀).

A specimen from Hol Haffen on apical sides of G1 and ventral half of G2-3 only red (rest black), 1 ♀ from Maccluer Gulf is as in Morobe District specimen, G2 with a large brown mark above, G3 similar but the mark is small, while G4 completely black above. One of the Ifer ♀♀ apical sides of G1 and ventral half of G2 and 3 clear red, while in the other apical sides of G1 and sides of G2 only red (basal inserted parts of G2 and 3 red, but this is invisible under normal posture of the abdomen).

(2) Colour of legs.

* Bismarck Archipelago specimens.

Tibiae except base black, in fore tibia at base always, sometimes broadly, distinctly ferruginous, only rarely in front and at base also ferruginous; in mid tibia at base usually obscurely and narrowly ferruginous or brown; in hind tibia usually completely black, rather rarely ferruginous at base. Fore and mid tarsi ferruginous, only T5 brown above, hind tarsus black, but T2-4 or T3-4 pale brownish or ferruginous yellow.

* Woodlark specimens

Fore tibia except folded side, mid one broadly at base and apex, hind one at base ferruginous; fore and mid tarsi, except brown mid T5, and hind T2-4 or 2-5 yellow or pale ferruginous, hind T1 always brown or black. Only in one specimen fore tibia broadly dark brown and at base and apex only ferruginous, mid and hind tibiae only at base only ferruginous, mid T5 and hind T1, 2 and 5 dark brown, rest of tarsi ferruginous.

* South, Southeastern and Eastern parts of the Island.

Generally similar to the Woodlark population, but fore and mid tibiae more frequently and more broadly darkened, hind T1 always black and mid and hind T5 as a rule brown above.

* Northern central part of the Island.

The specimens are similar to those of the bright form of Morobe population.

* West Irian - Bernhard specimens.

All tibiae mostly as in the Woodlark population, only very rarely fore tibia fairly broadly dark, but hind tarsus, besides black T1, as a rule T2 and 5, sometimes T3 also brown or dark brown, mid T5 mostly dark.

* West Irian - Hollandia population.

As in Bernhard population.

* West Irian - Northwestern Population.

Except the Maccluer Gulf specimen as in above; in the exceptional specimen fore and mid legs similar, but hind tarsus wholly dark (somewhat pale on T3 and 4).

(3) Form of clypeus and pronotal lamina.

Except the grade of abrading by use the apical margin of the clypeus is very constant in form, only varying more or less in the size and acuteness of the medio-apical tooth. Pronotal lamina always produced in large triangle, though slightly differing in the acuteness of its apical angle (on an average fairly acute), sometimes apical area slightly reflected.

(4) Punctures on mesoscutum.

Comparatively strong and very close. Punctuation is characteristic of this species, PIS usually equal to or less than PD. In the Woodlark population, however, punctures are distinctly sparser than usual, PIS mostly 1-2 times PD, it is certainly a geographical variation. Surface condition is usually opaque, but sometimes smooth and shining (without connection with the locality). Among those having mat surface very rarely a feeble microsculpture can be seen under high magnification.

(5) CV1, CV2, TCV and angle.

Venation is in general considerably variable in most species and slight change is valueless in comparing the species. In the present species also it is considerably variable (see Table 4). This is partly due to the states of the veinlet, CV2 and TCV. CV2 is usually down-curved, varied in strength and, moreover, the area of the veinlet is frequently strongly depressed. TCV is usually weakly sinuate, but sometimes fairly strongly so, or curved or bent inwards with varied strength. The angle is usually estimated by eye measurement and unless otherwise described it shows the angle formed by two straight lines, neglecting curvature. The values are, therefore, very rough. Despite the rough method, fluctuation of the values obtained is comparatively small and the range of variation shows an inclination or a character of the species.

Table 4. Measurements on Trypoxylon eximium Smith

Loco	IODv	A3	Al3	P	IODs	Ma	Mi	2	3	CV1	Angle
Lavongai I.	24	26	--	160	8.5	18	6	30	30	4.5	95°
N. Ireland	24	27	--	172	8.5	17	6	32	32	5.2	95
N. Britain	24	28	--	156	8.5	20	7	31	31	6.2	95
N. Britain	26	28	--	164	8.0	16	6	30	30	5.0	110
Woodlark I.	22	27	--	174	9.0	19	7	30	31	6.6	110
Woodlark I.	22	26	--	166	9.0	17	6	30	30	6.4	110
Milne Bay	22	26	--	172	9.0	16	5	30	30	6.0	95
Wau	26	27	--	160	8.0	17	6	32	31	7.2	100
Oriomo	24	26	--	162	8.5	18	6	30	33	7.2	100
Green River	24	28	--	162	8.0	18	6	28	30	7.2	100
Hol Hoffen	24	28	--	170	9.0	19	6	30	32	7.7	100
Ifer	24	28	--	174	8.0	16	5	29	30	7.4	100
Ifer*	25	25	--	120	8.3	30	9	30	42	5.5	95
Maccluer Gulf	23	28	--	172	8.5	18	6	30	30	7.0	100
Bernhard	24	26	--	168	8.7	18	6	30	31	5.2	110
Bernhard	24	27	--	162	9.0	18	6	32	34	5.4	100
Hollandia	24	27	--	168	8.5	18	6	30	34	7.0	110
Hollandia	24	27	--	174	8.3	18	6	30	30	6.0	110
Gazella Pen. ♂	27	16	28	147	8.5	15	7	32	36	5.2	100
Gazella Pen. ♂	27	17	--	160	8.2	15	6	29	34	5.0	100
Gazella Pen. ♂	27	18	28	160	8.3	14	6	32	32	5.0	100
Vogelkopf ♂	25	17	28	166	8.0	15	5	34	34	5.3	100

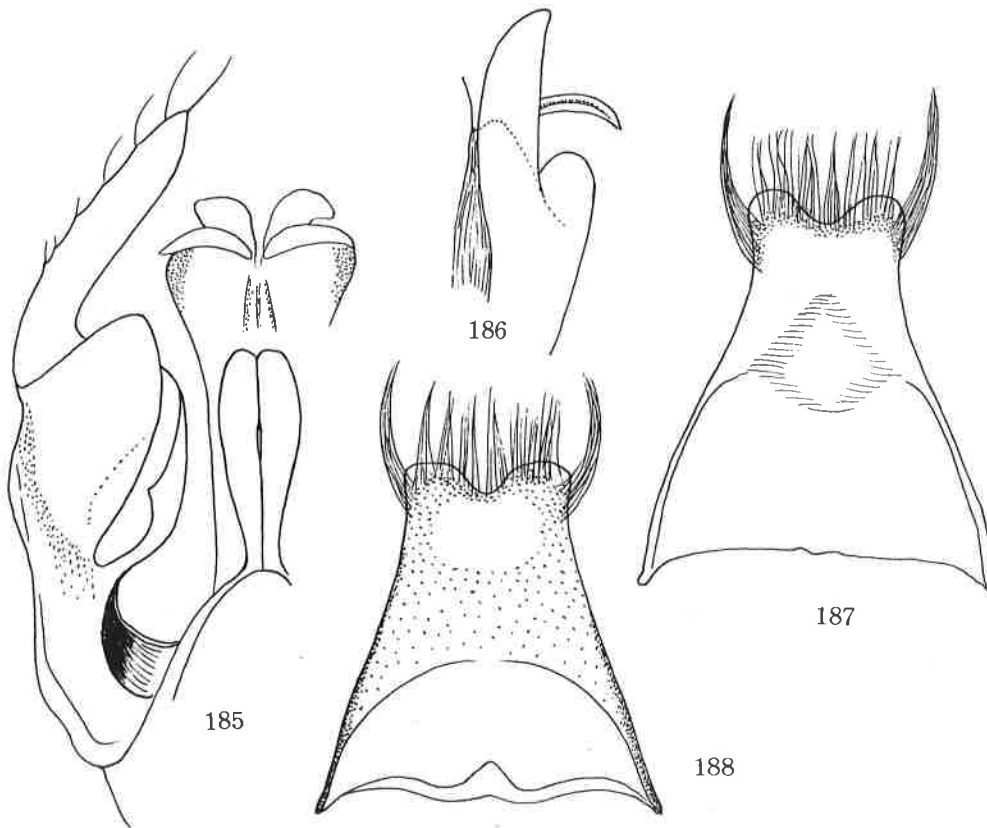
Remarks. IODv, A3, Al3, P ... HW=100 is omitted. IODs ... Length of IODs when IODv is 10. Ma, Mi, 2, 3 ... P=100 is omitted. CV1 ... CV1/CV2.

(6) Lateral carinae of propodeum.

The carinae are always absent in tee female, while they are always present in the male as far as examined. In the specimens from the New Britain (♂, Gazelle Pen.) the carinae are defined at lateral margin of the posterior inclination only, while in that of Vogelkopf, west of Manokwari, NW of West Irian, they are slightly more extend-

ed anteriorly. In all of them the carina is not a distinctly raised line, but the edge given rise to by the longitudinal impressed line just inside of it which consists of the impressed ends of the series of striae at lateral margins of the dorsal aspect of the segment. Therefore, the apparent carina is smoothly and flatly connected with the surface of the side.

The genitalia of two males of New Britain (Gazelle Peninsula) were examined. They well agree in structure with each other and with those of the lectotype of *T. gracillimum* Smith (= *eximium* ♂) (cf. Fig. 112 of Pt. II of the present paper). Viewed from ventral side: Fig. 185 (right paramere omitted), differing from those of *bibourelates* in the form and hair fringe of the paramere (cf. Figs. 178, 182), especially marked in the form of the longer one of apical two lobes. Apical part of penis valve in dorso-vertical view: Fig. 186 (left half only). While the 8th sternite is somewhat different from that of *gracillimum* type and also from each other (Figs. 187 and 188) in the form of apical margin. But these are considered variation within the same species.



Figs. 185-188. *Trypoxylon eximium* Smith, ♂

Trypoxylon eximium gracillimum Smith, 1864 (status nov.)

Trypoxylon gracillimum Smith, J. Proc. Linn. Soc. Loddon, Zool., 7:35, 1864 (♂, Mysol).

Trypoxylon gracillimum: Tsuneki, SPJHA, 8: 24, 1978 (lectotype desig. redescr., figs.).

Trypoxylon eximium (♂): Tsuneki, Ibid., 12: 104, 1980 (new syn.)

In Pt. VI of the present paper I synonymized *gracillimum* with *eximium* as its different sex. There is no error in synonymizing them at the species rank. But at the

subspecies level it should be separated from eximium eximium in colouration. Namely, in eximium gracillimum, apart from sexual difference, gaster and legs are more broadly black: gaster onl on ventral side of G2-3 narrowly reddish or brownish and mid tarsus partly (including T1) and hind tarsus largely black.

According to the examination of the New Guinean specimens it was made clear that the population of this subspecies is distributed over the northwestern region of the Island, including Is. Misool and Is. Schouten, showing some intermediate state between eximium s. str. and eximium obicola. Strictly the representative of Schouten Island is closer to ssp. obicola and may be another subspecies, but here taking the broad view it is included under the category of ssp. gracillimum.

On the other hand, some West Irian specimens of eximium s. str. are, as given in the remarks on the colour variation of this species, very close to the present subspecies and the clear separation is rather difficult. But this is only a natural result of the intraspecific classification.

Specimens examined:

- 1 ♀, Misool I. (west), Solal, 0-75 m, 13. X. 1948, M. A. Lieftinck (RMNH).
1 ♀, Vogel Kop, Sorong, 2. X. 1948, M. A. Lieftinck (RMNH); 2 ♀, Vogel Kop, Klamono Oilfields, 19. VIII. 1948, M. A. Lieftinck (RMNH).
1 ♀, Humboldt Bay Dist. Bewani Mts., IX. 1937, W. Stüber (BMNH).
1 ♀ 1 ♂, Strip, 2 H, X. 1956, G. den Hoed (RMNH).
5 ♀, Schouten Is. : 1 ♀, Base Biak, 3. IV. 1952, L. D. Brongersma & W. J. Roosdorp (RMNH); 2 ♀, Base Biak, 1. IV. 1952, L. D. Brongersma & W. J. Roosdorp (RMNH)
1 ♀, Base Biak (west of Serido), 25. IV. 1955, L. D. Brongersma (RMNH); 1 ♀, Biak, Kampong Landbouw, 30 km NW of air strip, 40 m, 17. VII. 1957, D. Elmo Hardy (RMNH).
1 ♀, Morobe Dist., coast, Buso, IX. 1979, J. H. Martin (BMNH).

On colouration.

In all the specimens, except one of those from Vogel Kop, G1-2-3 beneath at intersegmental area and on the posterior margins dusky brown or dusky red (marginal areas are rather due to discolouration). In the exceptional one nearly completely black as in obicola.

Fore tibia most usually on folded side and on medial area dark brown or black, rest ferruginous, mid tibia usually at base and apex comparatively broadly and on fore side ferruginous, rest dark brown or black, hind tibia at base only ferruginous to white. Fore tarsus pale ferruginous, often T5 somewhat brownish (arolia always black), mid tarsus most usually at apices of T1,2,3 and whole of T5 brown, but in the specimens from Schouten Island frequently from apex of T1 or T2 apically completely brown or dark brown. Hind tarsus usually on T1-3 and 5 dark brown or black (T3 often somewhat pale) and T4 only contrastively pale, in the specimens from Schouten Island hind tarsus more strongly darkened than in others, thus closer to ssp. obicola.

On the other hand, in the specimens from Humboldt Bay (1♀) and Strip (1♀, 1♂) tarsal colour is rather closer to that of eximium s. str. In mid tarsus each apex and T5 brown and in hind tarsus T1 and 5 black and T2-4 at apices alone brownish, rest pale ferruginous.

On the Morobe specimen.

This is a very large specimen, measuring 18.5 mm. From the view point of distribution there is a question regarding this specimen. But the colour of the gaster and legs is as in other specimens of gracillimum (G2-4 beneath narrowly dark red) and there is no question in allocating this specimen within the category of gracillimum.

♂ (from Strip). Except the gastral colouration similar to that of the type of gracillimum. Yet the gaster more broadly black than the female, only obscurely brownish at the discoloured posterior margin of G1-3. Genitalia are also similar to those of the New Britain specimens and apical form of 8th sternite is also as in Fig. 188.

Measurements of this specimen:

HW, HL, IODv, A3, Al3, P=100, 48, 25, 18, 30, 160. IODs=10:8.7. OOD, Od, POD=2, 4, 3. A3=AW×2.2. A3, 4, 5=10, 7, 7. A3:IODc=10:13. Al3=BW×3.5, and ≠A9-12. P, Ma, Mi, 2(Ma), 3 (Ma)=100, 16, 6, 31(20), 34(31). RC=B, RI short, CV1=CV2×5.3. TCV:CV2=5:3. Angle about 100°.

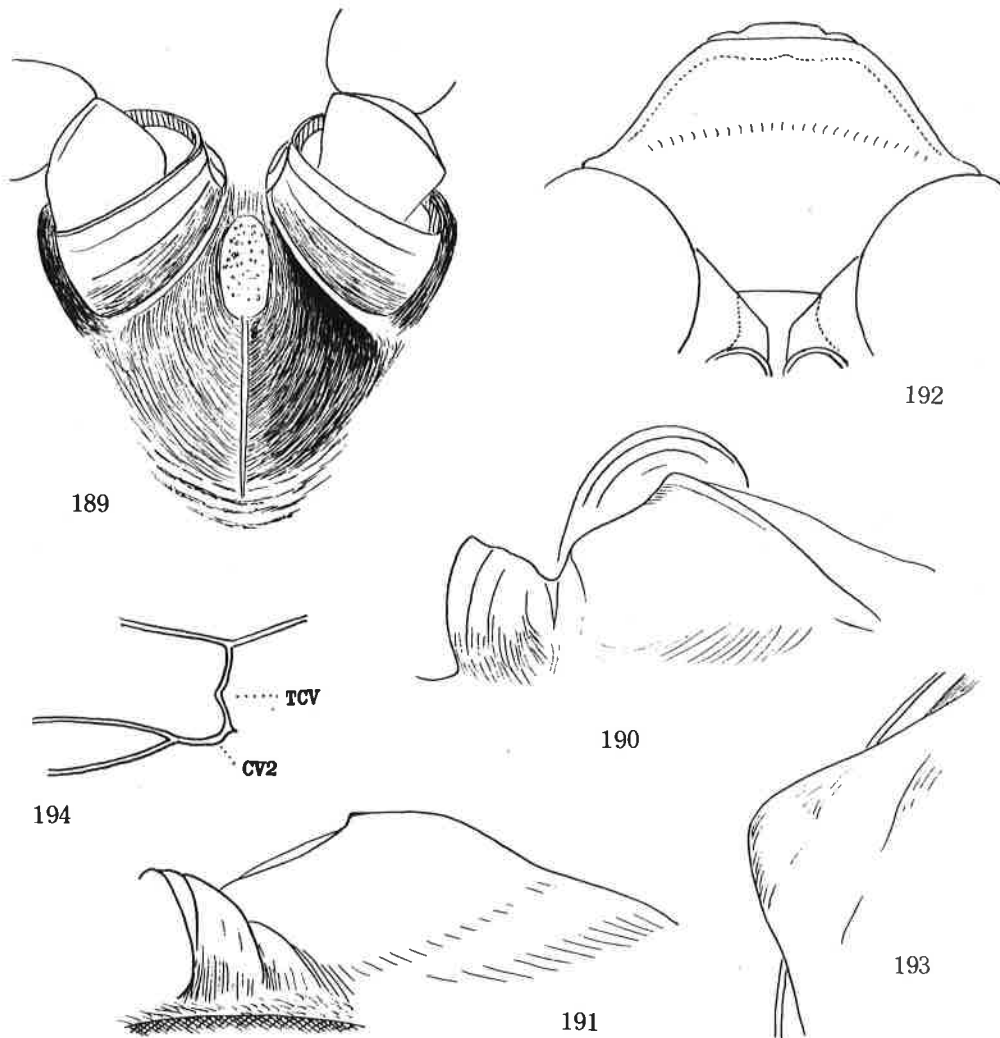
According to the measurement in this specimen A3 is relatively slightly shorter than in eximium s. str., ♂ and Al3 very slightly longer than in this. In the 3 males of the typical form from New Britain A3=AW×2.7, 2.7, 2.7 respectively and Al3=BW×3.2, 3.1 and 3.3 respectively.

