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A Revision of the Genera *Hypselothyrea* DE MEIJERE and *Tambourella* WHEELER (Diptera, Drosophilidae)

Toyohi OKADA

Gôtokuji 2-30-18, Setagaya-ku, Tokyo 154, Japan

Synopsis A revision of the genera *Hypselothyrea* DE MEIJERE and *Tambourella* WHEELER was made with descriptions of nine new species: seven of the former genus and two of the latter from various localities of Southeast Asia and New Guinea. A new subgenus, *Deplanothyrea*, was erected in the genus *Hypselothyrea*. Relationships between genera, subgenera and between species were taximetrically analysed and a key was automatically constructed from the dendrogram of relationships.

The genera *Hypselothyrea* DE MEIJERE and *Tambourella* WHEELER are closely related to each other as they are to the genus *Liodrosophila* DUDA, having in common a row of spicules on the inner surface of fore femur and pointed ovipositor. The characters common to *Hypselothyrea* and *Tambourella* but usually not shared by *Liodrosophila* are only one humeral and only one sternopleural. Major features distinguishing *Hypselothyrea* from *Tambourella* are the absence of postverticals, the proximally much narrowing abdomen and well demarcated frontal shield.

The present study was intended to review the genera taximetrically, to divide *Hypselothyrea* into 2 subgenera, and to describe 9 new species, 7 of *Hypselothyrea* and 2 of *Tambourella*, basing on various sources of collection mostly from Southeast Asia and New Guinea. Type specimens of new species are deposited in the Bernice P. Bishop Museum, Honolulu, Hawaii.

I am much obliged to Drs. J. L. GRESSITT, F. J. RO^ADOVSKY and W. A. STEFFAN, who had kindly allowed me free access to the Bernice P. Bishop Museum collection, and to Dr. M. R. WHEELER, through whom I could examine New Guinean specimens preserved at Genetics Foundation, University of Texas at Austin. My hearty thanks are also due to various investigators who have afforded me with material: Dr. H. L. CARSON of University of Hawaii, Dr. J. P. GUPTA of Banaras Hindu University, Dr. H. IKEDA of Ehime University, Dr. K. KANMIYA of Kurume University, Drs. O. KITAGAWA and S. NISHIHARU of Tokyo Metropolitan University, Dr. H. KURAHASHI of National Institute of Health, Dr. S. MIYAMOTO of Tsukushi Women's College, Dr. T. SAIGUSA and Mr. H. SHIMA of Kyushu University, Dr. S. SHINONAGA of Tokyo Medical and Dental University, and Dr. L. H. THROCKMORTON of the University of Chicago.

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Genus *Hypselothyrea* DE MEIJERE

DE MEIJERE, 1906, Anns. hist.-nat. Mus. natn. hung., 4: 193. Type-species: *H. dimidiata* DE MEIJERE.

Subgenus *Hypselothyrea* DE MEIJERE

usually /
 Acrostichal hairs absent. Scutellum upright. Wings not exceedingly narrowing proximally. C-index usually more than 1.0; if less than 1.0, wings pictured. It includes 6 known and 7 new species.

Hypselothyrea lanigera DUDA

(Figs. 7 and 8)

Hypselothyrea lanigera DUDA, 1928, Anns. hist.-nat. Mus. natn. hung., 25: 28.

Body black. Frontal shield broad and granulose. Mesoscutum granulose. Dorsocentrals in 2 pairs. Legs white, femora and hind tibia black at least distally. C-index 1.6; 4V-index 2.1; C3-fringe 5/8. Male genitalia (Figs. 7 and 8) black; surstylus with about 11 teeth.

Specimens examined. New Guinea: 1 ♂, near head of Ransiki River, Sucumi Camp, 6 VIII 1957 (D. E. HARDY); 1 ♂, Ransiki 10 m, Vogelkop, 9 VIII 1957 (D. E. HARDY); 2 ♂, Manokuari 75 m, Vogelkop, 11 VIII 1957 (D. E. HARDY); 1 ♂, SSE Sumberbaba, Dawai R., Japan I., 6 XI 1962 (H. HORTMANN); 1 ♂, SE Biak I., 1 VII 1962 (J. L. GRESSITT and J. SEDLACEK); 2 ♂, Ginnen, Hollandia 50 m, 12 VII 1957 (D. E. HARDY); 1 ♂, Lae 10 m, 6 VII 1962 (D. E. HARDY); 1 ♀, NE Karimui, south of Goroka 1000 m, 2 VI 1961 (J. L. and M. GRESSITT); 1 ♀, Hospital Creek, 1250 m Wau, 7 V 1965 (J. SEDLACEK, at Malaise trap); 1 ♂, Big Wau Creek, 1300 m, Wau, XI 1965 (P. SHANAHAN). All are from Bishop Museum collection.

Distribution. New Guinea.

Hypselothyrea spinifera sp. n.

(Figs. 9 and 10)

Body dark brown in general. Frontal shield broad and glossy black. Mesoscutum mat. Dorsocentrals in 1 pair. Legs bicolorous. Wings fuscous. C-index 2.5, C3-fringe 2/5. Abdomen glossy black.

♂ and ♀. Body about 2.2 mm in length, dark brown. Arista with 5 upper and 3 lower long branches and a long terminal fork. Palpus black, with a few fine setae. Frontal shield broad, glossy black. Periorbits broad. Face medially paler. Carina ridged. Proclinate orbitals slightly shorter than posterior reclimates; anterior reclimates absent. Second oral 2/3 vibrissa. Mesoscutum densely pruinose, lateroanteriorly and laterocaudally black. Scutellum mat velvety black. Thoracic pleura glossy, ventrally black. Dorsocentrals in 1 pair. Anterior scutellars fine. Legs pale yellow; fore femur, distal half of mid femur and hind femur except base black. Wings slender, nearly clear, faintly fuscous between anterior and posterior crossveins. C-index 2.5; 4V-index 1.5; 4C-index 0.8; 5x-index 1.1; Ac-index 3.0; C3-fringe 2/5. Halteres black, apically white. Abdomen glossy black; basal tergites mat and finely granulose. Male genitalia (Figs. 9 and 10) black. Surstylus with about 7 stout teeth. Epandrium ventrally tapering, with a stout tooth subapically.

Holotype ♂ and allotype ♀, Lae, Botanical Garden, 27–29 IX 1977 (T. Okada, No. 92801·1 and 2). Other specimens examined. 5 ♂, collected together with holotype.

