

THE GENERA OF PARASITIC HYMENOPTERA IN THE PHILIPPINES, PART 2¹

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Abstract: There are 215 genera and 24 subgenera of ichneumon flies now known to occur in the Philippines; out of these 120 genera and 4 subgenera are reported here for the first time. Fourteen subfamilies and 215 genera are keyed out. The different subfamilies were characterized briefly and the host preferences given. For each subfamily a representative genus was chosen and illustrated, with 25 figures of whole insects included. *Logna luzonica*, a new species, is described.

III. ICHNEUMONIDAE Figs. 74-116.

The ichneumon-flies are all parasites, the majority being primary parasites. Larvae and pupae of insects with complete metamorphosis (like Lepidoptera, Coleoptera, Diptera, Neuroptera), young and adult spiders, and egg sacs of spiders and pseudoscorpions comprise the hosts of these. In the Philippines only 13 species have definite host records: 2 secondary parasites on chrysopid (Neuroptera) and syrphid (Diptera) pupae; and the rest are primary parasites reared from lepidopterous or respid larvae and pupae.

The family Ichneumonidae is closely related to Braconidae, but differs in having 2 recurrent veins (fig. 78); the braconids have only one or none. This is a very large family and its members are found almost anywhere. The majority resembles slender wasps but differs from the stinging Aculeates in having 16 or more antennal segments, usually with 2-segmented trochanter and the costal cell in the front wings are absent; the ovipositor is quite long and arises ventrally before the tip of the abdomen and is permanently extended (in stinging wasps the ovipositor issues from the tip of the abdomen and is withdrawn into the abdomen when not in use). In most ichneumonids the radial or marginal cell is fused with the 1st discoidal cell due to the loss of a part of the cubital vein; the areolet or 2nd cubital or submarginal cell is often small or lacking (figs. 78, 82 & 83).

An immense collection of Philippine insects owned to Mr. Charles Fuller Baker was bequeathed to the U. S. National Museum, Washington, D. C., when he died in 1927. Rohwer and Cushman described many new species of ichneumon-flies from this lot. In 1952-54 Dr. and Mrs. Henry Townes and family concentrated in collecting ichneumonids from several mountains in the Philippines not reached by Baker and his collectors. Before the visit of Dr. Townes to this country, knowledge of Philippine Ichneumonidae was almost

1. Done mostly in the United States with the financial assistance of the John Simon Guggenheim Memorial Foundation, 1957-1958, to which the writer wishes to express her sincere appreciation.

at a standstill.

At present only 238 species of ichneumon-flies in 86 genera have been recorded from this area. There are 120 genera and 4 subgenera regarded as first records from the Philippines. This paper keys out 215 genera and 20 subgenera of ichneumonids studied from Philippine materials accumulated by Baker and Townes and those found in various museums mentioned in the introduction of part 1 (Pacific Ins. 4 (4): 737), but none in Oxford, Paris, and Geneva.

The key to genera presented here is based mostly on the manuscript key prepared by Dr. Townes in 1954 while in the Philippines and his key to genera of Ichneumonidae recorded from the Indo-Australian region (1961).

I am very much indebted to Dr. Henry Townes of the University of Michigan at Ann Arbor, Michigan, for corrections in the key to genera and allowing me access to their collection, notes, and library. Many thanks are due Miss Luella M. Walkley of the U. S. National Museum, Washington, D. C., for the use of their facilities and for corrections on the manuscript; to Mr. J. F. Perkins of the British Museum of Natural History, London, for suggestions in the Xoridini; and also to Dr. R. Wenzel of the Chicago Museum of Natural History at Chicago, and to Dr. J. Linsley Gressitt of the Bishop Museum, Honolulu, who loaned specimens for study.

The Classification of Ichneumonidae

Most of the studies on the family Ichneumonidae have been done by European and American workers. Only comprehensive works of recent years (at most 20 years old) were reviewed in this paper. Early workers grouped the family into 5 subfamilies. Townes' (1944) reclassification of the Nearctic Ichneumonidae recognized 12 subfamilies which later was increased to 14 (Townes & Townes, 1951) and now split up to 20 or more. For the British Ichneumonidae, Perkins (1959) recognized 20 subfamilies. In the reclassification of the Indo-Australian Ichneumonidae by Townes, Townes and Gupta (1961), 19 subfamilies were reported occurring in those regions and arranged in the order given in tab. 1. As will be observed no two authorities on the family Ichneumonidae agree on how it should be classified.

Within the past 10 years the classification of the Ichneumonidae has undergone many modifications. Unless the beginner is appraised of the two sets of names concurrently used in the family, confusion will likely happen; therefore, the student is advised to refer to the tabulation of supergeneric names (tab. 1) and their equivalents when in doubt. The U. S. Department of Agriculture Monograph No. 2 (1951) contained Townes and Townes' system of classification of the Ichneumonidae of America north of Mexico. Their 1951 classification and subsequent publications follow strictly the priority rule and the supergeneric name is derived from the oldest included genus. Smith and Shenefelt (1956) defined the new classificatory categories of Townes in their guide to the subfamilies and tribes of the family Ichneumonidae known to occur in Wisconsin. On the other hand, Townes' earlier work (1944-45), Walkley's (1958) and Perkins' (1959) nomenclature follow the *nomina conservanda* as prescribed by the International Commission of Zoological nomenclature. Perkins differed from Walkley in elevating several tribes (Stilbopini, Phrudini, Lycorini and Euceratini) to family rank. He used the name Ctenopelmatinae for the subfamily

Table 1. Subfamily and tribal classification used by various authors.

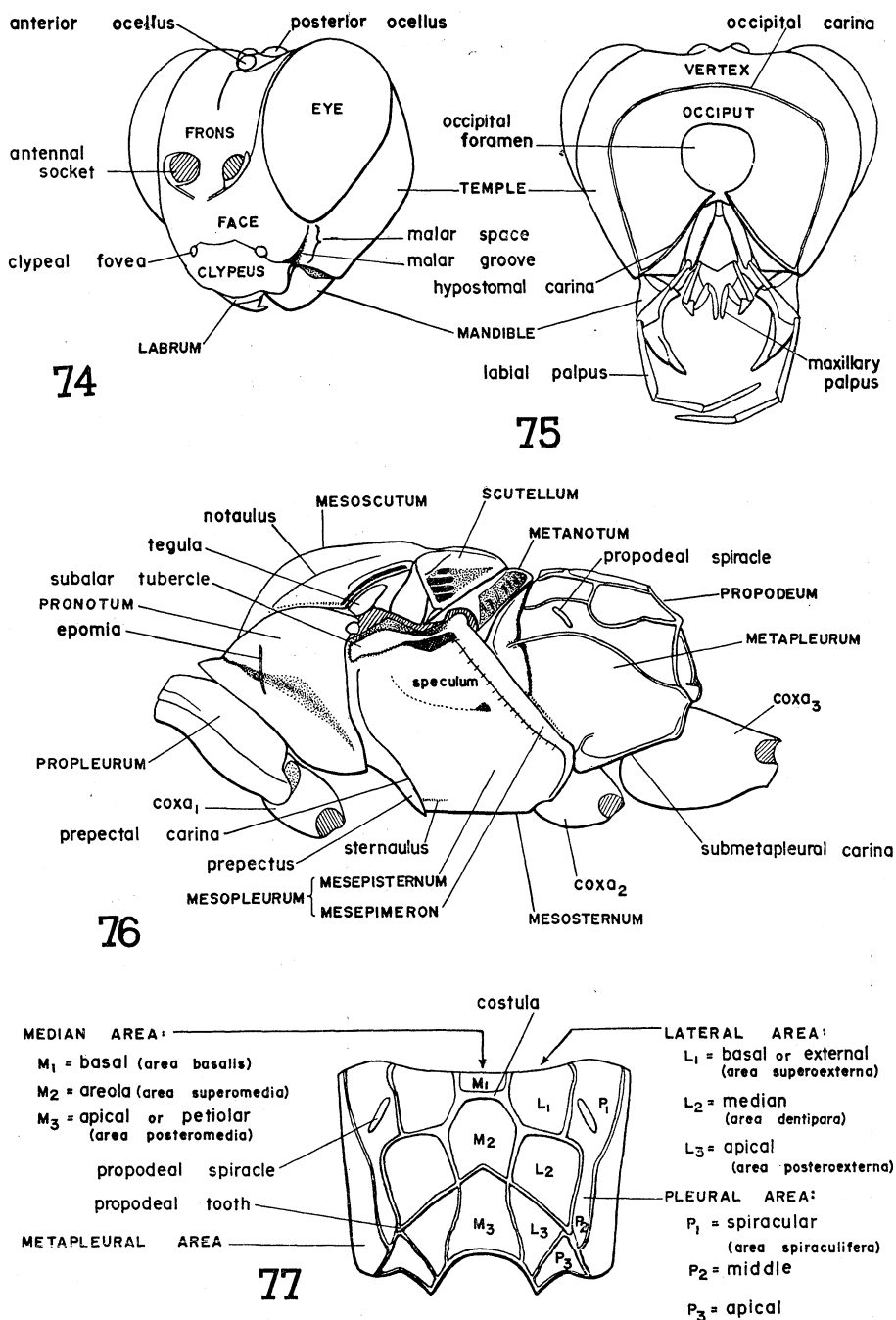
NEARCTIC		PALEARCTIC (British)		INDO-AUSTRALIAN
Townes & Townes (1951)	Walkley (1958)	Perkins (1959)		Townes, Townes & Gupta (1961)
(1) Pimplinae				(1) Ephialtinae
Pimplini	=Ephialtini	=Ephialtini		Pimplini
Polysphinctini				Polysphinctini
Ephialtini	=Pimplini	=Pimplini		Ephialtini
Poemeniini	=Neoxoridini	=Neoxoridini		Theroniini
Rhyssini				Poemeniini
Theroniini				Rhyssini
Brachycyrtini				(2) Tryphoninae
Labenini				Phytodietini
Xoridini				Sphinctini
Acaenitini				Eclytini
(2) Tryphoninae				Tryphonini
Stilbopini		=Stilbopinae		Cteniscini
Adelognathini	=Adelognathinae	=Adelognathinae		(3) Xoridinae
Phrudini		=Phrudinae		Xoridini
Phytodietini		=Neteliini		Labenini
Eclytini	=Thymaridini	=Thymaridini		Labiini
Grypocentrini	=Idiogrammatini	=Grypocentrini		Poecilocryptini
Boethini				Brachycyrtini
Tryphonini				(4) Gelinae
Cteniscini	=Exenterini	=Cteniscini		Gelini
		Sphinctini		Hemigasterini
(3) Gelinae	=Cryptinae	=Cryptinae		Mesostenini
	(Brachycyrtini)			(5) Banchinae
Gelini	=Hemitelini	Stilpnini		Glyptini
Aptesini				Lissonotini
Sphecophagini				Banchini
Mesostenini	=Cryptini			(6) Scolobatinae
(4) Ichneumoninae				Scolobatini
Alomyini	=Phaeogenini	=Phaeogenini		Mesoleiini
Pristiceratini	=Platylabini	=Platylabini		Pionini
Listrodromini				Euryproctini
Ischnojoppini				(7) Porizontinae
Eurylabini				Nonnini
Amblytelini	=Ichneumonini	=Ichneumonini		Campoplegini
Ichneumonini	=Protichneumonini	=Protichneumonini		Porizontini
Trogini		Heresiarchini		
		Zimmerini		(8) Cremastinae
(5) Banchinae	=Lissonotinae	=Lissonotinae		(9) Brachyscleromatinae
Glyptini				(10) Tersilochinae
Lycorini		=Lycorininae		(11) Ophioniae
Lissonotini				(12) Mesochorinae
Neorhacodini				
Banchini				

Table 1. (*Continued*)

NEARCTIC		PALEARCTIC (British)	INDO-AUSTRALIAN
Townes & Townes (1951)	Walkley (1958)	Perkins (1959)	Townes, Townes & Gupta (1961)
(6) Scolobatinae	=Mesoleiinae	=Ctenopalmatinae	(13) Metopiinae
Scolobatini			(14) Anomalinae
Euceratini		=Euceratinae	Anomalini
Pionini			Gravenhorstiini
Ctenopalmatini			Therionini
Mesoleiini			(15) Acaenitinae
Euryproctini			(16) Microleptinae
Callidiotini			(=Plectiscinae)
(7) Collyriinae			(17) Orthocentrinae
(8) Orthopelmatinae			(18) Diplazoninae
(9) Plectiscinae			(19) Ichneumoninae
(10) Orthocentrinae			Alomyini
(11) Diplazoninae			Heterischini
(12) Metopiinae			Notosemini
(13) Ophioninae			Joppini
Porizonini	=Campoplegini		Listrodromini
Cremastini			Ischnojoppini
Tersilochini			Pristicerotini
Anomalini			Trogini
Ophionini		Therionini	Geodartiini
(14) Mesochorinae			Ichneumonini
		Alomyinae	
		Agriotypinae	

Mesoleiinae (=Scolobatinae of Townes). He agreed with Townes in the usage of Grypocentrini and Cteniscini for Idiogrammatini and Exenterini, respectively. Short (1959) adopted Walkley's nomenclature except for considering the Anomalinae as a separate subfamily rather than a tribe of the Ophioninae and by moving the Mesochorinae from a position following the Anomalinae and placing it near the Lissonotinae. His departure from previous classification was based on a study of the final instar larvae. Townes and Townes (1960) divided the subfamily Pimplinae into 3 subfamilies, namely: Ephialtinae, Xoridinae, and Acaenitinae. Lately Townes *et al* (1961) has come out with the reclassification of the Indo-Australian Ichneumonidae and have elevated all the tribes of Ophioninae to subfamily rank. Only 3 tribes in the Cryptinae (=Gelinae) are now recognized with many subtribes under the tribe Mesostenini. The tribes are discussed in detail by Townes & Townes (1962) in their revision of the subfamily.

In this paper I followed Short and Townes in recognizing the Anomalinae and Acaenitinae, respectively, as distinct families but differed from Townes & Townes (1960) in retaining Xoridini with the subfamily Pimplinae rather than placing it in a distinct subfamily, Xoridinae. I still retain the tribes Campoplegini, Cremastini, Brachyscleromatini, Tersilochini and Ophionini in the subfamily Ophioninae, whereas Townes elevated these tribes to subfamily rank. Like Walkley I place the Brachycyrtini with the Cryptinae (=Gelinae of



Figs. 74-77. *Losgna luzonica*, n. sp. (Ichneumoninae). 74, antero-lateral view of head; 75, posterior view of head; 76, side view of thorax; 77, postero-dorsal view of propodeum.

Townes). In general I have followed Townes order of arrangement but adopted names and grouping similar to that presented by Walkley in the supplement (1958) of the U. S. D. A. Monograph No. 2.

Synoptic list of genera

(Those marked with an asterisk are new records for the Philippines; the equivalent names in parenthesis are those used by Townes; the synonyms of these genera may be found in Townes *et al.* 1961).

- | | |
|---|---|
| Subfamily Pimplinae: (Includes Ephialtinae and Xoridinae of Townes) | 28a. <i>Xorides</i> (<i>Caenostoma</i> Cameron) |
| Tribe Ephialtini (=Pimplini) | 28b. <i>Xorides</i> (<i>Gonophonus</i> Foerster) |
| 1. <i>Scambus</i> Hartig | 28c. <i>Xorides</i> (<i>Epixorides</i> Smith) |
| 2. <i>Flavopimpla</i> Betrem | 28d. <i>Xorides</i> (<i>Cyanoxorides</i> Cameron) |
| 3. <i>Dolichomitus</i> Smith | 28e. <i>Xorides</i> (<i>Sichelia</i> Foerster) |
| 4. <i>Acropimpla</i> Townes | Subfamily Tryphoninae: |
| 5. <i>Sericopimpla</i> Kriechbaumer | Tribe Stilbopini* |
| 6. <i>Pachymelos</i> Baltazar | 29. * <i>Stilbops</i> Foerster |
| 7. <i>Zaglyptus</i> Foerster | Tribe Phytodietini |
| 8. <i>Perithous</i> (<i>Hybomischos</i> Baltazar) | 30a. <i>Netelia</i> (<i>Netelia</i> Gray) |
| 9. <i>Camptotypus</i> Kriechbaumer | 30b. <i>Netelia</i> (* <i>Apatagium</i> Enderlein) |
| Tribe Polysphinctini | 30c. <i>Netelia</i> (* <i>Prosthodocis</i> Enderlein) |
| 10. <i>Laufeia</i> Tosquinet | 31. * <i>Phytodietus</i> Gravenhorst |
| 11. * <i>Acrodactyla</i> Haliday | Tribe Eclytini* |
| 12. <i>Polysphincta</i> Gravenhorst | 32. * <i>Thymaris</i> Foerster |
| 13. <i>Zatypota</i> Foerster | Tribe Exenterini* (=Cteniscini): |
| Tribe Pimplini (=Ephialtini) | (genus not yet determined) |
| 14. * <i>Itoplectis</i> Foerster | Subfamily Cryptinae (=Gelinae): |
| 15. * <i>Pimpla</i> Fabricius (=Coccygomimus Saussure) | Tribe Brachycyrtini |
| 16. <i>Echthromorpha</i> Holmgren | 33. <i>Brachycyrtus</i> Kriechbaumer |
| 17. * <i>Lissopimpla</i> Kriechbaumer | Tribe Hemitelini (=Gelini) |
| 18. <i>Xanthopimpla</i> Saussure | 34. * <i>Bathythrix</i> Foerster |
| Tribe Theroniini | 35. <i>Chrysocryptus</i> Cameron |
| 19. <i>Theronia</i> Holmgren | 36. <i>Uchidella</i> Townes |
| Tribe Neoxoridini (=Poemeniini) | 37. * <i>Acrolyta</i> Foerster |
| 20. <i>Eugalta</i> Cameron | 38. * <i>Endasys</i> Foerster |
| 21. <i>Cnastis</i> Townes | 39. * <i>Phygadeuon</i> Gravenhorst |
| Tribe Rhyssini | 40. * <i>Atractodes</i> Gravenhorst |
| 22. <i>Lytarmes</i> Cameron | 41. <i>Diatora</i> Foerster |
| 23. <i>Megarhyssa</i> Ashmead | 42. * <i>Aclastus</i> Foerster |
| 24. <i>Triancyra</i> Baltazar | 43. * <i>Ateleute</i> Foerster |
| 25. <i>Sychnostigma</i> Baltazar | 44. <i>Paraphylax</i> Foerster |
| 26. <i>Cyrtorhyssa</i> Baltazar | 45. <i>Strepsimallus</i> Foerster |
| 27. <i>Myllenyx</i> Baltazar | 46. * <i>Koshunia</i> Uchida |
| Tribe Xoridini | 47. * <i>Lienella</i> Cameron |
| | 48. <i>Caenopimpla</i> Cameron |
| | 49. <i>Astomaspis</i> Foerster |

Tribe Hemigasterini

- 50. *Rothneyia* Cameron
- 51. *Hemigaster* Brulle
- 52. *Mansa* Tosquinet
- 53. *Apophysius* Cushman

Tribe Cryptini (= Mesostenini)