36. TRYPOXYLON TOWNESI SP. NOV.

Diagnosis. ♀, 18-22 mm. Black, with legs fairly broadly yellowish, gastral segments discoloured at each apex, G1 flask-shaped, mesoscutum without microsculpture, strongly closely punctured, propodeum without lateral carinae, IODs=5:4 - 4:3, A3=AW 5, SAT rounded nasiform, PAF moderately deep, up-curved, V-shaped in cross section, frons anteriorly broadly flat, strongly closely punctured, clypeus truncate at apex, weakly trilobate, median lobe broader, pronotal lamina roundly distinctly produced.

Black, A1, 2, 3 with a narrow brown ring at each apex, mandible medianly yellow and at margins castaneous, mouth parts pale yellow and partly black (variable among specimens), palpi each with two basal joints brown streaked, fore and mid tibiae, all spurs and all tarsi yellow, but tibiae on folded side and outer side dark brown, hind tibia at base yellowish, all T5 brown or dark brown, hind T1 dark brown above and T2 somewhat brownish above. Hair silvery, on clypeus convergent towards medial line, usually straightly so, not sinuately convergent, showing that basal elevation is not rounded, but tectate.

Head in frontal view with lateral margins rounded, slightly narrowed below, W:L=



Figs. 189-194. Trypoxylon townesi sp. nov., ♀

100:86, vertex weakly depressed, tops of hind ocelli in a line with tops of eyes, eye incision narrow, subparallel-sided, dorsal margin horizontal, frontal elevations only gentle, median furrow shallow and broad and much shallowed anteriorly where surface flat, SAT rounded nasiform, median carina acute, but ending anteriorly near centre of SAT, leaving a long smooth inclination above IAA where surface flattened to form an elliptic area (Fig. 189 vertical view), ASR comparatively long, transversely striate, PAF deep, on median area straight, on both ends curved down, V-shaped in cross section (Fig. 190, dorso-lateral view to see through PAF), the structure in lateral view: Fig. 191; clypeus: Fig. 192, apical area gently broadly reflected, apical margin shortly bevelled. Head seen from above with each ocellus in a fairly deep hollow, interspace of them raised to form a Y-shaped ridge, posterior margin of vertex raised and bluntly edged at the top, the edge line connecting with posterior margins of eyes. Occipital carina complete, genal process moderately developed, gradually lowering posteriorly into buccal carina. Measurements of holotype:

HW, HL, IODv, A3, P=100, 48, 27, 27, 192. IODs=10:7.5. OOD, Od, POD=2, 3, 3. A3=AW×5. A3, 4, 5=10, 7, 6. A3:IODc=10:7.5. P, Ma, Mi, 2(Ma), 3(Ma)=100, 17, 6, 30(18), 33(22). RC=B, Rl short, CV1=CV2×6, TCV:CV2=5:4, angle about 95°.

Anterior part of collar as long in middle as posterior part, gradually enlarging towards sides, thus anterior margin roundly emarginate in dorsal view, in frontal view dorsal line rounded, almost not tuberculate in middle, but in some specimens minutely depressed, posterior part not discoloured, lamina on side roundly produced (Fig. 193), with apical area reflected, parapsidal sutures and subalar area normal, metapleural flange first transversely shortly stretched out, on posterior part roundly raised. Basal elevation of propodeum only a fine ridge, not conspicuous, lateral carinae absent, area dorsalis with feeble broad lateral furrows, medial furrow also comparatively shallow, area apicalis distinctly margined with carinae, GSR roundly elevated, in lateral view apical area distinctly curved. In fore wing state of TCV:CV 2: Fig. 194. G1 very slender and long (see measurements), each segment of gaster at apical margin (on G1 at posterior swollen part) discoloured and amber-yellow, sometimes on G2 and 3 slightly reddish beneath, discoloured area is narrow on dorsal side but broader laterally and ventrally. Coxal tubercle of hind leg distinct, cone-shaped with a short bristle on top.

Frons distinctly microcoriaceous and closely superimposed with comparatively large strong punctures, punctures partly contiguous to each other to form oblique puncture lines, SAT also strongly closely punctured, though punctures finer and shallower than those on frons; punctures on mesoscutum at antero-lateral area slightly smaller than those on frons, close, PIS 1-2 times PD, but on central area and posteriorly finer and sparser. Lateral series of striae on propodeum strong and distinct, on posterior part extending inwards to form a broad zone of transverse striae in front of area apicalis, this area smooth and shining, area dorsalis at base longitudinally shortly striate, on median and lateral furrows feebly striate, sometimes striae indistinct on the median, disc and outsides of the area finely, but distinctly, fairly closely punctured, sides sparsely covered with fine piliferous punctures, smooth area at femoral sinus very narrow and posterior area transversely striate as usual.

♂, unknown.

Holotype: ♀, New Guinea, Morobe Distr., Bulolo, 800 m, 13. II. - 13. III. 1979, J. Sedlacek (AEI).

Paratypes: 3 ♀, same locality, 1 ♀, same data as holotype, 2 ♀, 15. I. - 14. II. 1979, J. Sedlacek (AEI).

37. TRYPOXYLON LIEFTINCKI SP. NOV.

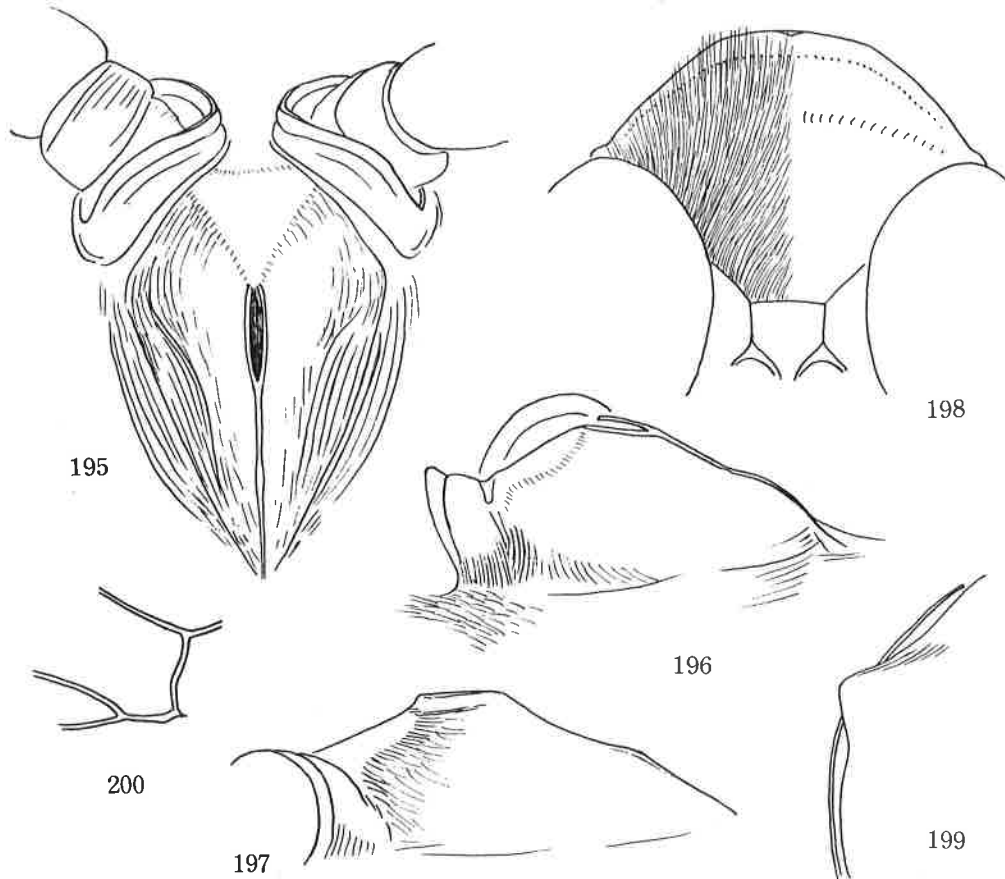
♀, 18-21 mm. Closely resembles *townesi*, but differing from it in the following characters:

(1) Apical margin of clypeus simply truncate, somewhat rounded, not trilobate, not bevelled (Fig. 198), disc at base gently roundly elevated, thence not tectate anteriorly, hence the hair at base only sinuately convergent towards medial line; supra-clypeal area also different in form (cf. Fig. 192).

(2) Frontal furrow broad and deep, elevations on both sides distinctly rounded (but not so highly rounded as in *placidum* Smith).

(3) Punctures on frons and vertex not so strong and close and not so conspicuous, those on mesoscutum much finer and sparser, PIS 5-6 times PD, on scutellum, area dorsalis and on sides of propodeum also finer and sparser.

- (4) Fore tibia only at base and in front ferruginous and mid tibia except base and apex completely black.
 (5) Collar of pronotum in frontal view with dorsal margin triangularly raised and weakly tuberculate in middle (posterior part not discoloured as in *townesi*).
 (6) Lamina on side of pronotum triangularly produced (Fig. 199), apical angle more acute and the area not reflected.
 (7) SAT nasiform, but more flatly inclined laterally, in vertical view (Fig.



Figs. 195-200. *Trypoxylon lieftincki* sp. nov., ♀

- 195), with outline not so round, nearly triangular, medio-apical flat area not elliptic, but triangular, with margins not edged, smoothly inclined to IAA and ASR, accordingly PAF much shallower, wide opened V-shaped (nearly downcurved) in cross section, median carina of SAT not simple, at anterior end enlarged and medianly deeply impressed to form a short trough (Figs. 195 vertical, 196 dorso-lateral, 197, lateral).
 (8) The hollow including each hind ocellus shallower (though that of fore ocellus deeper and broader), with Y-shaped ridge at their interspaces more obscure.
 (9) TCV-CV2 similar, but angle somewhat more acute, about 90° (Fig. 200).

A1,2,3 similarly brown ringed at each apex, mandible similar in colour, but medial yellow area much wider, both palpi similarly black striped on basal two joints, gaster similarly discoloured at apex of each segment, narrower dorsally and somewhat reddish at G2 and 3 beneath. Measurement of holotype: A3=AW×5.5.
 HW:HL in frontal view =100:90. HW,HL,IODv,A3,P=100,47,22,29,180. IODs=10:9.
 OOD,Od,POD=2,7,3.5. A3,4,5=10,7,6. A3:IOFc=10:7. P,Ma,Mi,2(Ma),3(Ma)=100,20,7,30(20),32(26). RC=B. Rl short. CV1=CV2×5.6. TCV:CV2=10:7, angle about 90°.

♂, unknown.

Holotype: ♀ (length 21 mm), New Guinea, West Irian, Vogel Kop, Sorong, 14. VIII. 1948, M. A. Lieftinck (BMNH).
Paratype: 1 ♀ (length 18 mm), New Guinea, 6. 2. 1891 (? A. R. Wallace) (BMNH, with a 6 mm round purple label with 6. 2. 1891 in two lines and a 8 mm round white label with New Guinea written in two lines).

38. TRYPOXYLON PETIOLATUM SMITH, 1857

Trypoxylon petiolatum Smith, J. Proc. Linn. Soc. London, Zool., 2: 105, 1857 (♀, Borneo).
Trypoxylon obsonator Smith, Trans. Ent. Soc. London, 1873, p. 194, 1973 (♀ ♂, Japan) (ssp.)
Trypoxylon bicolor, obsonator: Bingham, Faun. Brit. Ind., Hym., 1, pp. 226-227, 1897 (both partim, both are mixed with species of bicolor and petiolatum)
Trypoxylon canaliculatum, rejector: Bingham, Ibid., pp. 225, 226, 1897.
Trypoxylon bicolor: Tsuneki, SPJHA, 8:1, 1978 (partim).
Trypoxylon petiolatum: Tsuneki, Ibid., 8: 6, 1978 (redescr. lectotype).
Trypoxylon petiolatum: Tsuneki, Ibid., 9: 160, 1979 (with syn.); 11:39, 1979; 12: 110, 1980; 13: 82, 1980.
Trypoxylon obsonator: Auctt. (ssp.).

Specimens newly examined:

1 ♀, Ogasawara Is (Donin Is.), Chichidzima, 16. VIII. 1973, Y. Haneda.
6 ♀, Hawaii, Hilo, before 1912 (BMNH); 2 ♀ 3 ♂, Hawaii, Hilo, VII. 1900, H. W. Henshaw (USNM); 2 ♀, Oahu, 1 mile Ne of Koko Head, 21. VIII. 1945, R. P. Dow (USNM); 1 ♀ 1 ♂, Oahu, Keawaula, 12. VII. 1952, H. W. & D. Townes (AEI); 1 ♀, Oahu, Nuuanu Valley (in garden), 1. IV. 1947, T. Rouo (USNM); 1 ♀, Oahu, Honolulu, 6. VI. 1908, O. H. Swezey (USNM); 1 ♀ 1 ♂, Oahu, Mauva Valley, 21, 24. III. 1920, F. X. Williams (USNM); 1 ♀, Oahu, Mt. Tartalus, 20. XI. 1941, on weed, F. Tom (USNM); 1 ♀, Oahu, VIII. 1909, Coll. Terry (BMNH); 1 ♀, Oahu, 10. III. 1914, H. Maa, rest in stem Erigeron, Coll. Timberlake (USNM).

Colour of legs in the males from Hawaii.

Fore tibia at base, at apex and in front ferruginous, mid tibia at base and apex also ferruginous and hind tibia at base broadly, all tibial spurs and greater part of fore tarsi pale yellow; fore T1 usually with a brownish streak above and fore T5 brown; mid tarsus brown or dark brown and hind tarsus black, arolia always black.

Relative length of IODv and AL3 (when HW=100)

IODv: ♀ 26, 26, 27, 27, 27, 27, 27, 27, 27, 28, 28, 28, 28, 28, 28, 28, 28, 28, 29, 29.
♂ 30, 31, 31, 32, 33, 33.
AL3 ♂ 24, 25, 25, 26, 26.

According to the result relative length of interocular distance at vertex in the Hawaiian population ranges from the state of tropical population (petiolatum s. str., once recorded as obsonator tropicale) to that of the East Palaearctic population (p. obsonator), but are mostly in the intermediate state as shown by the Philippine and Formosan populations. The fact is due to that the Hawaiian population is the offspring of the immigrant from the Philippines.

