

LIST OF PLATES.



	<i>Follow page</i>
Plates I—IV (Coccidae)	10
Plates V—VI (Chelonia) ..	78
Plates VII—X (Trematodes and Cestodes)	104
Plates XI—XII (Chironomides)	198
Plate XIII (Ophiuroids)	226
Plate XIV (Diptera)	278
Plate XV (Batrachia and Lizards) ..	308
Plates XVI—XVII (Lizards)	326

LIST OF AUTHORS.

- Agharkar, S. P., M.A. Further Notes on the Habits and Distribution of *Limnocyba indica*, p. 247.
- Andersen, K. A subfossil Bat's skull from Rodriguez I., p. 337.
- Annandale, N., D.Sc. The Tortoises of Chota Nagpur, p. 63.—Description of a new Sand-boa from the Persian Gulf, p. 217.—The Indian Barnacles of the subgenus *Scalpellum*, p. 227.—Notes on Freshwater Sponges, XV, p. 237.—Adaptation in the Habits of a Tabanid Fly, p. 245.—Indian Blood-sucking Midges, p. 246.—Some new and interesting Batrachia and Lizards from India, Ceylon and Borneo, p. 301.—The Indian Geckos of the Genus *Gymnodactylus*, p. 309.
- Avinoff, A. Butterflies of the Genus *Parnassius* in the collection of the Indian Museum, p. 327.
- Baker, E. C. Stuart On a small collection of Birds from the Mishmi Hills, N. E. Frontier of India, p. 251.
- Bomford, Capt. T I. A Note on certain Ophiuroids in the Indian Museum, p. 219.—Some Salps taken by the R.I.M.S.S. 'Investigator' in the Bay of Bengal and Andaman Sea, p. 243.
- Boulenger, G. A. A List of the Reptiles obtained by Mr. H. Stevens in Upper Assam and the Eastern Himalayas, p. 337.
- Brunetti, E. New Indian Empidæ, p. 11.—New and interesting Diptera from the Eastern Himalayas, p. 255.
- Green, E. E. Notes on the collection of Coccidæ in the Indian Museum, II, p. 1.
- Henderson, J R., M.B., C.M. A new variety of freshwater crab from Travancore, p. 47.
- Jordan, K., Ph.D. The Anthribidæ in the Indian Museum, p. 203.
- Kemp, Stanley, B.A. Preliminary Note on a new genus of Onychophora from the N. E. Frontier of India, p. 241.

- Kieffer, J. J. Nouvelle étude sur les Chironomides de l' Indian Museum de Calcutta, p. 119.—Description de quelques nouvelles Cécidomyies des Indes, p. 199.—Description d'un nouveau Mymaride des Indes Orientales, p. 201.
- Lichtwardt, B. Nemestriniden (Dipt.) aus dem Indian Museum in Calcutta, p. 333.
- Maulik, S. Cryptostomes from the Indian Museum, p. 105.
- Sewell, Capt. R. B. Seymour, B.A. Notes on Plankton from the Chilka Lake, p. 338.
- Silvestri, F. On some Thysanura in the Indian Museum, p. 51.
- Southwell, T. Notes from the Bengal Fisheries Laboratory, Indian Museum, No. 1, p. 79.—On some Indian Cestoda, pt. I, p. 279.

INDEX.



N.B.—An asterisk (*) preceding a line denotes a new variety or subspecies; a dagger (†) indicates a new species; a double dagger (‡), a new genus or subgenus; synonyms are printed in italics.

	<i>Page</i>		<i>Page</i>
A			
<i>Ablabesmyia</i> ..	158	Anoplocephala ..	284
<i>Acanthina</i> ..	263	<i>gigantea</i> ..	285
<i>Acanthocephala</i> ..	80	<i>perfoliata</i> ..	285
<i>Acarterus</i> ..	21, 22	<i>plicata</i> ..	285
† <i>fuscipennis</i> ..	21	Anoplocephalidae ..	279, 284, 285
<i>orientalis</i> ..	21	Anoplocephalinae ..	284, 286
<i>pallipes</i> ..	21	Anthribidae ..	203
<i>Acartia centrura</i> ..	340	Anthribus ..	212, 213
<i>Acerina</i> ..	84	<i>albinus</i> ..	212
<i>Acorynus</i> ..	205, 206	<i>alternans</i> ..	213
<i>cylindricus</i> ..	206	<i>apicalis</i> ..	213
<i>passerinus</i> ..	206	<i>crassicornis</i> ..	211
<i>striolatus</i> ..	206	<i>daimio</i> ..	212
<i>Acrocalanus</i> ..	340	* <i>macrocerus andaman-</i>	
<i>Acrosalpellum</i> ..	227	<i>ensis</i> ..	213
<i>Acrotelsa collaris</i> ..	58	<i>macrocerus macrocerus</i> ..	213
<i>Adiamesa</i> ..	153	<i>nigroungulatus</i> ..	214
<i>Aetheria</i> ..	237, 238	<i>perfoliicornis</i> ..	211
<i>caillaudi</i> ..	237, 238	<i>wallacei malaicus</i> ..	213
<i>Aetheriidae</i> ..	237	<i>Antonina indica</i> ..	7
<i>Aetobatis narinari</i> ..	101, 102	<i>Apatenia</i> ..	207
<i>Allocreadium</i> ..	99	<i>Araecerus</i> ..	215
† <i>annandalei</i> ..	98	<i>fasciculatus</i> ..	216
<i>Allopsoutus</i> ..	51	<i>Arboricola to:queola</i> ..	254
<i>annandalei</i> ..	51	<i>Argyranœba distigma</i> ..	266
† <i>Alsophylax himalayensis</i> ..	305	<i>Asarcina aegrotus</i> ..	267
<i>Alutera schoepfii</i> ..	84	<i>Asilidae</i> ..	267
<i>Alyselminthus ellipticus</i> ..	288	<i>Aspidomorpha</i> ..	110
<i>gasterostei</i> ..	86	<i>amabilis</i> ..	111
<i>plicatus</i> ..	285	<i>difformis</i> ..	112
<i>Ammodytes ciccerelus</i> ..	86	<i>dor-ata</i> ..	111
<i>Ampsalis</i> ..	265	<i>dulcicula</i> ..	112
† <i>longispinus</i> ..	264	<i>fusconotata</i> ..	110
<i>Anaporrhutum</i> ..	101	<i>inquinata</i> ..	111
<i>albidum</i> ..	101	<i>micans</i> ..	111
<i>largum</i> ..	101	<i>miliaris</i> ..	110
<i>richiardii</i> ..	101, 102	<i>mutilata</i> ..	112
<i>Anatopynia</i> ..	154	<i>orientalis</i> ..	112
<i>Anguilla anguilla</i> ..	83, 85	<i>St. crucis</i> ..	111
<i>chrysopa</i> ..	84	<i>Astrocladus doffeini</i> ..	220, 221, 222
<i>vulgaris</i> ..	85, 86	<i>euryale</i> ..	222
<i>Anisodera</i> ..	116	<i>exiguus</i> ..	221, 222
<i>cylindrica</i> ..	116	<i>ludwigi</i> ..	222
<i>excavata</i> ..	117	<i>Astrodendrum</i> ..	221
(<i>Lissochila</i>) <i>bowringi</i> ..	117	<i>laevigatum</i> ..	219, 220
<i>ferruginea</i> ..	117	<i>sagaminum</i> ..	220
<i>guerinii</i> ..	117	<i>Atelura jacobsoni</i> ..	59
<i>Anodonta</i> ..	97	† <i>typhloponis</i> ..	58
<i>Anopheles</i> ..	247	<i>Atrichopogon</i> ..	162, 174, 179
<i>fuliginosus</i> ..	247	† <i>terrimus</i> ..	175, 178
<i>karwari</i> ..	247	† <i>brevistilus</i> ..	174, 178
<i>ludlowi</i> ..	247	† <i>flavellus</i> ..	175, 177
<i>rossii</i> ..	247	† <i>flavipalpis</i> ..	174, 175
		† <i>origenus</i> ..	174, 176

