

***Polyrhachis (Myrmhopla) schellerichae* n. sp.,  
a new ant of the *hector*-group from the Malay Peninsula  
(Insecta: Hymenoptera: Formicidae: Formicinae)**

WOLFGANG H. O. DOROW

With 14 figures

Abstract

A new species of the *hector*-group of *Polyrhachis (Myrmhopla)* is described from the Malay Peninsula.

Key words: Hymenoptera, Formicidae, *Polyrhachis*, systematics, new species, Malaysia.

*Polyrhachis* is one of the largest ant genera of the world, comprising today 470 described species from Africa, Asia and Australia (DOROW 1995, DOROW & KOHOUT 1995), 117 of these belong to the largest subgenus, *Myrmhopla*. Most species of this subgenus are characterized by an immarginate alitrunk and long spines on the propodeum (DOROW 1995). They have been assigned to 16 species-groups. A new species of *Polyrhachis (Myrmhopla)* was recently discovered on the Malay Peninsula. It belongs to the *hector* species-group, which is characterized by its flattened tibiae and antennae. The new species (*P.* sp. no. 3 in DOROW 1995) can be easily distinguished from all other *Polyrhachis* by its strongly elongated head, especially in the female.

Measurements: All measurements are given in mm in the following way: range [mean  $\pm$  standard deviation; median].

- CI cephalic index – head width  $\times$  100 / head length.
- G1L length of first gaster segment – measured in top view while the anterior and posterior ends of segment 2 are in focus.
- G1W width of first gaster segment – measured in top view at the posterior end of the segment.
- GL length of gaster – relatively coarse measurement because the gastral segments are often more or less retracted in a telescope-like manner.
- HL head length – measured in full face view from frontal margin of clypeus to posterior margin of head.
- HW head width – measured in full face view below the eyes.

- MTL length of metatibia – measured with both ends of metatibia in focus.
- PNSW distance between tips of pronotal spines.
- PPSW distance between tips of propodeal spines.
- PTL length of petiole.
- PTSW distance between tips of petiolar spines.
- PW width of pronotum – measured posteriorly of the base of the pronotal spines in the workers, in front of the forewings in females and males.
- SI scape index – scape length  $\times$  100 / scape width.
- SL maximum length of scape – measured with both ends of scape in focus.
- TL total length – measured as HL + TPL + GL; relatively coarse measurement because the gastral segments are often more or less retracted in a telescope-like manner and because the head is frequently not held in a prognathous position.
- TPL length of alitrunk + petiole – measured from the anterior part of the pronotum to the posterior end of the petiole.
- WL Weber's length – the diagonal length of the alitrunk in lateral view from the point at which the pronotum meets the cervical shield to the apex of the metapleural lobes.

Morphological terms follow TORRE-BUENO (1985), HÖLDOBLER & WILSON (1990) and BOLTON (1994). In addition "temple" is used for the sides of the head above the eyes (DONISTHORPE 1927: 2).

Acknowledgements: I am grateful to RÜDIGER KLEIN for proofreading the English manuscript.

Author's address:

WOLFGANG H. O. DOROW, Forschungsinstitut Senckenberg, Senckenberganlage 25, D-60325 Frankfurt am Main, Germany.

*Polyrbachis (Myrmhopla) schellerichae* n. sp.

Holotype: Worker (SMF 2369), Malaysia, Selangor: Ulu Gombak Research Centre, 8.III.1992; ANGELA SCHELLERICH, Acc.-No. 15.34.6.

Nidoparatypes: 350 workers (SMF 2370), 47 alate and none dealate females (SMF 2371), 91 males (SMF 2372), and uncounted numbers of pupae in cocoons, larvae and eggs.

Paratypes: 161 workers (SMF 2373), 29 females (SMF 2374), 40 males (SMF 2375), and uncounted numbers of pupae in cocoons, larvae and eggs, same locality as holotype, 6. II. 1993; A. SCHELLERICH, Acc.-No. 21.14.3.

Nidoparatypes and paratypes in the following collections: Senckenberg-Museum, Frankfurt a.M.; The Natural History Museum, London; Austral. Natn. Insect Coll., Canberra; Forest Res. Inst. Malaysia, Kepong; Univ. Mus. Kuala Lumpur; Mus. comp. Zool. Harvard Univ.; Queensl. Mus., Brisbane; Coll. U. MASCHWITZ (J.W. Goethe-Univ., Frankfurt a.M.); Coll. A. SCHELLERICH.

