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The Large Species of *Homalictus* and Related Halictinae from the New Guinea Area (Hymenoptera, Apoidea)

CHARLES D. MICHENER¹

ABSTRACT

Several species of *Homalictus* and the related new genus *Urohalictus* are markedly larger than other *Homalictus*. All these large species (all but one of which are new) occur at moderate to high altitudes in New Guinea or nearby islands, regions where other moderate-sized to large Halictinae are almost absent except for *Lasioglossum* (*Parasphecodes*?) *permetallicum* Michener. Five related new species (*Homalictus megalochilus*, *H. torulosus*, *H. pelorodontus*, *H. umbonis*, and

H. sedlaceki) constitute the new subgenus *Papualictus*. The other large forms of *Homalictus* seem to have been independently derived, presumably from different small ancestors. Such large species are *H. tricolor* Michener and the new species *H. hirashimai* and *H. ocellaris*. *Urohalictus lieftincki*, new species, is an extraordinary bee related to *Homalictus* and *Lasioglossum*; it is possibly parasitic although one cannot be certain of this in the absence of females.

INTRODUCTION

The bee genus *Homalictus* is found from Ceylon and southeast Asia to Australia and eastward across the Pacific to islands as distant as the Marianas and Samoa. Species and individuals are particularly abundant in Australia; over 75 trivial names have been proposed for forms from that continent (Michener, 1965). By contrast, only about 38 specific names have been proposed for forms from continental Asia to the Philippines and New Guinea (Blüthgen, 1926, 1931; Miche-

ner, 1965), almost all of them from islands rather than from Asia proper.

Over its large range *Homalictus* has been known as a genus of small bees, usually 6 mm. in length or smaller. Except in the insular areas, the genus is associated with larger halictines belonging to various subgenera of the genus *Lasioglossum*.

It is interesting to find that at moderate to high altitudes in New Guinea, New Britain, and New Ireland there are much larger

¹ Research Associate, Department of Entomology, American Museum of Natural History; Departments of Entomology and of Systematics and Ecology, and Snow Entomological Museum, University of Kansas, Lawrence.

species of *Homalictus*, 8 to 11 mm. in length. These forms are not closely related to one another, being morphologically diverse and attributable to different groups of *Homalictus*. The near absence, in the New Guinea area, of other middle-sized to large Halictinae may be related to the large size attained by *Homalictus* there. The first of the large species to be described was *H. tricolor* Michener, 1965. Seven additional large species are described herein.

In addition to these *Homalictus*, two other halictines found in the same areas of New Guinea are similar in size and general coloration. One is *Lasioglossum* (*Parasphecodes*) *permetallicum* Michener, the only New Guinea species of an otherwise Australian subgenus (Michener, 1965). The other is *Urohalictus lieftincki*, described herein.

Several of the species of large *Homalictus* in New Guinea are strongly metallic, suggesting many of the Augochlorini of the Western Hemisphere. The only other halictine of similar size and color in the area is *Lasioglossum* (*Parasphecodes*) *permetallicum* Michener, the only brilliantly metallic species of its subgenus. (It is unknown in the male, the discovery of which may show that its current subgeneric position is incorrect.) The female of this *Parasphecodes* is superficially very similar to *Homalictus* subgenus *Papualictus* and the habitat is seemingly the same. *Urohalictus* is also metallic, but the color is not brilliant. It is dull but with a fine sheen, like that of some of the *Indohalictus* group of *Homalictus* such as *H. dampieri* Cockerell.

Among the large *Homalictus*, *H. tricolor*, *H. hirashimai*, and *H. ocellaris* are finely roughened forms with rather dull cuticle and without striae on the head, thus being like the group which Blüthgen (1931) named *Indohalictus*. These three species are very different from one another and there is no indication that they had a common large ancestor. *Homalictus sedlaceki* and the group of *H. megalochilus* are rather shining forms with strongly striate heads, resembling in this respect many small species of *Homalictus*. However, the hind tibia and its scopa

in the female, in addition to certain other characters, are so different from those of most other *Homalictus* that these forms are here placed in a distinct subgenus, *Papualictus*. The many remaining (small) species of *Homalictus* are so diverse that one might wish to place them in two (or more) subgenera, as was done by Blüthgen (1931). However, examination of many species, particularly those of Australia, shows intergradation in every character that might seem to be of subgeneric value separating Blüthgen's *Homalictus* proper ("'*Halicti striatiapites*'") and his *Indohalictus* ("'*Halicti nomioidiformes*'") (Michener, 1965 and in prep.). Therefore, for the present, all species except those of the subgenus *Papualictus* can be included for formal purposes in *Homalictus*, *sensu stricto*. In the future this unit may well be divided into several subgenera, but probably not into the two proposed previously.

To document the locations of specimens, abbreviations in brackets indicate the museums in which they are preserved, as follows:

- [Bishop] Bernice P. Bishop Museum, Honolulu, Hawaii
- [Leiden] Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands
- [AMNH] American Museum of Natural History, New York, New York
- [KU] Snow Entomological Museum, University of Kansas, Lawrence, Kansas

The locality labels on the material from the Third Archbold Expedition frequently indicate camp sites or local features rather than places that can be found on ordinary maps. Dr. M. A. Lieftinck was kind enough to lend me a copy of a brief published explanation of the localities (Toxopeus, 1940), and in citing them I have added explanatory material in square brackets. Fuller accounts of the expedition and environments can be found in Archbold, Rand, and Brass (1942) and Brass (1941).

ACKNOWLEDGMENTS

I am indebted to Dr. M. A. Lieftinck of Rhenen, Netherlands, for the opportunity to

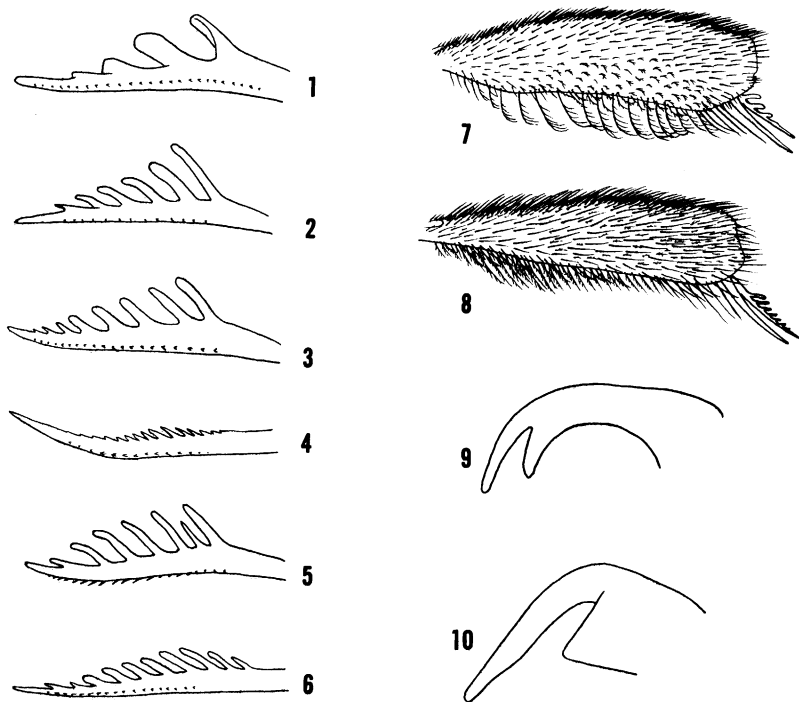
study the material collected by Dr. L. J. Toxopeus on the Third Archbold Expedition to New Guinea 1938–1939 (also known as the Netherlands Indies-American Expedition to Netherlands New Guinea, the specimens being so labeled). The second source of material included in this study is the Bernice P. Bishop Museum, Honolulu. Dr. Y. Hirashima of Fukuoka, Japan, had borrowed the specimens from that Museum and kindly sent them to me with his useful annotations calling attention to certain characters. I much appreciate the generosity of both Dr. Lieftinck and Dr. Hirashima in all matters relating to my study.