	<i>Page</i>		<i>Page</i>
<i>Atrichopogon rivicola</i>	.. 179	<i>Bothriocephalus gadi barbati</i>	.. 86
† <i>setosipennis</i>	175, 118	‡ <i>gadi merluccii</i>	86
† <i>opurius</i>	175, 177	<i>gadi morrhua</i>	.. 83
† <i>sublimatus</i>	175, 176	<i>gadi rediani</i>	.. 83
† <i>xanthopus</i>	174, 175	<i>infundibuliformis</i>	83
<i>Axona chalcopyga</i>	.. 273	<i>latus</i>	80
† <i>cyanea</i>	.. 272, 277	<i>lophii</i>	83
		<i>proboscideus</i>	.. 83
B		<i>punctatus</i>	.. 84
<i>Baccha robusta</i>	.. 267	<i>rectangulatum</i>	83
† <i>Baeotendipes</i>	126, 127	<i>salmonis carpionis</i>	86
† <i>brevicornis</i>	.. 127	<i>salmonis umblae</i>	.. 86
<i>Balistes</i>	.. 294, 295, 296	<i>salvelina</i>	.. 86
<i>Barbus tor</i>	92, 94, 95, 101	<i>solidus</i>	.. 83
<i>Barytelphusa</i>	.. 49	<i>succicus</i>	83
<i>Basitropis</i>	.. 214, 215	(<i>Anchistrocep-</i>	
‡ <i>affinis</i>	.. 215	<i>halus</i>) <i>polyptera</i>	81, 84, 88
‡ <i>coquereli</i>	.. 214		101, 283
‡ <i>hamata</i>	.. 215	<i>Bothriotaenia proboscidea</i>	85
‡ <i>nitidicutis</i>	.. 215	<i>Botrynocephalus pythonis</i>	282
‡ <i>tessellata</i>	.. 214	<i>Botryonopa sheppardi</i>	116
‡ <i>tuberidorsis</i>	214	<i>Brachypogon</i>	119, 164
<i>Batagur baska</i>	.. 78	<i>Bremia</i>	.. 200
<i>Batrachia</i>	.. 301	† <i>Brevios</i>	.. 22, 23
<i>Belgica</i>	.. 121	† <i>longicornis</i>	.. 22
‡ <i>antarctica</i>	.. 197	<i>Brilia</i>	.. 124
<i>Belone acus</i>	84, 85, 86	<i>Bufo andersoni</i>	.. 303
‡ <i>vulgaris</i>	86, 97	‡ <i>stomaticus</i>	303
<i>Bezzia</i>	165, 184, 191, 192	<i>Bufoidea</i>	.. 303
† <i>kempi</i>	.. 192, 197		
‡ <i>vaga</i>	.. 195	C	
<i>Bezzia (Probezzia)</i>	.. 165	<i>Caeciliidae</i>	.. 301
‡ <i>albipennis</i>	192, 195	<i>Calliphora</i>	273, 275
† <i>alioptica</i>	192, 193	<i>Calobata</i>	.. 275
† <i>calcuttensis</i>	193, 195	<i>Calopepla</i>	105, 106
‡ <i>eucera</i>	193, 196	‡ <i>leayana</i>	.. 105
* <i>gracilipes</i> var. <i>analisis</i>	193, 196	<i>Calopsectra</i>	.. 127
* <i>gracilipes</i> var. <i>bengalensis</i>	193, 196	<i>Calyptopogon</i>	161, 165, 190
* <i>gracilipes</i> var. <i>flavescens</i>	193, 196	‡ <i>albitarsis</i>	.. 165
† <i>hamifera</i>	192, 194	<i>Campodea</i> sp.	.. 52
* <i>hamifera</i> var. <i>arcuatipes</i>	192, 195	<i>Campodeidae</i>	.. 51
‡ <i>nigricans</i>	192, 193	<i>Camptocladus</i>	.. 123
<i>Biblio hortulanoides</i>	.. 256	<i>Cavis aureus</i>	.. 291
† <i>nigripennis</i>	.. 256	‡ <i>familiaris</i>	287, 291
<i>Bibionidae</i>	.. 256	<i>Capra hircus</i>	.. 289, 291
<i>Blythia reticulata</i>	.. 338	<i>Carcharhinus obscurus</i>	.. 82
<i>Bombylidae</i>	.. 266	<i>Cardiocladus</i>	.. 123
<i>Bos taurus</i>	.. 293	<i>Caryophyllaeus mutabilis</i>	83
<i>Bothridium pithonis</i>	.. 282	<i>Cassida</i>	.. 112
<i>Bothriocephalidae</i>	.. 280	‡ <i>enervis</i>	.. 113
<i>Bothriocephaloidea</i>	279	‡ <i>16-maculata</i>	.. 113
<i>Bothriocephalus</i>	283	‡ <i>obscura</i>	.. 112
‡ <i>barbatulae</i>	.. 83	‡ <i>syrtica</i>	.. 112
‡ <i>bicolor</i>	.. 83	<i>Cassidinae</i>	105
‡ <i>callariae</i>	.. 83	<i>Catostomus</i>	86
‡ <i>carpionis</i>	83	<i>Centrolophus pompilus</i>	84
‡ <i>cepolae</i>	.. 83	<i>Cepola rubescens</i>	.. 83
‡ <i>claviceps</i>	.. 83	<i>Ceratium fusus</i>	.. 339
‡ <i>cordiceps</i>	.. 83	<i>Ceratolophus</i>	.. 186
‡ <i>cyprini phoxini</i>	86	<i>Ceratopogon</i>	166, 183, 186, 247
‡ <i>eriosis</i>	83	<i>Ceratopogoninae</i>	.. 161, 246
‡ <i>fragilis</i>	.. 83	<i>Cereus</i>	.. 246
		<i>Ceria</i>	.. 274
		‡ <i>apicata</i>	.. 274
		‡ <i>fruhstorferi</i>	.. 274