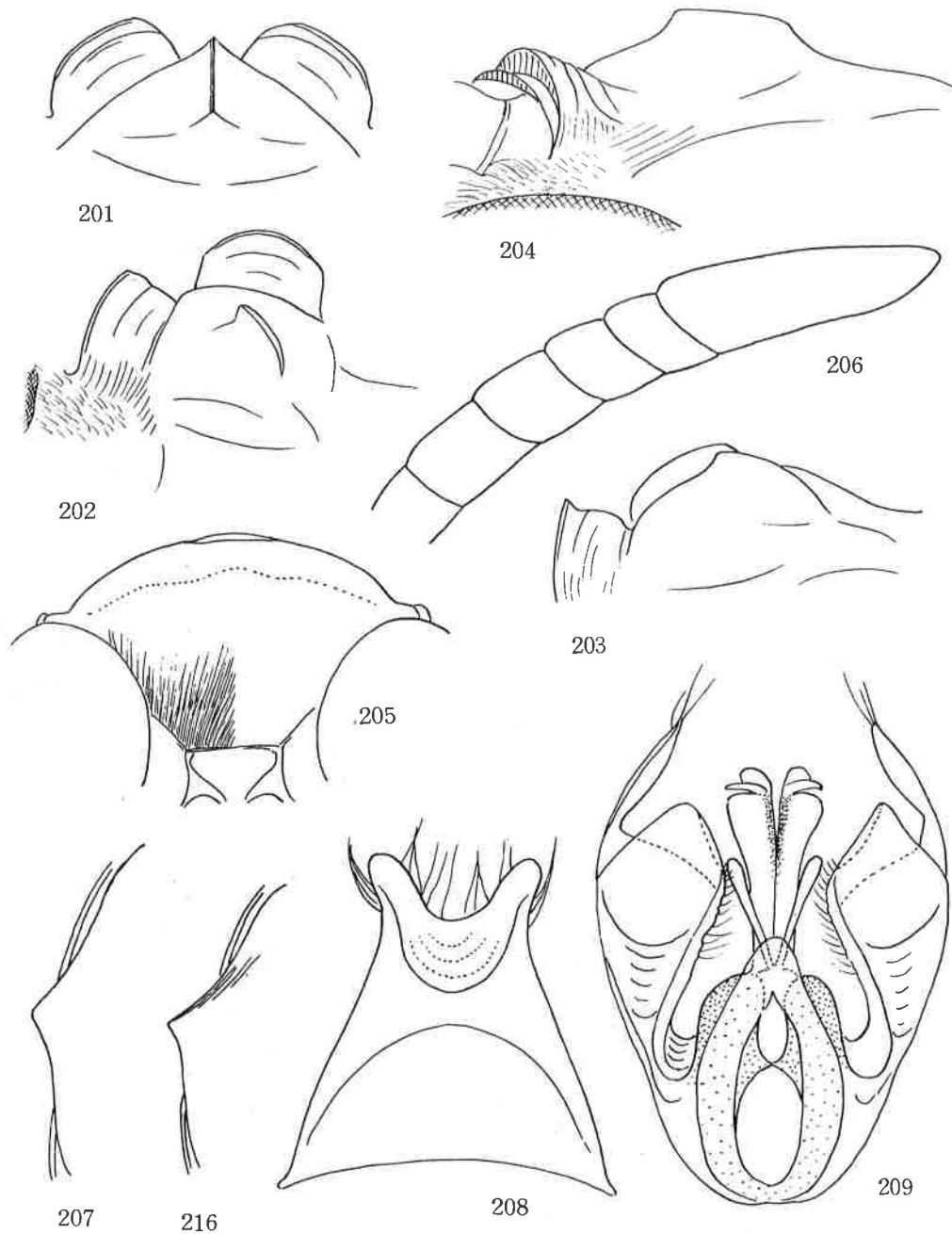
39. TRYPOXYLON LAE SP. NOV.

♀, closely allied to eximium Smith, but apical margin of clypeus thin and not toothed in middle, punctures on mesoscutum finer and PAF deeper. It is also somewhat similar to lieftincki, but much smaller in body size, with legs more broadly yellow, A3 relatively shorter, IODc relatively narrower and punctures on mesoscutum stronger and somewhat closer.

Diagnosis. ♀ ♂, 13-14 mm. G1 flask-shaped, gaster medianly red, mesoscutum simply punctured, propodeum without lateral carinae, legs broadly yellow, IODs=3:2 (♀), =1:1 (♂), apical margin of clypeus rounded (♀ ♂), AL3 > AL0-12 but < A9-12, SAT rounded

nasiform, PAF shallow, with bottom line up-curved, area dorsalis practically without lateral furrows, RC=B.

♂. Black, without plumbeous shine on mesoscutum, A1 and 2 narrowly ferruginous at apices, clypeus completely black, mandible ferruginous and dark brown at apex, palpi yellow, collar with posterior part not discoloured, tegla semitransparent dark brown, externally somewhat paler, gaster from apex of G1 (on sides broadly extended



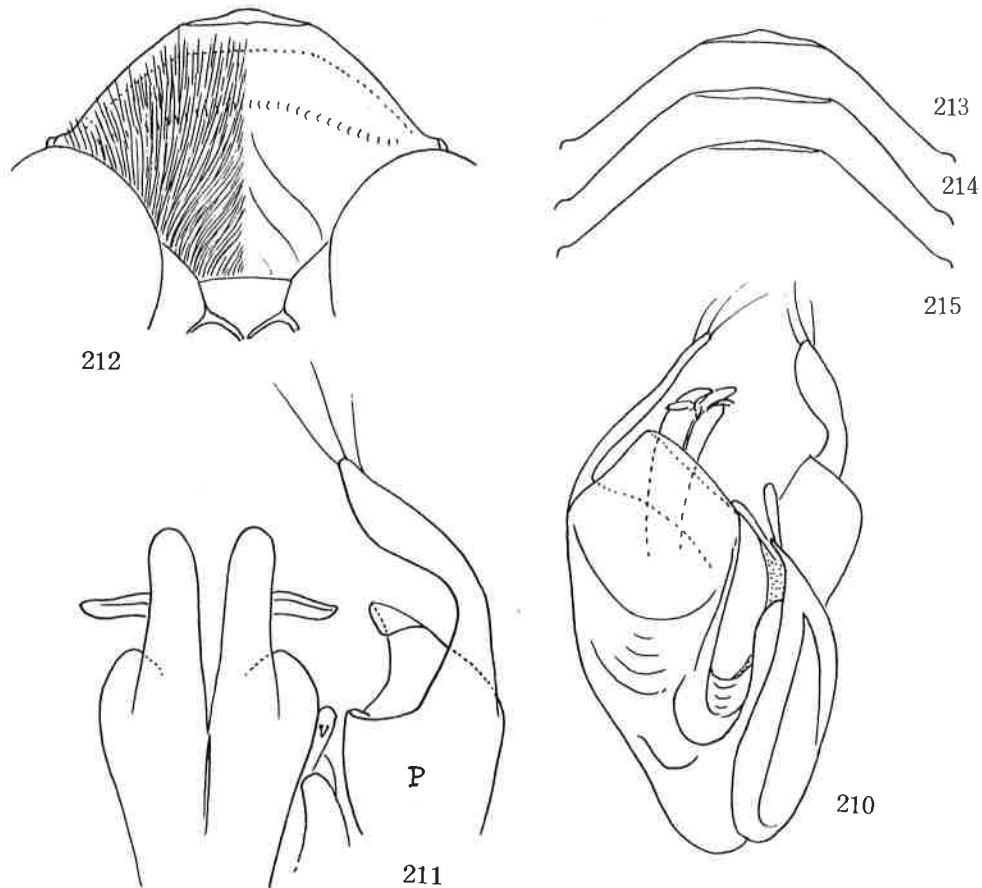
Figs. 201-209 (♂), 216 (♀). *Trypoxylon lae* sp. nov.

anteriorly) to basal sides and beneath of G_4 red, G_2 and 3 black marked above, fore and mid tibiae brown, paler in front and at base, hind tibia at base pale brown or ferruginous, spurs and tarsi pale yellow, but mid T1 slightly brownish above, hind T1 distinctly brown and all T5 ferruginous. Hair on clypeus silvery, at base convergent towards medial line.

Head in frontal view with sides roundly convergent towards clypeus, vertex slightly depressed, tops of hind ocelli slightly below level of tops of eyes, $W:L=100:78$, eye incision broad and narrowed towards bottom, dorsal margin somewhat inclined outwards, frons gently raised, medial furrow broad and shallow, hence elevations on both sides not marked. SAT round in outline, comparatively small, but nasiform, with medial carina distinct, ASR carinated at apex, dorsum transversely striate, not shining, PAF shallow, small V-shaped in cross section, bottom line up-curved, SAT-ASR in dorsal view: Fig. 201, oblique dorso-lateral view: Fig. 202, dorso-lateral view to see through PAF: Fig. 203, in profile: Fig. 204. Clypeus: Fig. 205, disc from base roundly elevated and roundly tectate till apical reflection, apical margin medianly weakly truncate; apical part of antenna: Fig. 206, in some condition appears almost as long as A9-12 united. Occipital carina triangularly depressed behind buccal cavity, but not interrupted.

HW, HL, IODv, A3, Al3, P=100, 48, 25, 16, 152. IODs=10:8.5. OOD, Od, POD=2, 4, 3. A3=AWx 2.2. A3, 4, 5=10, 8, 8. A3:IODc=10:14. Al3=JWX3. P, Ma, Mi, 2(Ma), 3(Ma)=100, 15, 6, 32(16), 32(23). RC=B. Rl short, CV1=CV2x5.5. TCV:CV2=3:2. TCV weakly sinuate, angle about 110° .

Pronotum transverse, anterior part narrow-ridge-like, weakly enlarged towards sides, in frontal view dorsal margin broad triangular, somewhat rounded and minutely



Figs. 210-211 (σ), 212-215 (ρ). *Trypoxylon lae* sp. nov.

weakly tuberculate on top, lamina on side triangularly produced, with apex slightly pointed (Fig. 207), parapsidal sutures and subalar area normal. Basal elevation of area dorsalis narrow ridge-like, not marked, lateral furrows sometimes very feebly defined, broad and very shallow, area apicalis always margined with carina, GSR roundly raised on posterior margin, in lateral view curved and slightly produced posteriorly, intercoxal carina gently up-curved.

Sternite 8: Fig. 208, characteristic are that latero-apical processes are markedly long, with sinus between them rounded, that apical area roundly depressed and that apical fringe of hair is very sparse. Genitalia seen from beneath: Fig. 209, paramere bifurcate at apex into slender and long inner dorsal lobe and broad short antero-ventral lobe, remarkable is that outer ventral one is exceptionally broad and short (in the figure inner apical area of it is roundly folded and overlapped), in oblique lateral view: Fig. 210, apical part seen vertically from dorsal side: Fig. 211 (right half is omitted), folded state of shorter ventral lobe is well visible, volsella slender spatulate, penis valve with well developed shoulder and a pair of sickle appendages, its form seen vertically: Fig. 211 (v .. volsella).

In structure of sternite 8 and genitalia the present species is distinctly different from closely allied other species, especially from *eximium* Smith.

Frons distinctly microcoriaceous and closely superimposed with comparatively large flat-bottomed punctures, PIS mostly =PD, rather uniform in distribution, but on top areas of the elevations somewhat sparse, PIS 1.5 - 2 times PD. Punctures on mesoscutum somewhat smaller than those on frons, but deeper and sparser, PIS mostly 1-2 times PD, and much sparser on median area and much finer on posteriorly, mesopleuron smooth and polished and very sparsely scattered with fine hair-bearing punctures. Propodeum with distinct lateral series of striae, striae posteriorly stronger and extended inwards to form a zone of arcuate striae in front of area apicalis, some locating close to this area strongly carinate, area dorsalis at base obliquely coarsely striate, medial furrow transversely and weakly striate, but in some specimens the striae fairly strong, disc and outsides of the area finely, very sparsely punctured, sides comparatively strongly, fairly closely punctured except anterior femoral sinus and transversely striate posterior area.

♀. On an average slightly larger than ♂ and differing from this as follows:

Fore and mid tibiae except blackish folded side and tibiae at base broadly ferruginous or pale yellow (but sometimes similar to ♂), hind T1 at base and apex yellow and medial dusky tone weaker, rather brown.

Head in frontal view relatively longer, W:L=100:90, eye incision narrower, subparallel-sided, with dorsal margin horizontal, IODs=4:3, antennal joints longer, clypeus longer, more distinctly and more broadly truncate at apex, in fresh specimens truncate area bevelled and shortly produced in middle (Fig. 212), but apical states variable (Figs. 213, 214 and 215), disc with apical reflection broader and stronger; pronotal lamina lightly toothed (Fig. 216), GSR similar, hind coxal process well developed, tuberculate and ferruginous in colour.

HW, HL, IODv, A3, P=100, 52, 24, 28, 160. IODs=10:7.5. OOD, Od, POD=2, 5, 3. A3=AWx 5. A3, 4, 5=10, 7, 6.5. A3:IODc=10:6.5. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 30(20), 36(25). RC=B, RL short. CV1=CV2x7. TCV:CV2=5:3, angle about 100°.

Holotype: ♂, New Guinea, Morobe Distr., Zeng - Lae Road, 200 m, Malaise trap, 17. I. 1965, J. Sedlacek (BPBM).

Paratypes: 1 ♂, 14.4 km west of Lae, 28-30. X. 1965, W. A. Steffan & Y. M. Huang (BPBM); 1 ♀, Papua, NE, Kalao, 750 m, 20-30. VIII. 1966, Mena & G. A. Samuelson (BPBM); 1 ♀, Papua, Northern Dist., Kokoda, 1200 ft, X. 1933, L. E. Cheesman (BMNH); 1 ♀, Morobe Dist., Lae-Zenag Road, 200 m, 14-19. I. 1979, J. Sedlacek (AEI); 2 ♀, Morobe Dist., Huon Peninsula, Finschhafen, 80 m, 16. IV. 1963, Malaise trap, J. Sedlacek (BPBM); 1 ♀, Western Highland Dist., Baiyer R. Valley, 1100 m, 26. XII. 1978 - 25. I. 1979, J. Sedlacek (AEI).

Remarks. One female specimen from the same locality as holotype is abnormal in the relative W:L of G1-3 and in the punctuation on sides of propodeum, namely, P, Ma, Mi, 2(Ma), 3(Ma)=100, 26, 9, 38(27), 42(38), and punctures on sides of propodeum stronger than usual and sparser on dorsal area and finer and closer on anterior and ventral area (except shining femoral sinus), and, besides, surface, except dorsal sparsely punctured area, obliquely and fairly closely striate and on posterior area without striae. Otherwise, however, very similar to other specimens.

In the female from Baiyer River, G3 distinctly ferruginous red and fore and mid tibiae on inside and hind T1 more broadly and distinctly black than in others.

In fore wing-venation ratio of CV1:CV2 is considerably variable among the specimens and can not be used strictly as a specific distinction, only of use in the com-

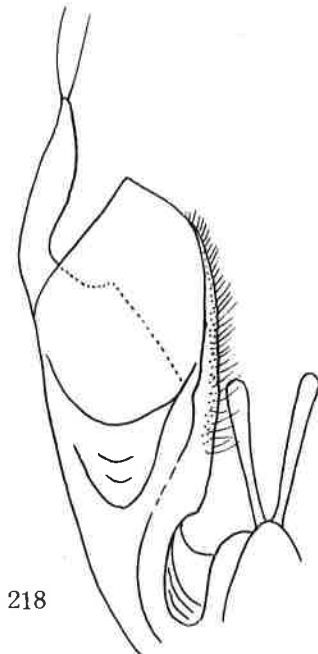
parison of the range of variation. In both sexes it varies from 5 to 7, mostly 5-6, TCV:CV2 most usually 3:2, but in one female it is 10:9, angle between the two veinlets is usually in the male 100°-110°, exceptionally 90°, in the female 90°-100°, exceptionally 110°.

Trypoxylon lae baiyerum ssp. nov.

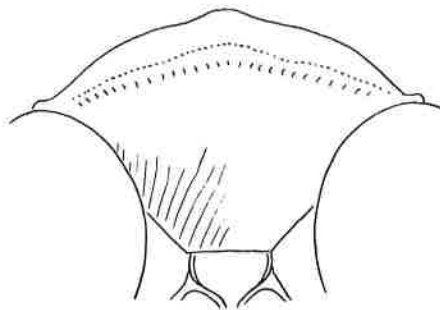
The present subspecies (σ) was considered at first to belong to a different species, judging from the external characters, but by examining the 8th sternite and the genital organs it was determined that it must be allocated within the specific category of lae, because the genital organs are completely, and the 8th sternite almost completely - apical sinus very slightly deeper than in lae -, consistent with those of lae. Judging from the height of the locality of the specimen it may be a montanic form of this species. The external differences:

- (1) A3 slightly longer than AW 2.
- (2) Frontal furrow somewhat deeper.
- (3) Gaster black and on G2-3 and 4 pale brown beneath.
- (4) Fore tibia except fore side and mid tarsus completely black.
- (5) Fore T1 and a patch on 5, mid and hind T1, 2 and 5 black or blackish brown, rest whitish.

Measurements: HW:HL in frontal view 100:82. HW, HL, IODv, A3, A13, P=100, 48, 25, 16, 28, 158. IODs=10:8. OOD, Od, POD=3, 4, 3. A3=AW \times 2.3. A3, 4, 5=10, 7, 7. A3:IODc=10:12.5. A13=BW \times 3.2 and \neq A9-12. P, Ma, Mi, 2(Ma), 3(Ma)=100, 17, 5, 33(20), 34(crashed). RC=B, RL short, CV1=CV2 \times 4.7. TCV:CV2=3:2. Angle about 95°.



218



217

Figs. 217-218.