Derivatio nominis: The species is named after its discoverer, Miss ANGELA SCHELLERICH.

Holotype measurements: TL: 9.47; HL: 2.43; HW: 1.41; SL: 2.18; TPL: 3.84; GL: 3.20; G1L: 1.41; G1W: 2.05; MTL: 3.58; PW: 1.02; PNSW: 1.66; PPSW: 0.64; PTW: 1.28; PTL: 0.64; WL: 3.07; CI: 57.89; SI: 154.55.

Worker measurements (n = 20): TL: 8.72–9.79 [9.29 ± 0.25; 9.29]; HL: 2.18–2.44 [2.38 ± 0.07; 2.41]; HW: 1.25–1.41 [1.34 ± 0.05; 1.34]; SL: 2.18–2.32 [2.22 ± 0.05; 2.20]; TPL: 3.46–3.97 [3.74 ± 0.12; 3.78]; GL: 2.70–3.71 [3.17 ± 0.22; 3.78]; G1L: 1.15–1.47 [1.31 ± 0.08; 1.28]; G1W: 1.68–2.18 [1.95 ± 0.11; 1.92]; MTL: 3.33–3.71 [3.53 ± 0.10; 3.56]; PW: 0.90–1.02 [0.96 ± 0.05; 0.96]; PNSW: 1.38–1.68 [1.52 ± 0.10; 1.54]; PPSW: 0.37–0.77 [0.57 ± 0.10; 0.55]; PTW: 1.16–1.38 [1.27 ± 0.05; 1.28]; PTL: 0.61–0.74 [0.66 ± 0.03; 0.64]; WL: 2.88–3.20 [3.07 ± 0.09; 3.07]; CI: 54.05–57.89 [56.24 ± 1.21; 56.09]; SI: 154.55–177.23 [166.24 ± 6.67; 167.63].

Worker diagnosis (Figs. 1–4): Head (Fig. 2) elongately oval; mandibles with 5 very broad and coarse teeth, gradually increasing somewhat in size from base to tip of mandible; mandibles finely longitudinally striate with small hair-pits; maxillary palps barely reaching the frontal margin of the eyes when flexed back against the genae; frontal margin of clypeus weakly convex, central two thirds weakly protruding with lateral corners, this area shiny with larger hair-pits; rest of clypeus finely punctured, with a weak central keel which is moderately shiny and bears only very few hairs; eyes positioned in the upper half of the head, without hairs, in frontal view rising moderately above the outline of the head; genae in frontal view long, convex, not marginate; occiput marginate; ocelli lacking; temples nearly parallel, only weakly narrowing posteriorly, with weak lobes at the posterior corners; antennae with flattened short (compared to other *Polyrbachis* species) scapes, which are protruding above the occiput by about 1/3 of their length; antennal segments longest near the scape; frontal carinae flat and only weakly curved, with a weak moderately shiny central keel.

Alitrunk long and slender, widest at the pronotum, not marginate; pronotum in side view convex, anteriorly with 2 long and acute spines that protrude forward, a little upwards and sideways, their tips weakly curved down; mesonotum in side view saddlelike concave; propodeum in side view straight, on top with 2 long and acute spines that are directed backwards and only weakly upwards and sideways; propodeal spines running forward on the upper sides of the segment in a bulge-like manner; posterior part of

propodeum declining concavely to the petiole; metathoracic spiracle round; propodeal spiracle a vertical oval slit with a median constriction; pronotal-mesonotal suture distinct; mesonotal-propodeal suture indistinct, elevated on a bulge; area where in other ant genera the metapleural gland bulla is situated sometimes coloured light brown, always smooth and shiny; legs long and slender, tibiae flattened without rows of spines; tibial spur comb-like.

Petiole short and broad, in side view with a nearly ball-like appearance (anteriorly and posteriorly convex) and broadly inserting long spines on top which are curved backwards and at the most slightly upwards, nearly embracing the gaster; spiracle of petiole round; ventral side with a keel anteriorly, which begins with a steep incline and runs arched to the posterior end of the segment.