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KEY TO THE LARGE SPECIES OF *HOMALICTUS* (8–11 MM. LONG) AND SIMILAR NEW GUINEA HALICTINAE

1. Females 2
Males 7
2. Metasoma with strong ventral scopa arising not only from sterna but from lateral portions of terga which are usually sharply flexed mesoventrad forming distinct angle along lateral metasomal margin between dorsal and ventral surface (Genus *Homalictus*) 3
Metasoma without conspicuous scopa, or scopalike hairs confined to sterna; terga curving onto ventral surface laterally, not forming angle between dorsal and ventral metasomal surfaces
..... *Lasioglossum* (*Parasphecodes*?)
..... *permetallicum*
3. Frons coarsely striate; hind tibia slender with slanting, nearly simple bristles on outer surface, under surface with feeble, scarcely noticeable concavity (Subgenus *Papualictus*) 4
Frons not striate; hind tibia robust with area of rather short, uniform, erect, branched hairs on outer surface of distal half; under surface of hind tibia with distinct concavity 5
4. Head as broad as long; minimum interorbital distance less than length of eye; mesepi-

- sternum coarsely strigose, becoming coarsely transversely striate ventrally
..... *sedlaceki*
- Head broader than long; minimum interorbital distance subequal to length of eye; mesepisternum largely dull and finely reticulostriate, coarsely so on pre-episternum and on prominence above pleural signum, horizontally striate behind that prominence, and transversely striate ventrally
... *megalochilus*, *torulosus*, *pelorodontus*
5. Clypeus yellow; pronotal collar elevated to a thin transverse lamella; claws with inner ramus a broad, angular tooth
..... *hirashimai*
Clypeus more or less concolorous with rest of face; pronotal collar not lamellate; claws normal 6
 6. Body black; ocelli enlarged, ocellocular distance about 1.2 times ocellar diameter; dorsum of propodeum coarsely reticulate, delimited posteriorly by a carina
..... *ocellaris*
Head and thorax green, metasoma largely red; ocelli small, ocellocular distance over 2.6 times ocellar diameter; dorsum of propodeum with fine radiating striae, not delimited posteriorly *tricolor*
 7. Frons not striate; paraocular lobes projecting deeply into clypeus from above; basitibial plate absent; clypeus, supraclypeal area, area on metanotum, etc., yellow; no propodeal elevation ... *Urohalictus lieftincki*
Frons coarsely striate; paraocular lobe insignificant; basitibial plate present; yellow marks absent; large shining boss at each side of dorsal area of propodeum (Subgenus *Papualictus*) 8
 8. Body of labrum with a single large median tubercle, apical process acutely pointed ...
..... *torulosus*
Body of labrum with two large tubercles or processes, apical process broad, rounded or truncate apically 9
 9. Mandible with large, apically directed tooth (apex of pollex) about five-eighths of mandibular length from base ... *pelorodontus*
Mandible without such a tooth 10
 10. Mandible longer than minimum distance between eyes, apex feebly bidentate, pollex nearly attaining apex of rutellum
..... *megalochilus*
Mandible shorter than distance between eyes, apex pointed, no notch between pollex and rutellum *umbonis*



FIGS. 1-6. Inner hind tibial spurs. 1. *Homalictus hirashimai*, female holotype; 2. *H. ocellaris*, female holotype; 3, 4. *H. megalochilus*, female and male paratypes; 5. *H. sedlaceki*, female paratype; 6. *Urohalictus lieftincki*, male holotype.

FIGS. 7-8. Outer surfaces of hind tibiae of females, *Homalictus hirashimai* and *H. megalochilus*.

FIGS. 9-10. Claws of females, *Homalictus tricolor* and *H. hirashimai*.

Homalictus tricolor Michener

Figure 9

Homalictus tricolor Michener, 1965, p. 319.

ADDITIONAL LOCALITY: Top of Mt. Kaindi, near Wau, northeast New Guinea, 2360 m., September 12-18, 1972 [Leiden].

Homalictus hirashimai, new species

Figures 1, 7, 10-12, 16

DIAGNOSIS: This is a large, robust species with a yellow clypeus (female), extensive areas of pale tomentum, greenish black head and thorax, and largely orange legs and base of metasoma. The most distinctive features are indicated in italics in the description, as are some that may indicate the group of species to which it belongs. Among the features that distinguish this species from fe-

males of all other *Homalictus* are the lack of a process on the labral keel, the broadly angular inner rami of the claws, and the yellow clypeus. In the lack of striations and frontal carina, the species falls in the group called *Indohalictus* by Blüthgen.

DESCRIPTION: Female. Length 9 mm.; forewing length 7 mm. Head and thorax greenish black. Mandible brownish black with large yellow area in basal half; labrum black; *clypeus yellow* with distal margin (broadly) and other margins (narrowly) brown; antenna brownish black. Legs brown, tibiae and distal half of front femur and all but bases of mid and hind femora orange, small yellow spot at bases of fore and mid tibiae and near apex of fore tibia on outer side. Tibial spurs brown. Tegula testaceous with yellowish area in front of middle. First

two metasomal segments orange, tergum II dark brown along lateral margin where dorsal and ventrolateral surfaces meet; rest of metasoma blackish brown with weak warm coppery sheen. Wings yellowish, dusky at extreme tips, stigma brown, veins C and R blackish.

Pubescence of head and thorax pale yellow, whitish on metapleuron and sides of propodeum. Short plumose hairs forming tomentum completely hiding body surface on metanotum and most of metapleuron; nearly completely hiding surface (except for small spot at base of each larger hair) on anterior margin of scutum except medially, lateral margin of scutum behind middle, longitudinal median scutal line, posterior margin of scutum, and sides of thorax including propodeum (small shining bare area above episternal scrobe); incompletely hiding surface on paraocular area, frons, genal area near eye margin, dorsolateral pronotal area, and posterior surface of propodeum. Dorsal metasomal pubescence blackish, almost completely absent on terga I–IV. Scape of terga and sterna yellowish on first two segments, brown on succeeding segments; hairs of fifth and sixth sterna blackish. Hairs of legs yellowish, orange on under sides of tarsi and orange-brown on upper sides of mid and hind tarsi; penicillus rather small, orange-brown.

Head slightly broader than long (79:71). Upper interorbital distance greater than lower (41:34). Clypeus about twice as wide as long (40:21), not protuberant, only slightly convex in profile, line tangent to lower ends of eyes crossing clypeus below middle. Supraclypeal area strongly convex. *Mandible shifted posteriorly relative to eye* so that anterior articulation is well behind anterior eye margin and almost in contact with lower end of eye, and posterior articulation is well behind posterior eye margin and distant from eye so that there is a triangular malar area, spreading from nil anteriorly to one-third as wide as mandible posteriorly. Mandible shorter than minimum distance between eyes (apex worn off). Antennal sockets separated by less than diameter of a socket; *no frontal carina* between antennae. Antennocellar:

interantennal: antennocellar:interocellar: ocellocular distances as 13:6:20:9:12. Labrum with transverse crest across body, no protuberances; process about as long as body of labrum, slender, acute except that apex is narrowly rounded, *without conspicuous keel*. Genal area as wide as eye seen from side. Scape reaching beyond ocelli; first flagellar segment nearly twice as broad as long, second as broad as long, others all longer than broad and subequal, the last a little longer. *Pronotal collar elevated to form a thin lamella medially* connecting the rather broad areas near dorsolateral angles, all this *nearly attaining level of curved dorsal scutal surface*, but separated from scutum by deep fissure; dorsolateral pronotal angle obtuse, rounded ridge extending down from angle and thin carina extending across pronotal lobe. Dorsal surface of propodeum longer than scutellum, a distinct angle but no carina separating dorsal from posterior surfaces, triangular area not recognizable except at extreme sides; carina separating posterior from lateral surfaces extending about halfway up from metasomal articulation to summit of posterior surface. Legs rather robust, hind tibia with large area of short, suberect, branched hairs on anterior surface, as usual in the genus; inner hind tibial spur shorter than outer, with inner margin coarsely pectinate with four teeth, basal ones thick, blunt, three to four times as long as broad; basitibial plate rounded at apex; *claws large with apical ramus long and basal ramus a broad angular tooth* (fig. 10). Marginal cell beyond stigma almost twice as long as stigma, portion of marginal cell subtended by submarginal cells half as long as free part of marginal cell; third submarginal cell larger than second, the two together shorter than first.

Head and thorax somewhat shining, surface nearly everywhere minutely roughened between punctures; clypeus with scattered coarse punctures, dense apically; supraclypeal area with scattered small punctures; non-punctate, nonmetallic area along lower inner orbit narrow, only half as wide as scape, inconspicuous; rest of head and thorax finely punctate, most closely so on frons, most

coarsely so on vertex; dorsum of thorax finely reticulate with scattered small punctures, lower half of mesepisternum finely rugose-punctate; upper extremity of metepisternum with a few fine horizontal striae; dorsum of propodeum smooth but not highly shining, *without striae except at extreme sides where triangular area is indicated by posterior ends of a few weak longitudinal striae*. Metasomal terga I to V minutely transversely lineolate, without punctures but with hair bases, posterior marginal areas not depressed, hairless; tergum VI more coarsely lineolate; sterna still more coarsely so.

TYPE MATERIAL: Holotype female. Mt. Sinewit, Gazelle Peninsula, New Britain, 900 m. altitude, November 7 to 16, 1962 (J. Sedlacek) [Bishop].

ETYMOLOGY: This species is named for Dr. Y. Hirashima who picked it out as an unusual species of *Homalictus* and called my attention to the distinctive claws.