Trypoxylon lae baiyerum ssp. nov., σ

Some supplements. SAT-ASR and pronotal lamina similar to those of lae s. str., but apical margin of clypeus slightly different: Fig. 217, microsculpture and punctuation on frons similar, but punctures on scutum (similar in strength) slightly sparser, on antero-lateral area mostly 2-3 times PD, area dorsalis enclosed with fairly distinct furrow, at base obliquely and coarsely striate, the striae comparatively long, median furrow anteriorly transversely striate, posteriorly smooth, disc finely sparsely punctured, lateral series of striae distinct on sides of posterior inclination of propodeum, sides strongly, fairly closely punctured.

♀, unknown.

Holotype: ♂, New Guinea, Western Highland Dist., Baiyer River, 1100 m, 25. I. - 6. II. 1979, J. Sedlacek (AEI).

Remarks. The following specimen is considered to belong to the present subspecies, judging from the similar characters of frons and A3 and the high altitude of the locality, but it is strongly faded in colour, possibly through too long exposure to CN vapour or the like and can not be identified with confidence:

1 ♂, Morobe Dist., Wau, 1250 m, 14. II. 1963, Malaise trap, J. Sedlacek (BPBM).

In this specimen A13 is longer, amply as long as A9-12 united, but this is possibly due to its extracted basal part. In colour antenna, G1, wing veins and all legs are pale brown and legs apically broadly pale yellow, G2-4 bright ferruginous and G5-7 alone darkened; body also strongly castaneous. The 8th sternite and the genitalia are just the same as in the present subspecies, although strongly discoloured and wholly amber yellow. In the genitalia of this specimen the shorter wider lobe of the paramere is well expanded and so it is shown in Fig. 218.

Measured values are slightly different, even when the probable errors are taken into consideration. Judging from the unknown colouration of the legs it may belong to another subspecies. Measurements:

HW:HL in frontal view 100:92. HW, HL, IODv, A3, A13, P=100, 48, 26, 16, 30, 156. IODv=10:8.5. OOD, Od, POD=4, 7, 5. A3=AW×2.3. A3, 4, 5=10, 7, 5, 7.5. A3:IODc=10:13. A13=BW×3.3 and ÷A9-12. P, Ma, M1, 2(Ma), 3(Ma)=100, 22, 10, 42(25), 43(34). RC=B, R1 short, CV1=CV2×5.4. TCV:CV2=5:3, TCV nearly straight, angle about 105°.

Punctures on frons and mesoscutum and sculpture and punctuation on propodeum are similar to those of lae baiyerum holotype.

40. TRYPOXYLON NOVAGUINEAE SP. NOV.

♀. Very closely resembles T. lae, differs in that clypeus at apical margin simply rounded, frontal furrow deeper (deeper than in ssp. baiyerum), with elevations on both sides more distinct, fore tibia more broadly and mid tibia nearly wholly black and mid tarsus on about apical half and hind tarsus completely dark brown or black.

Length 15-18 mm, on the average slightly larger than lae. Black; A1 and 2 narrowly brown at apices, mandible ferruginous, at apex brown, palpi yellow, posterior part of collar not discoloured, in some light apical margin appears narrowly brown, gaster from extreme apex of G1 (on sides extended anteriorly) to apex of G3 red, in some specimen G4 at base beneath or on sides ferruginous, usually without blackish mark above, if present much smaller and brown in colour; legs till apices of tibiae black, but all tibiae at base, fore and mid tibiae narrowly at apex also and fore tibia in front ferruginous, spurs ferruginous, but longer one of hind spurs brown or dark brown. Ground colour of tarsi pale yellow, but fore T5 brown or dark brown, mid T1 and 2 at apices and 3-5 wholly dark brown or black, hind tarsus completely black, often T3-4 somewhat brownish, arolia always black. Hair on clypeus silvery, at base strongly sinuately convergent towards medial line.

In structure (including SAT-ASR, occipital carina and hind coxal tubercle) and in punctuation very similar to lae. Slight differences:

(1) Apical margin of clypeus rounded, not truncate (Fig. 219, cf. Fig. 212), usually medio-apical area bevelled and posterior margin of bevelled area truncate and more or less incised in middle, bevelled area varied in length (Figs. 220, 221).

(2) Frontal furrow deeper, with elevations on both sides more marked.

(3) The hollow in which fore ocellus is located is distinctly deeper.

(4) Pronotal lamina triangularly produced, apex not toothed (Fig. 222).

(5) GSR usually not raised.

(6) Lateral furrows of area dorsalis weak, but somewhat more distinct than in

lae.

(7) Punctures on mesoscutum (similar in size) on an average sparser, on antero-lateral area usually 2-4 times PD and much sparser on medial area. In some specimens, however, punctures fairly close and difficult to separate the present species from lae in this respect.

(8) Punctures on sides of propodeum stronger and closer in general (in the present species not uniform in distribution, on dorso-posterior area sparser, surface without striae).

Measurements: HW:HL in frontal view 100:92. HW, HL, IODv, A3, P=100, 50, 23, 28,

155. IODs=10:7.7. OOD,Od,POD=2,6,4. A3,4,5=10,8,7. A3=AW×5.3. A3:IODc=10:7.2. P, Ma, Mi, 2(Ma), 3(Ma)=100, 18, 6, 32(22), 38(29). RC=B. R1 short, CV1=CV2×7. TCV:CV2=3:2. Angle about 90°.

♂, unknown.

Holotype: ♀, New Guinea, Morobe Dist., Markham River Valley, Nadzab, 14. V. 1944, K. V. Krombein (USNM).

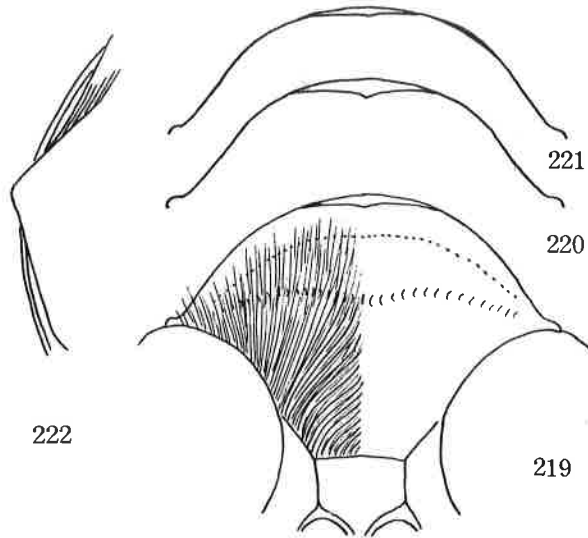
Paratypes: 1 ♀, same loco as holotype, 2. VII. 1944 K. V. Krombein (USNM); 1 ♀, Nadzab Terr., IX. 1944, U. N. Lanham (USNM); 1 ♀, Papua, Middle Fly River, 250-300 miles up, Pemberton (BPBM); 1 ♀, Milne Bay Dist., Milne Bay, III. 1944, K. V. Krombein (USNM); 2 ♀, Papua, Central Dist., Brown River, 1 mile DASF "block", 31. V. 1966, J. J. H. Ivany (in large numbers on moist Road in rain forest) (USNM).

Other specimen: 1 ♀, New Guinea NE, Telefonia, 1450 m, 4-7. IX. 1963, light trap, R. Straatman (BPBM) (it is strongly faded in colour).

Remarks. (1) CV1:CV2 is here also more or less varied, most usually it is 7:1, but sometimes 6:1 or 5:1, ratio of TCV:CV2 varies accordingly, sometimes nearly 4:3, angle usually about 90°, but rarely less than 90°. TCV in most specimens strongly sinuate or bent inwards.

(2) On PAF there is a fine shallow impressed line as a rule, but sometimes the impressed line completely disappeared and the place appears simply down-curved in cross section (dorso-lateral view).

(3) The female specimen that is shown as "other specimen" in the above list of material is identified with the present species with a query. In the characters of the frons and clypeus it well agrees with the present species, but it is strongly faded in colour, possibly through long exposure to CN vapour, or some other preserving medium. In this specimen antennae, legs and G1 are pale brown, G2-4 bright ferruginous yellow and only from G5 apically darkened. The presumption of the original colouration is almost impossible and it was dealt with as doubtful specimen. Moreover, in this specimen punctures on mesoscutum are finer than in others, though fairly close, and sides of propodeum more finely punctured than usual.



Figs. 219-222. Trypoxylon novaguineae sp. nov., ♀

41. TRYPOXYLON BISMARCKIANUM TSUNEKI, 1977

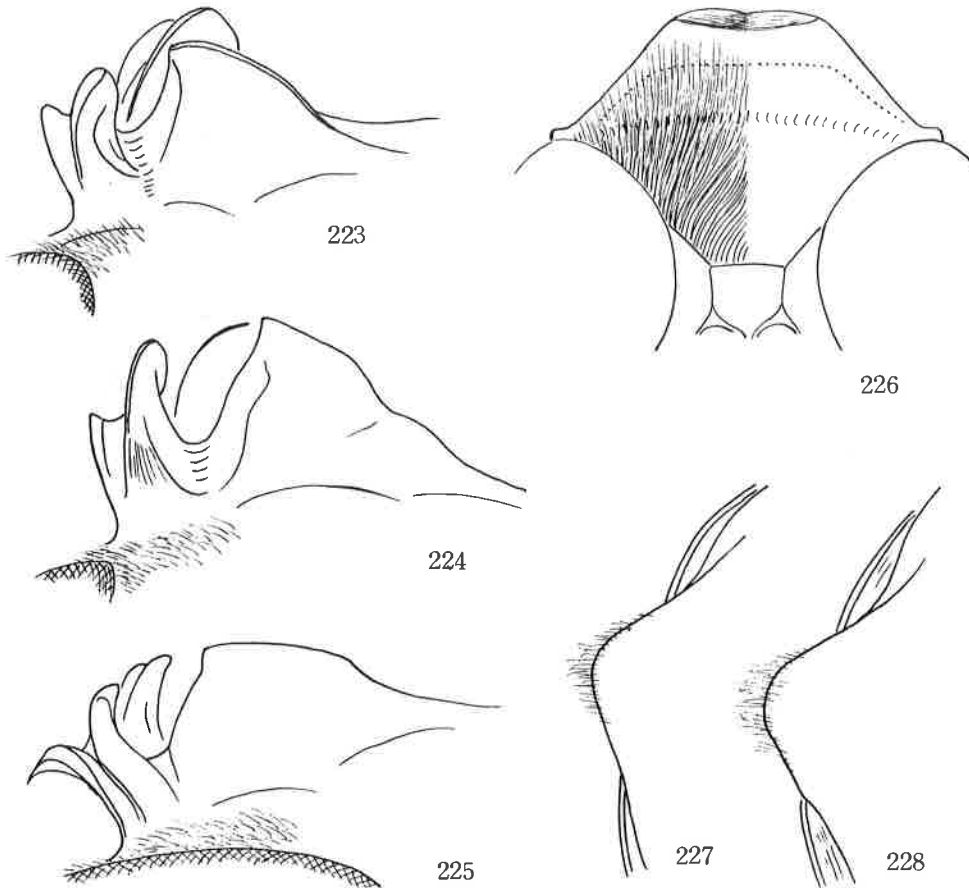
Trypoxylon bismarckianum Tsuneki, SPJHA, 6: 7, 1977 (♀, nec ♂) (2 ♀, New Britain, Figs.).

Main characters.

♀. 17 mm. G1 flask-shaped, propodeum without lateral carinae, mesoscutum simply punctured, without microsculpture; wholly black, only palpi, tibial spurs and fore T1 basally brownish white and mandible castaneous. IODs=10:9, A3=AW 5, SAT high short nasiform, PAF deep, flat-bottomed, ASR bicarinate, hind carina highly raised, strongly reflected, clypeus broadly truncate at apical margin, the area bevelled and medianly depressed, extreme margin broad-triangularly incised, disc at base roundly raised, with silvery hair strongly, sinuately convergent towards medial line, apical area markedly reflected, vertex distinctly depressed, eye incision narrow and gently narrowed towards bottom, dorsal margin horizontal, frontal elevations only gentle, pronotal lamina triangularly produced, apex minutely rounded, punctures on mesoscutum fine and sparse, PIS mostly 2-3 times PD; area dorsalis distinctly enclosed with fur-

row, disc smooth, lateral series of striae of the segment strong, area apicalis margined with arcuate carinae, GSR gently roundly elevated on apical margin.

HW:HL in frontal view 100:92, sides roundly convergent below. HW, HL, IODv, A3, P=100, 50, 22, 28, 166. IODs=10:9. OOD, Od, POD=2, 8, 4. A3=AWx5. A3, 4, 5=10, 6, 5, 6. A3:IODc=10:6. P, Ma, Mi, 2(Ma), 3(Ma)=100, 17, 6, 34(19), 34(26). RC=B. Rl short. CV1=CV2x5.6. TCV:CV2=3:2. TCV gently incurved, CV2 depressed and downcurved as usual.



Figs. 223-228. Trypoxylon bismarckianum Tsuneki, 1977, ♀.

SAT-ASR in dorso-lateral view: Fig. 223 (holotype), 224 (paratype, seen slightly more behind to see through PAF), in lateral view: Fig. 225. Clypeus: Fig. 226, pronotal lamina: Figs. 227 (holo) and 228 (para).

Specimens:

1 ♀ (holotype), Bismarck Archipelago, New Britain, Vaisisi, 9. VII. 1962, Noona Dan Expedition 1961-62 (ZMUC). 1 ♀ (paratype), New Britain, Yalom, 1000 m, 22. V. 1962, Noona Dan Expedition (ZMUC).

Remarks. The male specimen that was erroneously combined with the above females is in reality the male of a different species on which description will be made in the following section.

No new specimen of the present species could be found among numerous material investigated for the present Part.

♀. Closely related to *T. bismarckianum* m., but is distinguished from it by the following distinctions:

- (1) Clypeus at apical margin truncate and in fresh specimens bevelled and minutely roundly produced in middle.
- (2) SAT longer, with lateral inclinations somewhat gentler, PAF shallow, wide shallow V-shaped in cross section, ASR with carinae on top low and not reflected.
- (3) Legs completely black and tibial spurs also considerably darkened.

Diagnosis. ♀ 15-20 mm, ♂ 12-15 mm. Black except parts of appendages, G1 flask-shaped, mesoscutum without microsculpture, propodeum without lateral carinae, IODs=10:8-10:9 (♀ ♂), frontal elevations gentle, SAT nasiform, ASR, PAF, clypeus see above comparative note, genal process well developed, elongate and flatly roundly expanded, lamellate, posteriorly connected with buccal carina, A3=AW×5 (♀), AW×3 (♂), Al3=Al0-12, pronotal lamina toothed, subalar area normal, area dorsalis with very feeble lateral furrows or almost without furrow, angle formed by TCV and CV2 about 90°; male genitalia: Figs. 241-243, 8th sternite: Figs. 238-240.

♀. Mostly 18-20 mm. Mandible castaneous brown, darker at the margins, mouth parts brown, basal joint of palpi black-striped, tegula semitransparent castaneous, posterior part of collar not discoloured, gaster black, apical area of each segment in some light slightly yellowish. In some long preserved specimens mid and hind tibiae at base somewhat pale. Tibial spurs always brown or dark brown. Hair on clypeus silvery, at base strongly sinuately convergent towards medial line.