Gaster elongately oval; first segment anteriorly with a short ascent, which is at its lower part more or less straight and only at its upper part convex; all segments close to their posterior margins with a row of scattered hairs which are directed obliquely backwards; acidoporus only anteriorly with a row of short bristles, this row interrupted in the middle, the bristles closest to the resulting gap the longest; anterior-ventrally with a short process protruding anteriorly below the joint of the petiole.

Sculpture: head and alitrunk with fine pits, which are of the areolate type (HARRIS 1979) (Fig. 3), petiole and gaster with a fingerprint-like sculpture (Fig. 4), this type of sculpturation is not figured in HARRIS (1979).

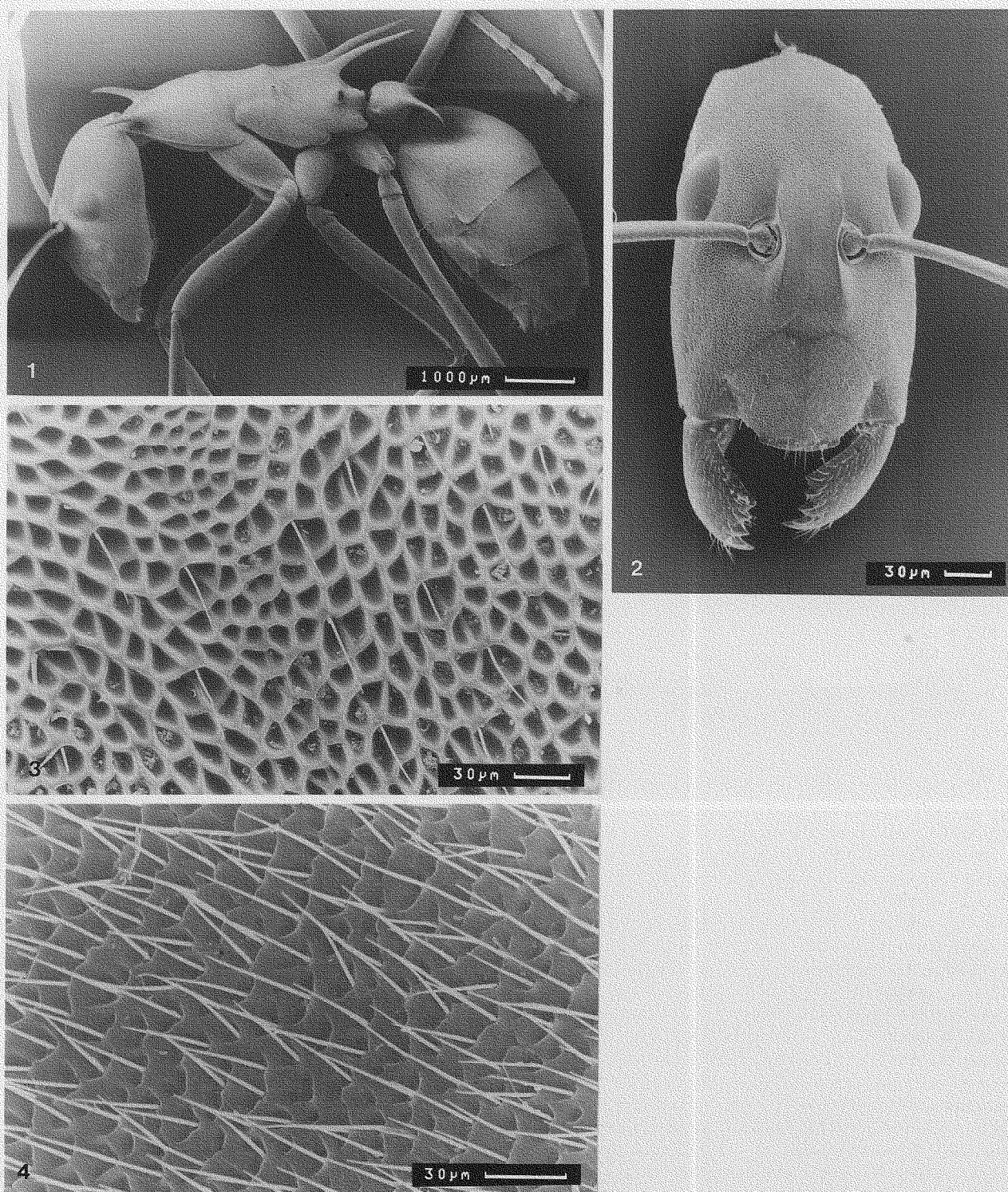
Hairs: whole body with a fine, dispersed, loosely appressed pubescence which is not hiding the sculpture.