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and 11827a

Distribution. New Guinea.

Relationships. It resembles *H. dimidiata* in wing venation and wing coloration, differs, however, in having bicolorous legs and glossy black abdomen.

Hypselothyrea brevipennis DE MEIJERE

Hypselothyrea brevipennis DE MEIJERE, 1906, Anns. hist.-nat. Mus. natn. hung., 4: 195.

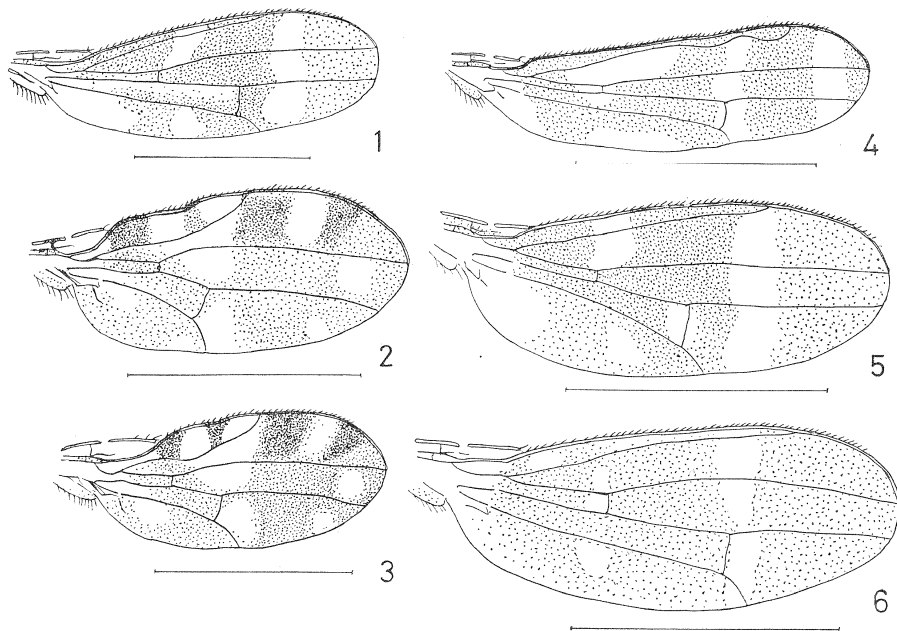
Body brown. Frontal shield broad and punctured. Mesoscutum mat, smooth. Scutellum black. Wings black with 3 white bands. C-index 3.0. Legs unicolorous. Abdomen glossy black, short.

Distribution. New Guinea.

Hypselothyrea tenuis sp. n.

(Figs. 4, 17 and 18)

Body black. Frontal shield broad and granulose. Mesoscutum smooth. Dorsocentrals in 1 pair. Scutellum apically white. Wings narrow, pictured. R_{2+3}



Figs. 1–6. Wings. — 1. *Hypselothyrea parafascipennis*; 2. *H. guttata*; 3. *H. pseudoguttata*; 4. *H. tenuis*; 5. *H. truncata*; 6. *H. albifascia*. Scales: 1 mm.

strongly undulant distally. C-index 3.0. Legs yellow, femora black. Abdomen glossy black.

♂. Body about 2.5 mm in length, slender, metallic blue black. Arista with 5 upper and 5 lower branches and a moderate fork. Palpus with a long apical seta. Frontal shield broad, mat, tuberculated. Periorbits broad. Anterior reclinate orbitals absent. Vibrissa weak. Mesoscutum granulose. Scutellum elongate, mat black, apically white. Thoracic pleura glossy black. Dorsocentrals in 1 pair. Anterior scutellars absent, posteriors close to each other. Legs yellow, femora black. Wings (Fig. 4) slender, somewhat truncate apically, with about 4 black cross bands. R_{2+3} twice undulated distally. C-index 3.0; 4V-index 1.0; 4C-index 0.7; 5x-index 0.6; Ac-index 2.5; C3-fringe 2/5. Abdomen glossy black. Male genitalia (Figs. 17 and 18) black. Surstylus with about 9 teeth.

Holotype ♂, Mt. Missim Trail, Wau, 1570 m (H. L. CARSON, ex Megapode mound, No. C 209. 12).

Distribution. New Guinea.

Relationships. It resembles *H. brevipennis* in having banded wings and undulated R_{2+3} , differs, however, in having blue black granulose frons and only one pair of dorsocentrals.

Hypselothyrea fascipennis DE MEIJERE

Hypselothyrea fascipennis DE MEIJERE, 1906, Anns. hist.-nat. Mus. natn. hung., 4: 194. — DUDA, 1928, *ibid.*, 25: 83.

Body reddish brown. Frontal shield smooth and broad. Dorsocentrals in 2 pairs. Wings black with 2 white cross bands. C-index about 2.0. Abdomen metallic purple black.

Distribution. India.

Hypselothyrea tuberofacies sp. n.

Body orange brown. Frontal shield oblong. Face yellow, large and swollen. Mesoscutum mat. Scutellum black. Thoracic pleura black. Dorsocentrals in 2 pairs. Wings clear. Legs bicolorous. Abdomen glossy black.

♀. Body about 3.5 mm in length. Arista with 5-6 upper and 3 lower branches and a fine fork. Palpus with a long apical seta. Frontal shield glossy brown, oblong and parallel-sided. Periorbits glossy brown, broad, anteriorly narrowing. Face greyish yellow, large, much swollen. Cheek broad, yellowish grey. Orbitals seemingly only 1 pair (posterior reclinate). Vibrissa very fine. Mesoscutum mat orange brown, laterally glossy brown. Scutellum mat black, apically and ventrally yellow. Thoracic pleura glossy black, yellow at wing base. Dorsocentrals in 2 pairs. Anterior scutellars absent. Legs yellowish white, distal 1/3 of femora and distal tips of fore and hind tibiae black. Wings hyaline, R_{2+3} straight, R_{4+5} and M somewhat convergent distally. C-index 1.6; 4V-index 3.0; 4C-index 2.0; 5x-

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index 2.0; Ac-index 4.0; C3-fringe 3/4. Halteres yellow, knobs brown. Abdomen glossy black, 2nd and 3rd tergites laterally swollen.