Head in frontal view with sides rounded, slightly convergent towards clypeus, W:L=100:92, vertex slightly depressed, tops of hind ocelli slightly below level of tops of eyes, eye incision narrow, subparallel-sided, with dorsal margin horizontal (strictly slightly raised outwards), frontal furrow broad, fairly deep and at above SAT flatly expanded laterally, elevations on both sides of the furrow gentle, rather small in outline, SAT moderately high nasiform, in vertical view nearly round in outline and acutely keeled in middle, the keel not reaching IAA, PAF shallow, wide V-shaped or down-curved in cross section, ASR apically bicarinate usually, SAT-ASR in dorso-lateral view to see through PAF: Fig. 229 (in holotype, this is the most usual form), in lateral view: Fig. 230, clypeus: Fig. 231 (in worn-out specimens simply truncate at apex). Genal process fairly well developed, in lateral view slenderly extended, but in postero-lateral view (hair should be removed) flattened, lamellate and lowering posteriorly to turn into buccal carina; Head in dorsal view hind ocellar area flatly depressed and raised posteriorly, hind ocellus not in a hollow, while fore ocellus in a broad shallow hollow which runs down forwards as frontal furrow, occipital carina complete. Measurements in holotype (see also Table 5):

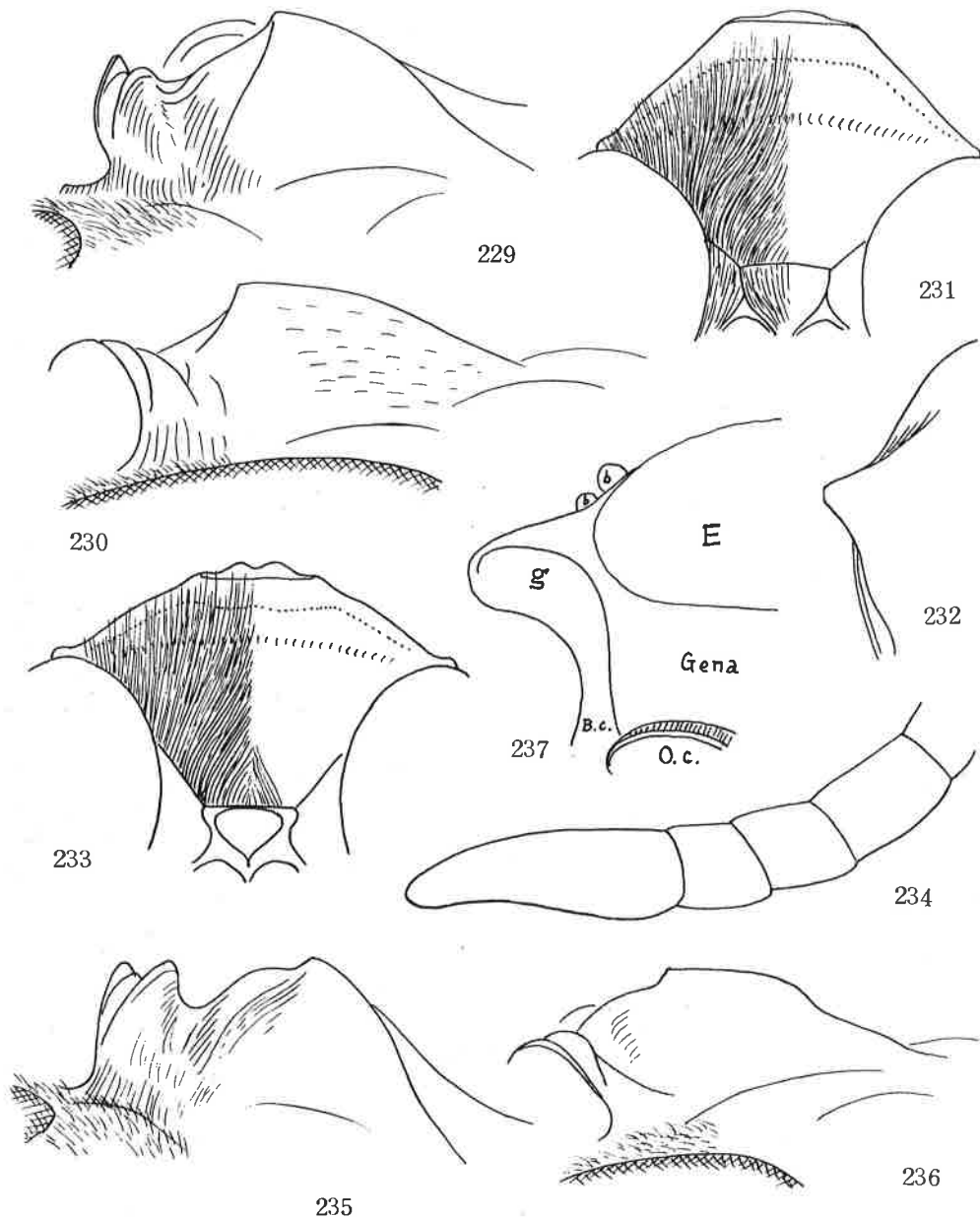
MW, HL, IODv, A3, P=100, 52, 22, 28, 172. IODs=10:8.5. OOD, Od, POD=3, 6, 4. A3=AW×5.3. A3:IODc=10:7.5. A3, 4, 5=10, 7.5, 7. P, Na, M1, 2(Na), 3(Na)=100, 20, 6, 30(21), 32(26). RC=B. M1 short. CV1=CV2×6.6. TCV:CV2=10:7. TCV incurved, CV2 strongly downcurved before apex (also the area is depressed as usual). Angle about 90°. Minimum width of G1 is just behind basal condyle, narrowest area before apical swelling is relatively 6.5.

Collar with anterior part shorter in middle than posterior part, round ridge-like and widened laterally, with anterior margin roundly emarginate, in frontal view dorsal margin broad subtriangular, with top weakly tuberculate, lamina on side distinctly toothed, but with apex not pointed (Fig. 232), parapsidal suture normally impressed, deep, pure black and strongly contrasted to the dull plumbeous reflection of the surroundings, propodeum with basal elevation not marked, narrow ridge-like, medial furrow of area dorsalis not deep and enlarged posteriorly, area apicalis with high lateral carinae, carinae anteriorly curved inwards, lowering, dorsal marginal area bordered with a few arcuate striae or fine carinae, GSR almost not raised, uniform band-like, intercoxal carina gently up-curved, at the posterior end raised again and roundly enlarged laterally, hind coxal tubercle only slightly produced, not conspicuous.

Frons very minutely, delicately microcoriaceous, mat and fairly closely superimposed with comparatively large shallow punctures, PIS 1-2 times PD, anterior area just above SAT with surface shining and more closely covered with similar punctures, SAT closely covered with piliferous punctures, mesoscutum on antero-lateral area finely and sparsely punctured, punctures usually irregular in distribution, PIS 2-5 times PD, on median area punctures much sparser; propodeum with weak lateral series of striae, usually defined only on sides of posterior inclination and sometimes completely lacking, area dorsalis at base coarsely crenate, medial and lateral furrows sometimes

completely without striae, but sometimes partly transversely, feebly striate, sides except anterior femoral sinus finely, fairly closely covered with fine piliferous punctures, on ventral part mixed with feeble oblique striae, posterior area sometimes similarly punctured, but sometimes transversely weakly striate.

♂. Similar in general to ♀, but head in frontal view shorter, W:L=100:88, cly-shorter and somewhat different in apical form (Fig. 233), eye incision comparatively wider, IODv wider (Table 5), though IODs is similar, antennal joints shorter except long deformed AL3 (Fig. 234), ASR shorter, with dorsal carina higher and hind one somewhat reflected (Fig. 235, dorso-lateral view), PAF deeper (moderately deep, bot-



Figs. 229-237. *Trypoxylon solomonense* sp. nov. (229-232, ♀; 233-237, ♂)

tom line up-curved, U-shaped in cross section, SAT-ASR in lateral view: Fig. 236, genal process much better developed than in ♀, seen in profile (somewhat from backwards) well observed (Fig. 237, hair should be removed, E ... eye, g ... genal process, b ... small process at base of mandible, B.C. ... Buccal carina, O.C. ... Occipital carina) (in ♀ more obliquely located, in profile appears like a short slender rod-like protuberance, to observe its true feature it must be observed somewhat from behind).

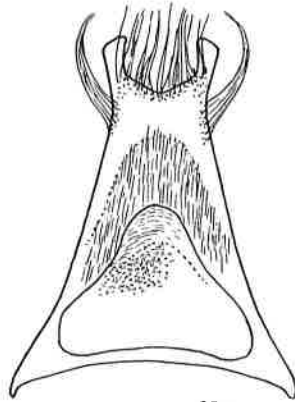
Measurements of one of paratypes (from S. Mal Supaina, this is not in Table 5): HW, HL, IODv, A3, AL3, P=100, 48, 25, 19, 24, 146. IODs=10:9. OOD, Od, POD=4, 7, 4. A3=AW×3.5. A3, 4, 5=10, 7, 7. A3:IODc=10:12. AL3=BW×3 and ≠AL0-12. P, Ma, Ni, 2(Ma), 3(Ma)=100, 18, 6, 31(22), 32(26). RC=B. RL short. CV1=CV2×6. TCV:CV2=4:3. TCV nearly straight. Angle about 90°.

The 8th sternite in ventral view (seen from outer side): Fig. 238, body comparatively slender, apical process always wider at apex than at its base, with sinus unrelated (Figs. 239, seen from outer side, specimen from Guadalcanal, 240, ditto, specimen from Vella Lavella). Genitalia in ventral view: Fig. 241 (specimen from Guadalcanal), in ventro-lateral view: Fig. 242 (penis omitted, specimen from San Cristobal), seen vertically from dorsal side: Fig. 243, right paramere omitted, notice left paramere with shorter apical lobe bent and folded inwards at apex, V... apex of volsella). Paramere split into two lobes at apex, a longer slender dorsal one and a shorter wider ventral one, the latter thin, lamellate and frequently bent or folded dorsally at apex (Fig. 243, dorsal view). In structure genitalia is similar to those of *lae*, but ventral layer of paramere is not so wide as in *lae* and without fringe of hair on inner margin, and volsella distinctly wider than in this species.

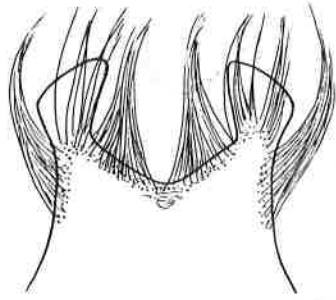
Holotype: ♀, Florida Island, Tulagi, 12. VIII. 1933, collecting mud, H. T. Pagden (BMNH).

Paratypes: 20 ♀ 10 ♂: 1 ♀, Bougainville Is., Kieta, 26. XI. 1959, T. C. Maa (BPBM); 1 ♀, Choiseul Is., Malangona, 30 m, 14. III. 1964, Malaise trap, P. Shanahan (BPBM); 1 ♀, Vella Lavella Is., Pusiasama, 17. XI. 1963, Malaise trap, P. Shanahan (BPBM); 2 ♂, Bella Lavella Is., Ulo Crater, 10 m, 8. XII. 1963, Malaise trap, P. Shanahan (BPBM); 2 ♂, Bella Lavella Is., Suanatali, Dobrii, 24. IX. 1933, H. T. Pagden (NIMB); 1 ♀, New Georgia Group, Gizo I., 1-100 m, 11. VII. 1959, J. L. Gressitt (BPBM); 1 ♀, Gizo I., Mundo Pt. Area, 3. VII. 1944, J. G. Franclemont (USNM); 1 ♀, Santa Ysabel Is., Tamatahi - Koloau, Jungle track, 4. VII. 1960, C. W. O'Brien (BPBM); 1 ♂, Santa Ysabel Is., Buala, 27. VI. 1960, C. W. O'Brien (BPBM); 2 ♀ 1 ♂, Russel Is., Pepesala, 0-100 m, 18, 20. VII. 1964, Malaise trap, R. Straatman (BPBM); 1 ♀, Russel Is., Pavuvu I., 20. IV. 1945, G. E. Bohart (CAS); 1 ♀, Florida Is., 26. I. 1935, Sasapi collecting, H. T. Pagden (BMNH); 3 ♀, Florida Is., Nggela I., 20. III. 1934, Jungle near Halaita, H. T. Pagden (NIMB); 1 ♀, Florida Is., Haleta, 200-250 m, 10. X. 1964, Malaise trap, R. Straatman (BPBM); Malaita Is., 2 ♀, Dala, 22. VI and 3. VII. 1964, J. Sedlacek (BPBM); 1 ♂, Guadalcanal Is., Honiara, 0-200 m, X. 1972, N. L. H. Krauss (BPBM); 1 ♀, Guadalcanal Is., 30 km west of Honiara, 25. V. 1964, Malaise trap R. Straatman (BPBM); 1 ♀, Guadalcanal Is., Roroni, 35 km east of Honiara, 10 m, 14. V. 1964, R. Straatman (BPBM); 1 ♀, San Cristobal Is., Wairahu river, 100 m, 9-15. V. 1964, J. Sedlacek (BPBM); 1 ♂, San Cristobal Is., Wugiroga, 8. VIII. 1960, C. W. O'Brien (BPBM); 1 ♂, Solomon Is. S. Mata, Supaina, 22. V. 1934, R. A. Lever (BMNH)

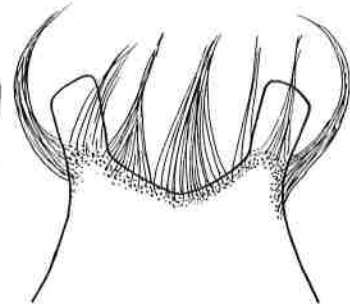
Other specimens: 57 ♀: Bougainville I. 1 ♀, Kokur, 690 m, 14. VI. 1958, E. J. Ford Jr. (BPBM); 1 ♀, Kieta, 26. XI. 1959, T. C. Maa (BPBM). Choiseul I. 2 ♀, Malangona, 30 m, 14. III. 1964, Malaise trap, P. Shanahan (BPBM). Vella Lavella I. 1 ♀, Pusiasama, 17-18. XI. 1963, Malaise trap, P. Shanahan (BPBM); 1 ♀, Ulo Crater, 10 m, 8. XII. 1963, Malaise trap, P. Shanahan (BPBM). New Georgia Group. 1 ♀, Gizo I., 90 m, 27. VI. 1964, J. & M. Sedlacek (BPBM). Santa Ysabel I. 1 ♀, Tamatahi, 450 m, 2. VII. 1960, C. W. O'Brien (BPBM); 2 ♀, Tamatahi - Koloau, Jungle track, 4. VII. 1960, C. W. O'Brien (BPBM). Russel I. 1 ♀, Pavuvu I., 20. IV. 1945, G. E. Bohart (CAS) Florida I. 1 ♀, Tulagi, 12. VIII. 1933, collecting mud, 5 ♀, 16. XII. 1934, Jungle, collecting mud, 5 ♀, 25. XII. 1934, Sasapi collecting; 1 ♀, 26. I. 1935, Sasapi collecting, all leg. by H. T. Pagden (NIMB); 1 ♀, Siota, III. 1945, G. E. Bohart (CAS); Nggela I., 3 ♀, 20. III. 1934, Jungle near Halaita, H. T. Pagden (NIMB); 2 ♀, Haleta, 200, 250 m, 12. X. 1964, 2 ♀, Haleta, 0-100 m, 6. X. 1964, 200-250 m, Malaise trap, R. Straatman (BPBM); Malaita I. 1 ♀, Numa Lava, 25 km NE of Dala, 200 m, 16. VI. 1964, J. Sedlacek (BPBM); 2 ♀, East of Kwalo and east of Auki, 350 m, 29. IX. 1957, J. L. Gressitt (BPBM); 2 ♀, NW area, Dala, 13. VI. 1964, Malaise trap, R. Straatman (BPBM); 7 ♀, Dala, 50 m, 9-14, 22. VI. 1964, J. Sedlacek (BPBM). Guadalcanal I. 1 ♀, Tapenanje, 10-23. XII. 1953, J. D. Bradley (BMNH); 1 ♀, 1945, E. Reimscheissel (MCZ); 1 ♀, Honiara, 22. IV. 1964, R. Straatman (BPBM); 1 ♀, Tambalia, 30 km west of Honiara, 21. V. 1964, Malaise trap, R. Straatman (BPBM); 1 ♀, Lunga River (Bridge)



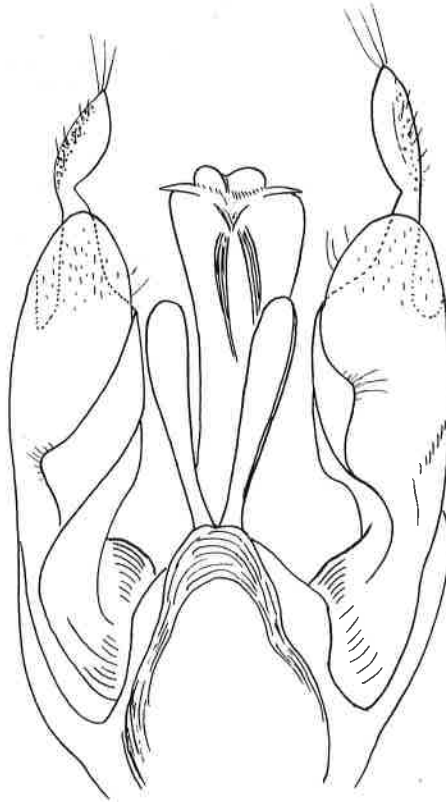
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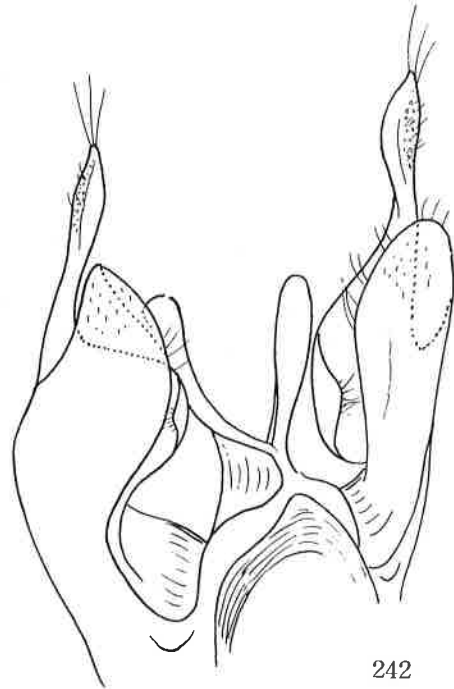
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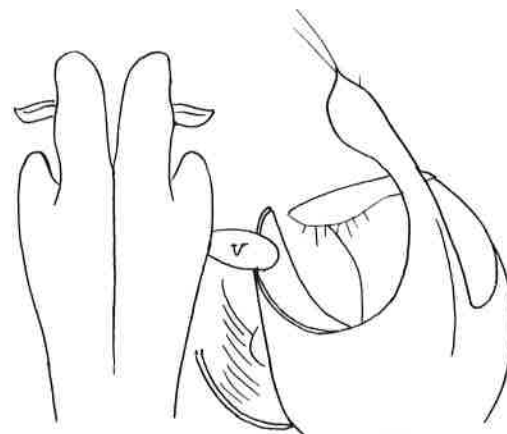
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241



242



243

Figs. 238-243.
Trypoxylon solomonense
sp. nov., ♂

4.IX. 1960, C.W. O'Brien (BPBM). San Cristobal I. 1 ♀, Kira-Kira, 0-50 m, 15. XI. 1964, R. Straatman (BPBM); 1 ♀, Wairahu River, 100 m, 9-10. V. 1964, Malaise trap, J. Sedlacek (BPBM); 1 ♀, Wugiroga, 8. VIII. 1960, C. W. O'Brien (BPBM). Solomon Is. 2 ♀, 9. III. 1884 (BMNH, 1 ... headless, 1 ... gasterless). 1 ♀, Vella Jurio, 22. IX. 1936, R. A. Lever (BMNH)

New Guinea. 1 ♀, Papua, Western Dist., Kiunga, Fly River, 9. IX. 1957, W. W. Brandt (BPBM)

Philippines.* 1 ♀, Luzon, Camarines Sur, Mt. Isaroy Pili, 800 m, 1. V. 1955, H. M. Torre Villas (BPBM).