***Homalictus ocellaris*, new species**

Figures 2, 13-15

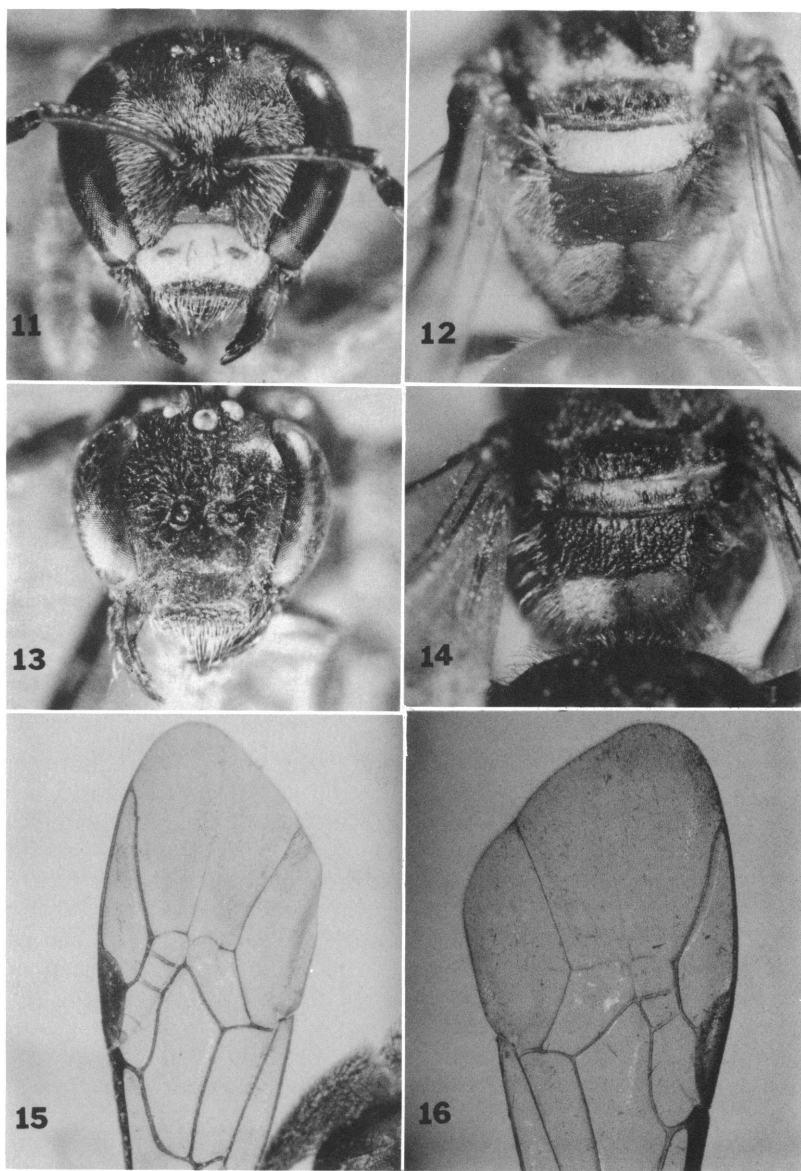
DIAGNOSIS: This is a robust, nonmetallic species, with surfaces minutely roughened and rather dull, not striate. Although such species (an example is *H. dampieri* Cockrell) commonly lack a frontal carina, *H. ocellaris* has a distinct frontal carina between the antennae. Features that distinguish this species from all other *Homalictus* are (1) the enlarged ocelli, the ocellocular distance being only about 1.2 times an ocellar diameter and the ocelloccipital distance being less than an ocellar diameter, and (2) the propodeum, the posterior surface of which is completely surrounded by a carina and the dorsal surface of which is longer than the scutellum and uniformly rather coarsely reticulate.

DESCRIPTION: Female. Length nearly 8 mm.; forewing length 6.5 mm. Black, possibly with the faintest recognizable greenish tint on frons, dorsum of head and thorax, and mesepisternum; preapical part of mandible, under side of flagellum, tegula, and legs including spurs dark reddish brown; posterior margins of terga dark brown.

Wings dusky, darkest beyond venation; veins and stigma blackish brown.

Pubescence of head and thorax mostly rather short, brown on face and dorsum of thorax, elsewhere on head and thorax dull yellowish white, longer white hairs on posterior pronotal lobe, just behind lobe, and on lateral and posterior surfaces of propodeum, these propodeal surfaces as well as metanotum also with very short whitish hairs, not hiding surface; hairs of coxae to femora yellowish white to pale brown, basal ventral brush of mid femur blackish; hairs of tibiae and tarsi dusky yellowish to black. Tergal hairs, including the scopal hairs of reflexed sides of terga, brown, almost absent mid-dorsally on terga I-III; sternal scopa yellowish white, light brown laterally; hairs of sterna V and VI light brown.

Head broader than long (69:59). Upper interorbital distance scarcely greater than lower (35:34), clypeus over twice as wide as long (37:17), weakly convex, line tangent to lower ends of eyes crossing clypeus near middle. Supraclypeal area strongly convex. Mandible scarcely shifted posteriorly, malar area linear. Mandible as long as minimum distance between eyes. Antennal sockets separated by slightly more than diameter of socket, frontal carina short but recognizable between antennal sockets. Antennocular: interantennal:antennocellar:interocellar:ocellocular distances as 11:7:21:8:7.5. *Ocelli enlarged* (see introductory comments and fig. 13). Labrum with body rather flat, ending apically as sharp, arcuate carina; apical process as long as body, slender, acute, distal part elevated but flattened dorsally so that there is no sharp keel. Genal area almost as wide as eye seen from side. Scape reaching to level of middle of posterior ocellus; first flagellar segment much wider than long, second as long as broad, third and following longer than broad. Pronotal collar not elevated, dorsolateral angle obtuse, no ridge or carina extending down from this angle or from it to posterior pronotal lobe. Dorsal surface of propodeum longer than scutellum, *strong carina separating dorsal from posterior surfaces, this carina curving down lat-*



FIGS. 11–12. Face and propodeal area of *Homalictus hirashimai*, female holotype.

FIGS. 13–14. Face and propodeal area of *H. ocellaris*, female holotype.

FIGS. 15–16. Forewings of *H. ocellaris* and *hirashimai*, female holotypes.

erally and delimiting entire posterior surface; triangular area not defined. Legs rather robust, hind tibia with large area of short erect hairs on anterior surface, as usual in the genus; inner hind tibial spur slightly

shorter than outer, with six blunt teeth, basal ones very long, parallel sided. Basitibial plate bluntly angulate, almost rounded, at apex. Marginal cell beyond stigma over 1.5 times as long as stigma, apex pointed on

wing margin, portion of marginal cell subtending submarginal cells less than half as long as free part of marginal cell; third submarginal cell subequal to second, the two together shorter than first.

Head and thorax, including lateral and posterior surfaces of propodeum, dullish, surface minutely roughened between small, widely separated punctures; clypeus with scattered coarse punctures, dense near apical margin; nonpunctate space along lower inner orbit scarcely differentiated, roughened like adjacent facial area except for lack of punctures and hairs; upper extremity of metepisternum with a few fine horizontal striae; dorsum of propodeum reticulate throughout, laterally forming irregular radiating striae. Metasomal terga I-V apparently dull, minutely roughened, largely transversely lineolate (dirty and difficult to study in holotype), with scattered punctures and hair bases, more abundant laterally and on more posterior terga; sterna also lineolate.

TYPE MATERIAL: Holotype female: Schleinitz Mountains, Lelet Plateau, New Ireland, October 1959 (W. W. Brandt) [Bishop].

ETYMOLOGY: The specific name refers to the large ocelli.

PAPUALICTUS, NEW SUBGENUS

TYPE SPECIES: *Homalictus megalochilus*, new species.

DIAGNOSIS: This subgenus differs from other subgenera of *Homalictus* in the combination of features italicized in the description of the type species, below. Subgeneric attributes of both sexes are the following: size large; frons, vertex, and genal area coarsely striate; frontal carina present between antennal bases. The striations and frontal carina suggest *Homalictus* proper. Females differ from most other *Homalictus* as follows: hind tibia slender, not or scarcely concave beneath, with hairs of outer surfaces sparse, all rather long, nearly simple, directed apicad, there being no area of erect, short, branched hairs as is found in other *Homalictus*. Males differ from other *Homalictus* as follows: head much broader than

long, clypeus low and transverse, about five times as wide as long, epistomal suture lateral to tentorial pit horizontal; dorsal surface of propodeum elevated at each side to form shining boss; area above pleural signum elevated; mesepisternum with transverse ridge behind front coxae.

COMMENTS: Males are unknown for *H. sedlaceki*, the most distinctive of the females. Therefore, the characters listed above for males may not, or may not all, actually be subgeneric attributes. Included species are the *megalochilus* group (*H. megalochilus*, *H. torulosus*, *H. pelorodontus*, and *H. umbonis*) and *H. sedlaceki*.

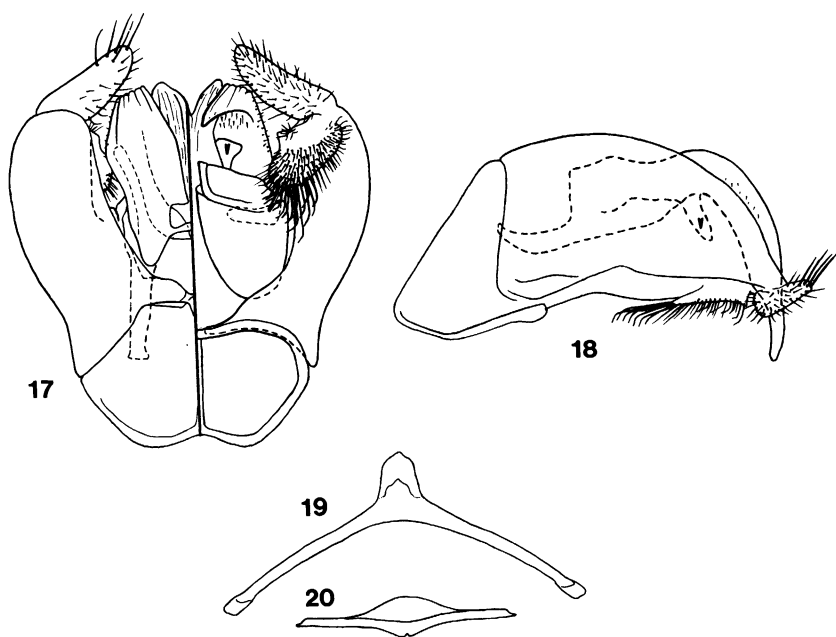
ETYMOLOGY: The subgeneric name is based on *Papua* (one name for part of New Guinea) plus *Halictus*.