Holotype ♀, Misamis Or., Gingoog Mt., Kiongolozokuse 700–800 m, 8–18 IV 1960 (H. TORRE-VILLAS, No. B116). Other specimen examined. 1 ♀, Dalton Pass, 915 m, Nueva Vizcaya, 9–10 IV 1968 (D. E. HARDY).

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Distribution. Philippines.

Relationships. Unique among the genus in having much swollen face. Somewhat related to *H. dimidiata* in having clear wing, high C-index, orange brown mesoscutum and 2 pairs of dorsocentrals. But it is distinguished from *dimidiata* by swollen face, bicolorous legs and black scutellum.

Hypselothyrea dimidiata DE MEIJERE

Hypselothyrea dimidiata DE MEIJERE, 1906, Anns. hist.-nat. Mus. natn. hung., 4: 194. — DUDA, 1928, *ibid.*, 24: 85.

Body dark brown. Thorax paler. Frontal shield broad. Dorsocentrals in 2 pairs. Anterior scutellars fine. Wings slightly fuscous. Legs unicolorous. C-index 2.5. Abdomen dark brown with black caudal bands.

Distribution. New Guinea.

Hypselothyrea parafascipennis sp. n.

(Figs. 1, 13 and 14)

Body black, somewhat bluish. Frontal shield broad and smooth. Mesoscutum finely granulose. Dorsocentrals in 1 pair. Legs bicolorous. Wings black with white bands. C-index 1.7. Abdomen mat black.

♂. Body about 2.5 mm in length, mat black, somewhat bluish. Arista with 6 upper and 4 lower branches and a small fork. Palpus with a long apical seta. Frontal shield broad, trapezoid. Periorbits broad. Anterior reclinate orbitals absent. Vibrissa short. Mesoscutum finely granulose and pruinose. Humerus dark brown. Scutellum mat brownish black, pointed apically. Thoracic pleura mat brown, caudal half somewhat bluish. Dorsocentrals in 1 pair. Anterior scutellars absent. Legs yellow; femora black; mid and hind femora basally yellow; hind tibia black; hind metatarsus basally dark. Wings (Fig. 1) black with 2 white bands. R_{2+3} straight. C-index 1.7; 4V-index 1.6; 4C-index 1.3; 5x-index 1.0; Ac-index 3.5; C3-fringe 4/7. Abdomen mat black. Male genitalia (Figs. 13 and 14) brownish black. Surstylus with 7 teeth. Egg with 4 long and 2 shorter filaments.

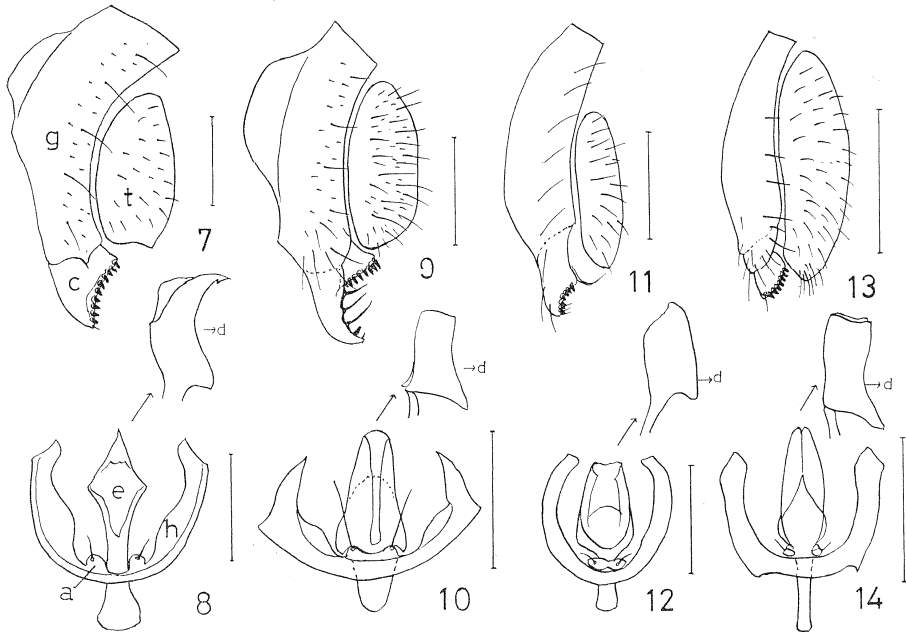
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Holotype ♂, Sucumi Camp, near head of Ransiki R., Vogelkop 300 m, 6 VIII 1957 (D. E. HARDY, No. B87). Other specimens examined. 1 ♂, collected together with holotype; 2 ♂, Pak Pak, S. Coast of Bomberal, Vogelkop 10–100 m, 3 VI 1959 (T. C. MAA).

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Distribution. New Guinea.

Relationships. It resembles *H. fascipennis* in having white wing bands, straight C, smooth frontal shield and bicolorous legs, differs, however, in having somewhat



Figs. 7-14. Male genitalia, periphallic organs (upper figures) and phallic organs (lower figures). — 7, 8. *Hypselothyrea lanigera*; 9, 10. *H. spinifera*; 11, 12. *H. scutellata*; 13, 14. *H. parafascipennis*. a, paramere; e, aedeagus; g, epandrium; h, hypandrium; t, cercus; →d, dorsal direction. Scales: 0.1 mm.

granulose mesoscutum, black mesoscutum and scutellum, and only one pair of dorsocentrals.

Hypselothyrea albifascia sp. n.

(Figs. 6, 21 and 22)

Body black. Frontal shield narrow, wrinkled. Mesoscutum finely granulose. Legs bicolorous. Wings dark, with 2 white bands. C-index 2.0. Abdomen glossy black.

♂, ♀. Body about 3 mm, generally black. Frontal shield narrow, glossy brownish black, laterally mat grey, wrinkled. Periorbits glossy brownish black, anteriorly narrowing. Cheek narrow, black. Mesoscutum mat bluish black, finely granulose. Scutellum black, laterally pale. Thoracic pleura glossy brownish black. Anterior scutellars fine. Legs yellow; fore femur and fore tibia black; mid and hind femora distally and hind tibia brownish black. Wings (Fig. 6) clouded, with 2 white cross bands. C-index 2.0; 4V-index 1.3; 4C-index 1.1; 5x-index 1.0; Ac-index 2.5; C3-fringe 3/5. Halteres brownish black, apically yellow. Abdomen

glossy black. Male genitalia (Figs. 21 and 22) generally black. Surstylus with about 9 teeth. Lower tip of cercus pointed.