Glossiness and colour: head in front of the eyes and gaster of a weak, silky glossiness, posterior part of head and alitrunk more or less matt; head including mandibles and alitrunk black to blackish-brown, gaster a little lighter (chestnut brown), legs chestnut or dark brown, tarsi blackish; antennae blackish-brown, becoming lighter towards the tip, tip of last segment yellowish-brown; eyes matt pink to blackish red.

Female measurements (n = 20): TL: 12.62–13.57 [13.05 ± 0.26; 13.06]; HL: 3.33–3.58 [3.47 ± 0.07; 3.46]; HW: 1.41–1.60 [1.48 ± 0.06; 1.48]; SL: 2.19–2.43 [2.37 ± 0.06; 2.38]; TPL: 5.17–5.50 [5.33 ± 0.09; 5.38]; GL: 3.97–4.86 [4.26 ± 0.22; 4.22]; G1L: 1.41–1.79 [1.58 ± 0.09; 1.56]; G1W: 2.05–2.55 [2.24 ± 0.12; 2.30]; MTL: 3.78–4.10 [3.93 ± 0.08; 3.91]; PW: 1.23–1.41 [1.32 ± 0.04; 1.32]; PNSW: 0.64–1.02 [0.90 ± 0.08; 0.90]; PPSW: 0.40–0.51 [0.45 ± 0.04; 0.45]; PTW: 0.81–0.91 [0.87 ± 0.03; 0.88]; PTL: 0.70–0.96 [0.78 ± 0.06; 0.77]; WL: 4.35–4.67 [4.50 ± 0.08; 4.48]; CI: 40.44–46.30 [42.71 ± 1.86; 42.14]; SI: 149.60–172.73 [160.41 ± 6.50; 158.33].

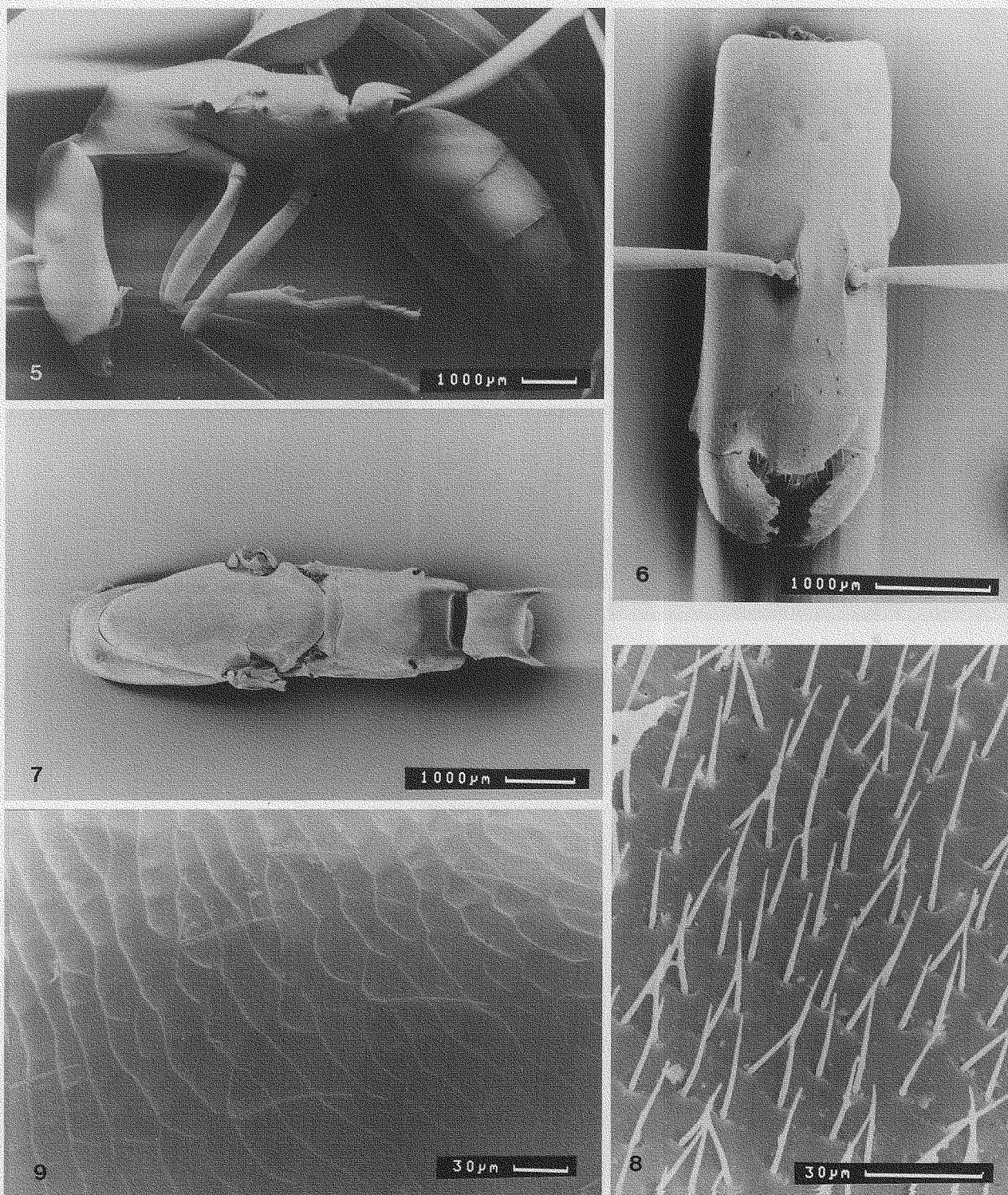
Female diagnosis (Figs. 5–9): Female differing strongly from the worker.