Homalictus (Papualictus) megalochilus, new species

Figures 3, 4, 8, 17-20, 22, 26, 28-30

DIAGNOSIS: This is a large species with greatly developed head and mandibles in the male. The most distinctive features of the group to which it belongs are those italicized in the description below. The other species of the group are *H. umbonis*, *H. torulosus*, and *H. pelorodontus*; the differences between these species and *H. megalochilus* are indicated in the descriptions of those species. *Homalictus megalochilus* differs from *H. torulosus*, in the male, by the two apical marginal bosses on the clypeus, the two enormous basal labral tubercles, and the continuation of the mandibular pollex almost to the mandibular apex. The last mentioned feature distinguishes this species from all others, possibly from all other bees. The females of all four species are very similar and the male genitalia and hidden sterna appear to be alike in all four species.

DESCRIPTION: Male. Length 10 (to 11) mm.; forewing length 8 mm. Head and thorax dark blue, the following black: labrum, anterior margin of clypeus, mandible (dark reddish at apex), antenna (under side of flagellum sometimes dark brown), posterior pronotal lobe, and tegula (translucent anteriorly and sometimes brownish). Legs black



FIGS. 17–20. Dorsal, ventral, and lateral views of male genitalia and hidden sterna of *Homalictus megalochilus*, paratype. The ventral process of the penis valve is marked *v* for easy recognition in both ventral and lateral views.

basally, usually progressively more reddish apically so that small segments of tarsi are reddish brown. Tibial spurs dark brown. Metasoma black, sterna and sometimes first two terga and posterior margins of other terga variably dark brown. Wings slightly dusky, paler basally; veins and stigma brownish black.

Pubescence rather long, no short plumose tomentum; hairs of face and dorsal surface of body and outer surface of hind and sometimes mid tibia and tarsus dark brown, blackish in certain areas and certain lights; hairs of ventral surface and most of legs light brown, yellowish on under sides of tarsi. Terga I–IV almost or entirely without hairs mid-dorsally. Sterna with several areas of dense, long hairs, as follows: II with rounded or longitudinal median patch of whitish or pale brown hair; III with transverse, subapical semilunar area of similar hairs; IV and V with lateral patches of black hairs, those of IV grading to whitish mesad and more widely separated than those of V.

Head much broader than long (89:70). Upper interorbital distance scarcely greater than lower (59:58). *Clypeus very low and transverse*, breadth:length::66:13, slightly concave in profile, *apical truncation concave*, only about one-fifth as wide as clypeus, end of truncation elevated as shining transverse boss, epistomal suture lateral to tentorial pit horizontal, only slightly below that segment of suture between subantennal sutures; clypeal surface with longitudinal median concavity, deepest at distal end between bosses of clypeal margin. Supraclypeal area weakly convex. *Mandible shifted a little posteriorly relative to eye* so that anterior articulation is well behind anterior eye margin and almost in contact with lower end of eye, and posterior articulation is well behind posterior eye margin and distant from eye so that malar area is triangular, spreading from almost nil anteriorly to one-third as wide as mandible posteriorly. *Mandible enormous, sickle-shaped*, longer than distance between eyes, when closed reaching

base of opposite mandible, apex of mandible straightened, acetabular groove continued almost to apex which is feebly bidentate, the apex of the pollex being almost as wide as and nearly attaining the apex of the rutellum (terminology of Michener and Fraser, 1978). Antennal sockets separated by distance much greater than diameter of socket; frontal carina vaguely recognizable between antennal bases, above lost among striae as strong as the carina. Antennocular: interantennal: antennocellar: interocellar: ocellocular distances as 19:13:21:8:21. Labrum with a pair of enormous basal tubercles, each much longer than wide, forming a rectangular emargination deeper than wide; apical process of labrum broad, apex broadly rounded, keel absent. *Genal area nearly twice as wide as eye seen from side.* Scape reaching beyond ocelli; flagellum slender, first segment about as long as broad, segments 2–10 subequal, 1.5 to nearly 2 times as long as broad depending on curvature of antenna. Pronotal collar not elevated medially, *dorsolateral angle a large acute tooth*, carina extending from tooth to and across pronotal lobe, ridge extending downward from angle. *Pre-episternum, just in front of pre-episternal groove, elevated to form rough vertical ridge; mesepisternum, above pleural signum, elevated to form rough prominence* which is rounded in holotype but may be exaggerated as hanging process; *venter of mesepisternum with transverse ridge behind front coxae.* Dorsal surface of propodeum shorter than scutellum, *strongly elevated to form shining, longitudinally elongate boss at side*; triangular area not defined; posterior surface not delimited by carinae except at sides below. Legs rather robust and hairy. Basitarsi parallel-sided, rather slender, scarcely broader than second segments, second segment of hind tarsus much broader than third; front and mid basitarsi about as long as remaining tarsal segments together, of hind leg subequal to or slightly shorter than remaining segments; articulation between segments 1 and 2 of hind tarsus slightly broader than that between segments 2 and 3. Basitibial plate distinct, slender, bluntly pointed. Inner hind tibial spur longer than

outer, its inner margin with about a dozen teeth coarser than those of other spur margins. Marginal cell beyond stigma less than twice as long as stigma, portion of marginal cell subtended by submarginal cells less than to slightly more than half length of portion beyond submarginal cells; second and third submarginal cells subequal, together almost as long as first (to as long as first). Pygidial plate rounded; exposed sterna simple except for hair tufts described above. Sternum VII with rather small, hairless median apical process; sternum VIII reduced, spiculum weakly developed. Genitalia with rather short, hairy gonostylus and small, hairy retrorse process; volsella not elongate.

Clypeus with scattered punctures, ground between them smooth medially, roughened laterally; supraclypeal area minutely roughened, with scattered punctures except on anterior median area which may be very large; lower part of paraocular area lineolate with scattered hair bases or punctures, next to lower eye margin an impunctate black area; rest of head coarsely striate, vertical striae on frons, curving over summit of eye and continuing on genal area, striae behind ocelli transverse, striae of hypostomal area finer and fading into lineolation anteriorly. Mesoscutum and scutellum with moderately coarse, close punctures, on disc of scutum arranged in longitudinal rows and appearing strigose, reticulate strigose on anterior lateral part of scutum, on anterior median part of scutum punctures elongate and widely separated by finely reticulate ground, on convexities of scutellum punctures separated by shining ground. Mesepisternum dull, reticulate, coarsely so in front of pre-episternal groove and on prominence above pleural signum, horizontally striate on lower part of side behind prominence, finely reticulostriate elsewhere on sides, transversely striate ventrally. Metanotum very finely and closely punctate, dull; metepisternum dull, horizontally striate. Propodeum with dorsal surface shining, with fine radiating, nonanastomosing striae which do not reach posterior margin; posterior surface shining, almost impunctate; lateral surface dull, with striae sloping downward anteriorly. Metasoma

shining, sterna and lateral parts of terga minutely roughened or lineolate but dorsum mostly smooth with widely scattered small punctures, absent mid-dorsally; posterior margins of terga broadly depressed, without punctures or hairs.

Female. Agrees with description of male except as follows: Head and thorax coppery or purplish, with greenish reflections except on scutum and scutellum which are more brightly colored than other areas. (Most paratypes with head and thorax dark blue-green or brassy green, brighter than in male; the coppery purplish of the holotype may be an artifact.) Tibiae, tarsi, apex of front femur, and mid and hind femora except bases reddish brown. First and base of second metasomal tergum reddish brown and first two or three sterna with irregular median reddish brown bands. (Some paratypes with reddish brown of metasoma infuscated or absent so that metasoma is wholly blackish.)

Pubescence of legs darker than in male, under sides of trochanters and femora with hairs dusky; outer side of mid tibia and tarsus (as well as hind) with blackish or dark brown hairs; femoral scopa blackish, the hairs paler toward their tips, and hairs of posterior and upper sides of hind femur light brown. Hairs of apical and lateral parts of metasoma black; terga II and III almost or entirely without hairs mid-dorsally; ventral scopa including that of lateral parts of terga dark brown or black.