Holotype ♂ and allotype ♀, Rejang Delta, Sarikei District, 15-25 VII 1950 (T. C. MAA, No. B142 and B144). Other specimens examined. 4 ♂, collected together with holotype.

Distribution. Sarawak.

Relationships. It resembles *H. parafascipennis* in wing ornamentation and mesoscutal coloration, differs, however, in having narrow and wrinkled frontal shield.

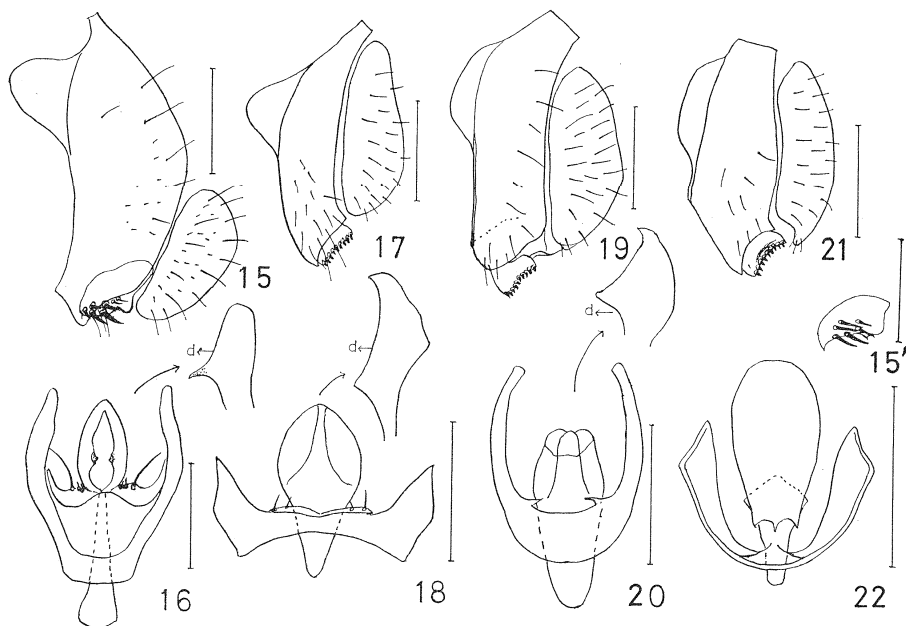
Bishop 11928
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Hypselothyrea truncata sp. n.

(Figs. 5, 19 and 20)

Body black. Frontal shield very narrow and finely granulose. Mesoscutum also finely granulose. Scutellum orange brown, apically truncate. Dorsocentrals in 2 pairs. Legs bicolorous. Wings black with white bands. C-index 1.6. Abdomen glossy black.

♂. Body black, about 3 mm in length. Frontal shield very narrow, subshining black, finely granulose. Periorbits broad, anteriorly narrowing. Face dark brown. Mesoscutum mat black, finely granulose. Scutellum orange brown, apically



Figs. 15-22. Male genitalia, peripheral organs (upper figures) and phallic organs (lower figures). — 15, 16. *Hypselothyrea breviscutellata*; 15'. *H. varanasiensis*; 17, 18. *H. tenuis*; 19, 20. *H. truncata*; 21, 22. *H. albifascia*. Scales: 0.1 mm.

(surstylus)

truncate. Thoracic pleura subshining brown, black below. Dorsocentrals in 2 pairs. Legs yellow, tarsi darker; fore and hind femora, distal half of mid femur, fore and hind tibiae and fore metatarsus black. Wings (Fig. 5) black with a broad white cross band below tip of R_{2+3} and 3 white patches above and below anterior crossvein and around posterior crossvein. C-index 1.6; 4V-index 2.0; 4C-index 1.5; 5x-index 0.8; Ac-index 5.0; C3-fringe 3/4. Abdomen glossy black. Male genitalia (Figs. 19 and 20) generally black. Cercus yellowish brown. Surstylus with about 10 teeth in a concaved row.

Bishop 11927 Holotype ♂, Doi Suthep, Chaing Mai Province, 28-31 III 1958 (T. C. MAA, No. B94).

Distribution. Thailand.

Relationships. It resembles *H. parafascipennis* in having banded wings, narrow frontal shield and granulose mesoscutum, differs, however, in having orange brown scutellum.

Hypselothyrea scutellata sp. n.

(Figs. 11 and 12)

Body black. Mesoscutum mat reddish brown. Frontal shield glossy, longer than broad. Periorbits broad. Dorsocentrals in 2 pairs. Scutellum basally and ventrally pale. Legs bicolorous. Wings hyaline. C-index 1.6. Abdomen glossy black, basal tergites mat black and punctured.

♂, ♀. Body about 2.5 mm in length. Arista with 6 upper and 2 lower branches and a large fork. Palpus mat black, with a stout apical seta. Frontal shield glossy dark brown, longer than broad. Periorbits glossy dark brown, broad. Carina undeveloped. Anterior reclinate orbital fine. Mesoscutum mat dark brown, caudally darker. Dorsocentrals in 2 pairs. Anterior scutellars minute. Scutellum very slender, mat brownish black, basally and ventrally pale. Legs yellow; fore femur, distal halves of mid and hind femora, fore and hind tibiae and bases of fore and hind metatarsi black. Wings slightly fuscous, without markings. C-index 1.6; 4V-index 1.9; 4C-index 1.3; 5x-index 1.0; Ac-index 4.4; C3-fringe 2/3. Halteres yellow. Abdomen glossy black, basal tergites mat black and punctured. Male genitalia (Figs. 11 and 12) black. Surstylus with about 10 teeth. Ovipositor pale yellow, with about 10 marginal and 4 discal pale teeth.