Head (Fig. 6) very long, in frontal view nearly rectangular, with the margins near the eyes weakly concave, in side view long and slender; mandibles with 5 teeth, gradually increasing somewhat in size from base to tip of mandible, but with the penultimate one being the smallest, finely longitudinally irregularly striate with fine hair-pits and loosely dispersed hairs; maxillary palp when flexed back against the gena not reaching the frontal margin of the eye; eyes blackish or reddish, situated in the upper half of the head, only weakly convex and only slightly breaking the outline of the head, without hairs; clypeus as in the worker, but posteriorly ending in an irregularly shaped dent, a larger hair pit is situated to each side of the dent,



Figs. 1–4. *Polyrhachis (Myrmhopla) schellerichae* n. sp., worker. – 1) Habitus; 2) head; 3) areolate sculpture of head; 4) sculpture of first segment of gaster, top view.





Figs. 5–9. *Polyrhachis (Myrmobopla) schellerichae* n. sp., female. – 5) Habitus; 6) head; 7) alitrunk; 8) sculpture of first segment of gaster, top view; 9) imbricate sculpture of petiole.

these two hair pits are often not positioned in symmetric distances from the dent; 3 ocelli; genae very long (about 1.8 mm), nearly straight (weakly convex), not marginate; temple about 1.1 mm long, temples in full face view running parallel to each other, i. e., head not narrowing at occiput; each side of posterior end of head protruding in a swelling; occipital margin concave, rounded; antennae with flattened short scapes which are widest closely in front of the posterior end; protruding beyond the occiput by less than 1/3 of their length; distal segments of funiculus shorter than proximal ones, only the last segment of about same size as the first; frontal carinae flat, only weakly curved, i. e., nearly parallel to each other, with a weak central keel between them, running nearly to the first ocellus, area between frontal carinae anteriorly only weakly sculptured and strongly shiny, posteriorly of the usual sculpture of the head (see below).