	Page		*Page
<i>Ceria javana</i> ..	273	<i>Coluber radiatus</i> ..	338
† <i>triangulifera</i> ..	273	<i>Colymbus</i> ..	91
<i>trinotata</i> ..	273	<i>Conocladus</i> ..	123
<i>Cestoda</i> ..	81, 479	<i>Conopidae</i> ..	274
<i>Chaetoceras</i> ..	339	<i>Conops</i> ..	275
<i>diversum</i> ..	339	<i>Copepoda</i> ..	339
<i>lorenzianum</i> ..	339	<i>Coptocyca</i> ..	114, 115
<i>peruvianum</i> ..	339	<i>Coregonus maraena</i> ..	85
<i>Chaetocladus</i> ..	124	<i>Corvospongilla</i> ..	238
<i>Chaibassia</i> ..	64—67, 73	<i>burmanica</i> ..	238
<i>theobaldii</i> ..	73, 74, 75	<i>loricata</i> ..	237, 238, 240
<i>Chasmatonotus</i> ..	122	<i>micramphidiscoides</i> ..	240
<i>Chelipoda</i> ..	37	† <i>scabripiculis</i> ..	238, 239, 240
† <i>dorsalis</i> ..	33	<i>Corynocera</i> ..	121
† <i>flavida</i> ..	32	<i>Corynoneura</i> ..	123
<i>pictipennis</i> ..	44	<i>Coryphaena equisetis</i> ..	96
(Phyllodromia) <i>fusci-</i>		<i>hippurus</i> ..	96
<i>cornis</i> ..	44	<i>Cottus cernua</i> ..	84
<i>fusci-</i>		<i>norvegica</i> ..	84
<i>seta</i> ..	44	<i>scorpio</i> ..	84
<i>Chelonia</i> ..	63, 78	<i>Crapitula melanaspis</i> ..	250
<i>Chiloscyllium indicum</i> ..	101	<i>Craspedometopon frontale</i> ..	263
<i>Chirida</i> ..	115	<i>Cricocephalus resectus</i> ..	102
<i>andamanica</i> ..	116	<i>Cricotopus</i> ..	123, 125
<i>bowringii</i> ..	116	† <i>brunetti</i> ..	125
<i>ornata</i> ..	115	<i>Crustacea</i> ..	80, 338
<i>promiscua</i> ..	115	<i>Cryptocystis trichodectis</i> ..	288
<i>septemnotata</i> ..	115	<i>Ctenodrapetis</i> ..	37
<i>sexmaculata</i> ..	115	<i>discoidalis</i> ..	37
<i>Chironomariae</i> ..	126	<i>gracilis</i> ..	37
<i>Chironomidae</i> ..	164, 246	<i>rubrithorax</i> ..	37
<i>Chironominae</i> ..	120	<i>strigifera</i> ..	37
<i>Chironomus</i> ..	126, 129	<i>Ctenolepisma longicauda</i> ..	57
<i>Chorenemus lysan</i> ..	89, 95, 294, 296	<i>nigra</i> ..	56, 57
<i>Chrysomelidae</i> ..	105	<i>Ctenotaenia</i> ..	286, 300
<i>Cichla monoculus</i> ..	85	<i>Culicoides</i> ..	163, 165, 179, 182, 246, 247
<i>Cirripedia</i> ..	230	<i>himalayae</i> ..	246
<i>Cirripedia Pedunculata</i> ..	230, 235	<i>molestus</i> ..	246
<i>Cittotaenia</i> ..	286, 300	<i>odiosus</i> ..	182, 183
<i>bursaria</i> ..	286	<i>oxystoma</i> ..	246
<i>denticulata</i> ..	286	<i>peregrinus</i> ..	246
<i>latissima</i> ..	286	† <i>xanthocoma</i> ..	182
<i>pectinata</i> ..	286	<i>Culicoidinae</i> ..	120, 161, 246
† <i>Clinocera fluviatilis</i> ..	34	<i>Curculio fasciculatus</i> ..	210
† <i>obscura</i> ..	34	<i>Cyathocephalus truncata</i> ..	83
† <i>Clinotanypus</i> ..	154, 157	<i>Cyclophyllidea</i> ..	297
<i>fuscosignatus</i> ..	158	<i>Cyclosalpa affinis</i> ..	245
<i>fuscosignatus</i> var. ..	158	<i>bakeri</i> ..	243, 245
* <i>fuscosignatus</i> var. ..		<i>floridana</i> ..	245
<i>jenkinsi</i> ..	157	<i>pinnata</i> ..	245
* <i>fuscosignatus</i> var. ..		<i>Cybiium guttatum</i> ..	89, 95, 294, 296
<i>vulgaris</i> ..	157	<i>regale</i> ..	89
<i>novempunctatus</i> ..	158	† <i>Cylindrorchis</i> † <i>tenuicuttis</i> ..	99
<i>ornatissimus</i> ..	158	<i>Cynodon</i> ..	7
<i>Clunio</i> ..	121	<i>dactylon</i> ..	4, 8
<i>Clunionariae</i> ..	120, 121, 197	<i>Cyprinodon dispar</i> ..	315
<i>Clupea alosa</i> ..	83	<i>Cyprinus barbatus</i> ..	83
<i>ilisha</i> ..	88, 296	<i>carpio</i> ..	83
<i>Cobitis barbatula</i> ..	83	<i>Cyrtodactylus pulchellus</i> ..	311
<i>Coccidae</i> ..	247	<i>yarkandensis</i> ..	316
<i>Coelenterata</i> ..	286	<i>Cyrtoma</i> ..	11, 22, 23
<i>Coelodela kuvaria</i> ..	286	(<i>Bicellaria</i>) <i>spuria</i> ..	44, 45
† <i>Coelotanypus</i> ..	154	<i>Cysticercus albopunctatus</i> ..	293
<i>Coenurus cerebri</i> <i>leporis-canicola</i> ..	292	<i>bovis</i> ..	293
<i>Coenurus serialis</i> ..	291	<i>cellulosae</i> ..	292, 293
<i>Coleoptera</i> ..	203	<i>fasciolaris</i> ..	292
<i>Coloboneura argyropalpa</i> ..	39		