Bishop 11929 and 11829 d Holotype ♂, Khao Yai, Thailand, 25 XII 1975 (H. SHIMA, No. 24650); allotype ♀, Chaing Mai, Thailand, 22 IX 1975 (H. KURAHASHI, No. 24652). Other specimens examined. 4 ♂, Erawan Water Fall, Thailand, 10 XII 1974 (H. SHIMA); 1 ♂, Papar, 50 km SW of Kota Kinabalu, Sabah, 13-15 XI 1975 (H. SHIMA, through K. KANMIYA). Bishop Museum collection: Thailand: 1 ♂, Doi Suthep, Chaing Mai Province, 28-31 III 1958 (T. C. MAA); 1 ♂, Makam District, 24 XI 1965 (J. S. BURTON); 1 ♀, 15 km SE of Bang Phra, Cholburi Province, 6 III 1968 (D. E. HARDY). Sarawak: 1 ♀, Kampong Tapuh, Sedong, 300-450 m, 10 VII 1958; 1 ♀, Nanga Pelagus near Kapit 180-585 m, 7-14 VII 1958 (T. C. MAA). British North Borneo: 1 ♂, Ranau 500 m, 28 IX-7 X 1958; 1 ♀, Paring, Ranau, 10 X 1958 (L. W. QUATE); 1 ♂, Gomantong caves, 22-26 XI 1958; 1 ♂, Kenangan, 2-17 I 1959 (T. C. MAA).

Distribution. Thailand, Sarawak, Sabah.

Relationships. It resembles *H. dimidiata* in having generally black scutellum, clear wing and brown mesoscutum, differs, however, in having bicolorous legs.

Hypselothyrea guttata DUDA

(Figs. 2, 23 and 24)

Hypselothyrea guttata DUDA, 1926, Suppl. ent., 14: 56. — DUDA, 1928, Anns. hist.-nat. Mus. natn. hung., 25: 86. — OKADA, 1966, Bull. Brit. Mus. (Nat. Hist.), Ent. Suppl., 6: 47. — DWIVEDI, SINGH and GUPTA, 1979, Orient. Ins., 13: 69.

Body brown. Frontal shield glossy, quadrate. Mesoscutum glossy brown, caudally darker. Scutellum marginally white. Thoracic pleura with a black longitudinal stripe above, paler below. Legs bicolorous. Wings (Fig. 2) pictured; C sinuated; a black patch at middle of Cell R_1 broadened caudally. C-index 0.8. Abdomen glossy black. Epandrium (Fig. 23) ventrally finger-like, without big spine.

Specimens examined. Taiwan: 6♂, 5♀, Chitou, 16 VIII 1967; 4♀, Yunshuei, 12-18 VIII 1967; 2♂, 1♀, Puli, 19 VIII 1967 (T. OKADA); 1♀, Fenchifu, 12 IV 1965 (S. MIYAMOTO and T. SAIGUSA).

Distribution. Taiwan, Nepal, India, Sumatra. The records from Malaya, Singapore and Java (OKADA, 1977. Catalog Dipt. Orient. Reg., III: 278) were found to refer to the succeeding species.

Hypselothyrea pseudoguttata TAKADA et MOMMA

(Figs. 3, 25 and 26)

Hypselothyrea pseudoguttata TAKADA et MOMMA, 1975, J. Fac. Sci. Hokkaido Univ., (VI), 20: 21.

Closely allied to the foregoing species. Body orange brown. Scutellum black. Thoracic pleura yellow, sternepisternum black. Acrostichal hairs in 2 rows. Anterior scutellars rather long. Legs yellow, nearly unicolorous. Wing (Fig. 3) pictured; costa sinuated; black patch at middle of cell R_1 caudally narrowing. C-index 0.7. Abdomen dark brown. Epandrium (Fig. 25) ventrally with a big black spine.

Specimens examined. 4♂, Tugu, Java, 27-30 VII 1971 (T. OKADA); 2♂, Singapore, Forest Reserve, 23 VII 1977 (H. IKEDA); 4♀, Kuala Lumpur, Malaya, VI 1962 (M. WASSERMAN), from the University of Texas collection.

Distribution. Malaya, Java (new record), Singapore (new record).

Hypselothyrea
para-guttata Takada et Momma
1975.

Subgenus *Deplanothyrea* n.

Acrostichal hairs present. Scutellum not upright. Wings exceedingly narrowing proximally. C-index less than 1.0. Type: *H. breviscutellata* DUDA. It includes 4 known species.

Addenda

P. 509, next to Hypselothyrea pseudoguttata

Hypselothyrea paraguttata Takada and Momma

Hypselothyrea paraguttata Takada and Momma, 1975, J. Fac. Sci.

Hokkaido Univ., (VI), 20:22.

Distinguished from H. pseudoguttata by having acrostichal hairs in 4 rows (2 in pseudoguttata), Ac-index 2.8 (4.0 in pseudoguttata and C3-fringe $3/4$ ($1/2$ in pseudoguttata).

Distribution. Malaya.

Hypselothyrea breviscutellata DUDA

(Figs. 15 and 16)

Hypselothyrea breviscutellata DUDA, 1928, Annl. hist.-nat. Mus. natn. hung., **25**: 82. — OKADA, 1956, Syst. Study Drosophilid. Japan: 38.

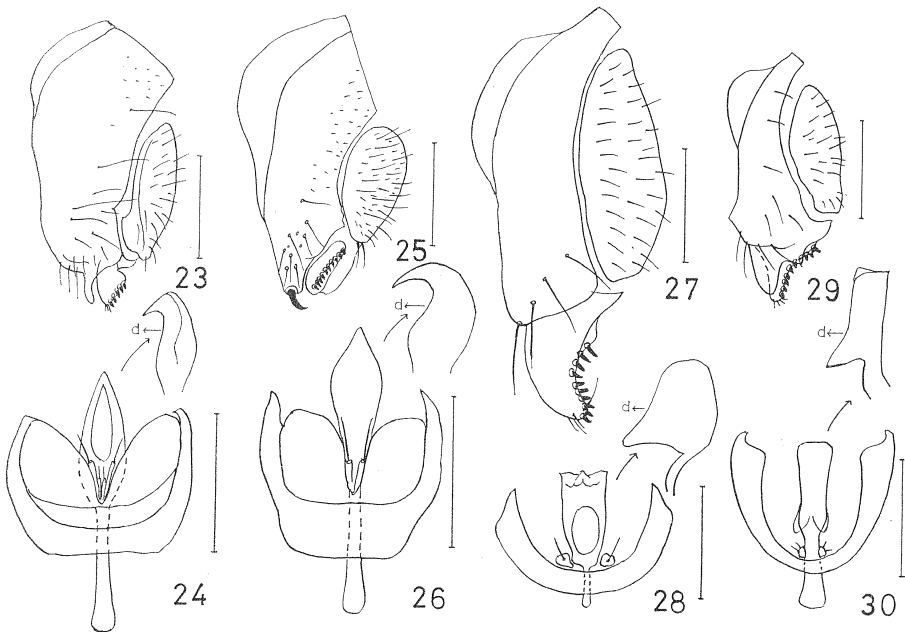
Body yellowish brown. Frontal shield subshining, quadrate. Periorbit narrow. Dorsocentrals in 1 pair. Acrostichal hairs in 2 rows. Scutellum short. Anterior scutellars very fine; posteriors short and upcurved. Legs yellow, unicolorous. Wings hyaline, narrow. C-index 0.9. Male genitalia (Figs. 15 and 16) brown; surstylus anteroventrally not clawed, with pointed teeth in 2 rows.