Alitrunk (Fig. 7) in side-view and in top view long and slender, nearly parallel sided, without margination, relatively flat on top; sutures distinct but never built as furrows; pronotum anteriorly only with a tubercle or angle on each side; mesonotum very long, in side-view the central part straight or weakly concave, anteriorly the segment has a steep rise, which shows a weak central keel; a U-shaped keel runs on the posterior half of the top of this segment (opening anteriorly); propodeum in side-view nearly straight, with swellings or short teeth where spines are present in the worker caste; declivity to the petiole low and concave; metathoracic spiracle very small and round, propodeal spiracle large and oval as in the worker; femora, tibiae and first tarsal segments flattened; tibiae without rows of spines; tibial spurs pectinate; fore wings light greyish brown, stigma and veins dark brown, in front of the stigma a small colourless area, also the folding line of the wing colourless; hind wings without such colourless areas, veins anteriorly darker brown in most specimens, a row of 17–19 hooks begins at the anterior margin of the hind wing posteriorly from where the cross vein meets the subcosta.

Petiole as in the worker, but on top at each side a spine (much shorter than in the worker) with a broad base arises, running backwards, weakly upwards and only very weakly outwards; area between the two spines broad and rounded.

Gaster like in the worker caste.

Sculpture similar to that in the worker caste, but generally somewhat weaker (Fig. 8), much weaker and more shiny on top of mesonotum, imbricate (HARRIS 1979) on petiole (Fig. 9); coarser pairs of pits near the anterior and posterior borders of the clypeus, near its side corners and near the anterior sides of the frontal triangle; a single pit at the posterior end of the frontal triangle, where the antennal keel starts; area where in other ant genera the metapleural gland bulla is situated sometimes coloured light brown and shiny.

Hairs: few yellow-brownish hairs on clypeus, coxae, keel of petiole, posterior ends of femora, tibiae, tarsal segments and gaster (as described above); first gaster sternite centrally also with few hairs; palps with hairs, antennal segments especially posteriorly with short bristle-like erect hairs; whole body with a fine, weak, appressed whitish pubescence, which does not hide the sculpture but is somewhat stronger on coxae and gaster.

Glossiness and colour: whole body with a weak silky glossiness, mesonotum and head (except the part above the eyes in full face view) more shiny than rest of body; whole

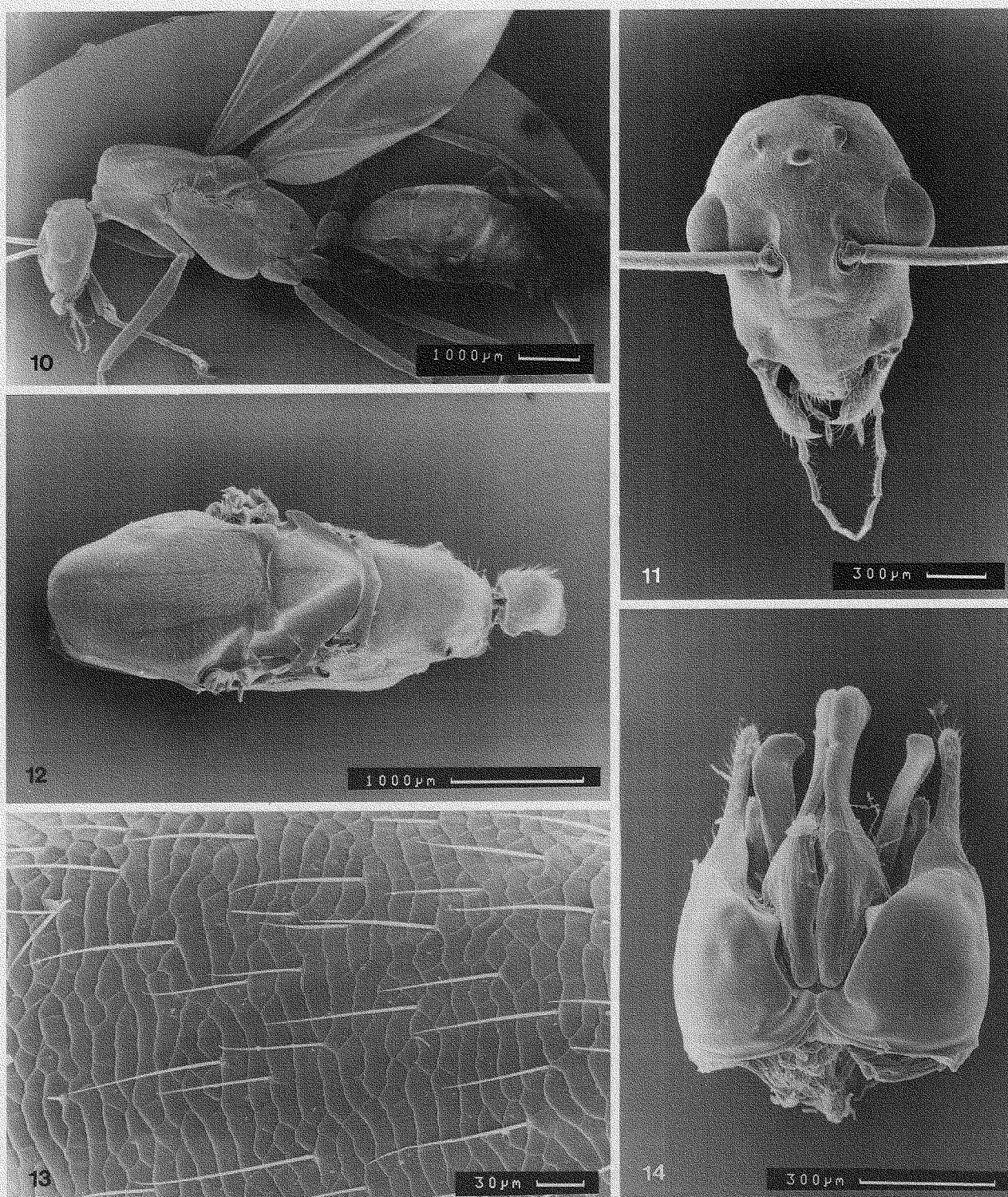
body black to blackish brown, palps, tip of last antennal segment, tip of last tarsal segment, tip of last gaster segment and strigil yellowish brown, gaster blackish brown to black, posterior margins of segments, especially of sternites, often lighter. One specimen had a round brownish-yellow area on the third gaster tergite, with a central injury in the middle. The cause for this injury could not be evaluated, but it is known, that parasitic infections often change body colours to lighter shades.