	Page		Page
<i>Cysticercus</i> <i>fixna</i> ..	293	<i>Distomum</i> <i>hepaticum</i> ..	97
<i>pisiformis</i> ..	292	<i>isopomum</i> :	99
<i>pyriformis</i> ..	293	<i>variegatum</i>	97
<i>tenuicollis</i>	292	<i>Ditonula</i>	339
<i>Cystoideae</i>	287	<i>Dyplidinae</i>	287
<i>Cystoidotaeniae</i> ..	287	† <i>Dolichocephala</i> <i>septemnotata</i>	35
		<i>Dolichocladus</i>	124
		<i>Doloplastus</i>	122
		<i>Doritis</i> ..	327
		<i>Dorylus</i> (<i>Typhlopone</i>) <i>labiatus</i>	59
		<i>Drapetis</i> ..	37
		<i>aenescens</i>	37
		<i>bahamata</i>	37
		<i>binotata</i> ..	37
		† <i>brevior</i>	37, 38, 39
		<i>brevis</i>	44
		<i>callosotibia</i>	37
		<i>distans</i>	45
		<i>divergens</i>	37, 45
		† <i>fascifemorata</i>	38
		<i>femoralis</i>	44
		<i>lutea</i> ..	37
		<i>obscuripennis</i>	37, 45
		<i>phaeopterus</i>	45
		<i>pubicornis</i> ..	44
		† <i>Drapetis</i> <i>rotundicornis</i>	38
		† <i>rufipes</i>	.. 38
		† <i>variegata</i>	39
		<i>xanthopyga</i>	37
		(<i>Ctenodrapetis</i>) <i>hamifera</i>	44
		<i>Drepane</i> <i>punctata</i>	294
		<i>Dryophis</i> <i>prasinus</i> ..	338
		<i>Duthiersia</i> ..	281
		<i>elegans</i> ..	282
		<i>expansa</i>	282
		<i>fimbriata</i> ..	281, 282
			E
		<i>Echinococcus</i>	299, 300
		<i>granulosus</i>	293
		<i>Echinocotyle</i> ..	286
		<i>Echinocotylidae</i>	286
		<i>Elaphropeza</i>	42
		<i>basalis</i> ..	42
		† <i>bicoloripes</i>	43
		<i>binotata</i>	45
		<i>calcarifera</i>	42
		<i>exul</i>	42
		† <i>erruginea</i>	43
		<i>formosae</i>	42
		<i>fulvithorax</i>	.. 42
		<i>kerteszi</i>	45
		<i>lineola</i> 42
		<i>lutea</i> 45
		<i>marginalis</i>	.. 45
		<i>melanura</i>	45
		<i>metatarsata</i>	.. 42
		<i>palpata</i>	42
		<i>pictithorax</i>	.. 45
		<i>scutellaris</i>	45
		<i>spuria</i> ..	42
		† <i>variegata</i>	42
		<i>xanthocephala</i>	45
		<i>Empidae</i> ..	11
		† <i>Empimorpha</i> <i>rufithorax</i>	30