- 54. **Buysmania* Cheesman
- 55. **Phaedraspis* Cameron
- 56. *Isotima* Foerster
- 57. *Goryphus* Holmgren
- 58. **Fislistina* Cameron
- 59. *Euchalinus* Townes
- 60. **Menaforia* Seyrig
- 61. *Kriegeria* Ashmead
- 62. *Amauromorpha* Ashmead
- 63. **Ischnus* Gravenhorst
- 64. *Cryptus* Fabricius (= *Trachysphyrus* Haliday)
- 65. **Coesula* Cameron
- 66. **Etha* Cameron
- 67. **Necolio* Cheesman
- 68. *Friona* Cameron
- 69. *Takastenus* Uchida
- 70. **Buodias* Cameron
- 71. *Baltazaria* Townes
- 72. **Diloa* Cheesman
- 73a. **Listrognathus* (*Listrognathus* Tscheck)
- 73b. **Listrognathus* (*Stivadens* Townes)
- 74. *Cremnocryptus* Cushman
- 75. *Gotra* Cameron
- 76. *Apocryptus* Uchida
- 77. **Ceratocryptus* Cameron
- 78. **Thelodon* Townes
- 79. **Fitatsia* Seyrig
- 80. *Stenarella* Szepligeti
- 81a. *Nematopodius* (*Microchorus* Szepligeti)
- 81b. *Nematopodius* (*Diapetus* Cameron)
- 82. *Xoridesopus* Cameron
- 83. *Schreineria* Schreiner
- 84. **Microstenus* Szepligeti
- 85. **Eurycryptus* Cameron
- 86. **Xanthocryptus* Cameron
- 87. **Dinocryptus* Cameron

Subfamily Lissonotinae (= Banchinae):

Tribe Glyptini

- 88. *Apophua* Morley
- 89. **Glypta* Gravenhorst

Tribe Lycorini*

- 90. **Lycorina*

Tribe Lissonotini

- 91. **Pimplopterus* Ashmead
- 92. **Stictolissonota* Cameron
- 93. **Tossinola* Victorov
- 94. **Asphragis* Foerster
- 95. **Syzeuctus* Foerster
- 96. *Leptobatopsis* Ashmead

Tribe Banchini*

- 97. **Banchus* Fabricius

Subfamily Mesoleiinae *(= Scolobatinae):

- 98. **Lathrolestes* Foerster
- 99. **Philotymma* Foerster

Subfamily Ophioninae:

Tribe Nonnini

- 100a. *Chriodes* (*Chriodes* Foerster)
- 100b. *Chriodes* (*Klutiana* Betrem)

Tribe Campoplegini

- 101. **Campoplex* Gravenhorst
- 102. **Devorgilla* Cameron
- 103. **Casinaria* Holmgren
- 104. **Scenocharops* Uchida
- 105. *Charops* Holmgren

Tribe Porizontini

- 106. **Campoletis* Foerster
- 107. **Dusona* Cameron
- 108. **Nepiera* Foerster
- 109. **Cymodusa* Holmgren
- 110. *Nythobia* Foerster (= *Diadegma* et al., not Foerster)
- 111. *Xanthocampoplex* Morley
- 112. **Hyposoter* Foerster
- 113. *Eriborus* Foerster
- 114. *Dichelobosmina* Uchida

Tribe Cremastini

- 115. *Pristomerus* Curtis
- 116. *Trathala* Cameron
- 117. *Temelucha* Foerster

Tribe Brachyscleromatini

- 118. **Brachyscleroma* Cushman

Tribe Tersilochini*

(Three genera not yet determined)

Tribe Ophionini

- 119. **Leptophion* Cameron
- 120. **Dicamptus* Szepligeti
- 121. *Enicospilus* Stephens
- 122. **Stauropogon* Brauns

Subfamily Mesochorinae :

- 123. **Zamesochorus* Viereck
- 124. *Mesochorus* Gravenhorst
- 125. **Stictopisthus* Thomson
- 126. *Plectochorus* Uchida

Subfamily Metopiinae :

- 127. *Acerataspis* Uchida
- 128. *Metopius* Panzer
- 129. **Chorinaeus* Holmgren
- 130. **Triece* Townes
- 131. *Triclistus* Foerster
- 132a. **Colpotrochia* (*Colpotrochia* Holmgren)
- 132b. *Colpotrochia* (*Scallama* Cameron)
- 133. **Seticornuta* Morley
- 134. **Hypsicera* Latreille
- 135. **Exochus* Gravenhorst

Subfamily Anomalinae :

- 136. **Anomalon* Panzer
- 137. **Trichomma* (*Trichomella* Szepligeti)
- 138. **Aphanistes* Foerster
- 139. **Pseudanomalon* Szepligeti
- 140. **Gravenhorstia* Boie
- 141. *Atrometus* Foerster
- 142. **Clatha* Cameron
- 143. *Trichonotus* Cameron (= *Labrorychus* Townes, *et al.*, not Foerster)
- 144. *Perisphincter* Townes
- 145. **Schizoloma* Wesmael

Subfamily Acaenitinae* :

Tribe Acaenitini*

- 146. **Siphimedia* Cameron
- 147. **Yezoceryx* Uchida
- 148. **Phalgea* Cameron

Subfamily Microleptinae* (=Plectiscinae) :

- 149. **Symplexis* Foerster
- 150. **Proclitus* Foerster
- 151. **Plectiscidea* Viereck
- 152. **Pantisarthus* Foerster
- 153. **Hemiphanes* Foerster

- 154. **Aperileptus* Foerster
- 155. **Megastylus* Schiødt
- 156. **Eusterinx* Foerster
- 157. **Ischyra* Foerster
- 158. **Gnathochoris* Foerster

Subfamily Orthocentrinae :

- 159. **Orthocentrus* Gravenhorst
- 160. **Plectiscus* Gravenhorst

Subfamily Diplazoninae :

- 161. *Syrphoctonus* Foerster
- 162. *Homotropus* Foerster
- 163. *Enizemum* Foerster
- 164. *Diplazon* Nees
- 165. *Promethes* Foerster

Subfamily Ichneumoninae :

Tribe Phaeogenini (=Alomyini)

- 166. **Phaeogenes* Wesmael
- 167. **Rhexidermus* Foerster
- 168. **Stenodontus* Berthoum

Tribe Heterischnini

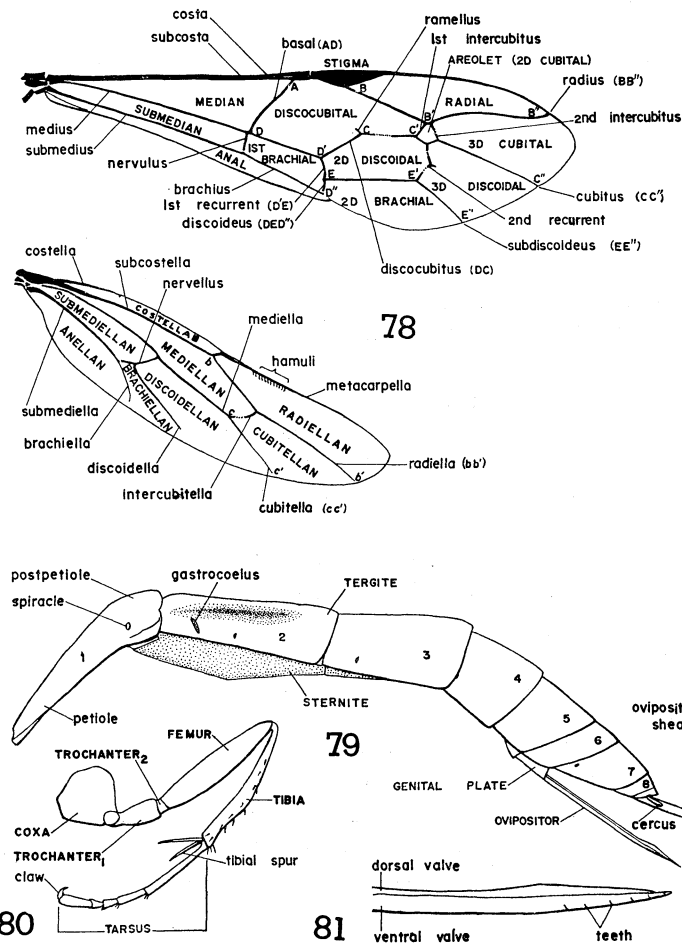
- 169. *Lusius* Tosquinet

Tribe Notosemini

- 170. *Aulojoppa* Cameron
- 171. *Satrius* Tosquinet
- 172a. *Imeria* (*Elasmognathias* Ashmead)
- 172b. *Imeria* (*Caenajoppa* Cameron)

Tribe Joppini

- 173. **Deniya* Cameron
- 174. *Allonotus* Cameron
- 175. **Cushmaniella* Heinrich
- 176. **Stenichneumon* Thomson
- 177. **Chiaglas* Cameron
- 178. **Stenaoplus* Heinrich
- 179. *Stirexephanes* Cameron
- 180. **Benyllus* Cameron
- 181. **Longichneumon* Heinrich
- 182. **Togea* Uchida
- 183. *Nesostenodontus* Cushman
- 184. **Bambuscopus* Heinrich
- 185. *Eccoptosage* Kriechbaumer
- 186. **Losgna* Cameron
- 187. **Hoplismenus* Gravenhorst
- 188. *Algalitia* Cameron
- 189. **Barichneumon* Thomson
- 190. *Barichneumonites* Heinrich
- 191. **Epheresiarches* Heinrich



Figs. 78-81. *Losgna luzonica*, n. sp. (Ichneumoninae). 78, fore and hind wings; 79, side view of abdomen; 80, side view of mid leg; 81, ovipositor tip.

- 192. **Heresiarches* Wesmael
- 193. **Cratichneumon* Thomson
- 194. **Lissosculpta* Heinrich
- 195. **Intermediichneumon* Heinrich
- 196. **Eutanyacra* Cameron
- 197. **Achais* Cameron
- 198. **Ctenichneumon* Thomson
- Tribe Listrodromini*
- 199. **Validentia* Heinrich
- 200. **Listrodromus* Wesmael
- Tribe Ischnojoppini
- 201. *Ischnojoppa* Kriechbaumer

- Tribe Pristiceratini*
- 202. **Pristicerus* Gravenhorst
- 203. *Platylabus* Wesmael
- Tribe Trogini
- 204. **Poecilojoppoides* Heinrich
- 205. *Neofacydes* Heinrich
- 206. *Holcojoppa* Cameron
- Tribe Geodartiini
- 207. **Charitojoppa* Cameron
- 208. **Habrojoppa* Cameron
- 209. **Compsochorus* Cameron
- 210. *Maraces* Cameron

- | | |
|---|----------------------------------|
| Tribe Protichneumonini* (=Ichneumonini) | 213. * <i>Atanyjoppa</i> Cameron |
| 211. * <i>Ichneumon</i> Linnaeus | 214. * <i>Cratojoppa</i> Cameron |
| 212. * <i>Naenaria</i> Cameron | 215. * <i>Ileana</i> Cameron |

The subfamilies of Ichneumonidae

In the discussion that follows the different tribes of Ichneumonidae occurring in the Philippines are grouped into 14 subfamilies in this order: Pimplinae, Tryphoninae, Cryptinae, Lissonotinae, Mesoleiinae, Ophioninae, Mesochorinae, Metopiinae, Anomalinae, Acaenitinae, Microleptinae, Orthocentrinae, Diplazoninae, and Ichneumoninae. The subfamilies Mesoleiinae, Acaenitinae and Microleptinae are recorded from the Philippines for the first time.

Four subfamilies, namely Adelognathinae, Collyrinae, Orthopelmatinae, and Agriotypinae and several tribes found in the Holarctic region have not been found in the Indo-Australian area. On the other hand, Brachyscleromatini, Labiini, Poecilocryptini, Nonnini found in the Indo-Australian region have not been recorded in the temperate regions.

Pimplinae (=Ephialtinae and Xoridinae of Townes, figs. 82-89). All of the members in this subfamily are ectoparasites except for the tribe Pimplini (=Ephialtini) which are endoparasites of lepidopterous pupae. The Ephialtini (=Pimplini) and Theroniini are parasitic on Lepidoptera; the Polysphinctini are parasites of spiders; the Neoxoridini (=Poeniini), Rhyssini and Xoridini parasitize wood-boring Coleoptera. The only parasites known with host records in the Philippines are three species of *Xanthopimpla* attacking corn and rice stem borers. The members of the tribes Ephialtini, Neoxoridini, Rhyssini and Xoridini in the Philippines were monographed by Baltazar (1961) but no specific hosts were recorded.

These are medium to large species with ovipositor usually longer than the length of the abdomen and the ovipositor tip without a subapical notch (fig. 81); areolet triangular or absent; sternaulus absent or weak; tarsal claws not pectinate but ♀♀ usually with an accessory tooth; abdominal segment 1 usually short and broad, with its spiracle at or in front of the middle.

Tryphoninae (fig. 90). Members of this subfamily are ectoparasites. The Phytodietini and Eclýtini are mostly parasites of lepidopterous larvae, the rest are parasites of sawfly larvae. The eggs of these parasites are attached to the skin of the host by a stalk (by other structures in some Exenterini) and the parasite larva completes its development in the host cocoon. Host records are unknown for the Philippine species which are few in collections.

The tryphonine species in the Philippines are usually medium-sized insects and may be recognized as follows: Spiracle of tergite 1 at or in front of middle; tarsal claws pectinate (fig. 90b), at least in front legs; ovipositor tip without a subapical dorsal notch (fig. 90c); subgenital plate not unusually large. The *Netelia* species resemble superficially many species of *Enicospilus* (Ophioninae) in size and color and in the compressed abdomen (compare figs. 90 and 102).

Cryptinae (=Gelinae, figs. 91-98). The majority of the cryptines are ectoparasitic on a great variety of hosts. The Brachycyrtini are parasites of chrysopid cocoons; the Hemitelini (=Gelini) attack a variety of hosts and many are reported to be occasionally or habitually secondary parasites; the Cryptini (=Mesostenini) are parasitic mostly on pupae

and prepupae, or on larvae (concealed in tunnels or leaf rolls) of various hosts like Lepidoptera, Symphyta or sawflies, Aculeata or stinging wasps, and spider eggs. In the Philippines only 3 parasites in this subfamily have host records: on *Chrysopa* cocoon, and moth borers on sugar cane and rice stems.

This subfamily is a large one composed of small to large ichneumon-flies. The members may be recognized by a combination of characters: Spiracle of abdominal segment 1 usually beyond middle, rarely at middle; abdomen usually depressed with segments 3 & 4 wider than deep; sternaulus usually reaching beyond middle of mesopleuron; areolet pentagonal or quadrangular, sometimes open distally; clypeus broad and convex; ovipositor long and usually extending well beyond apex of abdomen, its apex without a subapical dorsal notch.

Lissonotinae (=Banchinae, fig. 99). Members of this subfamily are internal parasites of caterpillars. No host records are known in the Philippines. The occurrence of the tribe Banchini is reported here for the first time.

The subfamily is composed of medium-sized insects. The characters that differentiate them from other subfamilies are as follows: Spiracle of tergite 1 at or in front of middle; claws pectinate (fig. 99c); ovipositor long except in *Banchus*, its tip with a subapical dorsal notch (fig. 99b), subgenital plate large and medially notched apically; propodeum usually with a conspicuous transverse postmedian carina.

Mesoleiinae (=Scolobatinae, fig. 100). Members of this subfamily are internal parasites of tenthredinoid sawflies. They oviposit into the host larva and emerge from its cocoon. This is the first record of the occurrence of this subfamily in the Philippines. Because the sawflies are so few in number in the Philippines one should not expect to find many representatives of this group here unlike in the temperate regions.

This subfamily is similar to *Lissonotinae* in having the spiracle of tergite 1 at or in front of middle; claws pectinate; ovipositor tip with a subapical dorsal notch, and the ♀ subgenital plate large. However, it differs from the *Lissonotinae* in having a small acute tooth on the outer apical edge of the front tibia, ovipositor short, and the smaller ♀ subgenital plate without a median apical notch.

Ophioninae, s. l. (figs. 101-104). All members are endoparasites. The Compoplegini (=Porizonini) include many species attacking lepidopterous larvae; the Cremastini parasitize microlepidopterous larvae in leaf rolls and tunnels; the Ophionini are parasitic on large caterpillars. The occurrence of the tribe Brachyscleromatini in the Philippines is recorded here for the first time. Five ophionine parasites have been reared from larvae of *Chilo*, *Schoenobius*, *Spodoptera*, *Papilio* and *Crocidolomia*.

The members in this subfamily are usually medium to large species, with strongly compressed abdomen, and the spiracles on the first tergite are situated beyond the middle.

The tribe Anomalini has been placed with the subfamily Ophioninae for a long time but recently Short (1959) treated it as a separate subfamily based on marked differences of larval characters.

Mesochorinae (fig. 105). All members of this subfamily are believed to be endoparasites and secondary parasites. These form a small group in the Philippines and no host records are known.

These are small black insects with an unusually large rhombic areolet (fig. 105a) except

in *Zamesochorus*; the ♀ subgenital plate is large and triangular in profile, the ovipositor sheath is about 0.7 as long as tergite 1, rigid, polished and rather flat; the ♂ clasper is elongated into a slender style (fig. 105c); the face is broad and not distinctly separated from the clypeus (fig. 105b); the claws are pectinate.

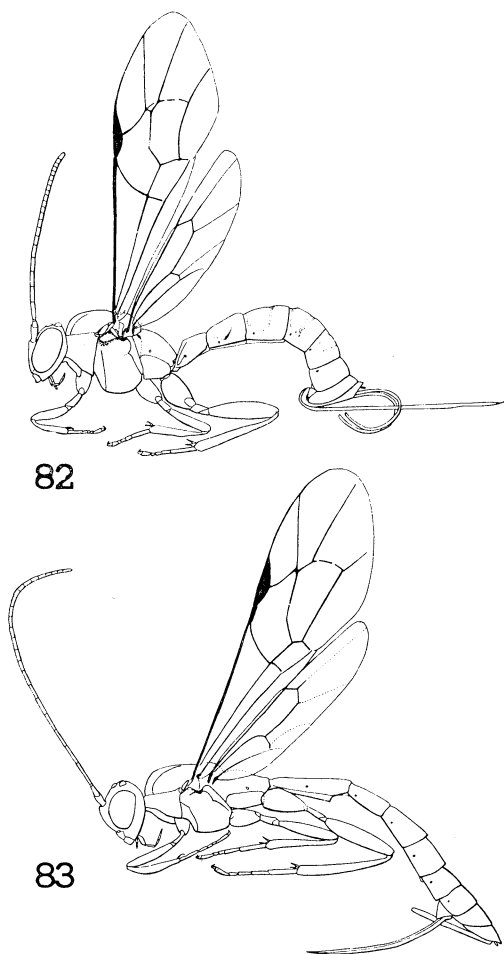
Metopiinae (figs. 106–109). These are endoparasitic in Lepidoptera and the usual hosts are among the pyraloids and tortricoids. The parasites emerge from the host pupa. No host records known for the Philippine species of metopiines.

The subfamily is composed of small to fairly large species, sometimes with yellow and rufous marks, stout-legged, with the face protruberant and the clypeus not separated from the face. The Metopiinae may be distinguished further by the following: Spiracle of tergite 1 situated in front or before middle of tergite; fore and mid legs with a single trochanter; ovipositor not protruding beyond end of abdomen; scape ovoid, less than 2× as long as wide; upper edge of face with a projection between antennal bases (figs. 106, 107b & 108a); areolet absent or of the triangular type. Townes and Townes (1959) did a remarkable treatment of the subfamily Metopiinae which was issued as the first of a series of the U. S. National Museum Bulletin 216 entitled "Ichneumon-flies of America North of Mexico."

Anomalinae (fig. 110). This group has been placed formerly as a tribe of the Ophioninae but was treated by Short (1959) as a separate subfamily because

the larval characters of the species of anomalines examined differ markedly from the characters of the Ophioninae. The anomalines are endoparasites. According to Townes and Townes (1951), larvae of Elateridae seem to be the usual hosts of *Anomalon* species. No host records are known in the Philippines for the subfamily.