Specimens examined. 1 ♀, Ōkurayama, Kanagawa Pref., 7 XII 1952; 1 ♂, Hikosan, Fukuoka Pref., 24 X 1961; 1 ♀, Gōtokuji, Tokyo, 9 XI 1962 (T. OKADA); 9 ♂, 8 ♀, Asakawa, Tokyo, IX 1977 (S. NISHIHARU, bred ex fruits of *Jugulans sieboldiana*).

Distribution. Taiwan, Japan.

Hypselothyrea notabilis (LAMB)

Drosophila notabilis LAMB, 1914, Trans. Linn. Soc. Lond., (2), **16**: 329. — *Hypselothyrea notabilis*: WHEELER, 1959, Univ. Texas Publ., (5914): 194.



Figs. 23–30. Male genitalia, peripheral organs (upper figures) and phallic organs (lower figures). — 23, 24. *Hypselothyrea guttata*; 25, 26. *H. pseudoguttata*; 27, 28. *Tambourella ornata*; 29, 30. *T. sphaerogaster*. Scales: 0.1 mm.

Body brownish yellow. Frontal shield very broad and glossy, bordered by dull orange. Orbitals in 2 pairs. Clypeus very large. Humerals absent. Dorsocentrals in 2 pairs. Acrostichal hairs in 2 rows. Anterior scutellars fine, posteriors crossed. Legs yellow. Wings hyaline. C-index 0.7. Abdomen with anterior segments dull orange, last tergite shiny black.

Distribution. Seychelles.

Hypselothyrea varanasiensis GUPTA

(Fig. 15')

Hypselothyrea varanasiensis GUPTA, 1974, J. Ent., (B), 43: 213.

Body brown. Frontal shield broad, bordered by dark brown. Dorsocentrals in 2 pairs. Acrostichal hairs in 2 rows. Anterior scutellars fine, posteriors crossed. Legs yellow. Wings hyaline. C-index 0.7. Wing base clouded. Abdomen brown, basal tergites medially orange. Male genitalia black; surstylus (Fig. 15') anteroventrally hooked, with pointed teeth in 2 rows.

Specimens examined. 1 ♀, Varanas, India, I 1973 (J. GUPTA); 1 ♂, Kandy, Sri Lanka, 25 VII 1979 (O. KITAGAWA).

Distribution. India, Sri Lanka (new record).

It is highly possible that this species is conspecific with the foregoing species.

Hypselothyrea aptera PAPP

Hypselothyrea aptera PAPP, 1979, Acta zool. acad. sci. hung., 25: 358.

Body dark brown. Wings and halteres absent. Scutellum short. Anterior scutellars absent. Dorsocentrals in 2 pairs. Legs yellow, fore tibia dark brown.

Distribution. India.

This is a single apterous species of the genus.

Genus *Tambourella* WHEELER

WHEELER, 1957, Univ. Texas Publ., (5714): 226. Type: *T. endiandrae* WHEELER.

Tambourella endiandrae WHEELER

Tambourella endiandrae WHEELER, 1957, Univ. Texas Publ., (5714): 226.

Body pollinose tan. Frons broader than long. Anterior reclinate orbitals minute or absent. Postverticals minute. Humeral one, small. Thoracic pleura with darker area. Anterior scutellars small. Legs pale tan; coxae and femora darker. Wings brownish black with scattered white patches; R_{2+3} abruptly bent to costa apically; posterior crossvein long and undulant; $M_3 + Cu_{1a}$ not reaching wing margin.

Distribution. Australia.

Tambourella ornata sp. n.

(Figs. 27, 28 and 31)

Body mat yellowish grey. Frons broad. Postverticals minute. Dorsocentrals in 2 pairs. Acrostichal hairs absent. Scutellars in 2 pairs. Legs mostly yellowish brown. Wings with scattered black patches. R_{2+3} abruptly curved to costa apically. C-index 1.1. Abdomen laterally dark.

♂, ♀. Body about 2 mm in length, mat yellowish grey. Arista with 6 upper and 1 lower branches and a large fork. Palpus with a long apical seta. Frontal shield broad, mat, anteriorly yellow. Check very narrow. Carina high. Anterior reclinate orbitals absent. Vibrissa strong. Mesoscutum with dark spots at the insertion of dorsocentrals, which are in 2 pairs. Thoracic pleura glossy black. Scutellum with 2 dark longitudinal stripes. Acrostichal hairs absent. Scutellars divergent, anteriors slightly shorter than posteriors. Legs yellowish brown, coxae and bases of femora black. Wings (Fig. 31) hyaline with scattered black patches. R_{2+3} abruptly curved to costa apically. R_{4+5} and M divergent distally. C-index 1.1; 4V-index 1.4; 4C-index 2.0; 5x-index 0.8; Ac-index 2.8; C3-fringe 3/5. Halteres yellow, apically dark. Abdomen grey, laterally glossy black; 2nd and 6th tergites glossy black. Male genitalia (Figs. 27 and 28) black. Epandrium truncate below. Surstylus with about 10 black teeth in a concave row.

Holotype ♂, Mt. Missim 1500 m, Wau, 1 XII 1977 (H. L. CARSON). Other specimens examined. 1 ♂, collected together with holotype; 1 ♂, Mt. Kaindi 2100 m, 28 VIII 1977 (H. L. CARSON). Bishop Museum collection: 1 ♂, 1 ♀, Mt. Hagen area 1650 m, 28 VI 1957 (D. E. HARDY); 1 ♂, Simbai 1600-1800 m, X 1968 (N. L. H. KRAUS); 1 ♂, Archibold Lake 760 m, Central Mts., 26 XI-3 XII 1961 (S. and L. QUATE, at light trap); 1 ♀, west shore of Lake Angi, Sururai Village area, Giji 1850 m, 25 VII 1957 (D. E. HARDY); 1 ♂, Nami Creek 1900 m, Wau, 2 VIII 1965 (J. SEDLACEK).