Head much more "ordinary" than that of male, breadth:length::81:76. Upper interorbital distance slightly less than lower (49:51), these distances subequal to eye length. Clypeal breadth: length::53:16; clypeus with apical truncation nearly straight, about three-fifths as wide as clypeus, not elevated; epistomal suture lateral to tentorial pit slanting; clypeal surface without concavity, distal half sloping at an angle to basal half so that profile is convex. Mandible less strongly shifted posteriorly relative to eye than in male; malar area short, less than one-third as long as diameter of scape; mandible of ordinary size and form. Antennocular:interantennal:antennocellar:interocellar:ocellocular distances as 17:11:21:8:16. Body of labrum with two

rounded, shining tubercles or bosses that divide the body into roughly equal thirds; between these tubercles is a strong concavity; process of labrum nearly twice as long as body of labrum, at base parallel-sided and about one-third as wide as body, distally tapering to acute point and with strong keel. Genal area about 1.5 times as wide as eye seen from side. First flagellar segment as broad as or broader than long, second longer than broad, segments 3–9 markedly so, subequal. Dorsolateral pronotal angle about right angular, much smaller than in male. Prominences on mesepisternum and propodeum as described for male absent, except for broad weak convexity above pleural signum. Front basitarsus much broader than second tarsal segment and hind basitarsus somewhat broader; hind basitarsus subequal in length to following tarsal segments together. *Anterior surface of hind tibia with large hairs nearly simple, bristlelike or with one or two branches, sloping* (no area with abundant, rather short, erect, plumose hairs as usual in the genus); *under surface of hind tibia scarcely concave*. Inner margin of inner hind tibial spur with four or five teeth, the basal ones long and blunt.

Clypeus with coarse punctures, mostly separated by about a puncture width of roughened ground. Hypostomal area lineolate, not striate. Mesoscutal punctures not in rows. Lower lateral mesepisternum with coarse irregular striae sloping downward posteriorly. Side of propodeum minutely roughened, not striate. Metasomal terga with widely scattered small punctures mid-dorsally as well as elsewhere, except for posterior marginal areas. Sixth tergum as usual in females.

TYPE MATERIAL: Holotype male, allotype female, and seven male paratypes: Lake Habbema [about 15 km. north of Mt. Wilhelm], West Irian, 3250–3300 m. altitude, July–August 1938 (Netherlands Indies-American New Guinea Expedition, L. M. Toxopeus) [AMNH; paratypes Leiden, KU]. Four male and two female paratypes: Moss Forest [5 km. northeast of Lake Habbema], West Irian, 2600, 2700, and 3000 m. altitude,

October 15, 21, and 27 and November 5, 1938 (same expedition, L. J. Toxopeus) [Leiden, KU].

OTHER DISTRIBUTIONAL DATA: Additional specimens, unassociated with males and therefore not designated as paratypes: Six females: Ibèlè Camp [on Ibèlè River 13 km. northeast of Lake Habbema], West Irian, 2200 and 2250 m. altitude, November 15 and December 2, 1938 (Netherlands Indies-American New Guinea Expedition, L. J. Toxopeus) [Leiden, KU]. One female: Sigi Camp [Sigi River Valley], 1500 m. altitude, February 12, 1939 (same expedition, L. J. Toxopeus) [Leiden]. One female: Tenma Sigin, Star Range, 1800 m. altitude, May 20, 1959 (Leiden Museum Netherlands New Guinea Expedition) [Leiden]. One female, 11 km. south of Laiagam, Northeast New Guinea, 2400–2500 m., June 24, 1963 (J. Sedlacek) [Bishop].

ETYMOLOGY: The specific name is based on the Greek *megale*, large, plus *chilus*, lip, with reference to the modified labrum and enormous mandibles of the male.

***Homalictus (Papualictus) torulosus*,**
new species

Figure 21

DIAGNOSIS: Similar to *H. megalochilus* but differing from the description of that species as indicated in the description below. Characters of the male that distinguish *H. torulosus* conspicuously from *H. megalochilus* are the single large median basal tubercle of the labrum and the lack of clypeal bosses.

DESCRIPTION: Male. Long pale hairs of sternum II not forming dense patch. Clypeus with discal part only feebly concave, margin of truncation raised and shining, slightly more so laterally but not forming boss at each side. Malar area short, not broadened posteriorly. Mandible with inner margin expanded in middle third, rather abruptly narrowed to slender distal third; apex of rutellum rather sharply pointed and extending farther beyond apex of pollex than in *megalochilus*. Labrum with a single large median

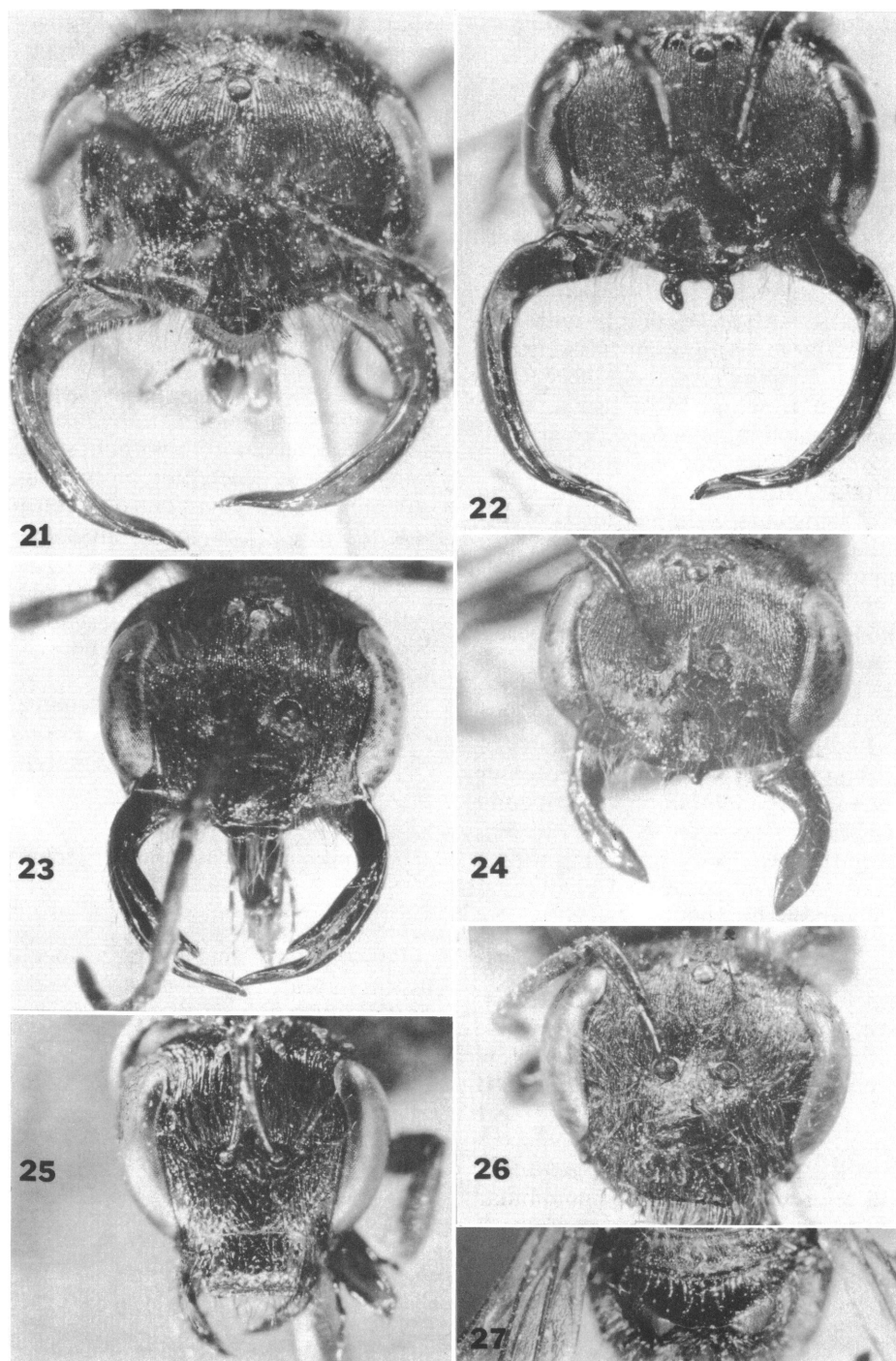
basal tubercle about as long as broad; apical process relatively slender, acutely pointed. Pre-episternum almost without an elevation; transverse ridge behind front coxae weak; boss on each side of propodeum shifted posteriorly, well separated from base of propodeum and extending down along angle between posterior and lateral surface of propodeum which is therefore a distinct ridge delimiting posterior surface. Clypeal punctures small and scattered, ground between them finely roughened medially, smoother laterally. Second and following metasomal terga with fine, feeble lineolations basally.

Female. Head and thorax not coppery or purplish in any available individuals. Legs commonly more infuscated, all femora dark except apices even in specimens with red tibiae. Metasoma entirely black (in one paratype red basally as in allotype of *megalochilus*; in another specimen, metasoma wholly red). Body of labrum with two rounded, shining tubercles as in *megalochilus*, but concavity between them weak and with feeble median convexity.

TYPE MATERIAL. Holotype male, allotype female, and three female paratypes: Enarotadi, Wisselmeren, northwest New Guinea, West Irian, 1900 m. altitude, August 2–12, 1962, in Malaise trap (J. Sedlacek) [Bishop]. One female paratype: Same data, but 1900–2000 m. altitude, July 2–11, 1962, not in trap [KU]. One female paratype: Same data, but 1800–1850 m., July 16, 1962 [Bishop]. Two female paratypes, same data, but 1850 m., July 12 to August 4, 1962, in Malaise trap [KU]. One male paratype: Top Camp [on the range between the Idenburg and Araucaria River valleys], West Irian, 2100 m. altitude, January 25, 1939 (Netherlands Indies-American New Guinea Expedition, L. J. Toxopeus) [Leiden].