These are medium to large species with strongly compressed abdomen and spiracles of tergite 1 situated beyond middle. The features that remove them from the Ophioninae are as follows: Propodeum not areolated, at most with a transverse basal carina, its sculpture



Figs. 82-83. 82, *Acropimpla calva* Baltazar (Ephialtini, Pimplinae), drawn from paratype; 83, *Pachymelos orientalis* Baltazar (Ephialtini, Pimplinae), drawn from paratype.

coarse and reticulate; areolet absent; occipital carina usually at the outer margin of temple so that the head is about as wide at this carina as at the eyes; hind tarsus swollen especially in the ♂♂; epipleuron of abdominal tergite 2 narrow, usually separated from its tergite by a fold or line.

Acaenitinae (fig. 111). The members were included formerly in the subfamily Pimplinae. Townes and Townes (1960) recognized this group as distinct and gave it a subfamily rank. These are parasites of wood-boring Coleoptera. This is the first report of its occurrence in the Philippines. Its distributional center is in the Old World tropics.

The acaenitines are medium to large species and distinct in having the ♀ subgenital plate very large, triangular, folded on the midline with its apex reaching or surpassing the apex of the abdomen; apical 1/3 of the abdomen of the ♂ is compressed. Additional characters to differentiate the subfamily are as follows: Labrum usually projecting, semi-circular or elliptic; propodeum usually well areolated; tarsal claws simple or with an acute tooth; spiracle of tergite 1 near middle.

Microleptinae (=Plectiscinae, fig. 112). Very little is known about the biology of this subfamily. Small flies abundant in damp habitats like the Fungivoridae are believed to be the hosts. This is the first report of its occurrence in the Philippines.

The species in this subfamily are small, black and delicate. The microleptines may be characterized as follows: Ovipositor tip with a subapical dorsal notch; 2nd recurrent with 2 bullae; spiracle of tergite 1 at or in front of middle; abdomen usually compressed apically; clypeus usually narrow; mandible sharply pointed with 2 minute teeth (fig. 112b); tarsal claws simple.

Orthocentrinae (fig. 113). Very little is known about the biology of this subfamily. Any of the families Fungivoridae and Itonididae are believed to be the hosts. This is the first report of its occurrence in the Philippines.

The species comprising this subfamily are mostly small, stout-legged and black. They are very similar to the metopiines in having a single trochanter in the fore and mid legs; the face is strongly convex and the clypeus is not separated from the face by a groove; and the ovipositor does not protrude beyond the tip of the abdomen. The orthocentrines differ from the metopiines in having a sub-cylindric scape, its length about 2× the diameter; and the upper edge of the face without a projection between or over the antennal sockets.

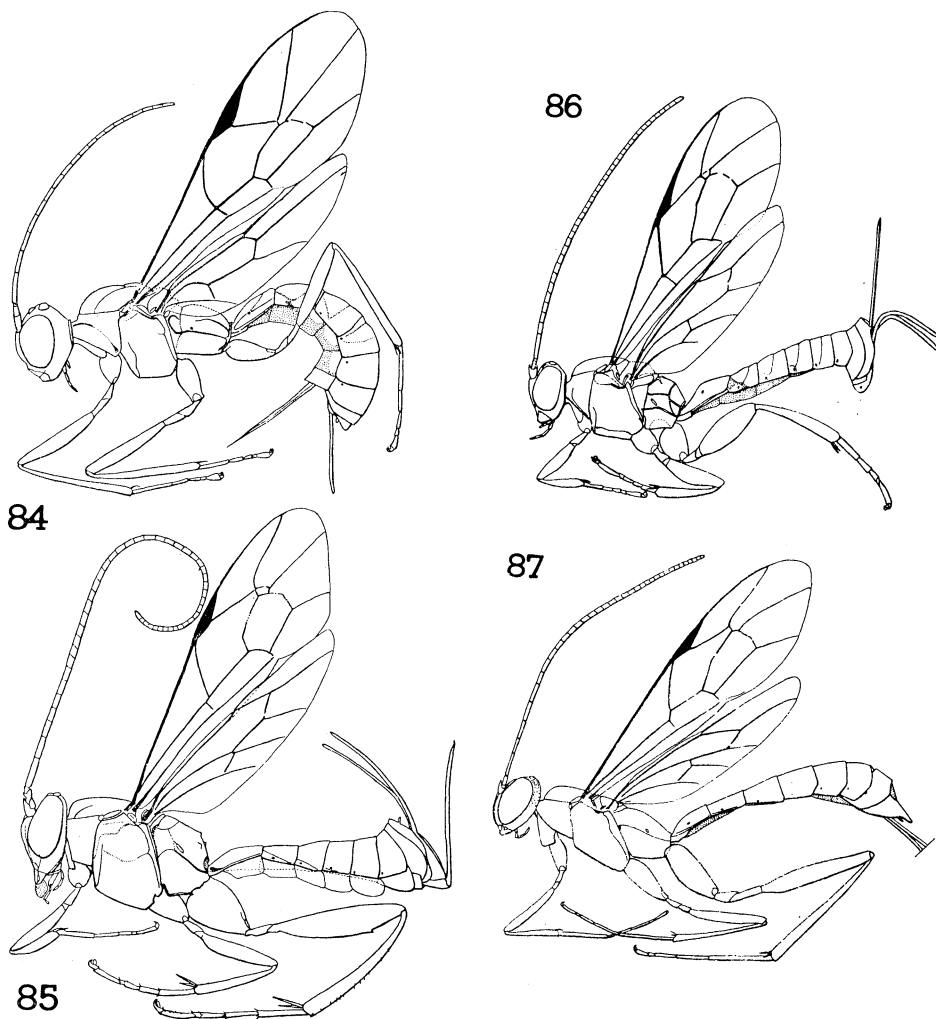
Diplazoninae (fig. 114). The species in this subfamily are endoparasitic in Syrphidae. They oviposit in the egg or young larva of the host and emerge from the puparium. The species from this area have been described (Baltazar, 1954). One host record is known—*Diplazon laetatorius* parasitic on *Ischiodon scutellaris* F. (Baltazar, in press).

The diplazonines are generally small black species with bright yellow and often also ferruginous markings, ranging from 5 to 10 mm long. Antenna black, without a white band. The structural character that distinguishes this subfamily from the rest of the ichneumonflies is the presence of 3 apparent teeth on the mandible, fig. 114b (with the exception of 2 genera in the Philippines, *Banchus* and *Myllenyxis*). Other characteristic features are as follows: Spiracle of tergite 1 at about basal 1/3; abdomen depressed; ovipositor short, not extending beyond apex of abdomen.

Ichneumoninae (figs. 74-81, 115 & 116). All members of this subfamily are endoparasites

of Lepidoptera. They oviposit in the host larva or pupa but always emerge from the pupa. No host records known in the Philippines. The occurrence of the tribes Listrodromini, Pristicerotini and Protichneumonini in this country is reported for the first time.

This is a large subfamily composed of medium to large species. Like the Cryptinae the spiracle of tergite 1 is situated behind the middle of the tergite (figs. 79 & 116), the abdomen is depressed or cylindric, segments 3 & 4 are wider than deep; the ovipositor tip has no subapical dorsal notch (fig. 81). It may be distinguished from the Cryptinae by a combination of characters: Sternaulus absent or short (fig. 76), less than $1/2$ as long as mesopleuron; ovipositor short, not extending conspicuously beyond apex of abdomen, its



Figs. 84-87. 84, *Zatypota* sp. (Polysphinctini, Pimplinae); 85, *Lissopimpla basalis* (Vollenhoven) (Pimplini, Pimplinae); 86, *Theronia* (*Epitheronia*) *rugosa* Gupta (Theroniini, Pimplinae), drawn from holotype; 87, *Chastis longicaudis* (Baltazar) (Neoxoridini, Pimplinae), drawn from paratype,

sheath always rigid; intercubital vein 2 present in *Lusius*; clypeus usually broad and weakly convex, its apex usually broadly truncate or subtruncate, its apical margin not notched (fig. 74).

KEY TO GENERA OF PHILIPPINE ICHNEUMONIDAE

1. Ovipositor sheath about 0.7 as long as tergite 1, rigid, polished and rather flat; ♂ clasper elongated into a slender style (fig. 105c); areolet rhombic, large except in *Zamesochorus*; face broad, not distinctly separated from the clypeus (fig. 105b). Whole insect, fig. 105a..... MESOCHORINAE, 2
- Ovipositor sheath not as above, either longer or flexible; ♂ clasper not elongated as a slender style except in a few genera (*Lusius*, some species of *Charops*, *Scenocharops*, and *Nematopodius*, fig. 93); areolet seldom rhombic, usually smaller 5

MESOCHORINAE

- 2 (1). Areolet small and triangular, higher than wide..... **Zamesochorus**
- Areolet rhombic, large..... 3
- 3 (2). Transverse carina below antenna with a sharp median dip (fig. 105b); upper end of prepectal carina not reaching rim of swollen mesopleural margin; tergite 1 polished; nervulus interstitial or slightly postfurcal; mesopleuron and metapleuron usually finely and sparsely punctate. Whole insect, fig. 105a **Mesochorus**
- Transverse carina below antenna straight; upper end of prepectal carina reaching rim of swollen mesopleural margin; tergite 1 more or less wrinkled or striate; nervulus postfurcal; mesopleuron and metapleuron coarsely and densely punctate, the interspaces equal to diameter of punctures 4
- 4 (3). Apex of propodeum reaching at least 0.7 the length of hind coxa in ♀, about 0.2 in ♂; tergites beyond 2nd elongate and strongly compressed in ♀, in ♂ slightly compressed beyond tergite 2; ovipositor sheath about 4× as long as wide **Plectochorus**
- Apex of propodeum not prolonged in both sexes; tergites beyond 2nd transverse and slightly compressed in ♀, in ♂ slightly compressed beyond tergite 3; ovipositor sheath about 12× as long as wide **Stictopisthus**
- 5 (1). Abdomen strongly compressed, segments 3 & 4 deeper than wide; tergite 1 with spiracle beyond middle 6
- Abdomen usually depressed, segments 3 & 4 wider than deep, or if sometimes compressed then spiracle of tergite 1 at or anterior to middle..... 41
- 6 (5). Areola and median apical area of propodeum united into a single narrow elongate area which occupies almost entire length of propodeum; sternaulus distinct; areolet pentagonal or if open, pentagonal nature discernible **Atractodes** (Cryptinae)
- Middle area of propodeum not as above; sternaulus usually absent; areolet triangular when present, the 2 intercubital veins joining or almost joining above.....OPHIONINAE, s. l., 7
- 7 (6). Intercubitus 1 basad of (figs. 101a & 110) or interstitial with recurrent vein

- 2, or if rarely distad of recurrent vein 2, then epomia present; fore tibia usually with a small spine or tooth on outer apical edge; small to large species 8
- Intercubitus 1 distad of recurrent vein 2 (fig. 102), distance between them greater than $1/2$ its length; epomia absent; fore tibia without a spine or tooth at apex..... OPHIONINI, 38
- 8 (7). Epipleuron of tergite 2 broad, not separated from tergite by a fold or line at least in its posterior $1/2$; posterior transverse carina of mesosternum broadly interrupted in front of each mid coxa; fore wing 2–7 mm long 9
- Epipleuron of tergite 2 narrow, usually separated from its tergite by a fold or line, often folded under, hence not easily visible; posterior transverse carina of mesosternum complete except in some Anomalinae and in the genus *Nepiera* (Porizontini); fore wing 2.3–23 mm long..... 10
- 9 (8). Areolet present; epipleuron of tergites 2 and 3 hairy; antennal socket separated by less than diameter of scape; clypeus not unusually broad, without an apical fringe of long bristles..... BRACHYSCLEROMATINI, *Brachyscleroma*
- Arolet absent; epipleuron of tergites 2 and 3 nearly or quite hairless; antennal sockets usually separated by a distance greater than diameter of scape; clypeus broad, with an apical fringe of long parallel bristles (3 genera not yet determined)..... TERSILOCHINI
- 10 (8). Propodeum not areolated, with coarse reticulate sculpture and often a distinct transverse basal carina; areolet absent; occipital carina usually at outer hind margin of head, so that the head is nearly as wide at this carina as at eyes; hind tarsus often swollen, especially in ♂♂; posterior transverse carina of mesosternum complete or incomplete. Whole insect, fig. 110..... ANOMALINAE, 11
- Propodeum usually areolated (figs. 101a) or with carinae in addition to transverse basal carina, its sculpture usually fine, not coarsely reticulate; areolet present or absent; occipital carina usually in its normal location, that is, head much narrower at this carina than at eyes; tarsus not swollen; posterior transverse carina of mesosternum complete except in the genus *Nepiera* (Porizontini). Whole insect, figs. 101a & 102..... OPHIONINAE, 20
(Excl. Brachyscleromatini & Tersilochini)

ANOMALINAE

- 11 (10). Epipleuron of tergite 3 separated by a longitudinal crease just beneath spiracle; intercubitus joining cubitus beyond recurrent vein 2 by a distance greater than $0.6\times$ its length; mid tibia with 1 spur; occipital carina dorsally well below hind ocelli *Anomalon*
- Epipleuron of tergite 3 not separated by a crease; intercubitus joining cubitus variably; mid tibia with 2 spurs; occipital carina dorsally close to level of hind ocelli..... 12
- 12 (11). Anteroventral corner of pronotum with an acute tooth; recurrent vein 1 joining discocubital cell usually at its midlength; apical margin of clypeus notched medially..... *Schizoloma*
- Anteroventral corner of pronotum without a tooth; recurrent vein 1 joining

- discocubital cell usually basad of its midlength; apical margin of clypeus medially pointed or rounded..... 13
- 13 (12). Nervellus broken..... 14
Nervellus not broken..... 16
- 14 (13). Tarsal claws not pectinate; frons without a median tooth or carina...**Gravenhorstia**
Tarsal claws pectinate; frons with a median compressed tooth between antennal bases or sometimes a median carina 15
- 15 (14). Nervulus antefurcal; ocelli large, posterior ocellus and eye almost touching; scutellum carinate laterally.....**Pseudanomalon**
Nervulus postfurcal; ocelli small, posterior ocellus distant from eye by 1.0–1.5× diameter of ocellus; scutellum not carinate laterally **Aphanistes**
- 16 (13). Front coxa without a transverse carina ventrally 17
Front coxa with a transverse carina ventrally 19
- 17 (16). Eyes hairy, strongly convergent below; subdiscoideus inserted above middle of brachial cell 1, not forming a straight line with abscissa 1 of discoideus; ovipositor about 1.5× as long as hind femur..... **Trichomma**
Eyes bare, moderately convergent below; subdiscoideus inserted on top of brachial cell 1, thus forming a straight line with abscissa 1 of discoideus; ovipositor about 0.8× as long as hind femur..... 18
- 18 (17). Apical abscissa of radiella stub-like, followed by an unpigmented furrow; intercubitus subequal in length to basal abscissa of cubitus..... **Atrometus**
Apical abscissa of radiella completely absent; intercubitus 0.6–0.8 × as long as basal abscissa of cubitus. Whole insect, fig. 110..... **Clatha**
- 19 (16). Apical margin of clypeus with a single median point; transverse carina on fore coxa interrupted on outer side **Trichonotus**
Apical margin of clypeus with 3 small points; carina on fore coxa continuing around coxa **Perisphincter**

OPHIONINAE

(Excl. Brachyscleromatini & Tersilochini)

- 20 (10). Tibial spur inserted in an area separate from that of tarsus, thus apex of tibia with 2 insertion areas separated by a sclerotized bridge (fig. 103b); clypeus separated from face, face usually pale.....**CREMASTINI**, 21
Tibial spurs inserted in a common area with tarsus, thus apex of tibia with a single membranous insertion area (fig. 104b); clypeus usually confluent with face, face usually black 23
- 21 (20). Gastrocoelus present; hind femur nearly always with a ventral tooth (fig. 103a); ovipositor tip sinuate..... **Pristomerus**
Gastrocoelus absent; hind femur without a ventral tooth; ovipositor tip straight 22
- 22 (21). Sternite 1 free from tergite..... **Trathala**
Sternite 1 partly enclosed by and fused with tergite **Temelucha**
- 23 (20). Clypeus set off by a distinct groove; eyes strongly convergent below (fig. 101a) **NONNINI**, **Chriodes**, 24
Clypeus confluent with face (fig. 104a) eyes usually not strongly convergent below..... **CAMPOPLEGINI** (=Porizonini), 25

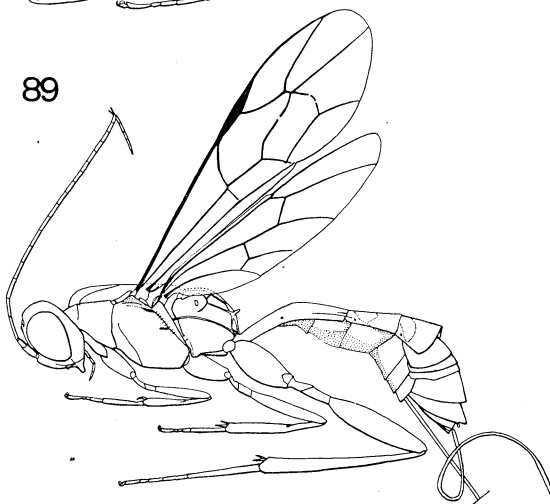
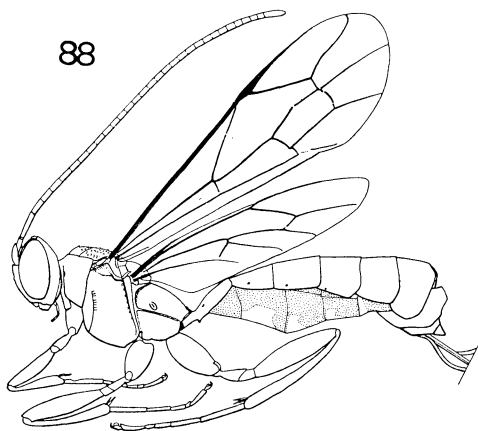
- 24 (23). Nervellus broken; scutellum carinate laterally; abscissa 2 of discoideus subequal to or longer than abscissa 3; sternaulus usually weak, not sharp beyond midlength of mesopleurum..... Subgen. **Chriodes**
 Nervellus not broken; scutellum not carinate laterally; abscissa 2 of discoideus absent or shorter than abscissa 3; sternaulus usually sharp for the entire length of mesopleurum. Whole insect, fig. 101a Subgen. **Klutiana**
- 25 (23). Abdominal segment 1 in cross section somewhat quadrate, trapezoidal or triangular; suture separating sternite 1 from tergite tending to be subventral, on basal 0.3 of segment the suture somewhat below midheight of segment (sometimes suture obsolete); tergite 1 usually with a lateral pit in front of spiracle..... Porizontina, 26
 Abdominal segment 1 in cross section circular or depressed-oval near basal 0.3; suture separating sternite 1 from tergite tending to be lateral or subdorsal, on basal 0.3 of segment, the suture at or above midheight of segment (suture always present); tergite 1 never with a lateral pit in front of spiracle Campoplegina, 34
- 26 (25). Propodeal spiracle elongate, its opening usually more than $1.75\times$ as long as wide; eye strongly emarginate opposite antennal socket..... **Dusona**
 Propodeal spiracle circular or subcircular; its opening usually less than $1.5\times$ as long as wide; eye less strongly emarginate opposite antennal socket..... 27
- 27 (26). Posterior transverse carina of mesosternum interrupted in front of each mid coxa; small species **Nepiera**
 Posterior transverse carina of mesosternum complete 28
- 28 (27). Clypeus with a weak median apical tooth; areolet present and receiving recurrent vein 2 near its base **Campoletis**
 Clypeus without a median apical tooth; areolet present or absent, if present receiving recurrent vein 2 near its apex 29
- 29 (28). Eyes convergent below and hairy, especially in ♀; tergite 1 without a pit or fovea in front of spiracle **Cymodusa**
 Eyes not distinctly convergent below nor hairy (fig. 104a); tergite 1 with a pit or fovea in front of spiracle..... 30
- 30 (29). Body yellow; cheek longer..... **Xanthocampoplex**
 Body blackish; cheek shorter 31
- 31 (30). Areola not sharply distinguished from petiolar area, either by a separating carina or a constriction or sharp angle in bounding carina at juncture of 2 areas.....**Nythobia**
 Areola sharply distinguished from petiolar area by a transverse carina or constriction, or areola not defined laterally..... 32
- 32 (31). Areolet present **Hyposoter**
 Areolet absent 33
- 33 (32). Spiracle on propodeum subcircular or short elliptic; scutellum moderately convex; areola defined laterally, usually longer than wide; ovipositor usually extending beyond apex of abdomen **Eriborus**
 Spiracle on propodeum elongate elliptic; scutellum strongly swollen; areola not defined laterally, shorter than wide; ovipositor not extending beyond apex of abdomen..... **Dichelobosmina**