	Page
Empinae ..	22
Empis ..	23, 24
abbrevinervis ..	24
†carbonaria ..	27
†centralis ..	26
ceylonica ..	24
†elegans ..	26
†griseonigra ..	25, 26
hyalogyne ..	44
†inconspicua ..	28
jacobsoni ..	24
papuana ..	24
raptorica ..	44
†rostrata ..	25, 26, 27
†squamata ..	27
†subciliipes ..	24
(Coptophlebia) hystrichopyga ..	44
inclinata ..	44
plorans ..	44
tenuinervis ..	44
velutina ..	44
(Pterempis) scopulifera ..	44
Emyda granosa intermedia ..	77, 78
Emys spinosa ..	64
thermalis ..	68
trijuga var. burmana ..	69, 70, 71
trijuga var. coronata ..	68, 71
trijuga var. madraspatana ..	67
Entozoa ..	298, 299
Epiceia ..	16
bicolor ..	16
deficiens ..	16
eustylata ..	16
ferruginea ..	16
hyaloptera ..	16
minor ..	16
? stigma ..	16
†Epidosis indicus ..	200
Epistictia ..	106
†fulvonigra ..	107
inornata ..	106
marginata ..	106
matronula ..	106
parryi ..	106
perplexa ..	106
quadripunctata ..	106
selecta ..	106
viridimaculata ..	106, 108
*viridimaculata var. trivandrumensis ..	108
Equus caballus ..	285
Eretmoptera ..	122
Eriocera nepalensis ..	261
Eristalis orientalis ..	272
tenax ..	272
Eryx ..	217
†fodiens ..	217, 218
jayakari ..	217
persicus ..	217
Esox ..	84
Estigmana chinensis ..	116
Eucorynus ..	211, 212
clavator ..	211
crassicornis ..	211
crassicornis crassicornis ..	211
marmoratus ..	211

	Page
Eucorynus setulosus ..	211
variolosus ..	211
Eudmeta marginata ..	264
Eugigas ..	203
goliathus ..	203
tessellatus ..	204
Eugonus ..	215
*Eumerus rufoscutellatus ..	269
Eurycnemus ..	124
Eutanypus ..	153

F

Fasciola ..	280
Felis domestica ..	287
tigris ..	282, 284, 291
Finna humana ..	293
Forcipomyia ..	162, 165, 166, 174, 179
albosignata ..	168
*albosignata var. asticta ..	167, 172
*albosignata var. variicrus ..	168, 172
†conigera ..	166, 168
†heterocera ..	168, 173
†confluens ..	167, 170
macrothrix, var. ..	168, 172
*macrothrix var. flaviceps ..	168, 173
†monticola ..	167, 171
†psychasta ..	167, 170
†trinotata ..	166, 169
†tristicta ..	167, 169
(Prohelea) ..	162

G

Gadus callarias ..	83
morrhua ..	83, 84
(Morrhua) minutus ..	83
Garrulax belangeri ..	252
leucolophus leucolophus ..	252
Garrulus bispecularis ..	251
owstoni ..	251
Gasterodiscus hominis ..	80
Gasterosteus laevis ..	85
Gasterostomum ..	97
†Gastrotheus indicus ..	59
Geckonidae ..	305
†Gehyra beebei ..	308
butleri ..	307
Geoemyda ..	64—67, 73
depressa ..	66
grandis ..	66
†indopeninsularis ..	65, 66, 70, 71, 72, 78
spengleri ..	67
spinosa ..	66
sylvatica ..	65, 66, 75
tricarinata ..	65, 66, 73, 74, 75, 78
trijuga ..	66, 67, 70, 72, 73
trijuga coronata ..	68, 71
trijuga edeniiana ..	69, 70, 71
trijuga madraspatana ..	70
trijuga thermalis ..	68, 69, 70, 71

	Page		Page
<i>Ginglymostoma concolor</i>	101	<i>Gymnodactylus variegatus</i>	309, 311, 313, 323, 326
<i>Glaucidium brodiei</i>	252	<i>Gynandrocerus</i>	215
<i>Glyptotendipes</i> ..	197		
<i>Gmelina arborea</i>	105	H	
† <i>Gonatocerus longicrus</i>	201		
<i>Gonophora masoni</i>	118	† <i>Haasiella</i>	164, 190
<i>Gorgonocephalinae</i>	219	† <i>semiflava</i> ..	190
<i>Gorgonocephalus cornutus</i>	222	<i>Habrissus heros</i> ..	208
<i>laevigatus</i> ..	219	<i>Haematopota litoralis</i>	.. 245
<i>verrucosus</i>	222	<i>Halirhytus</i> ..	122
<i>Gymnodactylus</i> 309, 310, 325, 326		<i>Halliella</i> ..	126
<i>albofasciatus</i> 309, 311, 313, 321, 322		<i>Halsanalotes fuscipes</i>	45
<i>brevipes</i> 309, 310, 312, 315		<i>Halysis elliptica</i> .	288
<i>caspius</i>	313	<i>solium</i>	291
<i>collegatensis</i>	321	<i>Harpamerus</i> ..	16
<i>consobrinoides</i> 309, 311, 313, 324		<i>dinoscelis</i>	16
<i>consobrinus</i>	322, 324	<i>signatus</i>	16
<i>deccanensis</i> 309, 311, 313, 321		<i>velutinus</i>	16
<i>elongatus</i> ..	310	<i>Hemerodromia</i>	32
<i>fasciolatus</i> 309, 311, 313, 325		<i>Hemerodromiinae</i>	31
<i>faeae</i> 309, 311, 313, 322		<i>Heosemys</i>	64, 65, 67
<i>fedtschenkoi</i> 309, 313, 314, 315		<i>Heptagyia</i>	154
<i>frenatus</i> 309, 311, 313, 325		<i>Herpele</i> ..	301
<i>geckoides</i> ..	313	<i>fulleri</i> ..	302
† <i>gubernatoris</i> 309, 311, 312, 316		<i>Heteromyia</i> ..	163, 183
<i>himalayicus</i> 309, 311, 312, 318, 319		† <i>indica</i> ..	183
<i>jeyporensis</i> 309, 311, 313, 321		<i>Hilara</i> ..	30
<i>kachhensis</i> 309, 310, 312, 315		<i>bares</i> ..	30
<i>khasiensis</i> 309, 311, 312, 319, 337		† <i>compacta</i>	30
<i>lawderanus</i> 309, 311, 312, 316		<i>melanochira</i>	44
<i>marmoratus</i> 316, 318, 319		<i>orientalis</i>	44
<i>mauritanicus</i>	316	<i>Hippobosca capensis</i>	.. 277
† <i>montium-salsorum</i> 309, 310, 312, 313		<i>Hippoboscidae</i> ..	277
<i>nebulosus</i> 309, 311, 313, 321		† <i>Hirmoneura annandalei</i>	333
<i>oldhamii</i> 309, 311, 312, 320, 322		<i>austeni</i>	334
<i>peguensis</i> 309, 311, 313, 323		<i>basalis</i>	333
<i>philippinicus</i>	318	<i>cingulata</i>	333, 334
<i>pulchellus</i> 309, 311, 313, 325		<i>obscura</i>	334
<i>rubidus</i> 309, 311, 312, 318, 323		<i>ochracea</i>	334
<i>scaber</i> 309, 310, 312, 314, 315		<i>opaca</i> ..	334
<i>speciosus</i> ..	321	<i>villosula</i>	334
<i>stoliczkae</i>	316	<i>Hislopia</i> 238
<i>stoliczkai</i> 309, 310, 311, 312, 316		<i>Hispinae</i> ..	105, 116
<i>triedrus</i> 309, 311, 312, 320		<i>Hoplionota</i> ..	106
		† <i>Howlettia flavipes</i> ..	23
		<i>Hybos</i> ..	11, 16—18
		† <i>apicis</i>	12 , 17
		† <i>auripes</i>	14 , 17
		<i>bezzii</i> ..	11
		<i>bicolor</i>	16
		<i>bisetosus</i>	.. 11
		<i>brachialis</i>	.. 11
		† <i>brunnipes</i> ..	12 , 13, 14
		† <i>flavipalpis</i> ..	14
		<i>fuscipennis</i>	13, 14
		<i>gagatinus</i>	11, 15
		<i>geniculata</i>	11
		<i>major</i> 44
		† <i>uiger</i>	12 , 17
		† <i>nigronitidus</i>	11 , 12
		† <i>nitens</i>	13 , 14
		† <i>allipes</i>	11
		<i>papuanus</i>	11
		<i>setosa</i>	11
		† <i>tenuipes</i>	13
		<i>tibialis</i>	44