Distribution. New Guinea.

Relationships. It resembles *T. endiandrae* in having pictured wings, abruptly curved R_{2+3} , broad frons, bicolorous legs, yellowish grey mesoscutum and brownish thoracic pleura, differs, however, in having not sinuated posterior crossvein, complete M_3+Cu_{1a} , and in wing ornamentation.

Tambourella sphaerogaster sp. n.

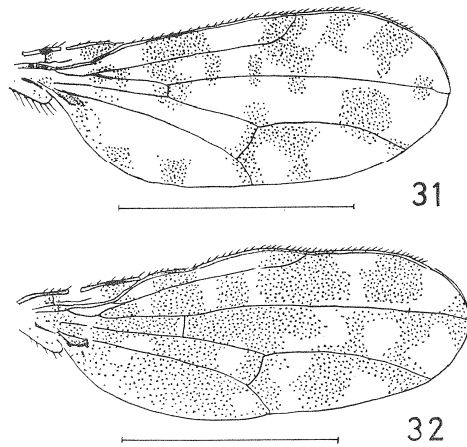
(Figs. 29, 30 and 32)

Body reddish brown. Frons quadrate. Anterior reclinate orbitals absent. Dorsocentrals in 2 pairs. Acrostichal hairs absent. Thoracic pleura black below. Legs yellow; femora black at bases. Wings brown with scattered patches. Venation normal. Costa somewhat undulant. Abdomen spherical, glossy black.

♂, ♀. Body about 2 mm in length. Head slightly broader than thorax. Antenna protruded. Arista with about 5 upper and 3 lower long branches and a large fork. Eyes oval, bare. Carina developed. Frons quadrate, mat orange brown, anteriorly yellow. Periorbits shiny grey, anteriorly narrowing. Face grey, convexed, laterally yellow. Check narrow, black. Proclinate orbital half of pos-

Bishop, 11830

Allotype Bishop
11830 2



Figs. 31-32. Wings. — 31. *Tambourella ornata*; 32. *T. sphaerogaster*. Scales: 1 mm.

terior reclinate; anterior reclinate absent. Two long orals. Postverticals minute. Mesoscutum mat brown, laterally darker. Scutellum hemispherical, mat pale brown, medially with a faint black longitudinal stripe. Thoracic pleura mostly black, narrowly yellow above. Humeral 1, long. Acrostichal hairs absent. Dorsocentrals in 2 pairs; anterior pair near suture, slightly shorter than posteriors. Scutellars divergent; anterior pair half of posteriors, which are nearer to anteriors than to each other. Legs brown, femora black at basal halves. Fore femur with a row of about 15 spicules. Wings (Fig. 32) brown with scattered white patches. Costa somewhat undulant. R_{2+3} nearly straight. R_{4+5} and M divergent distally. C-index 1.0; 4V-index 2.0; 4C-index 2.2; 5x-index 0.6; Ac-index 2.4; C3-fringe 1/2. Halteres mat black, stems paler. Abdomen glossy black, spherical; basal tergites dark brown with black caudal bands. Male genitalia (Figs. 29 and 30) black. Surstylus with a concave row of about 10 teeth. Aedeagus oblong, parallel-sided. Ovipositor brown, pointed, with about 14 black teeth. Egg with 4 filaments.

Holotype ♂ and allotype ♀, Wau, 22 VIII 1977 (T. OKADA, No. 82214.1 and 2). Other specimens examined. 15 ♂ 10 ♀, Wau, 18 VIII-23 IX 1977; 1 ♂, 1 ♀, Bulolo, 15 VIII 1977 (T. OKADA). Bishop Museum collection: 1 ♂, Wampit, Gurakor Village 950 m, near Wau, 7 VII 1957 (D. E. HARDY); 1 ♂, 6 miles N. W. Lae Rain forest 15 m, 9 VII 1957 (D. E. HARDY); 1 ♂, Archibold Lake 760 m, Central Mts., 26 XI-3 XII 1961 (L. W. QUATE); 1 ♂, Sentani, 18 VI 1959 (L. GRESSITT and T. C. MAA). Texas University collection: 13 ex, Wau, VIII 1961 (M. WASSERMAN); 8 ex, Madang, X 1961 (H. L. CARSON); 2 ex, Brown River, Port Moresby, VIII 1961; 6 ex, Popondetta, VIII 1961 (M. WASSERMAN); 1 ex, X 1961 (H. L. CARSON).

Distribution. New Guinea.

Relationships. It somewhat resembles *T. ornata* in having pictured wings, mat greyish mesoscutum and similar male genitalia, differs, however, in having nearly straight R_{2+3} , darker frons and dark wings with white spots. Although this species

Bishop 11831 and
11831a

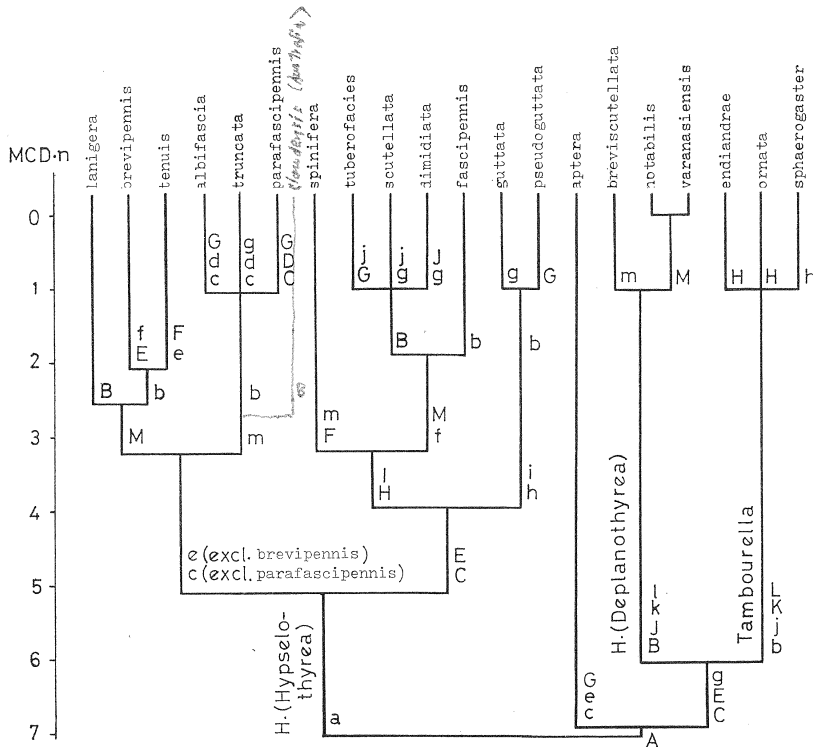


Fig. 33. A dendrogram of relationships between genera, subgenera, and species of the genera *Hypselothyrea* and *Tambourella* obtained from MCD proximity analysis and UPGA cluster analysis. n, number of characters. Alphabetical signs on each stem of clusters show corresponding character states of major diagnostic characters: large letters are plesiomorphs and small letters apomorphs.