Remarks. The asterisked locality is doubtful. The insect may be a strayed one or the specimen may be mislabelled.

Variation in characters.

(1) Relative length of body parts used in measurements.

Of the Island populations those of Bougainville and Choiseul were first measured with 3 specimens (♀) respectively. As the results were fairly constant the populations of other Islands, except Guadalcanal, were represented by a single specimen (♀ and ♂) only. As for Guadalcanal 5 individuals were especially measured for comparison with a closely related different species occurring on this Island (of Table 6). According to the results, the Island populations do not show as yet so remarkable differences between them as to be dealt with as the geographical races, as far as the measured characters are concerned.

Table 5. Measurements with Trypoxylon solomonense sp. nov., ♀

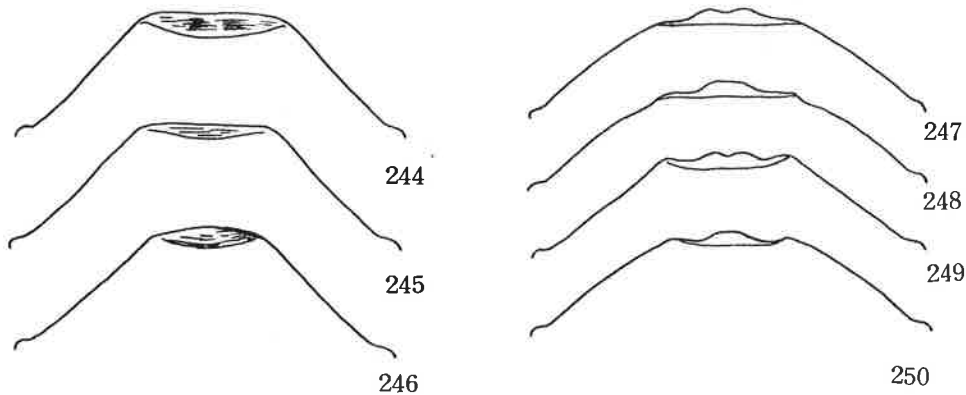
Locality	IODv	A3(L/W)	A13(L/W)	P	POD	IODc	IODs	CV1	CV2	Angle
Bougainville	24	30(5.8)	---(---)	177	3	6.5	8.3	5.6	8.0	90
Bougainville	23	29(5.4)	---(---)	172	3	6.5	8.2	7.3	7.5	90
Bougainville	22	30(5.5)	---(---)	176	3	6.7	9.0	5.6	8.0	90
Choiseul	22	28(5.5)	---(---)	166	3	6.7	9.0	5.8	7.0	90
Choiseul	23	28(5.4)	---(---)	166	3	6.5	8.5	6.4	7.5	90
Choiseul	22	27(5.4)	---(---)	166	3	7.0	8.5	6.3	7.0	90
New Georgia	22	28(5.7)	---(---)	172	3	6.5	8.3	6.7	6.5	90
Santa Ysabel	23	28(5.5)	---(---)	170	3	6.5	8.0	7.0	7.5	90
Malaita	23	27(5.4)	---(---)	160	3	6.7	8.0	6.5	7.0	90
Guadalcanal	23	28(5.7)	---(---)	173	3	6.5	8.3	6.8	6.5	90
Guadalcanal	22	28(5.5)	---(---)	172	3	6.5	8.0	7.0	7.5	90
Guadalcanal	23	28(5.4)	---(---)	170	3	6.4	8.0	6.5	7.6	90
Guadalcanal	22	28(5.5)	---(---)	174	3	6.5	8.0	6.0	7.0	90
Guadalcanal	23	28(5.5)	---(---)	172	3	6.7	8.0	6.3	6.5	90
San Cristobal	22	28(5.3)	---(---)	168	3	7.0	8.3	5.8	7.5	90
New Guinea*	23	29(5.4)	---(---)	172	3	6.5	8.5	6.2	7.0	90
Philippine*	23	28(5.4)	---(---)	180	3	7.0	9.0	7.0	7.5	85
Vella Lavella	25	19(3.1)	24(3.1)	146	2	12.5	9.0	5.9	8.0	90
Santa Ysabel	26	19(3.0)	24(3.3)	148	2	12.0	9.0	6.0	7.5	90
Russel	26	19(3.0)	24(3.3)	158	2	12.5	8.5	6.0	7.0	90
Guadalcanal	24	18(3.1)	24(3.4)	161	3	12.7	9.0	4.5	9.8	95
San Cristobal	24	19(3.2)	25(3.1)	162	3	11.5	9.0	5.6	7.5	90

Remarks. IODv, A3, P ... Relative length when HW is 100.
 POD When OOD is 2.
 IODc When A3 is 10.
 IODs IODc when IODv is 10.
 CV1 CV1/CV2.
 CV2 Relative length of CV2 when TCV is 10.
 Angle Angle between TCV and CV2 (degree).
 The locality marked with * is doubtful.

(2) Apical Margin of clypeus.

In fresh specimens in females (judged by the grade of rubbing down of mandible) apical truncated part is always bevelled. The form and the relative width of this bevelled area are considerably varied as given in Figures 231 (Florida specimen), 244 (New Guinea), 245 (Luzon) and 246 (Florida). This is also the case in males: Figs. 233 (Vella Lavella), 247 (San Cristobal and Vella Lavella), 248 (Russel and Vella Lavella), 249 (Santa Ysabel) and 250 (Guadalcanal).

It is a questionable fact, however, that in the male the medio-apical truncated and bevelled part is always produced in middle either in one or in two minute lobes. This is, together with the structure of ASR, the reason why the male is not selected as the holotype, in connection with the closely allied relatives that will be described later.



Figs. 244-250. Trypoxylon solomonense sp. nov., apical margin of clypeus

(244-246 ♀, 247-250 ♂)

(3) SAT-ASR.

In ♀ in dorso-lateral view to see through PAF the form of dorsal margin of ASR, swelling grade of antero-lateral part of SAT and state of PAF are considerably variable without connection with the locality as given in Figs. 229 (Florida), 251 (Malaita), 252 (Guadalcanal), 253 (San Cristobal), 254 (Bougainville), 255 (Russel) and 256 (Russel and New Georgia). While in the male the carinae of ASR are usually more highly raised than in the female and hind carina is somewhat reflected: Figs. 235 (San Cristobal), 257 (Vella Lavella, San Cristobal), 258 (South Mala, Guadalcanal and Santa Ysabel), 259 (Vella Lavella), 260 (Russel) and 261 (Vella Lavella, Guadalcanal). Notice that in Fig. 260 ASR is tricarinate on top!

As to the female, in 3 out of 4 Russel Island specimens and in one of the New Georgia specimens hind carina is slightly reflected as given in Figs. 255 and 256. The fact is worthy of notice in relation to the closely related other species (malaitae sp. nov. later described).

(4) Genal process.

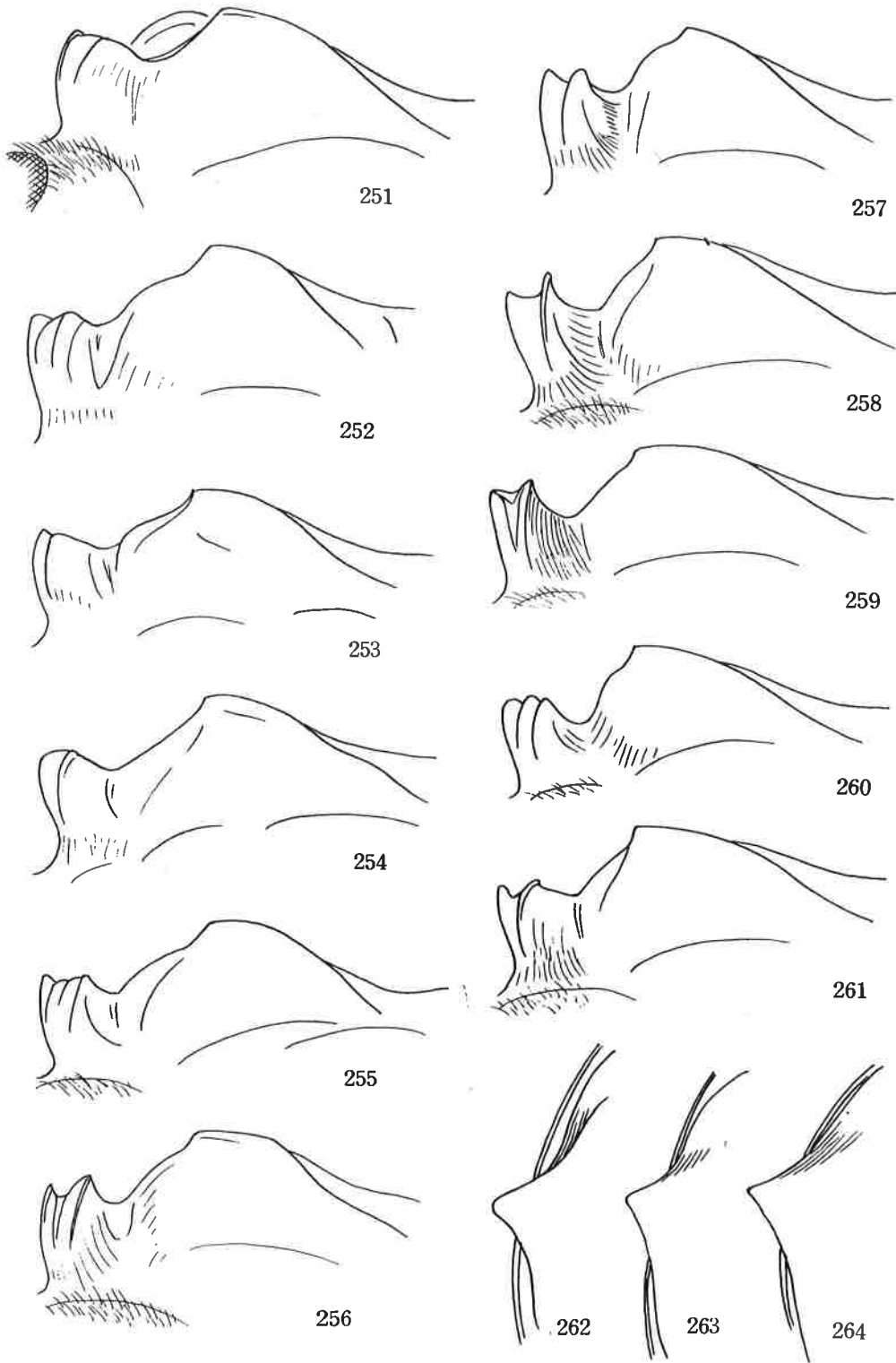
The fundamental form of genal process as shown in Fig. 237 is constant to the species, but the relative length or width of the process, the running state of its anterior and posterior margins are more or less variable. Sometimes it is comparatively wider, but sometimes narrower, with lateral margins usually somewhat convergent apically as given in Fig. 237, but sometimes the margins subparallel-sided and rarely somewhat divergent apically.

(5) Pronotal lamina.

In general the apex of the lamina is distinctly toothed, and sometimes reflected. In the holotype the toothed apex is comparatively broadly rounded (Fig. 232). But it is also more or less varied as given in Figs. 262-264.

(6) Sternite 8 and genitalia.

Four examples were examined with specimens from San Cristobal, Guadalcanal, Vella Lavella and Vella Lavella. Genitalial structure (Fig. 241, ventral view, specimen



Figs. 251-264. *Trypoxylon solomonense* sp. nov.

from Guadalcanal), 242 (ventro-lateral), 243 (dorso-apical, both from San Cristobal) is constant, but sternite 8 is more or less varied in the relative width of latero-apical processes and in the comparative distance between them (Figs. 238, ventral - San Cristobal) 239 (apical part, ventral or from beneath - Guadalcanal) and 240 (do. Vella Lavella).

Remarks. In regard to the Philippine specimen I have a doubt about the correctness of the attached label, just as in the case of the two papuanum specimens recorded from Luzon. To me it seems that they might be mislabelled, because (1) judging from the locality there is little possibility that they are the strayed insects by wind or artificial means, (2) both are recorded from Luzon only, without being collected from Mindanao and other Islands lying nearer to New Guinea and (3) the specimens, both are not collected by the scientist.

As to the New Guinean specimen there is also a problem. This is the single specimen of this species collected in New Guinea, and its locality is not close to the Solomon Islands, but a remotely separated area, at about central part of the Island - Papua, Western District, Kiunga along Fly River. If the attached label is correct the specimen may be a strayed insect, because this species, despite its flourishing occurrence in the Solomon Islands, it has not been found even in New Ireland, New Britain and southeastern part of Papua New Guinea.

At any rate, as to the correctness of these records future confirmation is necessary.

In structure both the specimens concerned well agree with those of the Solomon Islands (cf. Table 5). In both the genal process and pronotal lamina are typical and the lateral series of striae of propodeum are also within the range of variation of the species, although they are slightly more distinct anteriorly, but here each stria consists of 2 or 3 weak dots and very incomplete.

43. TRYPOXYLON KALILICUM SP. NOV.

Trypoxylon bismarckianum Tsuneki, SPJHA, 6: 7, 1977 (♂ nec ♀, holotype is ♀).

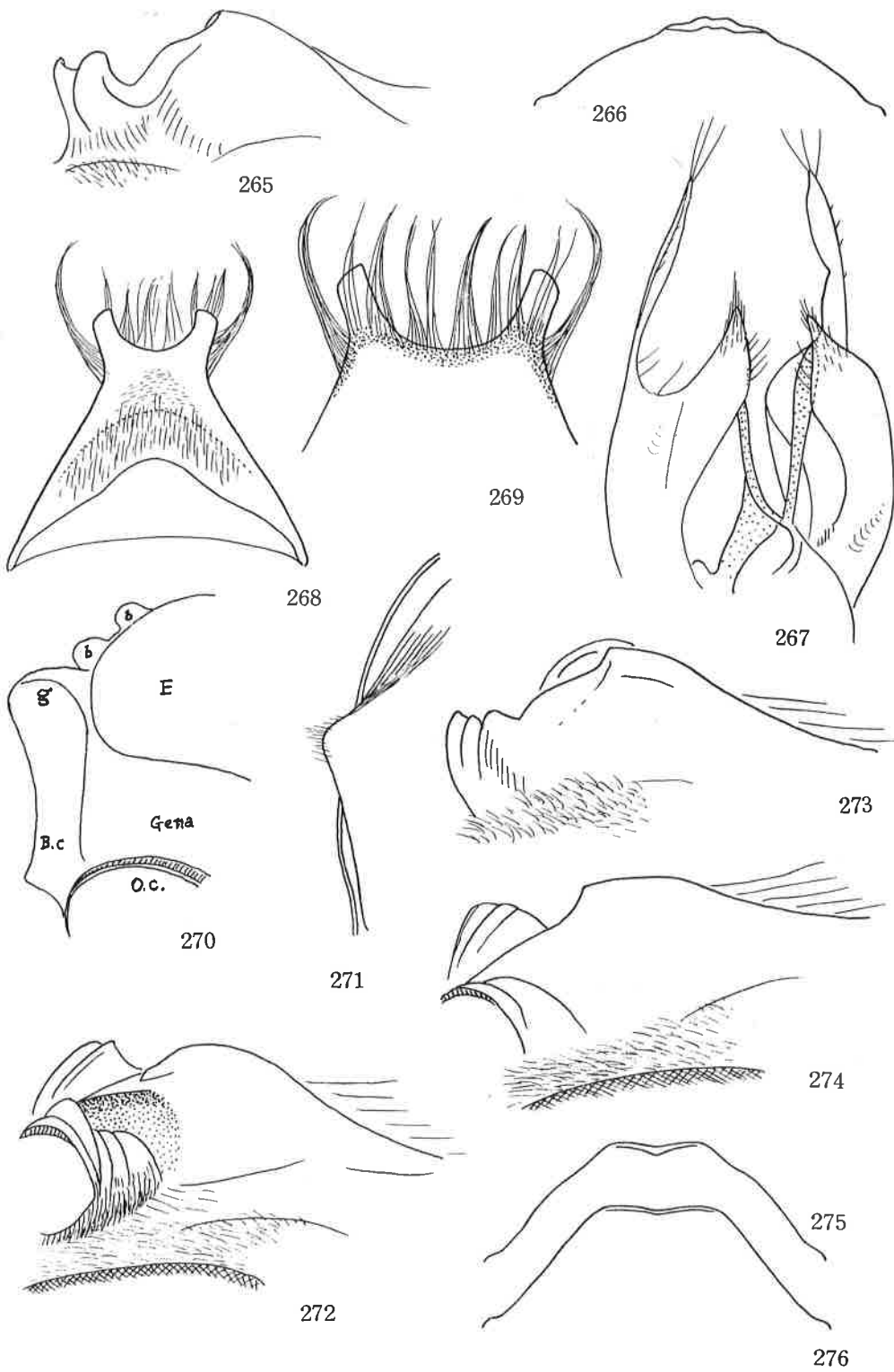
The holotype male specimen of the present species was at my first investigation in 1977 erroneously combined with the female of T. bismarckianum as its different sex, mainly because of the scanty material and considerably resemblance.