COMMENT: The female mentioned above with a wholly red metasoma, not designated as a paratype, is from the same locality as the holotype.

ETYMOLOGY: The specific name is from the Latin, meaning the bearer of small projections.



FIGS. 21-26. Faces of *Homalictus* (*Papualictus*) spp. 21. *H. torulosus*, male paratype; 22. *H. megalochilus*, male paratype; 23. *H. pelorodontus*, male holotype; 24. *H. umbonis*, male holotype; 25. *H. sedlaceki*, female holotype; 26. *H. megalochilus*, female allotype.

FIG. 27. Propodeal region of *H. sedlaceki*, female holotype.

Homalictus (Papualictus) pelorodontus,
new species
Figure 23

DIAGNOSIS: Similar to *H. megalochilus* but differing from description of that species as indicated in the description below. The character of the male that distinguishes *H. pelorodontus* most conspicuously from *H. megalochilus* is the large preapical mandibular tooth.

DESCRIPTION: Male. Mandible with pollex ending as large tooth about five-eighths of mandibular length from base, this tooth separated from rutellum by a broad, deep emargination which receives apex of acetabular groove; rutellum beyond tooth somewhat spatulate, rounded at apex. Labrum with pair of transverse, shining basal tubercles, similar in shape to bosses of clypeal margin, and separated by rather shallow, rounded emargination; apical process of labrum truncate. Mesosternum, clypeus, scutum, etc., as described for *H. umbonis*.

Female. Head and thorax dark blue-green, scutum and scutellum with strong rosy reflections. Red-brown color of distal parts of legs extending beyond middle of front femur and to bases of mid and hind femora. Second metasomal tergum (as well as first), except apical marginal area, red brown; basal part of third dark brown basally. Dorsolateral pronotal angles slightly acute.

TYPE MATERIAL: Holotype male and allotype female: Lower Mist Camp [in ravine that enters headwaters of Sahuweri River], West Irian, 1600 m. altitude, January 14, 1939 (Netherlands Indies-American New Guinea Expedition, L. J. Toxopeus) [AMNH].

ETYMOLOGY: The specific name is based on the Greek *peloros*, huge, and *odontos*, tooth, with reference to the large mandibular tooth.

Homalictus (Papualictus) umbonis,
new species
Figure 24

DIAGNOSIS: Similar to *H. megalochilus* but differing from description of that species as indicated in the description below. The

character of the male that distinguishes *H. umbonis* most conspicuously from *H. megalochilus* is the shorter and edentate mandible.

DESCRIPTION: Male. Mandible only about four-fifths as long as minimum distance between eyes, apex bladelike, sharply pointed, not bidentate, no notch (isolating apex of pollex) near apex of acetabular groove. Labrum with pair of basal tubercles which are broader than long and form emargination that is irregularly rounded, not rectangular, and is three or four times as wide as deep. Mesepisternal prominence weak (as in some individuals of *H. megalochilus*). Clypeus and supraclypeal area without or with little roughening between punctures. Scutum with punctures slightly less close than usual in *H. megalochilus* and less conspicuously in rows.

TYPE MATERIAL: Holotype male and one male paratype: Yaibos, Northeast New Guinea, 2000 m. altitude, June 12, 1963 (J. Sedlacek) [Bishop].

ETYMOLOGY: The specific name is from the Latin *umbo* meaning a boss or rounded projection, with reference to the thoracic and propodeal projections.

Homalictus (Papualictus) sedlaceki,
new species
Figures 5, 25, 27

DIAGNOSIS: This is a large species which in size, color, lack of an area of erect hairs on the outer side of the hind tibia of the female, and coarsely striate frons, resembles the group of *H. megalochilus*. It differs from that group, however, in coarser punctation, more elongate face, black legs, and dull whitish hairs on the outer surfaces of the tibiae and tarsi. Unfortunately, the male is not known; the female, however, shows no suggestion of the mesepisternal and propodeal projections found in males and weakly on episterna in females of *H. megalochilus* and its closest relatives.

DESCRIPTION: Female. Length 8.5 mm. (to 10.5 mm. in one paratype); forewing length 7.5 mm. Head and thorax dark blue, dorsum of thorax green. Labrum, clypeal

margin, mandible, antenna, pronotal lobe and tegula colored as in *H. megalochilus*. Legs entirely black; tibial spurs black. Metasoma black with basal parts of terga weakly dark blue (paratype from Okapa with transverse red-brown band on disc of each of first four terga, that on TII narrow and short, those on TIII and IV broad and occupying much of dorsum, that on TII intermediate). Wings brownish, distal half darker than basal half; veins and stigma black. Pubescence colored as in *H. megalochilus* (in paratypes dorsal pubescence of head and thorax rather light brown, not much darker than that of under surface) except that of tibiae which is dull whitish and of tarsi which is dull whitish on outer sides, dusky on inner sides.

Head breadth:length::72:73. Upper inter-orbital distance greater than lower (44:40), these distances less than eye length. Clypeal breadth:length::40:17; clypeus with apical truncation nearly straight, over half as wide as clypeus; clypeus otherwise as described for female of *H. megalochilus*. Supraclypeal area gently convex. Mandible not shifted posteriorly relative to eye; malar area over half as long as diameter of scape. Antennal sockets separated by distance slightly greater than diameter of socket; frontal carina weak between antennae, on frons lost among striae. Antennocular:interantennal:antennocellar:interocellar:ocellocular distances as 13:9:19.5:11:14. Body of labrum with median biconvex elevation, between convexities a weak concavity; process of labrum over 1.5 times as long as body of labrum, sides of process converging at very acute angle but apex rounded; keel of labral process present but small. Genal area wider than eye seen from side. Antennal segments as described for female *H. megalochilus*. Dorsolateral pronotal angle basically right angular but with small acute apex, carina extending laterally across posterior lobe, small ridge extending downward from dorsolateral angle. Dorsal surface of propodeum slightly shorter than scutellum, triangular area not defined, posterior surface not delimited by carinae. Basitarsi parallel sided, slender, front and hind ones slightly longer than re-

maining tarsal segments, middle one slightly shorter than remaining tarsal segments taken together. Hind tibial hairs, ventral concavity, basitibial plate, and spurs as described for *H. megalochilus* but inner spur with five or six teeth. Wing venation as described for *H. megalochilus*.

Clypeus shining with scattered coarse punctures, close in distal quarter; supraclypeal area shining (finely roughened in paratype from Daulo Pass) with punctures smaller than those of clypeus, widely separated medially and closer laterally; lower paraocular area strigose-punctate with impunctate black area next to eye margin; face above antennae coarsely vertically striate with punctures between striae especially laterally, striae curving over summit of eye and continuing down genal area where they are widely separated and interspersed with punctures; area behind ocelli coarsely reticulate punctate, transversely striate near occipital margin; hypostomal area lineolate. Scutum and scutellum coarsely punctate, punctures coarsest and separated in places by about a puncture width of finely roughened but shining ground in anterior median part of scutum, elsewhere ground smooth and punctures closer except for shining and sparsely punctate convexity of scutellum; mesepisternum coarsely strigose, becoming coarsely transversely striate ventrally. Metanotum finely reticulopunctate; metepisternum transversely striate down almost to mid coxa. Propodeum with dorsal surface shining, with radiating, non-anastomosing striae basally, reaching little beyond middle of dorsal surface medially; posterior surface shining but with punctures and hair bases; lateral surface reticulopunctate anteriorly, with scattered punctures on roughened ground posteriorly. Metasoma shining, bases of second and following segments inconspicuously lineolate, terga with scattered small punctures, posterior margins of terga broadly depressed, impunctate, and hairless.

TYPE MATERIAL: Holotype female: 11 km. south of Laiagam, 2400–2500 m. altitude, Northeast New Guinea, June 24, 1963 (J. Sedlacek) [Bishop]. One female paratype from each of the following localities in

Northeast New Guinea: 22 km. southeast of Okapa, 2100 m. altitude, August 28, 1964 (J. and M. Sedlacek) [Bishop]; Daulo Pass, 2500 m. altitude, May 2, 1959 (C. D. Michener) [KU].

ETYMOLOGY: The species is named for J. Sedlacek in recognition of his extensive collecting of insects in New Guinea.

UROHALICTUS, NEW GENUS

TYPE SPECIES: *Urohalictus lieftincki*, new species.

DIAGNOSIS: This genus resembles *Lasioglossum* and *Homalictus* in having the third transverse cubital vein and second recurrent vein weak but the second transverse cubital strong. The principal characters are italicized in the following description of the type species. Among the noteworthy features (male only) are the following: the small clypeus widely separated from the eye; the paraocular lobes projecting deeply into the clypeus from above; the lack of black, impunctate areas along the lower inner orbits; lack of basitibial plates, a feature shared by a few *Homalictus* such as *H. callaspis* and some *Lasioglossum* species; presence of yellow coloration on the clypeus, supraclypeal area, pronotum and metanotum; and the extraordinarily short hair of the legs.