as well as the foregoing species do not suffice a generic character of “aberrant wing venation”, they are thought best included in *Tambourella*.

Taximetric Analysis and Automatic Construction of Key

The relationships between genera *Hypselothyrea* and *Tambourella*, between subgenera *Hypselothyrea* and *Deplanothyrea*, and between species were analysed taximetrically with procedure of MCD proximity analysis and UPGA cluster analysis. Fourteen diagnostic characters (A–N) were chosen, each divided into two states, 0 and 1, according to presumed plesiomorphy and apomorphy, respectively.

- A. Scutellum flat (A=0) or upright (a=1).
- B. Wings hyaline (B=0) or pictured (b=1).
- C. Frontal shield not granulose (C=0) or granulose (c=1).
- D. Frontal shield broad (D=0) or narrow (d=1).

- E. Mesoscutum not granulose (E=0) or granulose (e=1).
- F. Mesoscutum black (F=0) or tan (f=1).
- G. Scutellum black (G=0) or orange (g=1).
- H. Thoracic pleura not striped (H=0) or striped (h=1).
- I. C-index more than 1.5 (I=0) or less than 1.5 (i=1).
- J. Legs unicolorous (J=0) or bicolorous (j=1).
- K. Postverticals present (K=0) or absent (k=1).
- L. Abdomen proximally not narrowing (L=0) or much narrowing (l=1).
- M. Dorsocentrals in 2 pairs (M=0) or in 1 pair (m=1).
- N. C3-fringe less than 1/2 (N=0) or more than 1/2 (n=1).

The resulted dendrogram (Fig. 33) shows that the species of *Tambourella* make a cluster which is separated from that of *Hypselothyrea*, especially nominate subgenus, and that *Deplanothyrea* is nearer to *Tambourella* than to nominate subgenus. It is also found that *H. aptera* stands intermediate between 2 subgenera.

On each stem of the dendrogram the character states representing the corresponding clusters are shown by alphabetical signs. Translating these signs into descriptions listed above, a key to species was automatically constructed from the dendrogram with some additional characters given in parentheses.

Key to Species of the Genera *Hypselothyrea* and *Tambourella*

- 1. Scutellum upright. *R*.....Subgenus *Hypselothyrea*.....2
- Scutellum not upright. *A*.....14
- 2. Frontal shield granulose exclusive for *parafascipennis*; mesoscutum granulose exclusive for *brevipennis*.3
- Frontal shield and mesoscutum not granulose. *C. E.*.....8
- 3. Dorsocentrals in 2 pairs. *M*.....4
- Dorsocentrals in 1 pair; wings pictured. *m*.....6
- 4. Wings hyaline. *B*.....*lanigera*
- Wings pictured. *b*.....5
- 5. Mesoscutum brownish and not granulose.*brevipennis*
- Mesoscutum black and granulose.*tenuis*
- 6. Frontal shield broad and not granulose.*parafascipennis*
- Frontal shield narrow and granulose.7
- 7. Scutellum black.*albifascia*
- Scutellum orange.*truncata*
- 8. Thoracic pleura not striped; C-index more than 1.5.9
- Thoracic pleura striped; C-index less than 1.5; wings pictured.13
- 9. Mesoscutum black; dorsocentrals in 1 pair.*spinifera*
- Mesoscutum tan; dorsocentrals in 2 pairs.10
- 10. Wings pictured.*fascipennis*
- Wings hyaline.11

- 11. Scutellum black; (face much swollen). *tuberofacies*
- Scutellum orange. 12
- 12. Legs unicolorous. *dimidiata*
- Legs bicolorous. *scutellata*
- 13. Scutellum orange. *guttata*
- Scutellum black. *pseudoguttata*
- 14. Frontal shield and mesoscutum granulose; scutellum black; (wings absent). *aptera*
- Frontal shield and mesoscutum not granulose; scutellum orange. 15
- 15. Wings hyaline; legs unicolorous; postverticals absent; abdomen basally much narrowing. Subgenus *Deplanothyrea* . . . 16
- Wings pictured; legs bicolorous; postverticals present; abdomen basally not narrowing. *Tambourella* . . . 17
- 16. Dorsocentrals in 1 pair. *breviscutellata*
- Dorsocentrals in 2 pairs. *notabilis* and *varanasiensis*
- 17. Thoracic pleura black with yellow stripe. *sphaerogaster*
- Thoracic pleura not striped. 18
- 18. (Wings black with white patches). *endiandrae*
- (Wings white with black patches). *ornata*

Wheeler, Carson, Hardy, Kanerlin, Steffan, Rodovsky, Gressitt
~~高田 黒森 高生 波部 堀越 鈴木 眞~~ ^{Reddy} ^{Basden} ^{Boehl}
 Prevost, Ray, Chaudhuri, Collier, Chvala, Cordeiro, Ciri, Pächl, Throckmorton
 With, Tsaw, Spieth, Pipkin, Storroch, Stayskal, Pate, Papp, Mäca, Mather
 Kastner, Lakovana, Cachera, Krichnamurti, Hoeningberg, Fleed, Hewson, H
 Höckman, Hardy, Gupta, Frydenberg, Fort-Pessoa, Delfinado, Cordeiro, Chvala
~~Allen~~ Val 高田 久大 宇田 木村 金丸 川 Univ. Cambridge Library 高田
 高田内 別村 利国 子根 藤永 加納 高橋 福 高田 高田
 高田 高田 高田 高田 高田 高田 David (asud)
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