Apparently the present species is very similar to T. solomonense described in the preceding section and until the detailed comparison of their genital organs were made it was not thought of that they belonged to a separate species respectively. As to the paratype females of the present species they are combined with the holotype male, basing upon the agreement of some non-sexual characters that are slightly different from solomonense, as well as upon their sympatric occurrence. So close in appearance are the present species (♀ and ♂) to solomonense that they seem to be likely identified with this species, because the differences above mentioned are mostly rather difficult to confirm and easy ones appear to be mere variations within a species.

First, the reason why the male is separated from bismarckianum is given. In the female of bismarckianum PAF is deep, flat-bottomed, U-shaped in cross section (Figs. 223, 224), while in the present male it is shallow, with bottom line up-curved and wide V-shaped in cross section (Fig. 265). This is reverse to the case where PAF is different in depth between the sexes of the same species of the present genus. Moreover, the differences between them in the form of ASR (same figures) and fundamental pattern of apical margin of clypeus (Fig. 266, cf. Fig. 226) are beyond the sexual difference of the same species. Pronotal lamina of the male is also more minutely rounded at apex than in the female (Fig. 271, cf. Fig. 227). Still further, in the strict sense they are not sympatric, the female of bismarckianum are collected in New Britain, while the male is in New Ireland.

The specific difference of the male from the same sex of solomonense lies chiefly in the character of the paramere of the genital organs. The ventral one of apical two lobes of paramere is narrower and at apex more pointed in the present species, and moreover, distinctly covered and fringed with hair (Fig. 267, cf. Figs. 241-243). The 8th sternite is also slightly different. It is relatively shorter, wider and with apical processes are not widened apically and with sinus not angulated (Figs. 268, 269 of. Figs. 238-240). Further differences:

(1) Genal process is only moderately developed in the present species, shorter. It is similarly expanded and lamellate, but at the posterior connection with the buc-



Figs. 265-276. *Trypoxylon kalilicum* sp. nov. (265-272 ♂, 273-276 ♀)

cal carina it is not abruptly lowered, but gradually so (Fig. 270, ventro-lateral corner of head, left side, placed fore side up and seen from outer side, hairs were removed, E - eye, g - genal process, b - short process at base of mandible, b.c. - buccal carina, O.c - occipital carina; cf. Fig. 237 in *solomonense*).

(2) Lamina on side of pronotum is not toothed (Fig. 271, cf. Fig. 232).

(3) Lateral series of short striae of propodeum are from about middle of dorsal aspect posteriorly defined, strong, close and distinct, in *solomonense* the series is not well developed, anteriorly indistinct, only on side of posterior inclination of the segment observed, and further, they are shorter, sparser and weaker.

Some supplements.

Length 16.5 mm. Head in frontal view with sides rounded, gently convergent towards clypeus, $W:L=100:82$, vertex depressed, tops of hind ocelli below level of tops of eyes, eye incision broad and narrowed towards sinus, dorsal margin slightly inclined outwards, frontal furrow broad and shallow, elevation on both sides gentle and comparatively small in outline, SAT in vertical view acute triangularly produced between oblique PAFs and median carina reaching almost apex of SAT, having a narrow somewhat flattened area along its apical area which is bluntly edged at verge to PAF (Fig. 272, oblique lateral view, cf. Figs. 229, dorso-lateral and 230, lateral). The same structure is often observed in *solomonense* ♂ also, but not always so and, moreover, in this species median carina not reached apex of SAT, leaving smooth inclining area anteriorly. Possibly in *kilikum* also the structure is variable. Occipital carina high and complete, broadly triangularly incised behind buccal cavity.

Measurements: HW,HL,IODv,A3,A13,P=100,48,25,20,23,160. IODs=10:9. OOD,Od,POD=4,9,4. $A3=AW \times 3$. $A3,4,5=10,7.5,7$. $A3:IODc=10:11.5$. $A13=BW \times 3.2$ and $=A10-12$. P, Ma, Mi, 2(Ma), 3(Ma)=100,15,5,30(20),32(27). RC=B, R1 short, $CV1=CV2 \times 5.6$. TCV:CV2=3:2. TCV incurved, angle about 95°. Collar with anterior part short, weakly widened towards sides, posterior part incompletely discoloured, in some light appears brownish, basal elevation of propodeum about 1/3 the length of postscutellum, lower than this, lateral furrows of area dorsalis very feeble. Area apicalis complete, anteriorly closely covered with striae, GSR weakly roundly raised at apical margin, not remarkable.

Frons fairly well shining, microsculpture weak, punctures medium-sized, on anterior area close, on elevations sparse, PIS 1.5-2 times PD, mesoscutum with plumbeous shine, punctures finer than on frons, sparse, on antero-lateral area PIS 2-3 times PD and finer and sparser medianly and posteriorly, area dorsalis at base obliquely and strongly striate, on median furrow weakly obliquely striate, disc shining, bearing very fine sparse punctures, sides finely sparsely punctured, on ventral area except anterior femoral sinus feebly obliquely striate, striae on posterior area stronger.

♀, 18-19 mm. Similar to ♂ in general and also to *solomonense* ♀. Differences from ♂ except usual secondary sexual ones are:

SAT smoothly inclined anteriorly, with median carina not reaching there and not deged at the verge to PAF, ASR bluntly tricarinate on top: Figs. 273 - dorso-lateral, 274 - lateral (but this may vary). Punctures on frons generally similar, but distribution sometimes irregular, mesoscutum less shining, with punctures closer, disc of area dorsalis sometimes finely sparsely, sometimes more distinctly and more closely punctured, median furrow smooth and shining or feebly striate, sides similarly punctured and striate, but striae on ventral area stronger. In two specimens observed mandibles considerably abraded and apical margin of clypeus also rubbed down as given in Figs. 275 and 276. Measurements:

HW:HL in frontal view 100:92. HW,HL,IODv,A3,P=100,50,23,28,174. IODs=10:6.5. OOD,Od,POD=2,6,3. $A3=AW \times 5.3$. $A3,4,5=10,6.5,6$. $A3:IODc=10:7$. P, Ma, Mi, 2(Ma), 3(Ma)=100,16,5,27(20),27(24). Narrowest part of P is at base, just behind basal condyle. RC=B. R1 short. $CV1=CV2 \times 6$. TCV:CV2=3:2. Angle about 90°.

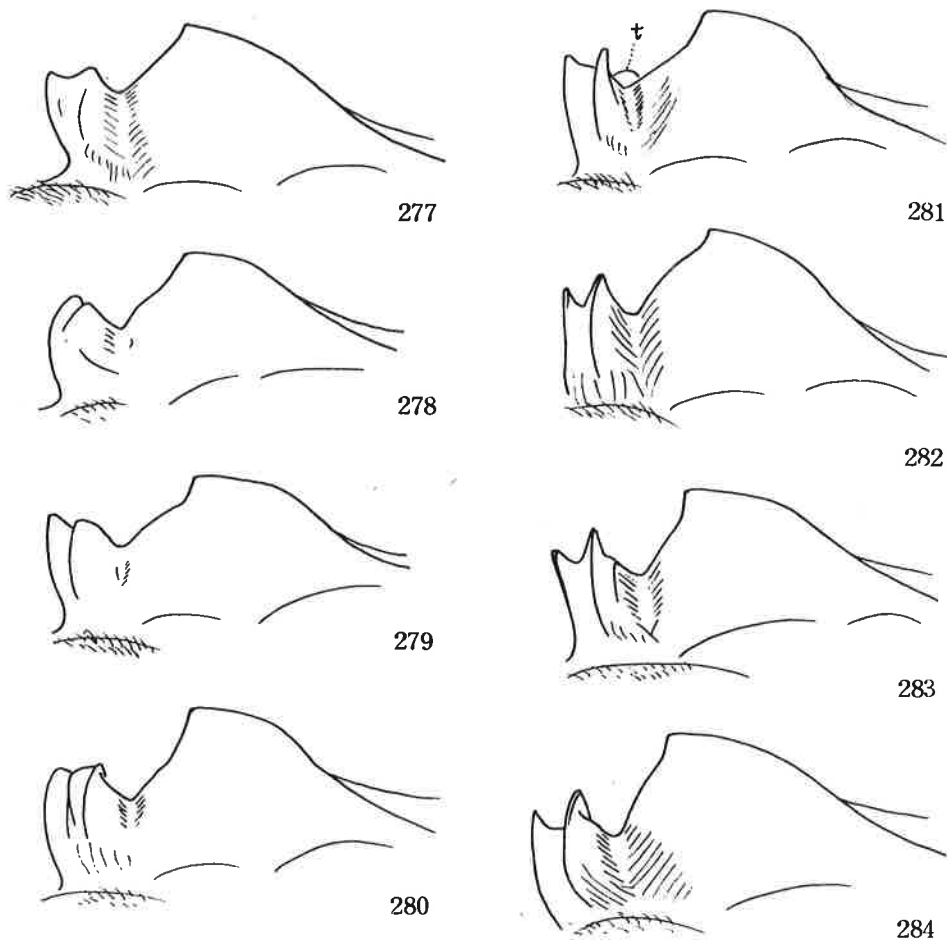
Holotype: ♂, Bismarck Archipelago, New Ireland, Danu, Kalili Bay, 1. III. 1962, Noona Dan Expedition, 1961-62 (ZMUC).

Paratypes: 1 ♀, Bismarck Archipelago, New Ireland, Knogogo road near Karu Plateaux, 40 km north of Namatanai, 10-11. XII. 1969, J. E. Tobler (CAS); 1 ♀, New Ireland (SW), Gilingil Plantation, 2 m, 17. VII. 1966, E. J. Ford Jr. (BPEM).

44. TRYPOXYLON MALAITAE SP. NOV.

The present species (♀) is also closely resembles *T. solomonense*, but is separable from it by the following differences:

- (1) Frontal furrow deeper, as a result rounded elevations on both sides of it appear much more marked.
 (2) On an average PAF deeper, distinctly V-shaped in cross section.
 (3) Genal process much less developed, shorter, gradually turning posteriorly into buccal carina.
 (4) Fore tibia at base in front, all tibial spurs and fore tarsus brown or pale brown, spurs and fore Tl especially paler.
 (5) According to measurements (Table 6) IODv relatively slightly greater, IODs smaller (=4:3, in solomonense 10:8 or 10:9) and A3 somewhat shorter, further, relative length of P, L/W of A3, ratio of IODc to A3 and of POD to OOD show slightly difference respectively.
 (6) Body length on the average smaller.



Figs. 277-284. Trypoxylon malaitae sp. nov., ♀
 SAT-ASR, dorso-lateral view, variation

♀. 13-16 mm. Black; mandible bright castaneous, palpi dull yellow, with basal joints black striped on outer side, tegula and basal plate of wing dark brown, legs as above given. Hair silvery, on clypeus at base strongly, sinuately convergent towards medial line.

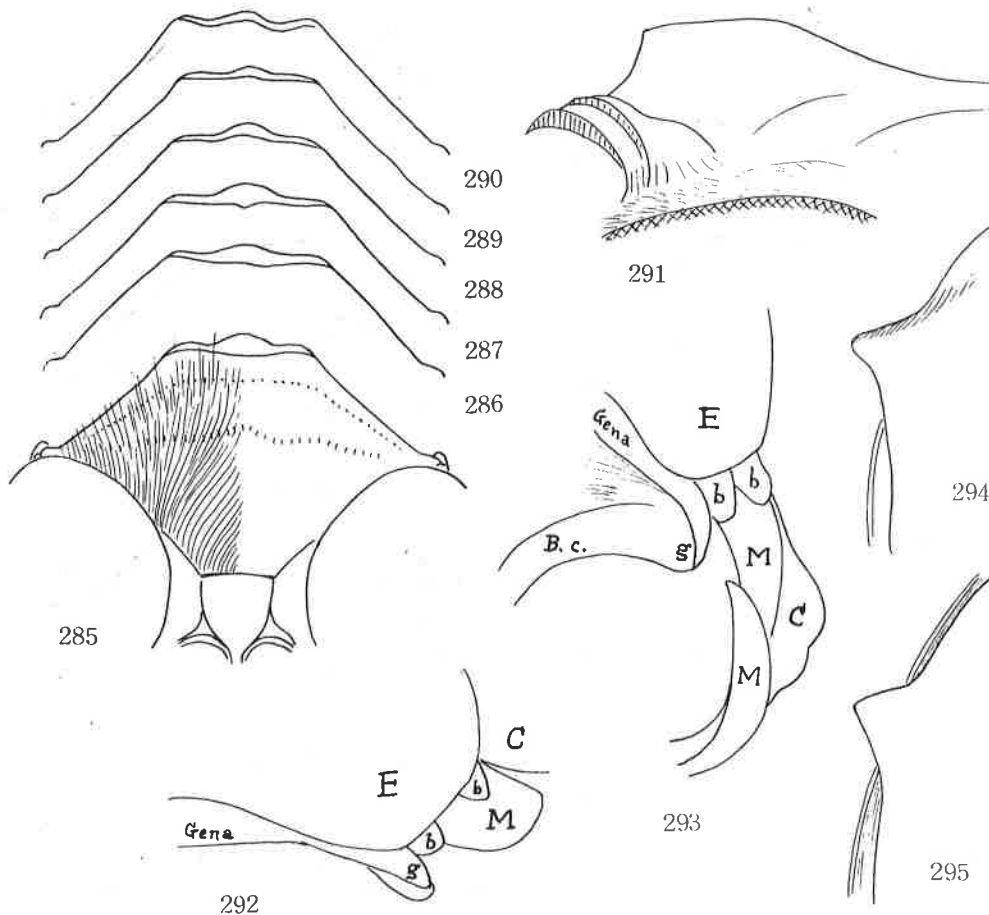
Clypeus: Fig. 285, SAT-ASR in lateral view; Fig. 291. Genal process (righthand one) seen from outer side: Fig. 292, seen obliquely from beneath; Fig. 293 (E - eye, C - clypeus, M - mandible, b - short protuberance at base of mandible, b.c. - buccal carina, g - genal process), genal process gradually lowering posteriorly to turn into

buccal carina. Collar as in solomonense, posterior part not discoloured, in some condition appeared slightly brownish, lamina on side toothed (Figs. 294 and 295). Subalar area normal, basal elevation of area dorsalis very short, almost linear, lateral furrows feeble, almost lacking, area apicalis margined dorsally with a band of striae, GSR slightly roundly elevated, not marked.

Frons weakly shining, punctures comparatively large, fairly close, on top areas of elevations PIS 1-1.5 times PD, anteriorly closer, SAT also closely covered with piliferous punctures, punctures medium-sized and partly contiguous to each other. Mesoscutum shining, with plumbeous lustre, punctures comparatively large, somewhat sparse, on antero-lateral areas PIS mostly 1.5-2 times PD, medianly sparser, posteriorly finer and much sparser. Lateral series of striae on propodeum distinct on posterior inclination, posteriorly extended inwards to form a band in front of area apicalis, area dorsalis usually with oblique short sparse striae at base, disc sparsely punctured, sides except anterior femoral sinus comparatively grossly, fairly closely punctured, punctures dorsally somewhat sparser, posteriormost area transversely weakly striate.