- 34 (25). Propodeum without a distinctly defined area dentipara; ovipositor short 35
 Propodeum with area dentipara defined; ovipositor usually elongate 37
- 35 (34). Recurrent vein 2 perpendicular; areolet absent; mesopleural suture not im-
 pressed below level of mesepisternum; ♂ clasper usually rod-like..... **Charops**
 Recurrent vein 2 slanting outward; areolet present (in all Philippine species);
 mesopleural suture impressed below level of mesepisternum; ♂ clasper not
 rod-like or rod-like..... 36
- 36 (35). Basal part of petiole with sternite occupying its entire depth, so that in side
 view its lateral suture runs along upper margin of petiole..... **Scenocharops**
 Basal part of petiole with sternite not occupying quite its entire depth, so that
 in side view its lateral suture is a little below upper edge of petiole... **Casinaria**
- 37 (34). Apex of propodeum extending beyond middle of hind coxa; ♂ clasper with
 an apical dorsal notch..... **Devorgilla**
 Apex of propodeum not reaching middle of hind coxa; ♂ clasper without an
 apical dorsal notch **Campoplex**
- 38 (7). Occipital carina absent; scutellum not carinate laterally; trochanter 2 of mid
 and hind legs with a sharp tooth on outer apical margin; mandible twisted
 so that upper tooth appears to be on inner margin; nervellus broken at
 about middle **Stauropactonus**
 Occipital carina present; scutellum carinate laterally; trochanter 2 of mid
 and hind legs without a tooth on outer apical margin; mandible normal or
 twisted; nervellus broken below middle..... 39
- 39 (38). Hind tarsal claw with a small tooth beyond apex; mandible large, apex slightly
 narrower than base; penultimate hamulus different from the rest; fenestra
 without sclerome **Leptophion**
 Hind tarsal claw without a tooth beyond apex; hamuli even throughout;
 fenestra with or without sclerome 40
- 40 (39). Mandible small and twisted so that upper tooth appears to be on inner margin,
 distinctly narrowed apically. Whole insect, fig. 102 **Enicospilus**
 Mandible broad at apex and not twisted, slightly narrowed apically..... **Dicamptus**
- 41 (5). Spiracle of abdominal tergite 1 beyond or rarely at middle; areolet pen-
 tagonal or quadrangular, sometimes open distally but in this case usually
 forming an open pentagon (except in Phobetini and Microleptinae) 42
 Spiracle of abdominal tergite 1 at or anterior to middle; areolet triangular or
 absent, rarely pentagonal..... 158
- 42 (41). Small delicate species; usually with narrow clypeus; mandible sharply pointed
 with 2 minute teeth (fig. 112b); abdomen usually compressed apically;
 recurrent vein 2 with 2 bullae; ovipositor usually with a subapical dorsal
 notch; sternite 1 long, reaching 0.5 to 0.7 the length of tergite 1 except in
Gnathochoris which reaches only basal 0.4 of tergite 1; propodeum usually
 with transverse carina or upper 1/2 of propodeum not areolated
 **MICROLEPTINAE** (In part), 43
 Small to large species; clypeus broad; mandible broad or narrowed apically;
 recurrent vein 2 with 1 or 2 bullae; ovipositor without a subapical dorsal
 notch; sternite 1 variable in length; propodeum completely or incompletely
 areolated..... 48

MICROLEPTINAE (=PLECTISCINAE)

(In part)

- 43 (42). Propodeum, metapleuron, tergites 1 and 2 mat; propodeum with 1 transverse carina (occasionally 2 in non-Philippine species) and without longitudinal carina; areolet ovipositor short, less than apical depth of abdomen. Whole insect, fig. 112a..... **Megastylus**
- Not as above..... 44
- 44 (43). Notaulus present and convergent before apex of mesoscutum; propodeum with 2 subapical teeth 45
- Notaulus present anteriorly, absent on disc of mesoscutum; propodeum with-



Figs. 88-89. 88, *Mylennyxis insularis* Baltazar (Rhyssini, Pimplinae), drawn from paratype; 89, *Xorides (Cyanoxorides) philippinensis* Baltazar (Xoridini, Pimplinae), drawn from paratype.

- out teeth..... 47
- 45 (44). Nervellus broken; tergite 1 sessile, $2.25\times$ as long as apical width; sternite 1 short, reaching basal 0.4 of tergite 1; tergites 2-4 without a transverse groove **Gnathochoris**
- Nervellus not broken; tergite 1 petiolate, $2.5-4.0\times$ as long as apical width; sternite 1 extending beyond middle of tergite 1; usually tergites 2-4 each with a transverse groove 46
- 46 (45). Propodeal teeth distinct; clypeus in profile evenly convex; temple short, less than $1/2$ length of eye; radius ending a great distance before apex of wing **Ischyrcis**
- Propodeal teeth absent or short; clypeus in profile strongly convex on its basal 0.3, the rest flat; temple long, $0.5-1.0\times$ as long as eye; radius ending near apex of wing in the only Philippine species..... **Eusterinx**
- 47 (44). Areolet absent, intercubitus 1 reduced to a point; propodeum with 1 transverse carina and longitudinal carinae, areola not completely enclosed by carinae; ovipositor longer than apical depth of abdomen **Proclitus**
- Arolet present or absent, intercubitus 1 about as long as abscissa 2 of cubitus; propodeum completely areolated; ovipositor not extending beyond apex of abdomen..... **Symplecis**
- 48 (42). Sternaulus usually reaching more than $1/2$ the length of mesopleuron (fig. 92, 97 & 98); ovipositor usually extending well beyond apex of abdomen; abdominal segment 1 with tergite and sternite fused; clypeus usually more convex, its apical margin usually impressed..... **CRYPTINAE**, 49
- Sternaulus reaching less than $1/2$ the length of mesopleuron, often subobsolete (figs. 76 & 116); ovipositor extending a little, if any, beyond apex of abdomen; abdominal segment 1 often with tergite separate from sternite; clypeus usually broad and weakly convex, its apex usually subtruncate and not impressed..... **ICHNEUMONINAE**, 107

CRYPTINAE (=GELINAE)

- 49 (48). Upper tooth of mandible broad and subdivided so that mandible appears tridentate; thorax very short and high; antenna thickened towards apex. Whole insect, fig. 91..... **BRACHYCYRTINI**, **Brachycyrtus**
- Upper tooth not subdivided, mandible with 2 teeth; thorax variable in length but not unusually high, antenna not thickened towards apex.....50
- 50 (49). Recurrent vein 2 usually with 2 bullae, nearly always sloping outward posteriorly so that outer hind corner of discoidal cell 2 is somewhat longer and more pointed than its anterodistal corner; face and clypeus of ♂ seldom marked with white or yellow; propodeum usually areolated. Whole insect, fig. 92..... **HEMITELINI**, 51
- Recurrent vein 2 with 1 bulla, usually not sloping outward posteriorly and usually meeting subdiscoidal vein at a right angle; face and clypeus of ♂ frequently marked with white or yellow; propodeum various..... 66
- 51 (50). Posterior transverse mesosternal carina complete 52
- Posterior transverse mesosternal carina interrupted in front of each mid coxa... 58
- 52 (51). Propodeum elongate, mat with fine transverse wrinkles and an apical trans-

- verse carina; intercubitus 2 often present or weak; thorax and gaster elongate; tergite 1 with spiracle at middle **Ateleute**
- Propodeum short, usually areolated or with basal carina strong and complete; intercubitus 2 absent; tergite 1 with spiracle more or less behind its middle; thorax and gaster not elongate..... 53
- 53 (52). *Sternaulus* distinct up to near hind coxa; collar of pronotum rather short; ovipositor with a normal-shaped point, its sheath about as long as width of tergite 2; sternite 1 without a preapical transverse carina; notaulus extending slightly beyond midlength of mesoscutum; area dentipara without a tooth..... **Paraphylax**
- Sternaulus* abruptly weaker halfway to mid coxa; collar of pronotum rather long; ovipositor with a long-tapered point, its sheath about 0.65× as long as width of tergite 2; sternite 1 usually with a preapical transverse carina; notaulus variable in length; area dentipara with or without a tooth 54
- 54 (53). Tergite 1 stout, with strong dorsal carinae; sternite 1 about 2.2× as long as wide..... 55
- Tergite 1 more slender, without distinct dorsal carinae; sternite 1 about 3.5× as long as wide 56
- 55 (54). Tergite 3 of ♂ with apicolateral spine, tergites 4 and 5 hardly projecting beyond 3rd; tergite 5 of ♀ ordinarily retracted within 4th. Whole insect, fig. 92..... **Astomaspis**
- Tergite 3 of ♂ without a lateral apical spine, tergites 4 and 5 projecting well beyond 3rd; tergite 5 of ♀ mostly exposed..... **Caenopimpla**
- 56 (54). Tergites 2 and 3 mat; abdomen of ♀ elongate-oval and more or less depressed; upper part of temple strongly convex..... **Strepsimallus**
- Tergites 2 and 3 coarsely punctuate or longitudinally striate; abdomen of ♀ elongate and more or less compressed apically; upper part of temple flat or nearly so 57
- 57 (56). Basal carina of propodeum rather strong and regular; lower end of occipital carina gradually curved in to meet hypostomal carina; wings hyaline; species yellow, usually marked with black..... **Koshunia**
- Basal carina of propodeum rather weak and irregular; lower end of occipital carina abruptly turned in to meet hypostomal carina; wings with a broad dark band near apex; species black or black and rufous..... **Lienella**
- 58 (51). Areola and median apical area of propodeum united into a single narrow elongate area which occupies almost entire length of propodeum; ♀ abdomen strongly compressed **Atractodes**
- Areola and apical area of propodeum separated by a carina, areola sometimes united with area dentipara; ♀ abdomen not compressed..... 59
- 59 (58). Tergite 2 without a sharp carina that separates its epipleura, its lateral edge curved over to the underside; nervellus not broken or broken..... 60
- Tergite 2 with a sharp carina or crease that separates its epipleura; nervellus broken..... 61
- 60 (59). Nervellus broken; disc of mesoscutum polished with few hairs; notaulus deeply impressed throughout and ending abruptly **Diatora**
- Nervellus not broken; disc of mesoscutum with fine hairs; notaulus shorter

- or posteriorly fading out; labrum visible as a crescent-shaped piece below clypeus.....**Aclastus**
- 61 (59). Notaulus extending beyond middle of mesoscutum, deeply impressed through-
out and ending abruptly.....62
- Notaulus short or gradually fading posteriorly 64
- 62 (61). Space between base of eye and basodorsal corner of mandible short, about
0.25× basal width of mandible; notaulus reaching hind end of mesoscutum.. 63
- Space between base of eye and basodorsal corner of mandible long, about 0.5×
basal width of mandible; notaulus reaching middle of mesoscutum..... **Uchidella**

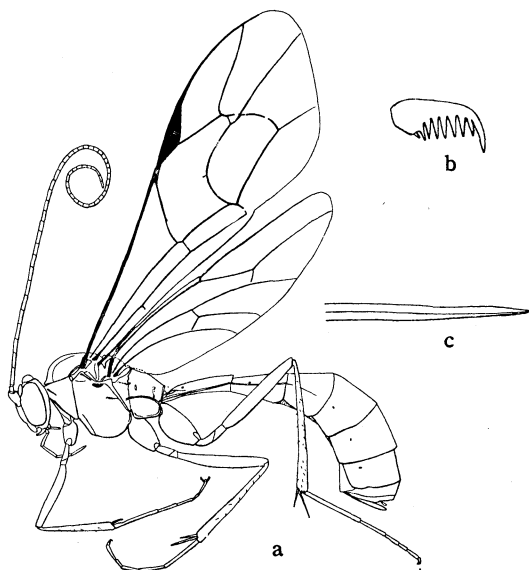
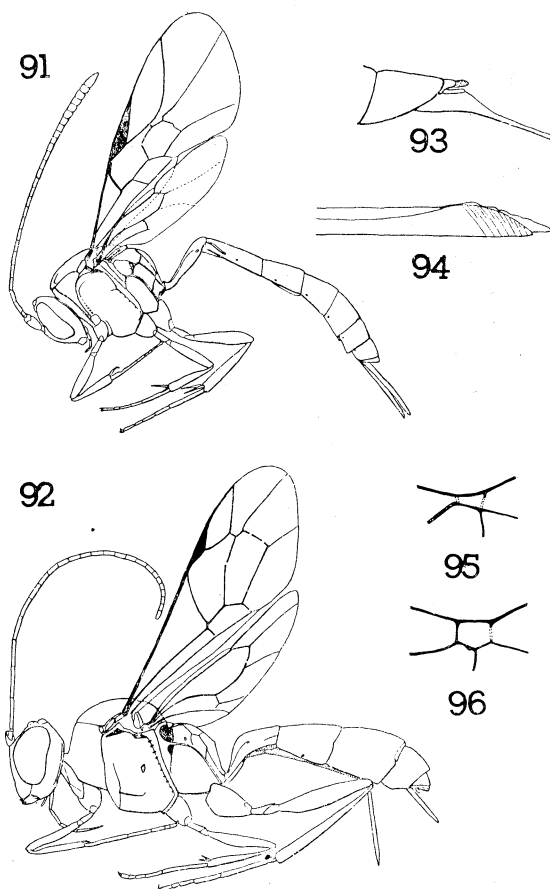


Fig. 90. a, *Netelia* sp., (Phytodietini, Tryphoninae); b, same, hind tarsal claw; c, same, ovipositor tip.

- 63 (62). Lower tooth of mandible short, about 1/2 as long as upper tooth; petiole circular in cross-section, carina between tergite and sternite absent; apex of clypeus with 3 small points at center; head and body with long hairs
.....**Chrysocryptus**
- Lower tooth of mandible subequal in length to upper tooth; petiole subquadrate in cross-section, carina between tergite and sternite present; apex of clypeus with 1-3 small points at center; head and thorax with shorter and sparse hairs, tergites with fine pubescence..... **Bathythrix**
- 64 (61). Eye with conspicuous long hairs; head and thorax coarsely punctate; prescutellar groove usually with longitudinal ridges..... **Endasys**
- Eye bare or with few inconspicuous hairs; head and thorax finely punctate; prescutellar groove smooth or with weak longitudinal wrinkles.....65
- 65 (64). Clypeus with a pair of small median apical teeth (except in 1 species); areola separated from area dentipara by a carina..... **Phygadeuon**

- Clypeus without apical teeth; apical margin convex or narrowly truncate; areola often confluent with area dentipara..... **Acrolyta**
- 66 (50). Posterior transverse mesosternal carina complete; propodeum elongate, mat and not areolated, with only the apical transverse carina and sometimes an incomplete median transverse carina; intercubitus 2 often present or weak; thorax and gaster elongate..... **Ateleute** (Hemitelini)
- Posterior transverse mesosternal carina interrupted at center; propodeum and gaster not as above, not elongate 67
- 67 (66). Rim of metanotum with a posterior sublateral projection opposing front end of lateral longitudinal propodeal carina; propodeum with longitudinal carinae present but in these basal transverse carina weak or absent and apical transverse carina strong. Whole insect, fig. 97..... **HEMIGASTERINI**, 68
- Rim of metanotum without a posterior sublateral projection; propodeum without longitudinal carinae except rarely, if only 1 transverse propodeal carina present, it is the basal carina rather than the apical one. Whole insect, fig. 98..... **CRYPTINI**, 71
- 68 (67). Tergites 2 and 3 fused, the tergites following hidden beneath 3rd; tergite 1 with 2 dorsal longitudinal carinae; propodeum with a pair of spines..... 69
- Tergites 2 and 3 separate, the tergites following projecting beyond 3rd; tergite 1 without dorsal carinae; propodeum with or without spines..... 70
- 69 (68). Propodeum with spines long, its spiracle round; posterior end of pronotum with a tubercle; frons without carinae; scutellum strongly carinate laterally, its apex truncate; tergite 3 with 2 apical teeth (in all Philippine species); areolet large, subquadrate; body black or black and ferruginous..... **Rothneyia**
- Propodeum with spines short, its spiracle elongate; posterior end of pronotum without a tubercle; frons with a median spine and an incurved lateral carina; scutellum not carinate laterally (in Philippine species) or carinate; areolet absent; body ferruginous. Whole insect, fig. 97 **Hemigaster**
- 70 (68). Postpetiole broad; legs with tarsal segment 4 bilobed apically; mesoscutum coarsely and densely punctate, propodeum rugosopunctate, and without strong apophyses; hair on thorax short or moderately long; areolet large and trapezoidal; stout and large species, mostly ferruginous..... **Mansa**
- Postpetiole cylindrical or gradually widened; legs with tarsal segment 4 straight apically; mesoscutum and propodeum finely punctate or impunctate; propodeum with 2 pairs of strong apophyses, one each at posterior end of spiracular area and area dentipara; head and thorax with long dense hairs; mesopleuron with a subtegular cup-like expansion; areolet subquadrate; slender and medium-sized, black **Apophysius**
- 71 (67). Lower valve of ovipositor tip extending dorsally to enclose or partially enclose tip of upper valve (fig. 94); tergite 1 with spiracle usually near its midlength; fore tibia of ♀ inflated but constricted basally **Echthrina**, 72
- Lower valve of ovipositor tip not enclosing upper valve; tergite 1 with spiracle usually beyond middle; fore tibia of ♀ not modified as above..... **Cryptina**, 80
- 72 (71). Tergite 1 with a lateral subbasal triangular projection, acute or subacute in ♀♀, blunt and often indistinct in ♂♂; propodeal spiracle oval or elongate..... 73