	<i>Page</i>		<i>Page</i>
Hybotinae ..	11, 31		
<i>Hydalis finna</i> ..	293		
<i>Hydrobaenus</i> ..	122		
<i>Hymenolepidae</i> ..	286		
<i>Hymenolepididae</i> ..	279, 286—288		
<i>Hymenolepis</i> ..	286, 287, 296		
Hymenoptera ..	8		
<i>Hyperalonia flaviventris</i> ..	266		
<i>oenomaus</i> ..	266		
<i>tantalus</i> ..	266		
<i>Hypolophus sephen</i> ..	82		
I			
<i>Ichthyophis glutinosus</i> ..	301		
<i>glutinosus</i> var. <i>tricolor</i>	301		
<i>Ichthyotaenia</i> ..	103		
<i>abscisca</i> ..	85		
<i>ambigua</i> ..	85		
<i>belones</i> ..	85		
<i>coryphicephala</i> ..	85		
<i>cyclops</i> ..	85		
<i>diesingii</i> ..	84		
<i>eperlani</i> ..	85		
<i>fossata</i> ..	85		
<i>hemisphaerica</i> ..	85		
<i>idus</i> ..	85		
<i>longicollis</i> ..	85		
<i>macrocephala</i> ..	85		
<i>macrocotyle</i> ..	85		
<i>macrophalla</i> ..	85		
<i>malapteruri</i> ..	85		
<i>micropteri</i> ..	85		
<i>osculata</i> ..	85		
<i>perca</i> ..	85		
<i>sagitta</i> ..	85		
<i>salmonis omul</i> ..	85		
<i>salmonis umblae</i> ..	85		
<i>torulosa</i> ..	85		
<i>Isocladius</i> ..	123		
† <i>Isoparorchis</i> ..	91		
† <i>trismillitubis</i> ..	92, 101		
<i>Isoplastus</i> ..	158		
<i>Ithaginis cruentus kuseri</i> ..	251, 252, 253		
<i>Ixalus</i> ..	304		
<i>annandalei</i> ..	304		
<i>chalazodes</i> ..	304		
<i>cinerascens</i> ..	304		
<i>glandulosus</i> ..	304, 305		
<i>leucorhinus</i> ..	303		
<i>nasutus</i> ..	303		
† <i>semiruber</i> ..	305		
<i>signatus</i> ..	303		
<i>variabilis</i> ..	303		
J			
<i>Jacobsiella</i> ..	121		
<i>Japygidae</i> ..	51, 52		
<i>Japyx indicus</i> ..	51, 52		
† <i>Jenkinsia</i> ..	161, 185		
† <i>setosipennis</i> ..	165		
<i>Johannseniella</i> ..	186		
K			
<i>Kachuga dhongoka</i> ..	78		
<i>lineata</i> ..	78		
<i>tectum intermedia</i> ..	78		
<i>Knepperia</i> ..	126		
L			
<i>Labeo calbasu</i> ..	80, 90		
<i>rohita</i> ..	81, 82, 84, 85, 87, 88, 91, 280, 283, 289		
<i>Labrax lupus</i> ..	84		
<i>Lacoptera</i> ..	113		
<i>philippinensis</i> ..	114		
<i>quatuordecimnotata</i> ..	119		
<i>tredecimpunctata</i> ..	113		
<i>vigintisexnotata</i> ..	113		
<i>Lacertilia</i> ..	305		
<i>Lachesis gramineus</i> ..	338		
<i>Larus</i> ..	91		
<i>Lauterbornia</i> ..	126		
<i>Leia nigra</i> ..	255		
<i>Lepadidae</i> ..	235		
<i>Lepidocampa weberi</i> ..	51		
<i>Lepidospora ceylonica</i> ..	60, 61		
† <i>notabilis</i> ..	61		
† <i>Lepisma graveleyi</i> ..	53		
<i>gyriniformis</i> ..	54		
<i>indica</i> ..	55		
<i>nigra</i> ..	56		
† <i>uirgina</i> ..	54, 55		
<i>Lepismidae</i> ..	51		
<i>Lepthispa pygmaea</i> ..	117		
<i>Leptobrachium monticola</i> ..	304		
<i>Leptoconops</i> ..	162		
<i>Leptopeza biplagiata</i> ..	44		
† <i>vitripennis</i> ..	31		
<i>Lepus hispidus</i> ..	286		
<i>ruficaudatus</i> ..	286		
<i>Leuciscus idus</i> ..	85		
<i>Leuckartia</i> ..	83		
<i>Ligula</i> ..	280		
<i>abdominalis</i> ..	281		
<i>avium</i> ..	281		
<i>calastoma</i> ..	90, 91		
<i>diagramma</i> ..	90, 281		
<i>intestinalis</i> ..	90, 91, 281		
<i>monogramma</i> ..	90, 281		
<i>piscium</i> ..	281		
<i>simplicissima</i> ..	80, 81, 90, 280		
<i>uniserialis</i> ..	281		
<i>Ligulinae</i> ..	280		
<i>Limnea truncatula</i> ..	97		
<i>Limnocyba</i> ..	249		
<i>indica</i> ..	247		
<i>Liotelphusa</i> ..	49		
<i>Litanomyia</i> ..	30		
† <i>indica</i> ..	36		
<i>Litocerus</i> ..	206		
<i>khasianus</i> ..	207		
* <i>macrophthalmus luteus</i> ..	206		
* <i>moestus andamanicus</i> ..	207		
<i>passerinus</i> ..	206		
<i>paviei</i> ..	207		
<i>Lophius piscatorius</i> ..	83, 85		
† <i>Loxoneura ornata</i> ..	275		
<i>Lutianus</i> ..	295		