♂, unknown.

Holotype: ♀, Solomon Islands, Malaita I., NW area, Dala, 3. VII. 1964, R. Straatman (BFBM).



Figs. 285-295. Trypoxylon malaitae sp. nov., ♀

Table 6. Measurements with T. malaitae and T. gadalense (marked with *).

Loco	HL	IODv	A3(L/W)	P	IODs	OD:PD	IODc	A4	A5	Ma	Mi	CV1	T:C	Angle
M	50	25	26(4.8)	150	7.7	2:4	7.5	6.5	6.0	20	7	7.3	5:3	90°
M	50	24	26(5.0)	148	7.5	2:4	7.0	6.5	6.0	20	7	6.0	5:3	90°
M	52	25	25(5.0)	146	7.5	2:4	7.2	6.2	5.5	16	7	6.0	5:3	90°
M	50	26	26(5.0)	154	7.6	2:4	7.5	6.7	6.2	19	7	6.6	5:3	90°
G	50	25	26(5.0)	160	7.5	2:3	7.4	6.5	5.5	16	6	5.8	3:2	90°
G	50	24	25(5.2)	156	7.5	2:3	7.3	6.5	6.0	18	6	6.0	5:3	90°
G	50	25	26(5.2)	158	7.5	2:4	7.4	6.5	6.0	17	6	6.0	5:3	90°
G	50	24	26(5.5)	166	7.5	2:4	7.0	6.0	5.5	17	6	6.3	5:3	90°
G	50	25	26(5.3)	164	7.5	2:4	7.0	6.5	6.0	17	6	6.1	5:3	90°
G*	49	23	27(5.3)	166	7.8	2:3	6.3	6.5	6.0	16	6	7.3	5:3	90°

Remarks. Loco, M - Malaita I. G - Guadalcanal.

HL, IODv, A3, P - HW=100 is omitted. IODs - Relative length of IODc when IODv is 10. OD:PD - = OOD:POD. IODc - when A3 is 10. A4, A5 - when A3 is 10. Ma, Mi when P is 100. CV1 - CV1/CV2. T:C - TCV:CV2.

Paratypes: 1 ♀, Malaita I., Dala, 50 m, 6-13. VI. 1964, J. Sedlacek (BPBM); 2 ♀, Malaita I., Dala, 3. VII. 1964, Malaise trap, R. Straatman (BPBM); 1 ♀, Guadalcanal I., Honiara District, Kukum, 20. VII. 1950, E. E. Brown (BMNH); 1 ♀, Guadalcanal I., same loco, 1956, E. E. Brown (BMNH); 1 ♀, Guadalcanal I., Tenaru R., I. 1946, G. E. Bohart (CAS); 1 ♀, Guadalcanal I., Tambalia, 30 km west of Honiara, 27. V. 1964, Malaise trap, R. Straatman (BPBM); 2 ♀, Guadalcanal I., Paripao, 21. V. 1960, C. W. O'Brien (BPBM).

Remarks. In order to confirm the geographical variation, some of the characters are comparatively observed. The results:

(1) ASR is usually bicarinate, but the carinae are much higher in Guadalcanal population (Figs. 281-284 - dorso-lateral view) than in Malaita population (Figs. 277-280 - ditto). (PAF distinctly deeper and with bottom line more acutely pointed in the present species than in solomonense).

(2) Clypeus always at apex truncate and the truncate area is bevelled and medianly roundly produced. Strictly the bevelled area is somewhat longer in the Malaita population (Figs. 285-287) than in the Guadalcanal (Figs. 288-290).

(3) A3 is slightly longer in Guadalcanal population (Table 6)

As to genal process (Figs. 292, 293), pronotal lamina (Figs. 294 - Malaita, 295 Guadalcanal), propodeal sculpture, GSR and measurement results (Table 6) no noteworthy difference could be discovered between the two Island populations.

45. TRYPOXYLON GUADALENSE SP. NOV.

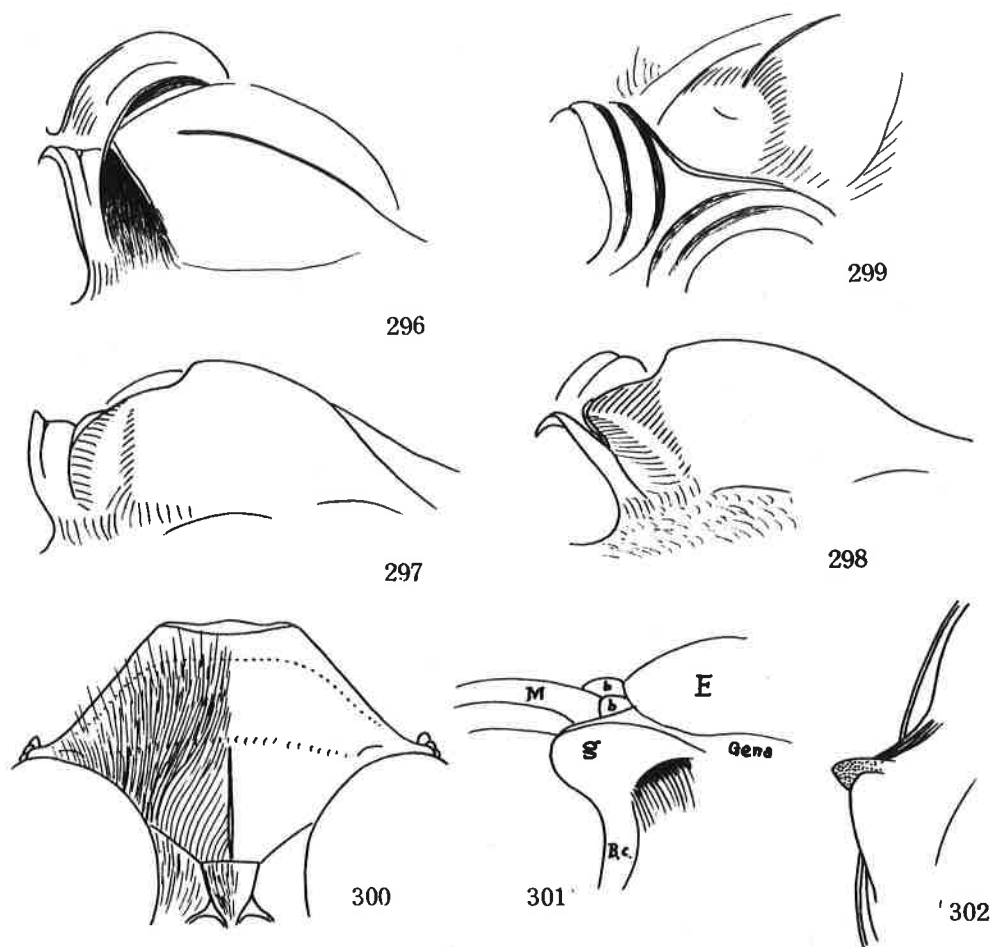
♀. Very similar in external appearance to solomonense and malaitae, but differs from both of them in that the SAT is anteriorly transversely carinated.

The present species is in the structure of frons, in the relative length of A3 and in the ratio of IODs closer to malaitae than to solomonense, but in the character of the clypeus and genal process, in the relative greatness of IODv and in the colour of fore leg similar to solomonense. On the other hand, it shows a very peculiar character in the structure of the lamina on side of pronotum (Fig. 302).

Length 17 mm. Mandible dark brown, at extreme base black and on apical half ferruginous, palpi dull dark brown, apically somewhat paler, legs completely black, spurs dark brown.

Head in frontal view with sides roundly convergent towards clypeus, vertex somewhat depressed (less in degree than in solomonense), tops of hind ocelli almost level with tops of eyes, W:L=100:90, eye incision narrow and gently narrowed towards bottom frontal furrow broad and fairly deep, elevations on both sides of it gentle and comparatively small in outline. SAT-ASR: Fig. 296 (oblique dorso-lateral view), 297 (dorso-lateral), 298 (lateral) and 299 (ventro-lateral); clypeus: 300, genal process well developed, in oblique posterior view: Fig. 301, g (E - eye, M - mandible, b - bas-

al tubercle of mandible, B.c. - Buccal carina), occipital carina complete, lowered and depressed behind buccal cavity from which it is considerably separated. Measurements in Table 6 (G*), G2 and G3 relatively 30(18),34(22). RC=B, somewhat close to C, R1 short, TCV gently incurved, CV2 down-curved and depressed at apical area as usual. Collar as in *solomonense* and *kalilicum*, lamina on side triangularly produced, apical area toothed, but here it is flattened, slightly obliquely located and apparently reflected (Fig. 302). Basal elevation of area dorsalis linear, area apicalis at dorsal area margined with a zone of transverse striae that are extended from lateral series. GSR almost not elevated, like a simple band.



Figs. 296-302. *Trypoxylon guadalense* sp. nov., ♀

Frons not completely mat, microreticulation distinct, punctures large, on elevations PIS 1-2 times PD, anteriorly closer; mesoscutum with plumbeous shine, punctures finer than on frons, sparse, on antero-lateral area PIS 1-3 times PD, on median area sparser, but on posterior area not sparser, not finer (constant?). Lateral series of striae of propodeum distinct, but on dorsal aspect weaker, shorter and incomplete, area dorsalis finely sparsely punctured, at base coarsely orenate, area apicalis irregularly finely rugulose.

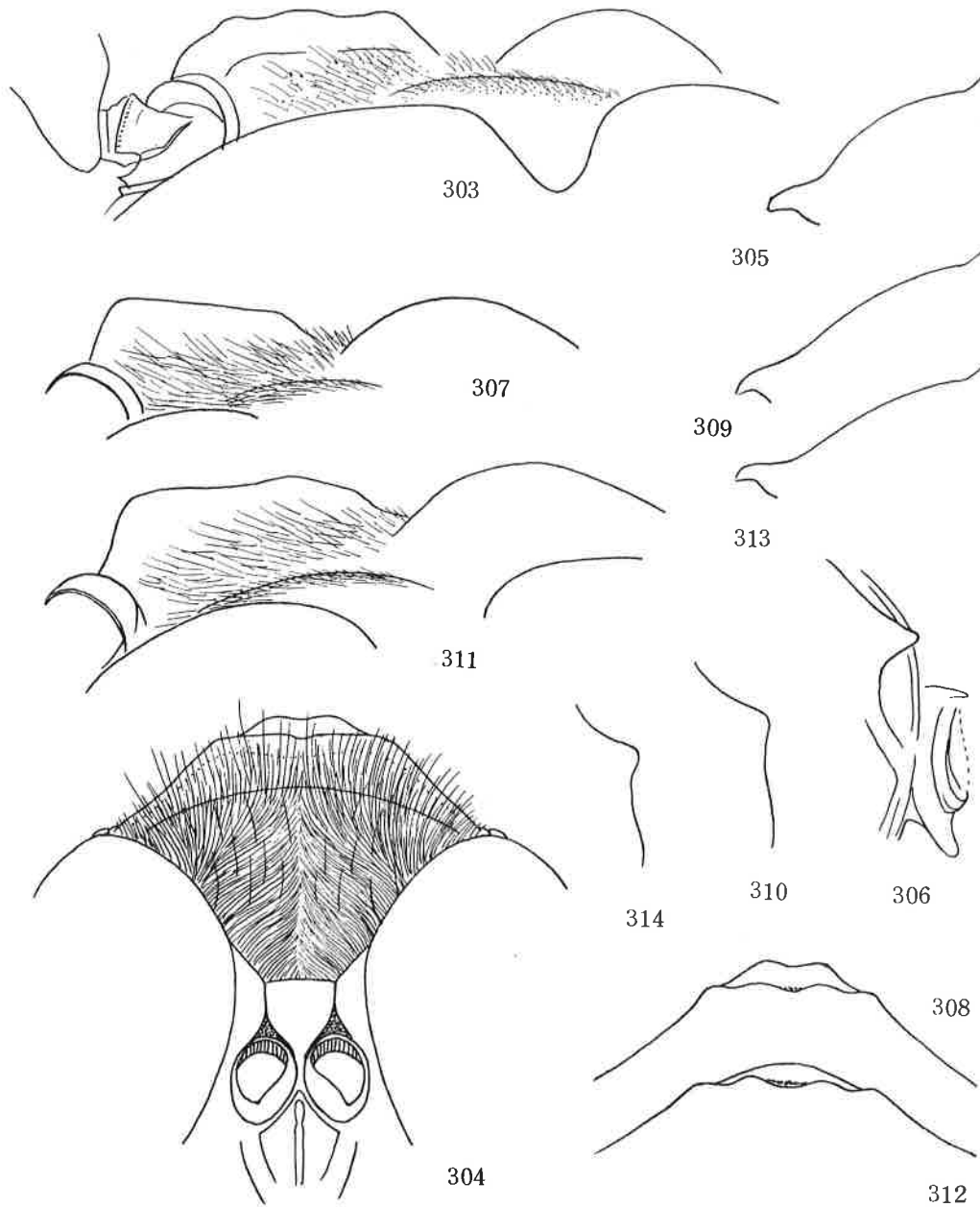
♂, unknown.

Holotype: ♀, Solomon Islands, Guadalcanal, Paripao, 21. V. 1960, O. W. O'Brien (BPRM).

Supplement to TRYPOXYLON BITUBERCULATUM MYSOLENSE TSUNEKI, 1980

Trypoxylon bituberculatum mysolense Tsuneki, SPJHA, 12: 114-116, 1980 (♀, Mysol, with 12 figs.)

A considerably detailed explanation was already given in the original description. Here some supplemental notes are presented.



Figs. 303-314. Trypoxylon bituberculatum Tsuneki, ♀
(303-306: ssp. mysolense; 307-310: typical form; 311-314: ssp. biroi n.)

Trypoxylon bituberculatum mysolense differs from the typical form in that the reddish colour in the middle part of the gaster is much less developed, nearly completely black, mid tarsus from T2 (except base) apically black, SAT more slenderly raised, frontal elevations somewhat smaller and pronotal lamina more acutely pointed at apex.

Comparison.

SAT (Fig. 303, lateral view) is much narrower, more stoutly keeled and more acutely raised than in typical form (Fig. 307, in holotype) or in ssp. biroi (Fig. 311).

Clypeus (Fig. 304) with apical margin somewhat less produced in middle than in typical form (Fig. 308) (in biroi different in form, due to lack of medial incision (Fig. 312) and with disc more highly raised than in the others (Fig. 305, lateral view, cf. Figs. 309 in holotype and 313 in biroi).

Pronotal lamina much more strongly produced and toothed (Fig. 306, cf. Figs. 310 typical form, 314 biroi).

Sculpture on propodeum. In mysolense dorsal aspect and posterior inclination transversely strongly, rather coarsely striate, only on narrow area just outside the median furrow of area dorsalis and of posterior inclination without striae and finely and sparsely punctured, but area pugdialis smooth and polished. In the typical form disc of area dorsalis and outsides of lateral furrows of it broadly without striae and finely and very sparsely punctured, while in biroi smooth and shining area much broader, with striae restricted to the areas along lateral carinae (= lateral series of striae) and just inside lateral furrows of area dorsalis. Sides of propodeum in mysolense sparsely punctured, anterior femoral sinus smooth and polished and posterior-most area obliquely striate; in typical form generally similar, but in biroi punctures much sparsely, without striae even on posterior area.

I N D E X

<u>albitarsatum</u> Tsuneki	45	<u>nitidum</u> Smith	11
<u>albitarsatum huonense</u> Tsuneki .	46, 103	<u>nitidum mooreaense</u> ssp. nov.	11
<u>albitarsatum muluanum</u> ssp. nov. ..	49	<u>novaguineae</u> sp. nov.	80
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<u>eximium gracillimum</u> Smith	70	<u>townesi</u> sp. nov.	72
<u>flavipes</u> Tsuneki	13, 103	<u>Trypargilum</u> Richards	11
<u>gadalense</u> sp. nov.	95	<u>umboiense</u> ssp. nov.	41
<u>gracillimum</u> Smith (ssp.)	70	<u>warisum</u> sp. nov.	33
<u>hollandiae</u> sp. nov.	36	<u>wauense</u> sp. nov.	61
<u>huonense</u> Tsuneki (ssp.)	46, 103	<u>woodlarkense</u> ssp. nov.	33
<u>kaitum</u> sp. nov.	40		
<u>kaitum umboiense</u> ssp. nov.	41		
<u>kalilioum</u> sp. nov.	90		
<u>karimui</u> sp. nov.	15		
<u>kokodaense</u> sp. nov.	66		
<u>lae</u> sp. nov.	75		
<u>lae baiyerum</u> ssp. nov.	79		
<u>lieftincki</u> sp. nov.	73		
<u>longicorne</u> sp. nov.	56		
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<u>muluanum</u> ssp. nov.	49		
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<u>morobense</u> sp. nov.	59		

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