DISCUSSION: The metasoma at least in the male is not at all flattened with angles along the lateral margins, but is instead almost cylindrical. Thus there is nothing to suggest close relation to *Homalictus*. The lack of long hairs on the sterna also differentiates this genus from most male *Homalictus*. On the other hand, there are also no characters establishing a close relationship to *Lasioglossum*. Yet at least the paraocular lobes and the yellow ornamentation are features found in some species of that enormous genus.

It is the features of the apex of the metasoma, however, that are unique among bees and show most clearly that this insect represents a genus different from *Lasioglossum* and *Homalictus*. The seventh and eighth sterna (if interpreted correctly) are fused to form a large and elaborate, heavily sclero-

tized but hairless double plate (double because the eighth sternum is above and broadly overlapping the seventh). Each of these sterna ends in a pair of large processes extending upward into the genitalia. By contrast, in *Lasioglossum* and *Homalictus* these sterna are weakly sclerotized transverse ribbons, usually with a median apical projection on one or both, often with a few hairs. This extraordinary sternal development must be associated with the unique genitalic structure. The penis valves are reduced to nearly straight, slender structures, posteriorly lying on top of the apically elaborate penis, and not curved down toward their apices. Functionally they are probably replaced by the greatly elongated volcellae, the distal parts (cusps?) of which are *dorsal*, extend beyond all genitalic structures except the gonostyli, and are somewhat downcurved, like penis valves in other halictines. The digitis (?) is also elongate, heavily sclerotized, toothed, directed posteriorly, located in about the middle of the volsella, but does not seem to be opposable to any structure.

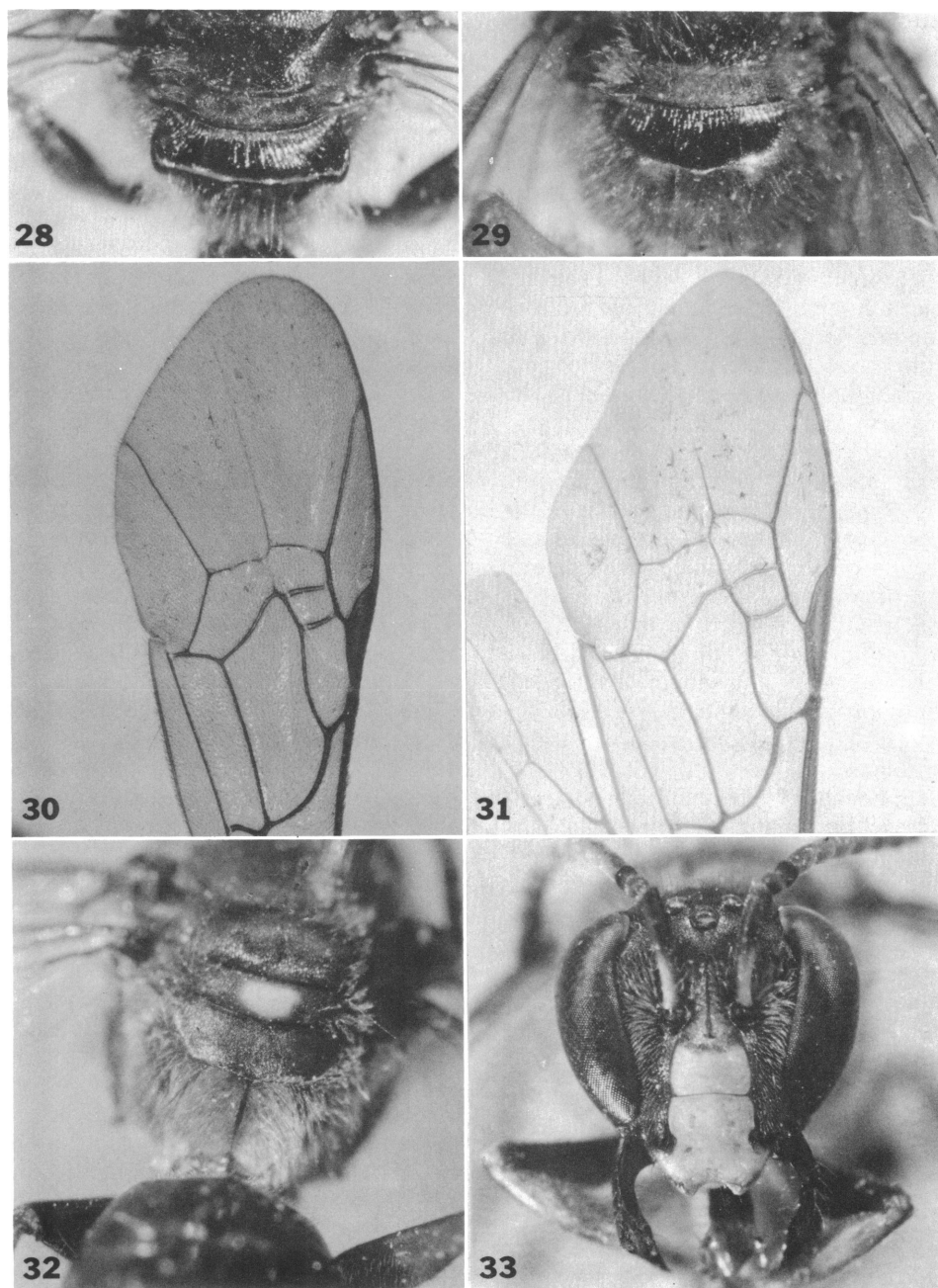
The very short hair of the hind femora and tibiae and of the metasomal sterna suggest that this may be a parasitic genus. The female may lack a scopa. The punctuation, however, is fine, not coarse as in many parasitic groups. If *Urohalictus* is parasitic, its strange male terminalia may be an adaptation to a modified abdominal apex which the female is likely to possess, perhaps for egg-laying in host cells, or perhaps only to manage a large sting such as many parasitic bees have.

ETYMOLOGY: The generic name is based on the Greek *ura* or *oura*, tail, plus *Halictus*. The reference is to the extraordinary male genitalia and associated sterna.

Urohalictus lieftincki, new species

Figures 6, 31-39

DIAGNOSIS: This is a large, robust, dull greenish blue species, known only in the male. Its most extraordinary characters are italicized below and some are listed in the account of the genus. The size, fine punctuation, and lack of rugae on the dorsum of the



FIGS. 28-29. Propodeal region of *Homalictus megalochilus*, male holotype and female allotype.
FIGS. 30-31. Forewings of *Homalictus megalochilus*, male paratype, and *Urohalictus lieftincki*, male holotype.
FIGS. 32-33. Propodeal region and face of *Urohalictus lieftincki*, male holotype.

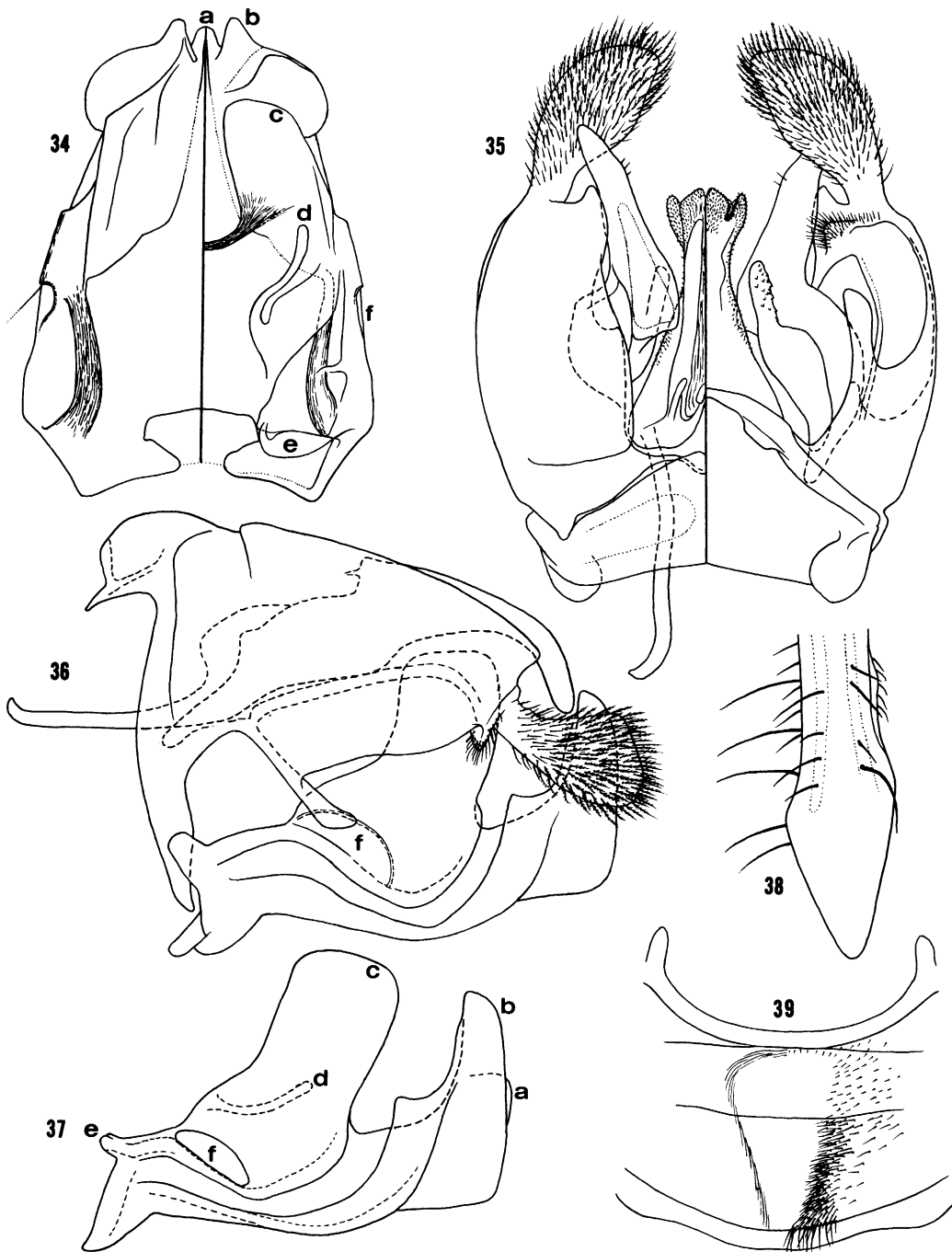
propodeum suggest that this might be related to the female described as *Homalictus hirashimai*, but many characters that do not ordinarily vary between the sexes show that there is no close relationship. For example, *U. lieftincki* has a frontal carina, paraocular lobes, a long appendage on the marginal cell, a slender stigma, etc., not shared with *H. hirashimai*.