	Page		Page
<i>Lutianus argenteimaculatus</i>	.. 294	<i>Monobothrium hexacotyle</i>	.. 86
<i>gibbus</i>	.. 294	<i>Monodoridium</i>	.. 283
<i>Lycodon jara</i>	.. 33 ^R	<i>Mulleria dalyi</i>	.. 237
M		<i>Mus decumanus</i>	.. 292
<i>Machilidae</i>	.. 51	<i>rattus</i>	.. 292
<i>Machilis gravis</i>	.. 51	<i>Muscidae</i>	275
<i>Machilontus gravelyi</i>	.. 51	<i>Mustelus canis</i>	.. 82
<i>Macropeza</i>	.. 165	<i>Mycetophilidae</i>	.. 255
<i>Macroptilum</i>	.. 161	<i>Mycterotopus</i>	.. 163
<i>Malacolepidota</i>	287	† <i>Mydas carmichaeli</i>	266
<i>Malapterurus electricus</i>	.. 85	<i>Mydasidae</i>	.. 266
† <i>Mallota rufipes</i>	.. 271	<i>Myxosporidia</i>	80
<i>Margarodes</i>	.. 1, 9	N	
<i>indicus</i>	.. 1, 4	<i>Naia tripudians</i>	.. 338
<i>mediterraneus</i>	2, 5, 9	<i>tripudians</i> var. <i>fasciata</i>	338
<i>niger</i>	1, 5, 8, 9	<i>Nandus marmoratus</i>	95, 97
<i>papillosus</i>	1, 5, 8, 9	<i>Naultinus fasciolatus</i>	.. 325
<i>Mecocercus</i>	.. 204	<i>variegatus</i>	.. 326
<i>allectus elegans</i>	.. 204	<i>Neanthribus</i>	.. 213
<i>allectus maculatus</i>	.. 204	<i>Nemachilus barbatula</i>	.. 85
† <i>asmenus</i>	.. 204	<i>rupicola</i>	91, 280
<i>gazella guttatus</i>	.. 204	<i>Nemestrinus niveus</i>	.. 335
<i>sulphureus</i>	204	<i>Nepalia</i>	.. 121
<i>Mecotropis</i>	208	<i>Nessiara</i>	.. 207
<i>bipunctatus</i>	208	<i>Nicoria</i>	.. 64, 65, 66, 67, 73
† <i>hippium</i>	208	<i>tricarinata</i> var. <i>sivalensis</i>	67
<i>vitticollis</i>	.. 208	<i>trijuga</i>	65, 68, 69
† <i>xanthomelas</i>	208, 209	<i>trijuga coronata</i>	65, 68
<i>Medusae</i>	.. 247, 248, 249	<i>trijuga edeniana</i>	65, 69, 71
<i>Megalopsobius convergens</i>	.. 51	<i>trijuga thermalis</i>	65, 68
<i>Meganthribus</i>	.. 204	<i>Nitzschia</i>	.. 339
<i>harmandi tessellatus</i>	204	<i>Nostoe</i>	.. 339
<i>sulphureus</i>	.. 204	<i>Nucifraga caryocatactes</i>	caryo-
<i>Megaspis crassus</i>	.. 272	<i>catactes</i>	.. 251
<i>zonalis</i>	.. 272	<i>caryocatactes multi-</i>	
<i>Melanochelys edeniana</i>	69, 70, 71	<i>punctata</i>	.. 251
<i>Melosira</i>	.. 339	<i>hemispila</i>	.. 251
<i>Merlangus pollachius</i>	.. 84	O	
<i>Merluccius vulgaris</i>	.. 84	<i>Ocydromia cothurnata</i>	31
<i>Mesembrina meridiana</i>	.. 275	<i>Ocydrominae</i>	.. 31
<i>Mesocestoidae</i>	.. 283	† <i>Odontomyia rufoabdominalis</i>	265
<i>Mesocestoides</i>	279, 283	<i>Oeacta</i>	.. 164
<i>ambiguus</i>	283	<i>Oithona</i>	.. 340
<i>lineatus</i>	.. 283	<i>Oncocephala quadrilobata</i>	.. 117
<i>Mesocestoididae</i>	.. 283	<i>Onychophora</i>	.. 241
<i>Mesocestoidinae</i>	.. 283	<i>Ophiocephalus striatus</i>	81, 82, 84, 85,
<i>Mesoscalpellum</i>	.. 227	87, 88, 100, 283, 289	
<i>Metriocnemus</i>	.. 124	<i>Ophiuroidea</i>	.. 225
<i>Metriona</i>	.. 114	<i>Ophryocotyle</i>	289, 290
<i>catenata</i>	.. 115	† <i>beugalis</i>	81, 85, 87,
<i>circumdata</i>	.. 114	<i>proteus</i>	101, 289
* <i>circumdata</i> var. <i>dentatus</i>	114	<i>Ophryocotylinae</i>	289, 299
<i>physodis</i>	.. 115	<i>Opuntia elatior</i>	.. 245
<i>Microdromia</i>	.. 32	<i>Oreocncla dixonii</i>	.. 252
<i>Micropsectra</i>	.. 127	<i>mollissima</i>	.. 252
<i>Micropterus nigricans</i>	.. 85	† <i>Oribremia</i> † <i>multiida</i>	199
<i>Microtaenia</i>	.. 287	<i>Orthocladariae</i>	120, 122, 197
<i>Milesia balteata</i>	.. 268	<i>Orthocladus</i>	124, 127, 135, 197
<i>doriae</i>	.. 269	<i>Oscillaria</i>	.. 339
† <i>ferruginosa</i>	.. 268	<i>Osmerus eperlanus</i>	85
<i>gigas</i>	.. 267	<i>Ostrea</i>	.. 237
<i>himalayensis</i>	.. 268		
<i>macularis</i>	.. 268		
<i>variegata</i>	.. 268		
<i>Mola rotunda</i>	.. 84		