Male measurements ( $n = 20$ ): TL: 7.94–9.22 [ $8.45 \pm 0.30$ ; 8.43]; HL: 1.47–1.60 [ $1.52 \pm 0.03$ ; 1.54]; HW: 0.95–1.02 [ $0.99 \pm 0.03$ ; 0.99]; SL: 1.41–1.60 [ $1.47 \pm 0.05$ ; 1.47]; TPL: 3.71–4.10 [ $3.96 \pm 0.10$ ; 3.97]; GL: 2.56–3.71 [ $2.96 \pm 0.25$ ; 2.94]; G1L ( $n = 8$ ): 1.02–1.15 [ $1.08 \pm 0.05$ ; 1.07]; G1W ( $n = 4$ ): 1.45–1.79 [ $1.58 \pm 0.14$ ; 1.54]; MTL: 2.55–2.69 [ $2.62 \pm 0.04$ ; 2.62]; PW: 1.14–1.59 [ $1.33 \pm 0.12$ ; 1.29]; PTL: 0.50–0.59 [ $0.54 \pm 0.03$ ; 0.52]; WL: 3.01–3.52 [ $3.34 \pm 0.12$ ; 3.36]; CI: 61.67–68.97 [ $64.85 \pm 1.69$ ; 64.66]; SI: 137.50–168.92 [ $148.87 \pm 8.43$ ; 148.03].

Male diagnosis (Figs. 10–14): Head (Fig. 11) oval in frontal view, semicircular in side-view; clypeus convex, weakly keeled along its midline, anterior border convex and with a few long setae; eyes large, situated slightly above the middle of the sides of the head, nearly hemispherical, breaking the outline of the head, reddish-black, without hairs; genae about as long as the eyes, straight, not marginate; temple about as long as the eyes, somewhat narrowing towards the occipital margin, but occipital margin still broad and nearly straight, only weakly concave due to weakly prominent side corners; 3 large ocelli protruding in a hump-like way; mandibles only with one broad based anterior tooth, rounded behind this tooth after a notch; palps when flexed backwards protrude to the anterior border of the eyes; antennal scapes protruding beyond the posterior margin of the head by about half of their length; scapes without distinct flattening, colour of underside of antennal segments in some specimens becoming lighter toward the tip, where they are yellowish; frontal carinae flat, the sides at most weakly curved upwards, only weakly curved above the insertions of the antennae, weakly shiny; area between them with a weak central keel; sometimes an indistinct groove is present in front of the first ocellus.