- Tergite 1 without a lateral subbasal triangular projection; propodeal spiracle elongate 79
- 73 (72). Propodeum with basal and apical transverse carinae complete, pleural carina absent 74
- Propodeum with basal transverse carina complete, but apical transverse carina absent or medially interrupted; *or* if complete, pleural carina of propodeum present 77
- 74 (73). Hypostomal carina turning lateral to meet occipital carina some distance before base of mandible; face with a short groove above each clypeal fovea; propodeum densely punctate between its transverse carinae **Xoridesopus**
- Hypostomal carina obsolete apically, not meeting occipital carina; face without a groove above clypeal foveae; propodeum sparsely punctate or almost impunctate between its transverse carinae, or finely wrinkled 75
- 75 (74). Propodeum with a median and a pair of sublateral longitudinal grooves between its transverse carinae; tergite 1 with a distinct dorsolateral carina beyond spiracle; face weakly impressed near clypeal foveae **Microstenus**
- Propodeum without longitudinal grooves between its transverse carinae; tergite 1 with or without a carina beyond spiracle; face strongly impressed near clypeal foveae 76
- 76 (75). Tergite 1 with a sharp dorsolateral carina beyond spiracle; propodeum entirely wrinkled **Xoridesopus**
- Tergite 1 without a carina beyond spiracle; propodeum sparsely punctate or almost impunctate between transverse carinae **Eurycryptus**
- 77 (73). Clypeus with a postmedian transverse ridge, apical margin without a median tooth and somewhat concave **Schreineria**
- Clypeus without a postmedian transverse ridge, apical margin with a median tooth and approximately truncate 78
- 78 (77). Tergite 1 with a dorsolateral longitudinal carina; sternaulus extending over entire length of mesopleurum; nervulus interstitial **Kriegeria**
- Tergite 1 without a dorsolateral longitudinal carina except sometimes at its base; sternaulus weak, extending about the midlength of mesopleuron; nervulus antefurcal **Xanthocryptus**
- 79 (72). Clypeus without a median tooth nor a subapical transverse ridge; areolet absent, intercubitus interstitial with recurrent vein 2; body hair very dense. Whole insect, fig. 98 **Amauromorpha**
- Clypeus with a subapical transverse ridge; areolet present; body hair sparse **Dinocryptus**
- 80 (71). Areolet small and elongate (fig. 95), the opening 1.5–2.5× as wide as high (rarely narrower) and usually only about 2× as high as the width of surrounding veins (sometimes areolet open apically) 81
- Arolet small to large (fig. 96), usually not elongate, the opening less than 1.5 × as wide as high (sometimes areolet open apically) 87
- 81 (80). Clypeus about 2× as wide as long, its apical margin weakly concave; dorsal valve of ovipositor with a coarse apical serration **Stenarella**
- Clypeus 1–1.8× as wide as long, its apical margin weakly to strongly convex; dorsal valve of ovipositor without an apical serration 82



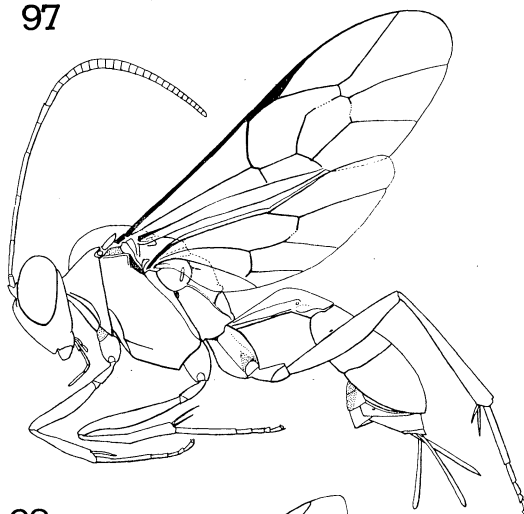
Figs. 91-93. 91, *Brachycyrtus nawaii* Ashmead (Brachycyrtini, Cryptinae); 92, *Astomaspis metathoracica* Ashmead (Hemitelini, Cryptinae); 93, *Nematopodius (Microchorus) philippinensis* (Cushman) (Cryptini, Cryptinae), abdominal tip of ♂; 94, *Microstenus canaliculatus* Szepilgeti (Cryptini, Cryptinae), ovipositor tip; 95, *Gotra marginatus* (Brulle) (Cryptini, Cryptinae), areolet; 96, *Fritona perpulchra* Cameron (Cryptini, Cryptinae), areolet.

- 82 (81). Epomia long, reaching top of pronotum and there curved forward..... 83
 Epomia obsolete or short, not reaching close to top of pronotum.....84
- 83 (82). Mandible narrowed apically, lower tooth about 0.5× as long as upper tooth;
 upper part of temple hardly projecting behind eye; frons without a median
 carina nor a median pair of tubercles; apical propodeal carina lacking...**Fitatsia**
 Mandible broad apically, tooth subequal in length; upper part of temple usu-
 ally projecting behind eye; frons with a mid-longitudinal carina or horn;
 apical propodeal carina present as lateral crests or horn..... **Gotra**
- 84 (82). Mandible narrowed apically, lower tooth about 0.5× as long as upper tooth;
 dorsal pronotal tubercle usually strong; frons with a pair of horns medial-

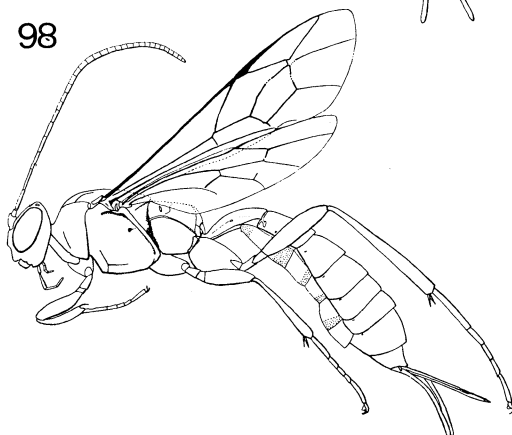
- ly; posterior face of propodeum with 2 white broad longitudinal stripes (in Oriental species), apical propodeal carina present as lateral crests (often weak in ♂) **Ceratocryptus**
- Mandible broad apically, teeth subequal in length; dorsal pronotal tubercle weaker; frons with or without a pair of horns medially; posterior face of propodeum with a white inverted-T area or various; apical propodeal carina absent or present as lateral crests 85
- 85 (84). Frons with a pair of horns medially; tergite 2 shorter than apical width, with close strong punctures; tergite 1 wide apically, with strong punctures..... **Cremnocryptus**
- Frons without a horn medially; tergite 2 longer than apical width, with weak punctures or mat; tergite 1 gradually widened apically, impunctate or with fine scattered punctures..... 86
- 86 (85). Propodeum elongate, apically projecting beyond base of hind coxa, without apical transverse carina; metapleuron and propodeum not separated by a groove; tergite 2, 2-3× as long as apical width (in Philippine species); ovipositor of equal depth from base to near apex..... **Thelodon**
- Propodeum short, apex not extending beyond base of hind coxa, with apical transverse carina present as lateral crests or horns; metapleuron and propodeum separated by a groove; tergite 2 about 1.2× as long as apical width; ovipositor tapered into a sharp point at apex **Apocryptus**
- 87 (80). Occipital carina absent; mandible narrowed apically, lower tooth small; tergite 1 with spiracle at middle; areolet open **Nematopodius**, 88
- Occipital carina present; mandible broad apically, its teeth equal in length or lower tooth slightly shorter; tergite 1 with spiracle usually behind middle; areolet open or closed 89
- 88 (87). Epomia produced dorsally into a sharp tooth; ♂ clasper rod-like (fig. 93) ... **Subgen. Microchorus**
- Epomia not produced dorsally into a sharp tooth; ♂ clasper not rod-like ... **Subgen. Diapetus**
- 89 (87). A semicircular area above antennal socket present, bordered dorsally by a carina, in some ♂♂ this carina is produced dorsally into a horn; brachiella usually absent **Isotima**
- Not as above, frons not modified or at most with a median horn 90
- 90 (89). Propodeum apically extending beyond base of hind coxa; tergite 1 with spiracle near middle; nervellus broken above middle; brachiella short or absent **Menaforia**
- Propodeum apically not extending beyond base of hind coxa, tergite 1 with spiracle beyond middle; nervellus broken at or below middle; brachiella long or absent 91
- 91 (90). Brachiella absent..... 92
- Brachiella present..... 93
- 92 (91). Areolet open apically; apical propodeal carina not produced laterally as a spine; tergite 2 impunctate; pleura and propodeum impunctate or finely wrinkled..... **Diloea**
- Arolet closed; apical propodeal carina produced laterally as a spine in ♀,

- or present as lateral crests; tergite 2 finely and closely punctate or coarsely mat; pleura and propodeum rugose.....**Baltazaria**
- 93 (91). Areolet large, its greatest length more than 5× width of surrounding veins...94
 Areolet small, its greatest length less than 5× width of surrounding veins
 (areolet sometimes open) 98
- 94 (93). Areolet pentagonal 95
 Areolet quadrangular 96
- 95 (94). Propodeal spiracle elongate; discubital vein with a distinct ramellus.....**Cryptus**
 Propodeal spiracle subcircular; discocubital vein usually with a very short ramellus..... **Ischnus**
- 96 (94). Propodeum rugose, gradually curved in profile; posterior mesosternal carina medially short and pronounced.....**Takastenus**
 Propodeum transversely striate, with a long sub-horizontal part and gradually or abruptly decurved at position of apical carina; posterior mesosternal carina medially absent 97
- 97 (96). Basal transverse carina of propodeum present..... **Friona**
 Basal transverse carina of propodeum absent..... **Etha**
- 98 (93). Frons with a median horn above antennal bases; epomia long, reaching top of pronotum and there curved forward; tergite 1 pyramidal in profile
 **Listrognathus**, 99
 Frons without a median horn above antennal bases; epomia variable in length or absent; tergite 1 straight or gradually curved apically..... 100
- 99 (98). Strong teeth present on side of petiole..... Subgen. **Stivadens**
 Teeth absent on side of petiole..... Subgen. **Listrognathus**
- 100 (98). Propodeum with a median longitudinal groove between its basal and apical transverse carinae, both of which are complete.....**Coesula**
 Propodeum without a median longitudinal groove between its basal and transverse carinae, apical carina usually incomplete 101
- 101 (100). Epomia absent; mesopleuron with a coarsely punctate speculum on its upper hind quadrant; tergites 2 and 3 very finely and closely punctate; nervellus broken slightly below middle..... **Phaedraspis**
 Epomia present, or if absent mesopleuron with a shiny impunctate or finely punctate speculum on its upper hind quadrant; rest of thorax coarsely punctate or rugose-punctate; tergites 2 & 3 variably punctate; nervellus broken usually far below middle 102
- 102 (101). Tergites 2 & 3 finely punctate or coarsely mat; tergites 1 & 2 usually long and slender; ovipositor tip usually tapered.....103
 Tergites 2 & 3 coarsely punctate; tergites 1 & 2 shorter and broader; ovipositor tip rather blunt or tapered 104
- 103 (102). Clypeus more or less evenly convex; ovipositor slightly thickened near tip, not acutely tapered and without teeth or serrations; abdominal segment 1 without a lateral carina (in Philippine species), its tergite and sternite not separated by a carina in both sexes; apical transverse carina on propodeum with lateral crests instead of strong spines.....**Necolio**
 Clypeus strongly convex; abdominal segment 1 usually with a lateral carina, sometimes with a dorsal carina also; ovipositor tip tapered acutely, with

97



98



Figs. 97-98. 97, *Hemigaster bakeri* Cushman (Hemigasterini, Cryptinae); 98, *Amauromorpha accepta metathoracica* Ashmead (Cryptini, Cryptinae).

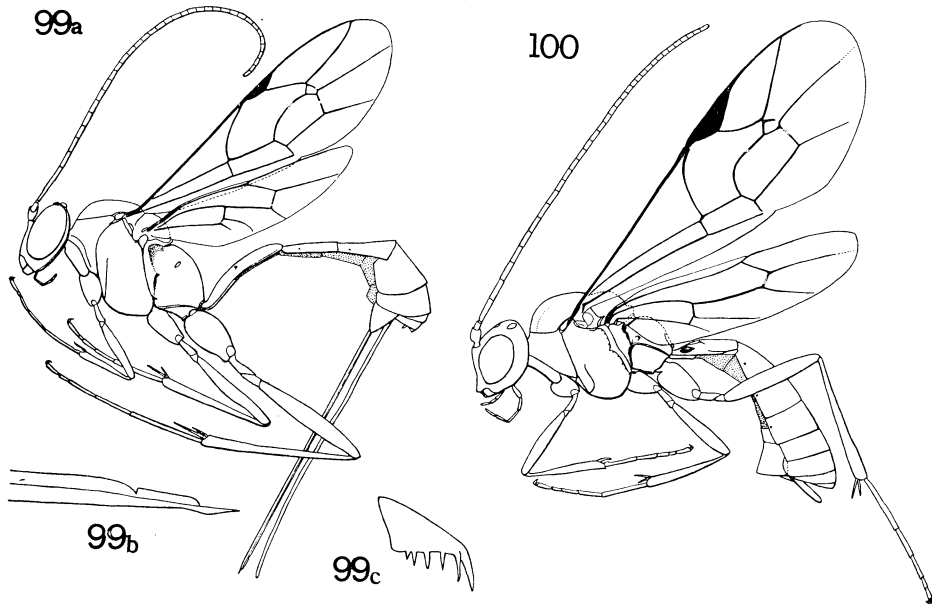
- teeth or serrations; apical transverse carina on propodeum with 2 strong spines in ♀ but absent in ♂..... **Buodias**
- 104 (102). Upper margin of pronotum swollen; propodeal apophyses in ♀ blunt and well separated, in ♂ represented by lateral crests 105
- Upper margin of pronotum not swollen; propodeal apophyses long or present as lateral crests..... 106
- 105 (104). Upper valve of ovipositor without a subapical series of blunt teeth; dorsal face of propodeum about 0.7× as long as posterodorsal face; form rather robust **Fislistina**
- Upper valve of ovipositor with a subapical series of blunt teeth; dorsal face of propodeum about 0.4× as long as posterodorsal face; form very robust **Buysmania**

- 106 (104). Mandible tapered apically with upper tooth longer; epomia curved forward at upper end; ovipositor slender and acutely tapered apically.....**Euchalinus**
Mandible broad apically with teeth subequal in length; epomia curved or not curved forward at upper end; ovipositor thicker and tip usually rather blunt **Goryphus**

ICHNEUMONINAE

- 107 (48). Propodeal spiracle small and circular.....**PHAEOGENINI** (=ALOMYINI), 108
Propodeal spiracle elongate to oval 112
- 108 (107). Mandible narrow at apex, bidentate, lower tooth smaller; propodeum completely areolated; occipital carina complete..... **Phaeogenes**
Mandible simple; propodeum with or without carina 109
- 109 (108). Apical margin of clypeus with a row of 6-8 small teeth (fig. 115)
.....**Nesostenodontus**
Apical margin of clypeus without small teeth 110
- 110 (109). Areolet absent; discoidal cell 2 pointed basally; discoidella absent; propodeum without carina or at most an apical transverse carina present, apically projecting beyond base of hind coxa; ♂ clasper rod-like; mesosternal carina complete or weakly interrupted before mid coxa **Lusius**
Arolet present; discoidal cell 2 truncate basally; propodeum completely or almost completely areolated, apically not prolonged; ♂ clasper not modified; mesosternal carina widely interrupted before mid coxa 111
- 111 (110). Tergite 1 separated from its sternite by a carina; scutellum carinate laterally; tergite 2 with gastrocoeli transverse; deep and almost meeting at center; clypeus truncate or slightly concave apically **Rhexidermus**
Tergite 1 completely fused with its sternite; scutellum not carinate laterally; tergite 2 with gastrocoeli shortly transverse, shallow and distant from each other; clypeus more or less convex apically..... **Stenodontus**
- 112 (107). Petiole flattened, distinctly wider than high **PRISTICEROTINI**
Occipital carina complete; notaulus absent or weakly impressed; gastrocoelus transverse 113
Petiole not flattened, not distinctly wider than high.....114
- 113 (112). Costula present; apical tooth on area dentipara distinct **Pristiceros**
Costula absent; apical tooth on area dentipara weak.....**Platylabus**
- 114 (112). Mandible apparently simple but with a small appressed tooth on inner side when viewed from posteroventral side of head; tergites 5-7 compressed in ♀ 115
Mandible with 2 teeth, sometimes smaller lower tooth shifted inwards; tergites 5-7 variable 116
- 115 (114). Furrow between propodeum and metanotum deep and not interrupted at center; propodeum with carinae not sharp, areola not defined..... **Euhersiarches**
Furrow between propodeum and metanotum interrupted at center by the projecting median basal area of propodeum; propodeum with carinae strong, areola distinct or fused with median basal area **Hersiarches**
- 116 (114). Abdomen long and narrow, tergite 2 about 1.4× as long as wide, tergites 2-4 with apicoventral corner each forming a right angle; nervulus oppo-

- site basal vein; areolet truncate above; malar space $2\times$ as long as basal width of mandible. Whole insect, fig. 116.....**ISCHNOJOPPINI, Ischnojoppa**
 Abdomen usually shorter and wider, tergite 2 usually $0.6-1\times$ as long as wide; nervulus variable in position; areolet truncate or pointed above; malar space variable in length 117
- 117 (116). Space between gastrocoeli equal to or less than width of gastrocoelus, the latter usually transverse or triangular and deep, superficial to a certain extent in *Allonotus*.....118
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- 118 (117). Propodeum pyramidal in profile, anterior and posterior faces sloping steeply, areola absent; scutellum with a median cone-like elevation; tergites 2-5 like rectangular boxes, separated from each other by deep incisions; labrum visible; apical margin of clypeus concave..... **TROGINI**, 119
- Propodeum gradually curved in profile; scutellum without a median elevation except in *Charitojoppa*; tergites with sutures between them not unusually deep; labrum concealed or visible; apical margin of clypeus variable in shape 120
- 119 (118). Tergite 1 without dorsal carinae; tergites 2-5 longitudinally striate, grooves between them not very deep, dorsal part of each tergite gradually curved with sides; anterior face of propodeum shiny and impunctate; occipital carina meeting hypostomal carina at base of mandible (true only in Philippine species).....**Neofacydes**
- Tergite 1 with 2 dorsal carinae; tergites 2-5 longitudinally rugoso-punctate, grooves between them very deep, sides of tergite almost perpendicular to dorsal part; anterior face of propodeum rugoso-punctate; occipital carina meeting hypostomal carina before base of mandible..... **Holcojoppa**
- 120 (118). Tarsal claws pectinate 121
- Tarsal claws simple 122
- 121 (120). Clypeus with a median apical tooth; scutellum strongly convex and impunctate; hind tibia without any unusual structure apically; gastrocoelus more or less triangular, the distance from the other equals $1.2\times$ its width **Listrodromus**
- Clypeus without a median apical tooth; scutellum conspicuously large, subrectangular, flat, coarsely rugoso-punctate and completely carinate; hind tibia with a depressed area dorsoapically that is enclosed by a carina; gastrocoelus transverse, the distance from the other equals $0.5\times$ its width **Maraces**
- 122 (120). Mandible broad apically; teeth equal in size or lower tooth slightly shorter; occipital carina joining hypostomal carina at base of mandible; scutellum with a lateral carina except in *Aulojoppa* 123
- Mandible narrow or tapered apically; lower tooth smaller and shorter, sometimes shifted inwards; occipital carina joining hypostomal carina at or before base of mandible; scutellum with or without a lateral carina 132
- 123 (122). Mesosternal carina entire..... 124
- Mesosternal carina interrupted before each mid coxa.....125

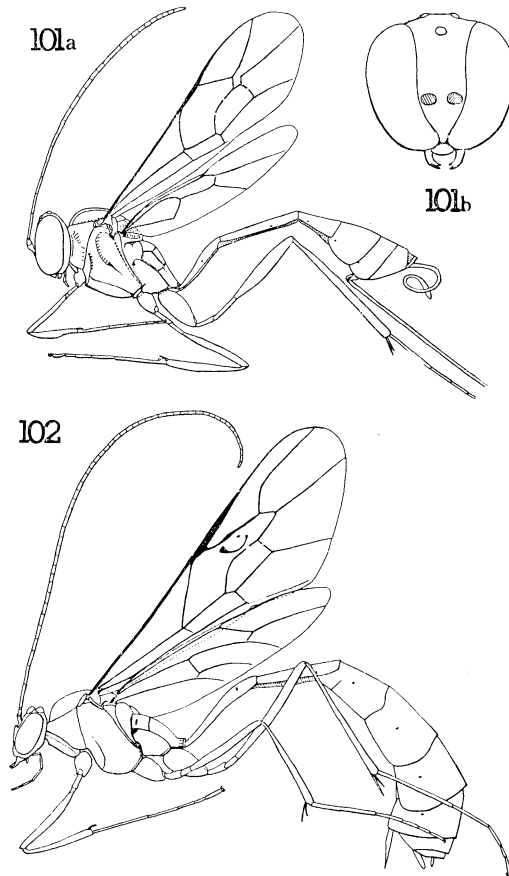


Figs. 99-100. 99a, *Leptobatopsis indica* (Cameron) (Lycorini, Lissonotinae); 99b, same, ovipositor tip; 99c, same, front tarsal claw; 100, *Lathrolestes* sp. (Mesoleiinae).