DESCRIPTION: Male. Length 11 mm.; wing length 9 mm. Head and thorax bluish green; metasomal terga blackish brown with strong blue reflections; mandible (except reddish apical half), antenna, tegula, legs (including spurs) and metasomal sterna blackish brown; the following parts yellow: labrum (except red-brown apical margin and process), clypeus (except red-brown lower lateral margins), supraclypeal area, basal half of scape on lower surface, dorsolateral angle of pronotum, mid-dorsal area of pronotum, small spot in anterior half of tegula, median fourth of metanotum, and basal three-fifths of outer surface of front tibia. Wings light brownish, distinctly darker beyond level of stigma, veins and stigma brownish black.

Pubescence short, dull whitish, densest and plumose but not covering surface on lower half of genal area, upper half of metepisternum, and lateral and posterior surfaces of propodeum; vertex with intermixed blackish hairs; mandible, clypeus and posterior part of scutellum with a few long blackish hairs; femora and tibiae with hairs abundant, short, those of under side of hind femur less than one-fifth as long as femoral diameter; apices of tibiae with a few blackish bristles; tarsal and mid tibial hairs yellowish to dusky, orange dusky on under side of mid and hind tarsi, under surfaces of tarsal segments 2–5 of foreleg and 4–5 of mid leg with short, dense, erect white hairs. Metasomal pubescence grayish, terga I–IV almost without hairs except for short ones laterally; terga V–VII with progressively more hairs; sterna with short hairs, densest near middle of each sternum.

Head about as long as wide (79:79). Upper interorbital distance scarcely greater than lower (38:36). Clypeus wider than long

(40:28), not protuberant; only slightly convex in profile, apex without a truncation, with a pair of apical teeth between which is a deep emargination; acute but rounded paraocular lobe extends down into clypeal area on each side; lateral margins of clypeus above tentorial pits almost parallel to one another and separated from eye by distance about equal to antennocular distance; line tangent to lower ends of eyes crossing clypeus above middle. Supraclypeal area strongly convex. Mandible in normal position, malar area absent; mandible broadened preapically (fig. 38), markedly longer than minimum interocular distance. Antennal sockets separated by more than diameter of a socket; frontal carina present, extending from below level of antennae to about an ocellar diameter below anterior ocellus. Antennocular:interantennal:antennocellar:interocellar:ocellocular distances as 8:11:19:10:8. Body of labrum shining, convex, without protuberances; process slender, about as long as body of labrum, without keel. Genal area narrower than eye seen from side. Scape reaching to about level of middle of lateral ocellus; flagellum slender, little thicker distally than basally, slightly crenulate on under surface, first segment broader than long, second segment about 1.75 times as long as broad, following segments to middle of flagellum progressively shorter but all conspicuously longer than broad, last segment longer than second. Pronotal collar low, not lamellate; dorsolateral angle obtuse, rounded; no carina extending laterally and across pronotal lobe, no ridge extending downward from dorsolateral angle. Dorsal surface of propodeum about two-thirds as long as scutellum, margined posteriorly all along by a carina which appears to limit the triangular area, which thus covers the entire dorsal surface; posterior surface of propodeum entirely delimited by carinae, the lateral ones curving mesally in upper thirds so that the surface is broadest about one-third of the way down from the upper end. Basitarsi not thicker than following tarsal segments, shorter than remaining segments together of corresponding tarsi; small tarsal segments all much longer than broad; articulation of hind basitarsus



FIGS. 34–39. *Urohalictus lieftincki*, male holotype. 34. Ventral and dorsal aspects of fused seventh and eighth metasomal sterna; 35. Dorsal and ventral aspects of genitalia; 36. Lateral view of genitalia and associated seventh and eighth sterna; 37. Lateral view of fused seventh and eighth metasomal sterna; 38. Distal part of mandible, lower margin to the left; 39. Discal part of sixth sternum, showing margin of the median depression on left half and hairs on right half. For the sterna, a given structure seen in different views is marked with the same letter, to facilitate interpretation of the drawings.

with second segment similar to that between second and third segments; inner margin of inner hind tibial spur pectinate with about nine long, blunt teeth; *basitibial plate absent*; claws normal. Marginal cell beyond stigma not much longer than stigma, apex bent away from wing margin by distance equal to nearly three vein widths, with long dark appendage extending apically to wing margin halfway between apex of cell and wing tip; portion of marginal cell subtended by submarginal cells almost three-fourths as long as free part of cell; third submarginal cell larger than second, receiving second recurrent far before apex, second plus third cells longer than first. Posterior margins of terga I–VI broadly depressed, more conspicuously so laterally than mid-dorsally and more conspicuously so on VI than on other terga, defined only posteriorly by a carina and therefore much broader than long. Sterna I–V unmodified; VI with heavily sclerotized part broadly rounded apically but posterior margin in reality more nearly straight because of thin, transparent, posterior extensions of lateral parts; *surface of sternum VI immediately in front of gradulus deeply depressed medially, this area forming large, deep, impunctate, hairless, shining pit*, behind which a broad impunctate, hairless, shining band extends nearly to hind margin of sternum; on each side of this band on posterior half of sternum is an area of dense, more or less erect, dusky hairs, lateral to which are bare lateral parts of sternum; *sterna VII and VIII larger and more heavily sclerotized than in other known Halictinae, VII with apex upturned as paired lobes between gonostyli* (fig. 36), VIII (?) with apex upturned as broad paired lobes between apices of gonocoxites. Gonobase rather short, large in diameter; gonostylus long, flattened, with fine, dense hair, retrorse basal lobe reduced to small, sclerotic, hairy projection; *volsella enormously modified into two long, heavily sclerotized structures, (1) the probable cuspis, extending to dorsal surface of genitalia and thence posteriorly well beyond apex of gonocoxite, pointed and curving down posteriorly, resembling and probably functionally replacing penis valve, and (2)*

the more mesal, pointed, probable digitus which is black and toothed apically; penis valve slender, straight, not curved downward apically, weakly sclerotized.

Clypeus and supraclypeal area shining but minutely roughened, with widely scattered punctures where hairs arise. Rest of head with small punctures, densest on frons, ground between them minutely roughened, strongly so, producing a dull surface, on vertex and genal and hypostomal areas, the roughening forming fine, dense, longitudinal striation on hypostomal area; *impunctate, nonmetallic area along lower inner orbit absent*. Thorax finely punctate, punctures mostly separated by one or more puncture widths, ground between punctures finely roughened, duldest on mesoscutum (duller than vertex), most shining on highest convexity of scutellum and much of side of thorax; dorsum of propodeum dull but without rugae except for a few, fine, longitudinal ones at extreme sides; lower part of lateral surface of propodeum with several longitudinal striae. Metasomal terga I–VI minutely transversely lineolate, therefore rather dull, most shiny on gentle convexities anterior to depressed marginal zones; scattered punctures on these convexities and sides of terga, widely scattered elsewhere on IV, and more abundantly so on V and VI; depressed marginal zones sculptured like rest of terga but lacking hairs and punctures.

TYPE MATERIAL: Holotype male: Araucaria Camp [valley of the Araucaria River], West Irian, 800 m., March 30, 1939 (Netherlands Indies-American New Guinea Expedition, L. J. Toxopeus) [AMNH]. It bears the typewritten number 128.

ETYMOLOGY: This species is named for Dr. M. A. Lieftinck who sorted out the type specimen from among various other halictids for my study.

Lasioglossum (?*Parasphcodes*)
permetallicum Michener

Lasioglossum (*Parasphcodes*) *permetallicum*
Michener, 1965, p. 312.

I have nothing to add to the knowledge of this species, known from three females from Papua and West Irian.

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