Alitrunk (Fig. 12) proportions similar to those of female, but overall appearance shorter and broader (broadest in front of the wings); pronotum and anterior part of mesonotum form a vertical incline of the alitrunk; mesonotum in this part with two sutures, which start apart from each other in the lower area, then approach each other and finally often run parallel to each other to the top of the incline, after a short interruption a central suture running along top of the segment for about 1/3 of the segment's length; about at the height of the central suture's end, a lateral suture at each side of the upper part of the mesonotum starts running backwards to the end of the segment; mesonotum in side-view on top nearly straight (weakly convex), not saddle-shaped; scutellum strongly arched; propodeum convex, running evenly down to the insertion of the petiole; alitrunk without margination or spines, propodeum sometimes with small humps at where the spines are situated in the workers; sutures distinct but not incised; metanotum higher than propodeum, posteriorly elongated in the middle; metathoracic spiracle like a small round puncture; propodeal spiracle large and oval; wings like in the female, but lighter areas indistinct; fore





Figs. 10–14. *Polyrbachis (Myrmhopla) schellerichae* n. sp., male. – 10) Habitus; 11) head; 12) alitrunk; 13) imbricate sculpture of first segment of gaster, dorsal view; 14) genitalia.

femora somewhat flattened, other parts of legs not; only fore tibiae with a distinct spur (strigil).

Petiole nodiform, sometimes weakly marginate or humped posteriorly at the sides; ventral part of petiole with a weak keel, which is evenly arched anteriorly and posteriorly.

Gaster slender; first segment short, weakly increasing in diameter, otherwise like in the female.

Hairs and pubescence like in the female but petiole with erect light hairs.

Sculpture similar to that in the female but frontal head sculptured like the rest of the body; sculpture on gaster imbricate (HARRIS 1979) (Fig. 13).

Glossiness and colour: head and alitrunk of a weak silky glossiness, gaster more shiny; colour lighter than in female.

Sexual organs: sagitta, volsella, stipes posteriorly brownish, anteriorly yellowish brown, sagitta sometimes totally yellowish brown; only stipes posteriorly with standing light hairs (Fig. 14).

Comments: Despite the great interest of the early entomologists in the large *Polyrhachis* species, which is documented by the relatively few overlooked species compared with other ant genera, this large and morphologically outstanding species had remained undetected even during the intense ant research at the Ulu Gombak Field Studies Centre during the last decades. So, *Polyrhachis schellerichae* n. sp. seems to be not only a highly specialized ant with a hidden mode of life in the internodes of bamboo but really a rare species. The interesting biology will be reported by SCHELLERICH et al. in the next issue of this journal.

## References

- BOLTON, B. (1994): Identification guide to the ant genera of the world. – 222 pp.; Cambridge, Mass., and London (Harvard University Press).
- DONISTHORPE, H. S. J. K. (1927): British ants. Their life-history and classification. – 436 pp.; London (George Routledge and Sons).
- DOROW, W. H. O. (1995): Revision of the ant genus *Polyrhachis* SMITH, 1857 (Hymenoptera: Formicidae: Formicinae) on subgenus level with keys, checklist of species and bibliography. – Courier Forschungsinstitut Senckenberg, 185: 1–113; Frankfurt am Main.
- DOROW, W. H. O. & KOHOUT, R. J. (1995): A review of the subgenus *Hemioptica* ROGER of the genus *Polyrhachis* FR. SMITH with description of a new species (Hymenoptera: Formicidae: Formicinae). – Zoologische Mededelingen, 69: 93–104; Leiden.
- HARRIS, R. A. (1979): A glossary of surface sculpturing. – Occasional Papers in Entomology, 28: 1–21.
- HÖLLDOBLER, B. & WILSON, E. O. (1990): The ants. – 732 pp.; Berlin, Heidelberg, London, Paris, Tokyo, Hong Kong (Springer-Verlag).
- TORRE-BUENO, J. R. DE LA (1985): A glossary of entomology. SMITH's "An explanation of terms used in entomology." Completely revised and rewritten and supplement A (edited by G. S. TULLOCH). – 336 + 36 pp.; New York (New York Entomological Society).