- 124 (123). Scutellum not carinate laterally; posterior end of pronotum produced into a pretegular spine; clypeus convex, apical margin convex with a row of minute teeth, separated from face by a sharp groove; prepectal carina ending far below subtegular ridge; gastrocoelus situated on basal 0.3 of tergite.....**Aulojoppa**
 Scutellum carinate laterally; posterior end of pronotum not produced into a spine but with a vertical preapical carina; clypeus flattish, apically trilobed, separated from face by a weak groove; prepectal carina ending at subtegular ridge; gastrocoelus situated at base of tergite.....**Satrius**
- 125 (123). Mandible swollen near base and turned so that lower tooth is on the same horizontal plane as upper tooth; clypeus with a midapical tooth; spiracle on tergite 1 small and circular, apical area of propodeum divided into its median and lateral areas **Imeria**, 126
 Mandible normal in size and position; clypeus usually without a midapical tooth; spiracle on tergite 1 large and elongate..... 127
- 126 (125). Propodeum with a distinct tooth at apex of 2nd lateral area.....
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 Propodeum without a tooth at apex of 2nd lateral area...Subgen. **Elasmognathias**
- 127 (125). Front tibia with a small acute tooth dorsoapically; face slightly convex, without any longitudinal furrow above clypeal fovea nor a groove 128
 Front tibia without an acute tooth apically; face flat with a longitudinal furrow in line with clypeal fovea130
- 128 (127). Female subgenital plate large, as long as tergites 6 & 7 united; abdominal segments 5-7 weakly compressed, sternite 2 membranous and with a me-

- dian fold, sternites 4 & 5 strongly sclerotized and more or less flat; subtegular ridge present as a sharp carina.....**Habrojoppa**
- Female subgenital plate short, not extending beyond apical margin of tergite 6; abdominal segments 5-7 more compressed, sternites 4 & 5 weakly sclerotized, not flat; subtegular tubercle present but not as a sharp carina.....129
- 129 (128). Scutellum with a cone-like elevation medially, its lateral carinae wide apart apically..... **Charitojoppa**
- Scutellum flat, without a median elevation but apically excavate, its lateral carinae strongly convergent and meeting apically..... **Compsophorus**
- 130 (127). Propodeum strongly convex in profile; scutellum with fine shallow punctures; notaulus extending beyond middle of mesoscutum..... **Atanyjoppa**
- Propodeum weakly convex or subhorizontal in profile; scutellum with deep coarse punctures; notaulus not extending beyond middle of mesoscutum...131
- 131 (130). Hind basitarsus of ♀ enlarged ventrally..... **Ileanta**
- Hind basitarsus of ♀ not enlarged ventrally **Cratojoppa**
- 132 (122). Areola fused with basal area, often not completely bounded by strong carinae; area dentipara if present ending near base of hind coxa; scutellum flat and carinate laterally; postpetiole not elevated; lower mandibular tooth not shifted or slightly inwards; mesosternal tooth present in front of mid coxa.....133
- Areola separated from basal and apical median areas by strong transverse carina except in some species of *Lissosculpta* where basal transverse is absent; area dentipara usually ending far from base of hind coxa; scutellum raised and not carinate or laterally; lower mandibular tooth shifted far inwards or not; mesosternal tooth absent in front of mid coxa.....134
- 133 (132). Tergites 2-5 parallel-sided and elongate, distinctly narrower than thorax ...
.....**Naenaria**
- Tergites 2-5 not parallel-sided, tergites beyond 2nd transverse, slightly narrower than thorax, median area of propodeum bounded by carinae, divided into a basal and an apical area **Ichneumon**
- 134 (132). Upper margin of pronotum widened and shelf-like; notaulus distinct to the middle or beyond middle of mesoscutum; upper part of temple flat ... **Deniya**
- Upper margin of pronotum not widened; notaulus not distinct to middle of mesoscutum; upper part of temple convex 135
- 135 (134). Scutellum carinate laterally; lower mandibular tooth shifted far inwards; propodeal spines present or absent 136
- Scutellum not carinate laterally; lower mandibular tooth not shifted inwards; propodeal spines absent.....139
- 136 (135). Apical margin of clypeus concave with a median tooth; gastrocoeli almost meeting at center of tergite; postpetiole pyramidal in profile and with a median furrow; ovipositor extending beyond apex of abdomen...**Cushmaniella**
- Apical margin of clypeus convex or straight, without a median tooth; gastrocoeli variable in width but not meeting near center of tergite; postpetiole evenly curved in profile and without a median furrow, ovipositor not extending beyond apex of abdomen.....137
- 137 (136). Gastrocoeli not distinctly impressed, the space between them more than 0.7×

- width of each and not striate; occipital carina joining hypostomal carina above base of mandible.....**Stirexephanes**
- Gastrocoeli very wide, space between them less than $0.7\times$ the width of each; occipital carina joining hypostomal carina at or above base of mandible..... 138
- 138 (137). Apical transverse carina on propodeum forming a continuous curved line; clypeus flat with apical margin straight and thick; occipital carina joining hypostomal carina a little distance above base of mandible; notaulus weakly impressed on anterior 0.2; propodeal spines absent or very weak..... **Stenaoplus**
- Apical transverse carina on propodeum broken at middle; clypeus arcuate basally with apical margin convex and thin; occipital carina joining hypostomal carina at or close to base of mandible; notaulus impressed on

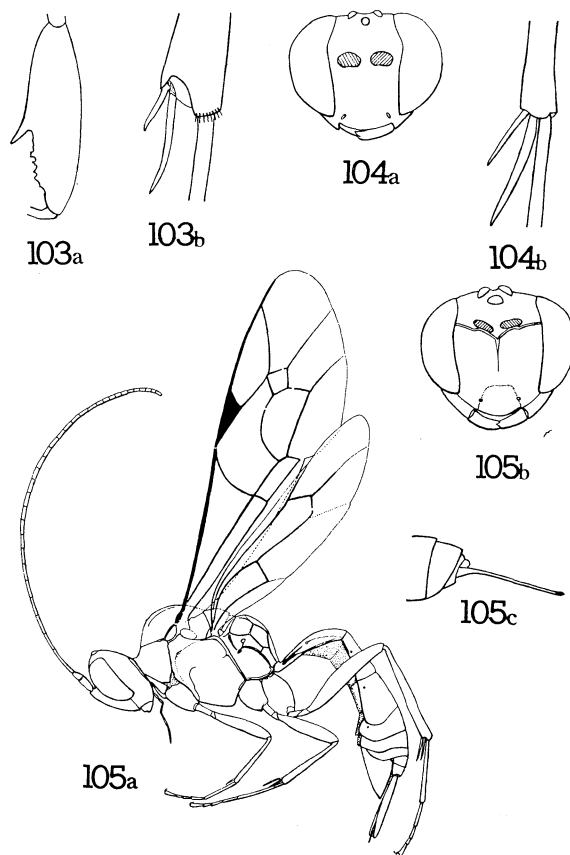


Figs. 101-102. 101a, *Chriodes (Klutiana) baguionensis* Baltazar (Nonnini, Ophioninae); 101b, same, front view of head; 102, *Enicospilus* sp. (Ophionini, Ophioninae).

- anterior 0.5 of mesoscutum; propodeal spines present..... **Allonotus**
- 139 (135). Gastrocoeli almost meeting at center of tergite, the interspace less than 1/2 as wide as gastrocoelus; anterior carina of areola very near base of propodeum so that median basal area is very short; areola large and squarish; tergite 1 in profile pyramidal near spiracle; clypeus convex 140
- Gastrocoelus not extending close to center, the interspace more than 1/2 the width of gastrocoelus; anterior carina of areola distant from base of propodeum, median basal area at least 1/2 as long as areola; areola longer than wide or an inverted heart-shape; tergite 1 in profile evenly curved apically; clypeus flat..... 141
- 140 (139). Clypeus strongly elevated basally and sharply separated from face by a deep groove; cheek with a furrow, its length equals 1/2 the basal width of mandible..... **Chiaglas**
- Clypeus evenly convex and weakly separated from face; cheek without a furrow as long as basal width of mandible..... **Stenichneumon**
- 141 (139). Areola wider than long, kidney-shaped; postpetiole with its median area raised and coarsely punctate; clypeus slightly convex, about 2.5× as long as wide..... **Intermedichneumon**
- Areola longer than wide; postpetiole with its median area evenly convex and longitudinally wrinkled or rugose-punctate; clypeus flat, 3-3.5× as long as wide..... **Lissosculpta** (In part)
- 142 (117). Mandible broad apically, lower tooth 0.6-0.7× as long as upper tooth; areole elongate, 1-1.5× as long as wide; gastrocoelus deep 143
- Mandible tapered apically, lower tooth less than 0.5 as long as upper tooth; areole variable in size; gastrocoelus deep or superficial 145
- 143 (142). A median fold present on sternites 2 & 3 in ♀ or sternites 2-4 in ♂; face slightly convex and not separated from clypeus by a groove; apical margin of last tarsal segment deeply notched, with 2 small median teeth; propodeal teeth present **Bambuscopus**
- A median fold present on all sternites; face flat and separated from clypeus by a groove; apical margin of tarsal segment widely notched and without teeth; propodeal teeth present or absent..... 144
- 144 (143). Postpetiole with a closely punctate middle field; gastrocoelus triangular, lower part of face without a slant ridge in line with lateral margin of clypeus; propodeal teeth present; scutellum not carinate laterally **Barichneumonites**
- Postpetiole without a distinct middle field, impunctate or punctate; gastrocoelus usually transverse; lower part of face with a slant ridge in line with lateral margin of clypeus; propodeal teeth usually absent; scutellum with lateral carina present or absent **Validentia**
- 145 (142). Scutellum carinate; gastrocoeli superficial 146
- Scutellum not carinate; gastrocoeli deep or superficial 150
- 146 (145). Tergite 2 with 2 shallow indentations behind shallow gastrocoeli; propodeal spines absent..... **Losgna**
- Tergite 2 without indentations behind gastrocoeli; propodeal spines usually long 147
- 147 (146). Clypeal margin convex and conspicuously thin; scutellum apically notched,

- and its lateral carina raised **Eccoptosage**
 Clypeal margin truncate and not conspicuously thin; scutellum not notched
 apically, its lateral carina not raised 148
- 148 (147). Areola large and quadrangular; propodeal spiracle long and slit-like; tergites
 black, each with a white apical band; legs black and white **Togea**
 Areola smaller and horseshoe-shaped; propodeal spiracle oval to short elli-
 ptical; tergites mostly ferruginous, if black and marked with white legs
 are mostly ferruginous..... 149
- 149 (148). Abdomen conspicuously narrow and elongate, especially in ♀; scutellum
 and metapleuron impunctate or with fine punctures; areola usually wider
 than long, its basal carina not close to base of propodeum; clypeal fovea
 not very large and not depressed around it..... **Longichneumon**
 Abdomen normally constructed; scutellum coarsely punctate; metapleuron
 coarsely punctate or with vertical striae and scattered punctures; areola
 7-sided with its basal carina very near base of propodeum; clypeal fovea
 large and depressed around it **Benyllus**
- 150 (145). A median fold present on sternites 2 and 3 in ♀, in ♂ on sternites 2-4;
 the other sternites sclerotized..... 151
 A median fold present on all sternites or excluding the last 2; discoidella
 present..... 154
- 151 (150). Female subgenital plate with a tuft of hairs apically, ♂ subgenital plate
 produced medially at apex..... **Eutanyacra**
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 rounded apically..... 152
- 152 (151). Scutellum cone-like; middle area of propodeum parallel-sided and without
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 tergites 1-4 striate longitudinally **Poecilojoppoides**
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 tergites 1-4 not striate longitudinally 153
- 153 (152). Sternite 3 without a median fold; propodeum with teeth absent, its lateral
 carina weak or if strong not straight throughout its length; tergites 2 & 3
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 long as thick, antenna serrate in ♂..... **Ctenichneumon**
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 lar segments long, 1-3× as long as thick, antenna not serrate in ♂... **Achaisus**
- 154 (150). Propodeal teeth strong..... 155
 Propodeal teeth absent..... 156
- 155 (154). Cheek longer than basal width of mandible; scutellum conical with 2 horns
 (in Philippine species); gastrocoelus deep; tergites 2-4 mat or punctate
 **Hoplismenus**
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 vex; gastrocoelus superficial; tergites 2-4 impunctate..... **Cratichneumon**
- 156 (154). Gastrocoelus transverse and deep; postpetiole wide, without a middle field,
 smooth or usually punctate on sides; areola usually fused with median
 basal area, if not distinct horseshoe-shaped; tergites weakly convex

- **Lissosculpta** (In part)
 Gastrocoelus small, deeply or moderately impressed; postpetiole with or without a middle field, mostly densely punctate, sometimes with weak longitudinal striae; areola distinct, horseshoe-shaped; tergites very convex..... 157
 157 (156). Gastrocoelus weakly impressed; flagellum of ♀ with apical part subcylindric; postpetiole with a distinct middle field, usually sparsely punctate and with weak longitudinal striae; body moderately slender..... **Algathia**
 Gastrocoelus moderately impressed or deep; flagellum of ♀ with apical part moderately or strongly tapered, usually flattened beneath; postpetiole with middle weakly bounded, usually densely punctate, sometimes with weak longitudinal striae; body stout to moderately slender..... **Barichneumon**
 158 (41). Fore legs with 1 distinguishable trochanter; clypeus not separated from face,



Figs. 103-105. 103a, *Pristomerus* sp. (Cremastini, Ophioninae), hind femur; 103b, same, apical end of tibia; 104a, *Xanthocampoplex luteus flavus* (Cushman) (Porizontini, Ophioninae), front view of head; 104b, same, apical end of tibia; 105a, *Mesochorus* sp. (Mesochorinae); 105b, same, front view of head; 105c, same, abdominal tip of ♂.

- face usually protruberant..... 159
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 groove, face seldom protruberant..... 170
 159 (158). Scape more than 2× as long as wide (fig. 113); dorsal part of face which
 is shelf-like without a median tooth; very small species
 **ORTHOCENTRINAE**, 160
 Scape less than 2× as long as wide (figs. 107a & 109); dorsal part of face
 with a small median tooth between antennal bases (figs. 106, 107b & 108a);
 small to medium-sized species..... **METOPIINAE**, 161

ORTHOCENTRINAE

- 160 (159). Prepectal carina present, at least above level of sternaulus; notaulus absent
 or indistinct; areolet present; nervellus broken weakly near its posterior
 end, its posterior end further from wing base than its anterior end.....
 **Orthocentrus**
 Prepectal carina absent; areolet absent, abscissa 2 of cubital vein about as
 long as intercubitus; hind femur reaching to about apical 0.9 of abdomen;
 hind end of nervellus about the same distance from wing base as front
 end. Whole insect, fig. 113..... **Plectiscus**

METOPIINAE

- 161 (159). Face occupied largely by a flat or concave escutcheon-shaped area (fig. 108a)
 bounded by a carina; mid tibia with 1 spur. Whole insect, fig. 108b...**Metopius**
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 162 (161). Epipleura of tergites 3–5 apparently absent (represented by narrow, incon-
 spicuous vestiges); fore and mid tarsal claws conspicuously pectinate..... 163
 Epipleura of tergites 3–5 well developed; fore and mid tarsal claws usually
 apparently simple 165
 163 (162). Areolet present; interantennal process of face forming a high semicircular
 flange between antennal sockets; tergite 2 with a pair of midlongitudinal
 carinae; tergite 7 of ♂ retracted; hind tarsal claws conspicuously pectinate;
 abdomen clavate; mid tibia of ♂ with 1 spur..... **Acerataspis**
 Areolet absent; interantennal process of face forming a triangular projection
 in front of antennal sockets but not a high flange between them; tergite 2
 with 1 midlongitudinal carina; tergite 7 of ♂ exposed; hind tarsal claws
 apparently simple; abdomen parallel-sided; mid tibia of ♂ with 2 spurs...164
 164 (163). Upper edge of pronotum paralleled by a broad, shallow, submarginal groove;
 sublateral longitudinal carina of abdomen extending at most to basal of
 2nd; metapleurum with an anterior suture; mesopleural suture present ...
 **Chorinaeus**
 Upper edge of pronotum without a distinct submarginal groove; sublateral
 longitudinal carina of abdomen extending to entire length of tergite 2, at
 least basally; metapleuron, without an anterior suture; mesopleural suture
 absent..... **Trieces**
 165 (162). Antennal sockets separated by a high lamella, lamella with a deep median
 groove dorsally (just below median ocellus)..... 166

- Antennal sockets not separated by a high lamella, or if lamella is present it does not have a median groove 168
- 166 (165). Abdominal segment 1 broad basally, spiracle near its basal 0.25, sternite extending about 0.2 its length; propodeum with distinct dorsal and posterodorsal faces; head somewhat cubical; edge of interantennal lamella arcuate in profile..... **Triclistus**
- Abdominal segment 1 narrow basally; spiracle near its basal 0.37-0.5, sternite extending about 0.3× its length; propodeum without distinct dorsal and posterodorsal faces, these blending in an even curve; head lenticular, edge of interantennal lamella angulate in profile..... **Colpotrochia**, 167
- 167 (166). Nervellus with its front end nearer the wing base than its hind end; areolet present Subgen. **Scallama**
- Nervellus vertical or with its front end farther from wing base than its hind end; areolet present or absent Subgen. **Colpotrochia**
- 168 (165). Areolet present; epipleurum of abdominal segment 2 large, conspicuous, at least 0.3 as wide as its tergite; spiracle of tergite 1 just above sublateral carina temple short..... **Seticornuta**
- Arolet absent; epipleuron of abdominal segment 2 narrow; spiracle of tergite 1 just below sublateral carina; temple rather long..... 169
- 169 (168). Back of head vertical behind posterior ocelli (fig. 109); face in profile sloping anterior to its upper margin; spurs of mid tibia subequal in length **Hypsicera**
- Back of head sloping from posterior ocelli to level of occipital carina, thence approximately vertical to foramen magnum (fig. 107a); spurs of mid tibia unequal in length **Exochus**
- 170 (158). Upper tooth of mandible broad and subdivided so that the mandible appears to have 3 teeth (fig. 114b)..... 171
- Upper tooth of mandible not subdivided, mandible with 2 teeth or 1 .. 177
- 171 (170). Scutellum with a strong median spine (in Philippine species); claws pectinate; prepectal carina absent; ♀ subgenital plate large (BANCHINI, in part)..... **Banchus**
- Scutellum without a median spine; claws simple; prepectal carina present; ♀ subgenital plate not unusually large 172
- 172 (171). Mesoscutum covered with sharp transverse wrinkles; nervellus broken far above middle; ovipositor long, sinuate and strongly compressed at apex. (RHYSSINI, in part). Whole insect, fig. 88 **Myllenyxis**
- Mesoscutum without transverse wrinkles; nervellus broken near or below middle; ovipositor short, hardly extending beyond apex of abdomen **DIPLAZONINAE**, 173

DIPLAZONINAE

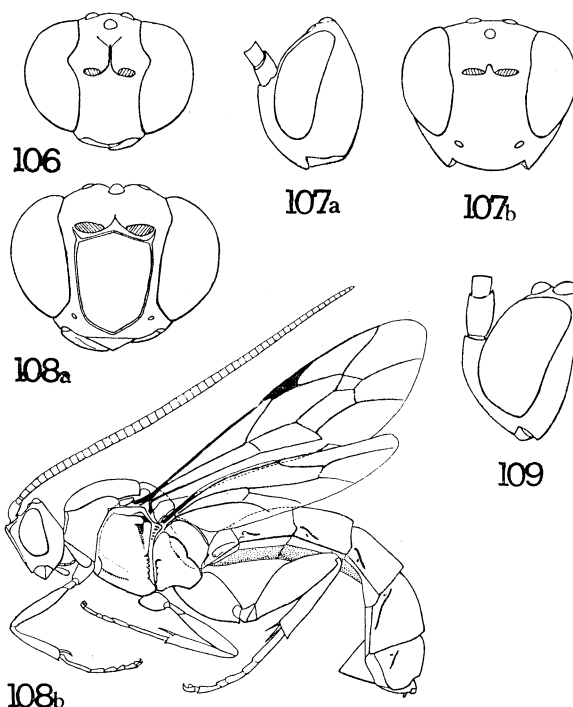
- 173 (172). Tergites 2 & 3 with a postmedian transverse groove; areolet absent; propodeum with strong carinae; notaulus present. Whole insect, fig. 114a... **Diplazon**
- Tergites 2 & 3 without a postmedian transverse groove; areolet present or absent; propodeum with or without carinae; notaulus present or absent... 174

- 174 (173). Tergite 2 with a pair of convergent median basal carinae; tergite 1 wide, about 1.25–1.3× as long as basal width..... **Enizemum**
 Tergite 2 without a pair of median basal carinae; tergite 1 narrow, 2–2.25× as long as basal width..... 175
- 175 (174). Notaulus present; propodeum with sharp carinae; face polished; areolet absent **Promethes**
 Notaulus absent; propodeum usually without distinct carinae; face mat; areolet present or absent..... 176
- 176 (175). Scutellum black (in Philippine species); clypeus without median longitudinal groove; areolet present (in Philippine species); propodeum weakly rugose, with indistinct carinae; flagellum in ♂ with tyloids **Homotropus**
 Scutellum yellow (in Philippine species); clypeus with a faint median longitudinal groove; areolet absent; propodeum smooth, with microreticulations; flagellum in ♂ without tyloids..... **Syrphoctonus**
- 177 (170). Small delicate species; usually with narrow clypeus; mandible sharply pointed with 2 minute teeth (fig. 112b); abdomen usually compressed apically (fig. 112a); recurrent vein 2 with 2 bullae; ovipositor usually with a subapical dorsal notch; sternite 1 short, not extending beyond middle of tergite 1; propodeum usually completely areolated.....
 **MICROLEPTINAE** (In part), 178
 Not as above 181

MICROLEPTINAE

(In part)

- 178 (177). Propodeum metapleurum, tergites 1 & 2 mat; propodeum with 1 transverse carina (occasionally 2 in non-Philippine species) and without longitudinal carinae; areolet absent; ovipositor short; less than apical depth of abdomen. Whole insect, fig. 112a **Megastylus**
 Not as above 179
- 179 (178). Propodeum without a transverse carina; prepectal carina obsolescent ventrally; notaulus absent; areolet present..... **Aperileptus**
 Propodeum with a sharp transverse carina; prepectal carina entire; notaulus present at least anteriorly; areolet present or absent 180
- 180 (179). Areolet absent, intercubitus 1 reduced to a point; median apical area on propodeum with a midlongitudinal carina; ovipositor sheath about 0.5 as long as apical depth of abdomen..... **Pantisarthrus**
 Areolet present or absent; intercubitus 1 at least 0.3× as long as abscissa 2 of cubitus; median apical area on propodeum without a median carina; ovipositor sheath longer than apical depth of abdomen..... **Plectiscidea**
- 181 (177). Tarsal claws pectinate (figs. 90b & 99c), at least in front legs; ovipositor short or long 182
 Tarsal claws not pectinate, often with an internal lobe or tooth, especially in the ♀; ovipositor usually long..... 199
- 182 (181). Ovipositor without a subapical dorsal notch (fig. 90c); subgenital plate not unusually large (fig. 90a)..... 183
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Figs. 106-109. 106, *Colpotrochia* sp. (Metopiinae), front view of head; 107a, *Exochus* sp. (Metopiinae), side view of head; 107b, same, front view of head; 108a, *Metopius rufus browni* Ashmead (Metopiinae), front view of head; 108b, *Metopius rufus browni* Ashmead (Metopiinae); 109, *Hysicera* sp. (Metopiinae), side view of head.

- (figs. 99a & 100) 189
- 183 (182). Tergites 2-4 each with a pair of oblique grooves that are convergent anteriorly and widely divergent posteriorly, each with a deep basal and post-median grooves in addition to the pair of oblique grooves; epomia produced dorsally into a horn LYCORINI, *Lycorina*
- Tergites 2-4 without sharp grooves; epomia not produced dorsally into a horn..... TRYPHONINAE (in part), 184

TRYPHONINAE

(In part)

- 184 (183). Hind tibia without a spur, mid tibia with 1 spur (1 species of this tribe is in Townes' collection, genus undetermined)..... CTENISCINI
- Hind tibia with 2 spurs; mid tibia with 2 spurs; propodeum without carinae or at most with a pair of transverse crests beyond middle, often striate transversely; tergites 1-3 with epipleura wide.....PHYTODIETINI, 185

- 185 (184). Nervellus broken above middle; mandible twisted thus upper tooth much forward of the shorter lower tooth; notaulus distinct; eye emarginate opposite antennal socket; thorax mostly or entirely ochreous to ferruginous. Whole insect, fig. 90a **Netelia**, 186
- Nervellus broken below middle, or not broken; mandible not twisted; notaulus absent or slightly impressed; eye not distinctly emarginate opposite antennal socket; thorax mostly or entirely black 188
- 186 (185). Nervulus antefurcal; hind tarsal claw with a small tooth beyond its true apex; temple weakly convex; ovipositor sheath longer than tergite 1..... Subgen. **Apatagium**
- Nervulus interstitial or postfurcal; hind tarsal claw without a tooth beyond its apex; temple strongly convex; ovipositor sheath shorter than tergite 1 187
- 187 (186). Nervulus interstitial; metapleurum densely and finely punctate Subgen. **Prosthodocis**
- Nervulus postfurcal or if almost interstitial, posterior end is farther distad than anterior end; metapleuron coarsely and/or sparsely punctate Subgen. **Netelia**
- 188 (185). Nervellus broken; areolet present; apical margin of clypeus emarginate; lower tooth of mandible $0.8-0.9\times$ as long as the upper..... **Phytodietus**
- Nervellus not broken; areolet absent; apical margin of clypeus entire; lower tooth of mandible about $0.6\times$ as long as the upper... **Phytodietus**, aberrant sp.
- 189 (182). Apical edge of front tibia without a small tooth on its outer side; ♀ subgenital plate large (fig. 99a), with a median apical notch; ovipositor extending well beyond apex of abdomen (short in *Banchus*); propodeum usually with a conspicuous transverse postmedian carina... **LISSONOTINAE**, 190
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LISSONOTINAE (=BANCHINAE)

- 190 (189). Tergites 2-4 each with a pair of oblique grooves that are convergent anteriorly, divergent posteriorly, without transverse grooves; areolet absent **GLYPTINI**, 191
- Tergites 2-4 without sharp grooves; areolet present or absent 192
- 191 (190). Tergites 1-4 each with a midlongitudinal carina **Apophua**
- Tergites 1-4 without a midlongitudinal carina **Glypta**
- 192 (190). Nervellus broken above middle; apical margin of clypeus notched in middle; upper mandibular tooth broad, sometimes subdivided so that mandible appears to have 3 teeth, **BANCHINI**; prepectal carina absent, ovipositor short, not extending beyond apex of abdomen; scutellum with a spine (in Philippine species)..... **Banchus**
- Nervellus broken below middle; apical margin of clypeus entire; mandibular teeth subequal in size; prepectal carina present; ovipositor long **LISSONOTINI**, 193
- 193 (192). Tergite 1 with spiracle at middle, petiolate, $4-6\times$ as long as apical width,

- glymma absent; sternite 1 long, more than $4\times$ as long as wide; occipital carina interrupted dorsally. Whole insect, fig. 99a **Leptobatopsis**
- Tergite 1 with spiracle before middle, subsessile, $2-3.5\times$ as long as apical width; glymma present; sternite 1 less than $3\times$ as long as wide; occipital carina entire or interrupted dorsally..... 194
- 194 (193). Epomia present; areolet with a stalk as long as its body; propodeal spiracle elongate..... **Syzeuctus**
- Epomia absent; areolet when present with a short stalk or no stalk; propodeal spiracle round or oblong.....195
- 195 (194). Occipital carina obsolete dorsally; areolet absent..... **Tossinola**
- Occipital carina entire; areolet present or absent..... 196
- 196 (195). Propodeum without an apical transverse carina; carina between metapleuron and propodeum absent; head, thorax and tergites 1-3 coarsely and closely punctate; ovipositor thick and short, its sheath $0.3-0.8\times$ as long as fore wing **Stictolissonota**
- Propodeum with an apical transverse carina; carina between metapleuron and propodeum present; head and thorax finely and/or sparsely punctate; tergites 1 & 2 usually striate longitudinally or mat; ovipositor long and slender its sheath $1.0-1.3\times$ as long as fore wing..... 197
- 197 (196). Areolet present **Pimplopterus**
- Arolet absent..... **Asphragis**

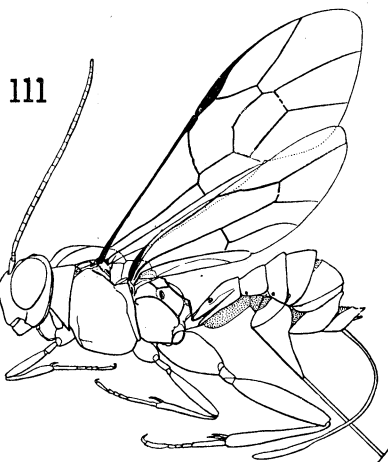
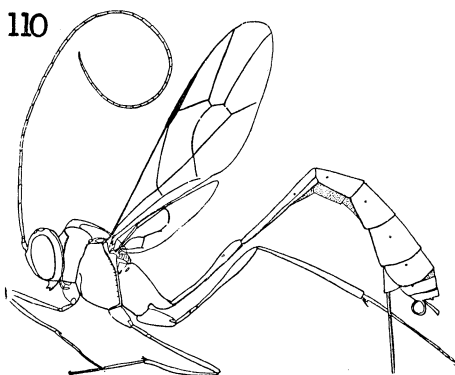
MESOLEIINAE (=SCOLOBATINAE)

- 198 (189). Tergite 1 with a glymma; sternite 1 free from its tergite. Whole insect, fig. 100..... **MESOLEIINI, Lathrolestes**
- Tergite 1 without a glymma; sternite 1 fused with its tergite.....
- **EURYPROCTINI, Philotymma**
- 199 (181). Female subgenital plate very large, triangular, folded on the midline, its apex reaching or surpassing apex of abdomen (fig. 111); apical 0.3 of ♂ abdomen compressed (deeper than wide)..... **ACAENITINAE, 200**
- Female subgenital plate not enlarged (figs. 82-89); apical 0.3 of abdomen of ♂ cylindric or depressed (wider than deep) 202

ACAENITINAE

- 200 (199). Ventral swelling of sternite 1 with numerous long erect hairs; clypeus with a strong transverse preapical ridge; occipital carina complete; propodeal spiracle encircled by a carina that encloses a shallow basin; maxillary palpus bare except for long hairs near apex of each segment **Siphimedia**
- Ventral swelling of sternite 1 without hairs, or rarely with 1 or very few hairs; clypeus with or without a transverse preapical ridge; occipital carina complete or absent; propodeal spiracle usually not encircled by a carina; maxillary palpus hairy throughout..... 201
- 201 (200). Occipital carina absent; apex of clypeus semicircularly emarginate; basal transverse carina absent..... **Phalgea**
- Occipital carina complete; apex of clypeus truncate and usually with a

- median tooth; basal transverse carina present or absent, midlongitudinal carinae of propodeum closely parallel for less than $1/2$ the length of propodeum, usually divergent from very near base; sternite 1 with a swelling or a sharp transverse ridge. Whole insect, fig. 111 **Yezoceryx**
- 202 (199). Abdominal sternite 1 completely fused with its tergite; propodeum areolated; epipleura moderately wide to very wide, XORIDINI. Epomia long and strong, usually projecting dorsally as a tooth; antenna curved or elbowed subapically, with 1 or more strong setae at the curve or elbow. Whole insect, fig. 89..... **Xorides**, 203
- Abdominal sternite 1 more or less free from its tergite; propodeum areolated or not areolated; epipleura often narrow or vestigial..... 207
- 203 (202). Nervulus distad of basal vein; intercubitus basad of recurrent vein 2 by more than its length; occipital carina incomplete dorsally..... Subgen. **Sichelia**
- Nervulus basad of basal vein; intercubitus basad of recurrent vein 2 by not



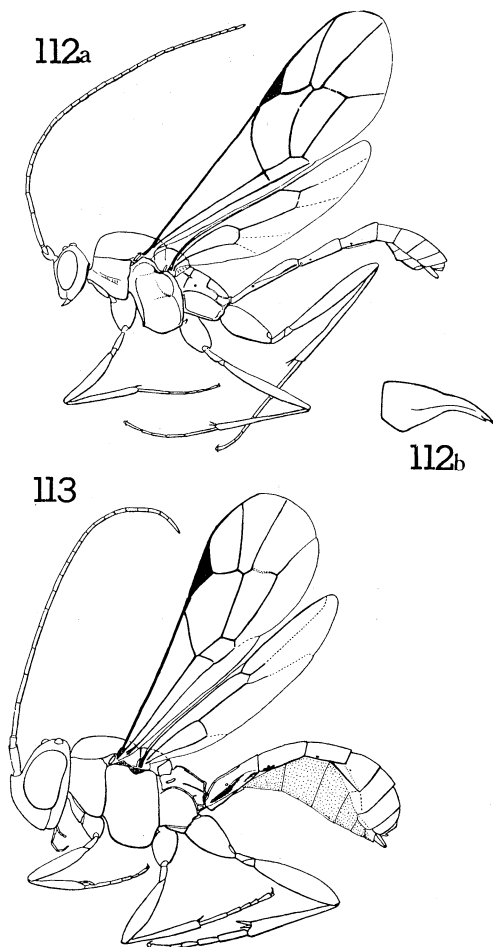
Figs. 110-111. 110, *Clatha* sp. (Anomalinae); 111, *Yezoceryx* sp. (Acaenitinae).

- more than its length; occipital carina complete dorsally 204
- 204 (203). Posterior transverse carina of mesosternum complete and strong; subapical bend of flagellum involving 2 or 3 joints; trochanter 2 of hind leg as seen from the front side, about 3× as long as trochanter 1; propodeal teeth absent; front margin of pronotum centrally with a row of upstanding coarse bristles..... 205
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- 205 (204). Trochanter 2 of fore leg with a tooth at apex on front side; mesoscutum with its median and lateral lobes transversely striate at centers; propodeum subhorizontal.....Subgen. **Caenostoma**
- Trochanter 2 of fore leg without an apical tooth on front side; mesoscutum without transverse striae; propodeum strongly convex..... **Gonophonus**
- 206 (204). Trochanter 2 of fore and mid legs with an apical tooth on front side; temple with longitudinal and/or oblique striae..... Subgen. **Epixorides**
- Trochanter 2 of fore and mid legs without an apical tooth on front side; temple smooth except for vertical striae on its ventral 0.1 or 0.2..... Subgen. **Cyanoxorides**
- 207 (202). Propodeum with transverse and longitudinal carinae (fig. 86); tergites 1-3 without epipleura; tarsal claws without a basal lobe..... 208
- Propodeum not areolated (figs. 82-85); tergites 1-3 with epipleura narrow or vestigial; tarsal claws with or without a basal lobe...most **PIMPLINAE**, 210
- 208 (207). Tarsal claws each with an enlarged spatulate bristle near base; mandibular teeth of equal size. Whole insect, fig. 86.....**THERONIINI**, **Theronia** (In part)
- Tarsal claws without an enlarged spatulate bristle near base; mandibular teeth of unequal size..... 209
- 209 (208). Tergite 1 sessile, less than 3.0× as long as sub-basal width, with 2 dorsal carinae near base, spiracle before middle; areolet present (in Philippine species); mandibular teeth subequal in length; nervulus postfurcal and oblique; tergites 1-4 punctate throughout; eyes bare.....**STILBOPINI**, **Stilbops**
- Tergite 1 petiolate or subpetiolate, more than 4× as long as subbasal width, without dorsal carinae, spiracle near middle; areolet absent (in Philippine species), **ECLYTINI**; upper mandibular tooth about 3× as long as lower; nervulus interstitial or slightly postfurcal; tergites 1 & 2 longitudinally striate; eyes hairy **Thymaris**

PIMPLINAE

(=EPHIALTINAE of Townes)

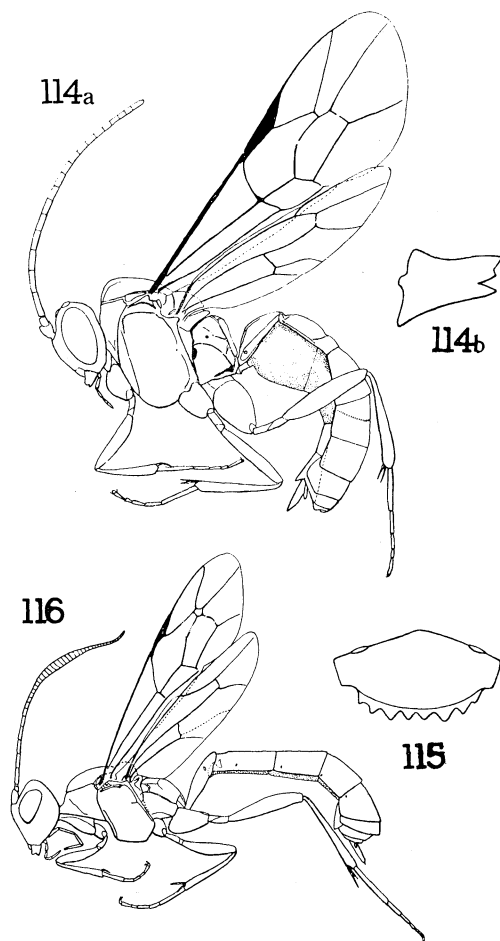
- 210 (207). Mesoscutum covered with sharp transverse wrinkles (fig. 88) ... **RHYSSINI**, 211
- Mesoscutum without transverse wrinkles, or with transverse wrinkles restricted to small areas 217



Figs. 112-113. 112a, *Megastylus* sp. (Microleptinae); 112b, same, mandible; 113, *Plectiscus* sp. (Orthocentrinae).

- 211 (210). Areolet present (rarely absent in abnormal ♂♂) 212
 Areolet absent..... 214
- 212 (211). Occipital carina joining hypostomal carina at or very close to base of mandible; clypeus with a strong median apical tubercle..... **Lytarmes**
 Occipital carina joining hypostomal carina before base of mandible, its distance from base of mandible about $0.3\times$ the basal width of mandible; clypeus with or without a median apical tubercle 213
- 213 (212). Intercubitus 2 far basad of recurrent vein 2; radial cell $3-4\times$ as wide as high; tergite 1 petiolate, without dorsolateral ridges basally; ♂ clasper without a groove along its inner edge; tergites 3-6 of ♂ straight apically, without a midlongitudinal submembranous area apically... **Cyrtorhyssa** (in part)

- Intercubitus 2 opposite recurrent vein 2 or beyond it; radial cell $4.5-5.5\times$ as wide as high; tergite 1 sessile, with short dorsolateral ridges basally; ♂ clasper with a strong setiferous groove along inner edge (not true in dwarfed ♂♂); tergites 3-6 of ♂ strongly concave and with a midlongitudinal submembranous area apically **Megarhyssa**
- 214 (211). Mandible with 3 teeth, upper tooth being weakly subdivided; middle lobe of mesoscutum in profile forming an even curve; sternites 2-4 of ♀ without a pair of tubercles basally; intercubitus interstitial with recurrent vein 2; ovipositor sinuate and strongly compressed at apex. Whole insect, fig. 88 **Myllenyx**
- Mandible with 2 teeth, upper tooth not subdivided; middle lobe of mesoscutum in profile usually forming a rounded right angle; sternites 2-4 of ♀ with a median pair of tubercles basally; intercubitus variable in position with recurrent vein 2; ovipositor straight and moderately compressed at apex..... 215
- 215 (214). Apex of upper tooth of mandible slightly narrower than apex of lower tooth; hamuli with a basal group of usually 3 hooks; prepectal carina sinuate in side view; stigma about $5\times$ as long as wide; tergite 1 about $1.3\times$ as long as wide, with a weak dorsolateral carina basally; sternite 1 of ♀ with a pair of large flat tubercles..... **Triancyra**
- Apex of upper tooth of mandible slightly wider than apex of lower tooth; hamuli with a basal group of 2 hooks, followed by single widely spaced hooks; prepectal carina straight in side view; stigma $5-10\times$ as long as wide; sternite 1 of ♀ with or without a pair of tubercles 216
- 216 (215). Intercubitus interstitial with or basad of recurrent vein 2 by $0.2\times$ its length; tergite 1 sessile, usually with short dorsolateral carina basally; apical abscissa of radius moderately curved..... **Sychnostigma**
- Intercubitus basad of recurrent vein 2 by $1.5\times$ its length; tergite 1 petiolate, without dorsolateral carinae basally; apical abscissa of radius very strongly curved **Cyrtorhyssa**
- 217 (210). Prepectal carina absent; propodeum not areolated; tergite 1 without a lateral longitudinal carina; upper part of temple with a sharply scabrous area. Whole insect, fig. 87 **NEOXORIDINI**, 218
- Prepectal carina present (figs. 82-85); propodeum completely or incompletely areolated; tergite 1 nearly always with a lateral longitudinal carina..... 219
- 218 (217). Outer claw of hind tarsus bent at a sharp angle with an enlarged spatulate bristle near base; inner claw of hind tarsus more weakly curved, bidentate; mesoscutum strongly trilobed; tergites not entirely punctate; tergite 1 narrow at base, about $5\times$ as long as basal width; last tergite of ♀ not modified as a flattened lobe beyond cerci; areolet present or absent... **Eugalta**
- Outer claw of hind tarsus gradually curved and without an enlarged bristle near base; inner claw of hind tarsus gradually curved, simple; mesoscutum weakly trilobed; tergites entirely punctate; tergite 1 broad at base, about $3\times$ as long as basal width; last tergite of ♀ modified as a flattened lobe beyond cerci; areolet absent. Whole insect, fig. 87, **Cnastis**
- 219 (217). Mesopleural suture without a distinct angulation just above middle, or if



Figs. 114-116. 114a, *Diplazon visayensis* Bal-tazar (Diplazoninae); 114b, same, mandible; 115, *Nesostenodontus bakeri* Cushman (Joppini, Ichneumoninae), clypeus; 116, *Ischnojoppa lute-ator* (F.) (Ischnojoppini, Ichneumoninae).

- there is an angulation (as in *Xanthopimpla* and *Lissopimpla*, fig. 85) the tarsal claws each with an enlarged spatulate hair and the apex of mandible twisted so that its lower tooth is toward the mouth..... PIMPLINI, 220
- Mesopleural suture with an angulation just above middle (fig. 82-84); never with both an enlarged hair on tarsal claws *and* apex of mandible not twisted..... 224
- 220 (219). Mandible with teeth approximately equal in size..... 221
- Mandible with lower tooth much smaller and shorter than upper tooth 222
- 221 (220). Eye sharply emarginate opposite antennal base; front tarsal claws of ♀ each

- with a basal tooth **Itoplectis**
 Eye weakly emarginate opposite antennal base; front tarsal claws simple
 **Pimpla**
- 222 (220). Tip of mandible turned 90° so that the lower tooth is inward; propodeum polished and with strong carinae; nervellus broken at about its upper 0.25; cheek short, less than basal width of mandible; body color lemon yellow..... **Xanthopimpla**
 Tip of mandible not or slightly turned inward; propodeum punctate, striate or mat, without definite carinae; nervellus broken at its upper 0.15 or above this, sometimes discoidella arising from cubitella near nervellus; cheek longer than basal width of mandible; body black or black with yellow or ferruginous 223
- 223 (222). Hind femur with an acute postmedian tooth beneath; abdomen impunctate and polished; nervulus interstitial or antefurcal. Whole insect, fig. 86 ...
 **Lissopimpla**
 Hind femur without a tooth; abdomen punctate or somewhat mat; nervulus postfurcal..... **Echthromorpha**
- 224 (219). Tarsal claws of ♀ without a basal tooth; tergites 2-4 with fine indistinct punctures, polished or strongly mat; areolet present; ♂ subgenital plate usually longer than wide..... **THERONIINI, Theronia** (In part)
 Tarsal claws of ♀, or at least front claws of ♀, with a basal tooth except in *Perithous*; tergites 2-4 usually with rather coarse, distinct punctures; areolet present or absent; ♂ subgenital plate usually wider than long..... 225
- 225 (224). Last segment of tarsus not enlarged, a little narrower than basal segment of tarsus; areolet usually present; ovipositor of approximately uniform depth between its middle and its apical point **EPHIALTINI**, 226
 Last segment of tarsus enlarged, a little wider than basal segment of tarsus; areolet absent except in *Laufeia*; ovipositor tapered from near middle to its apical point. Whole insect, fig. 84..... **POLYSPHINCTINI**, 234
- 226 (225). Areolet absent (fig. 83) 227
 Areolet present (fig. 82) 228
- 227 (226). Occipital carina absent; discoidella not pigmented, nervellus broken below middle; ovipositor curved downward, with inconspicuous ridges at apex; propodeum without apicolateral tubercles. Whole insect, fig. 83... **Pachymelos**
 Occipital carina complete; discoidella distinct, nervellus broken variably; ovipositor straight, with its basal tooth modified into an elongate barb; propodeum with blunt apicolateral tubercles in ♀, less prominent in ♂
 **Zaglyptus**
- 228 (226). Tarsal claws of ♀ without a basal lobe; subgenital plate of ♂ prolonged with apex rounded and edges upturned; tergite 1 with a sharp lateral tooth basally; ovipositor strongly compressed and slightly sinuate at apex
 **Perithous**, subgen. **Hybomischos**
 Tarsal claws of ♀ with a large basal lobe; subgenital plate of ♂ truncate or medially notched, its edges not upturned; ovipositor not strongly compressed and straight at apex 229
- 229 (228). Nervellus broken below middle (fig. 82); vertex usually abruptly declivous

- behind ocelli 230
 Nervellus broken at or above middle; vertex wide behind ocelli 233
 230 (229). Occipital carina obsolescent dorsally; pleural carina on propodeum absent;
 tergites with apical corners forming a right angle; wings dark or with
 base yellow..... **Camptotypus**
 Occipital carina entire; pleural carina on propodeum present; apical corner
 of tergites not sharply angled; wings clear 231
 231 (230). Eye conspicuously emarginate opposite antennal insertion; posterior ocellus
 1/2 as far from eye as from the other posterior ocellus; ♀ subgenital
 plate large and rectangular; areolet more or less an isosceles triangle ...
 **Sericopimpla**
 Eye weakly or not emarginate on inner margin; posterior ocellus far from
 or equidistant to eye and other posterior ocellus; ♀ subgenital plate usual-
 ly with a median membranous area, a few with plate entire; areolet
 usually wedge-shaped 232
 232 (231). Tergite 2 with distinct oblique grooves cutting off its basolateral corners;
 clypeus of ♂ and sometimes part of all of face of ♂ or of both sexes
 white or yellow; recurrent vein 2 at outer corner of areolet; temple 0.25-
 0.6× as long as eye. Whole insect, fig. 82..... **Acropimpla**
 Tergite 2 without oblique grooves cutting off its basolateral corners; clypeus
 and face of both sexes black or concolorous with rest of head; recurrent
 vein 2 inserted before outer corner of areolet; temple about 0.7 as long
 as eye..... **Scambus**
 233 (229). Tergite 2 with deep oblique basal grooves which reach about middle of
 tergite; ventral valve of ovipositor each with a subapical lobe; abdomen
 slender and long, tergite 1 at least 2× as long as apical width...**Dolichomitus**
 Tergite 2 without oblique basal grooves, or if present, shallow and reaching
 basal 0.25-0.3 of tergite; ventral valve of ovipositor without a subapical
 lobe; abdomen broader and shorter, tergites 1-3 short, as long as or
 shorter than their apical width **Flavopimpla**
 234 (225). Areolet present; eye densely hairy in ♀, less hairy in ♂..... **Laufeia**
 Areolet absent (fig. 84); eye bare..... 235
 235 (234). Median lobe of mesoscutum with a vertical carina anteriorly on each side;
 clypeus in profile strongly convex, ovipositor sheath almost as long as
 tergite 1..... **Acrodactyla**
 Median lobe of mesoscutum without a vertical carina anteriorly on each
 side; clypeus in profile flattish or weakly convex; ovipositor sheath 1-2×
 as long as tergite 1 236
 236 (235). Tergites 3 & 4 each with a median pair of large rounded swellings; ner-
 vellus broken; ovipositor sheath 2× as long as tergite 1..... **Polysphincta**
 Tergites 3 & 4 each with oblique grooves that enclose a median rhombic
 area; nervellus broken or not broken; ovipositor sheath 1-1.5× as long
 as tergite 1. Whole insect, fig. 84..... **Zatypota**

Losgna luzonica Baltazar, n. sp. Figs. 74-81.

The species can be readily distinguished from other Philippine Ichneumoninae because of

two large but shallow indentations on tergite 2 (fig. 79) behind the small and weakly impressed gastrocoeli. The upper 1/2 of pro- and mesothorax and tergites 4 & 5 are black; the structures between these black area, including the legs, are mostly ferruginous or brownish orange.

♀ & ♂: Face transverse, 1/2 as long as wide, flat, with middle area raised, irregularly punctate, with 2 dorsal carinae converging at middle (fig. 74); clypeus about 0.35× as long as wide, flat and continuous with face, clypeal groove weakly impressed, clypeal fovea large, apical margin truncate, impunctate or with a few scattered punctures; labrum visible; mandible broad apically with upper tooth 2× as long as lower tooth; malar space subequal to basal width of mandible, malar groove present; temple wide, shiny, with a few widely scattered punctures; frons impunctate with a concavity above each antennal socket to accommodate orbicular scape; antenna with 53 flagellar segments, each segment wider than long beyond the 10th, clavate preapically, apex tapered; ocellar triangle delimited by a deep groove anteriorly, concave behind ocelli; occiput shiny and impunctate, occipital carina meeting hypostomal carina at base of mandible (fig. 75). Pronotum finely punctate on upper 1/2, impunctate on lower 1/2, transversely striate along entire posterior margin, epomia present (fig. 76); mesoscutum with a deep groove along outer border of lateral lobe, closely punctate with minute punctures on anterior 1/2 and coarse punctures on posterior 1/2, notaulus broadly impressed on entire length of mesoscutum but not as a deep groove; scutellum carinate laterally, with large deep punctures, the interspaces 1–2× diameter of punctures; metanotum impunctate; prepectal carina reaching subalar tubercle, prepectus very finely and closely punctate; mesopleurum finely punctate but coarse on ventral 0.3, impunctate around mesopleural pit, transverse mesosternal carina interrupted in front of each mid coxa; mesosternum closely punctate, the interspaces 0.5–1.5× diameter of punctures; propodeum (fig. 77) punctate on 1st lateral and 1st pleural areas, irregularly wrinkled on areola, with transverse wrinkles on midlateral and midpleural area; apicolateral and apicopleural areas coarsely wrinkled, petiolar area somewhat mat; propodeal spine absent but slightly suggested; metapleurum rugoso-punctate; wing venation as in fig. 78; fore and mid tibiae (fig. 80) with numerous bristles on dorsal side; hind coxa closely punctate. Abdominal profile (fig. 79); tergite 1 shiny and almost impunctate except for a few scattered punctures on the broad postpetiole; tergite 2 about 1.5× as long as apical width, longitudinally wrinkled throughout except for punctate apical 0.2, with a broad depressed area behind small and shallow gastrocoelus; tergite 3 about 0.8× as long as apical width, rugoso-punctate but sculpture finer than on tergite 2, apical 0.3 punctate; tergites 4–7 smooth, with short sparse pubescence, tergite 4 about 0.6× as long as apical width, tergites 5–7 conical from top view; ovipositor tip as in fig. 81.

Black, ferruginous and yellow, wings clear with a yellowish tinge. Head yellow except for black mandibular teeth, depressed central area on frons, ocellar triangle, vertex and posterior margin of head on upper 0.6 of temple; antenna dark brown except for yellow outer side of scape, and flagellar segments 12–20 (in ♂) or inner side of 9–17 (in ♀); mesoscutum black with a small yellow spot near each basal corner of scutellum, scutellum yellow with a brown midlongitudinal stripe, pronotum black except for the yellow collar and a transverse dorsal spot, propleurum brown with yellowish borders, mesopleurum yellow with a large black stripe below subalar tubercle, mesosternum black in ♀ but yellow in ♂; metapleuron and propodeum ferruginous except for a dark spot on 1st and 2nd lateral areas of propodeum; all legs ferruginous except for yellowish coxa and trochanter

1 on fore and mid legs, and dark brown tarsus of hind leg, sometimes apical 0.3 of hind tibia dark brown; tergites 1-3 ferruginous except for a large triangular spot on apical corner of tergite 3; tergites 4-6 black except for a yellowish white dorsoapical band on tergite 6 and a transverse spot on apical corner of tergite 4 in ♀ only, sometimes ferruginous on basal 1/2 of tergite 4 in some ♂♂; tergite 7 yellowish white except for the dark basal corner; ovipositor sheath black, ovipositor ferruginous.

Length: Body 13-14 mm (excluding ovipositor); fore wing 9-11 mm (♂), 9.5-11 mm (♀); ovipositor 2-2.5 mm.

Holotype ♀ (MANILA), Mt. Maquiling, Laguna, Luzon, 18. II. 1954, C. R. Baltazar. Allotype ♂, same data as holotype but 26. IV. 1954 (MANILA). Paratypes: ♂, Los Baños, Laguna, Luzon, 1. III. 1953, C. P. Madamba; same locality as holotype, 1 ♂, 2. II. 1954, F. R. Candelaria; 2 ♀♀, 3. XI. 1953, 7. X. 1953, A. A. Marmeto; 1 ♀, 2. II. 1954, E. Dagang; 2 ♀♀, 12. XI. 1954, C. R. Baltazar (MANILA, USNM).

LITERATURE CITED

- Baltazar, C. R. 1954. The Philippine Diplazoninae (Hymenoptera, Ichneumonidae). *Philipp. Jour. Sci.* **83**: 161-175.
- 1961. The Philippine Pimplini, Poemeniini, Rhyssini, Xoridini (Pimplini, Ichneumonidae, Hymenoptera). *Monogr. Inst. Sci. Tech. (Manila)* No. **7**: 1-113, 98 figs.
- (In press). Biological association of three insect species found in a tobacco field. *Philipp. Jour. Agri.*
- Perkins, J. F. 1959. Hymenoptera Ichneumonoidea, Ichneumonidae, Key to subfamilies and Ichneumoninae I. *Handbooks for the Identification of British Insects* **7** (2): 1-116.
- Short, J. R. T. 1959. A description and classification of the final instar larvae of the Ichneumonidae (Insecta, Hymenoptera). *Proc. U. S. Natl. Mus.* **100** (3419): 391-511, figs.
- Smith, L. K. & R. D. Shenefelt. 1956. A guide to the subfamily and tribes of the family Ichneumonidae (Hymenoptera) known to occur in Wisconsin. *Trans. Wis. Acad. Sci. Arts & Lett.* **44**: 165-219.
- Townes, H. K. 1944-45. A catalogue and reclassification of the Nearctic Ichneumonidae. *Mem. Amer. Ent. Soc.* **11** (1-2): 1-925.
- 1961. A key to the genera of Ichneumonidae recorded from the Indo-Australian area. IN Townes *et al.*, A catalogue and reclassification of the Indo-Australian Ichneumonidae. pp. 421-474.
- & M. Townes. 1951. IN Muesebeck, *et al.*, Hymenoptera of America North of Mexico. *Synoptic Catalog. U. S. D. A. Monograph Mo.* **2**: 184-409.
- 1959. Ichneumon-flies of America North of Mexico: 1. Subfamily Metopinae. *U. S. Natl. Mus. Bull.* **216** (1): 1-318.
- 1960. Ichneumon-flies of America North of Mexico: 2. Subfamilies Ephialtinae, Xoridinae, Acaenitinae. *Ibid.* **216** (2): 1-676.
- 1962. Ichneumon-flies of America North of Mexico: 3. Subfamily Gelinae, Tribe Mesostenini. *Ibid.* **216** (Pt. 3): 1-602.
- & V. K. Gupta. 1961. A catalogue and reclassification of the Indo-Austral-

- ian Ichneumonidae. Ann. Arbor: Cushing-Mallory, Inc., 522 pp.
Walkley, L. M. 1958. Family Ichneumonidae. IN Krombein and others, Hymenoptera of America North of Mexico, Synoptic Catalog. U. S. D. A. Monograph No. 2 (First Suppl.): 36-62.

Errata for Part 1 of this paper
Pacific Insects 4 (4): 737-771

- p. 739, fig. 1 : Label ANAL below submedian
p. 739, last line : *Aparamesisu* should be *Aparamesius*
p. 741, line 4 : Cancel the word *not*
p. 741, line 12 : Insert the word *not* between *pronotum reaching*; cancel the figures within the parenthesis.
p. 741, line 16 : Cancel the word *not*
p. 742, line 18; p. 743, line 2; p. 744, line 2; p. 746, lines 21 & 27 : *Aulacostethus* Philippi is preoccupied and should be replaced by *Pristalaucus* Kieffer
p. 747, line 19 : Insert the word *and* between *mid hind*
p. 749, no. 87 : Place an asterisk before *Odontogaster*

Publication Announcement

PACIFIC INSECTS MONOGRAPH 6

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By T. C. Maa

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