	<i>Page</i>		<i>Page</i>
Otobothrium ..	279, 295	Parnassius delphius var. fuldussica	328
crenocolle ..	82	delphius var. staudingeri ..	328
insigne ..	296	delphius var. stoliczkanus ..	328
Ovis aries ..	289, 292	discobolus ..	330
Ozotomerus maculosus ..	215	discobolus var. insignis	330
		discobolus var. romanov† ..	330
		epaphus ..	331
P		epaphus var. cachemiriensis ..	331
Pachygaster ..	263	epaphus var. poeta ..	331
Pachygastrinae ..	261	epaphus var. sikkimensis ..	337
Pachyleptus ..	163, 183	evermanni ..	331
Palpomyia 164, 165, 186, 187		hardwickii ..	328
†abjuncta ..	187, 189	hardwickii ab. charino ..	328
†albinervis ..	187	hardwickii ab. otos ..	328
†disjuncta ..	187, 189	hesebolus ..	329
distincta ..	187, 190	himalayensis ..	330
interrupta ..	187, 190	honrathi ..	329
†photophila ..	187, 188	imperator ..	328
Papilionidae ..	327	imperator var. angustus	328
Paracalanus ..	340	jacquemonti ..	330, 331
crassirostris ..	339, 340	mercurius ..	330
parvus ..	340	mnemosyne ..	331
pygmaeus ..	339, 340	nomion ..	329
Paraclunio ..	122	nomion var. nomius ..	329
Paradiamesa ..	154	nordmanni var. minima	331
Parahybos ..	21, 22	orleans ..	331
chaetoproctus ..	21	orleans var. groumi ..	331
chiragra ..	44	phoebus ..	329
†flavipes ..	21	rhodius var. chitralensis ..	330
incertus ..	44	rhodius var. variabilis	330
infuscatus ..	21	stubbendorffii ..	331
iridipennis ..	21	stubbendorffii var. citrinarius ..	331
melas ..	44	stubbendorffii var. koreanana ..	331
pusillus ..	21	stubbendorffii var. taratarus ..	331
sauteri ..	44	szechenyi ..	329
simplicipes ..	44	szechenyi var. germanae ..	329
*Parajapyx grassianus var. indica	52	tenedius ..	329
Paratelphusa austriaca ..	47	thibetanus ..	330
malabarica ..	47, 48, 49	Paruterina ..	288
*Paratelphusa (Liotelphusa) malabarica var. travancorica	47, 48	Paruterinae ..	288
Paratendipes ..	126, 143	Paruterininae ..	288
†caunteri ..	143, 144	Paryphoconus ..	162
†ditaenius ..	143, 144	Pelamys sarda ..	83
†dolens ..	143, 145	Pelopia ..	154, 158
†pelargus ..	143	†birmanensis ..	159
Parnassius ..	327	macrocera var. ..	160
acco ..	328	†macrochaeta ..	159
actius ..	330	oriplana ..	161
altaica ..	329	ornatipes ..	160
apollo var. alpherakyi ..	329	paivai ..	159
apollo var. chryseis ..	329	pulchripes ..	160
apollo var. geminus ..	329	Pelopiinae ..	120, 153
apollo var. pyrenaicus ..	329	Pentaneura ..	154
apollo var. sibirica ..	329	Pentapedilum ..	127
apollonius ..	329	Perca ..	84, 85
charltonius ..	327	Peripatus ..	241
charltonius var. dekerti ..	327	Peritaphreus ..	158
charltonius var. princeps ..	327		
clarius ..	331		
clarius ab. dentata ..	331		
delius ..	329		
delius var. intermedius ..	329		
delius var. smintheus ..	330		
delphius var. chitralica ..	328		

	Page
Phloeobius	213
albimaculatus ..	214
alter-nans ..	213, 214
gigas ..	214
gigas nigroungulatus ..	214
†lutosus ..	213
pallipes ..	214
pallipes ab. pilipes	214
pilipes ..	214
Phloeophilus agrestis ..	205
Physocephala calopa ..	275
nubeculosa ..	275
tenella ..	275
†quadrata ..	274
testacea ..	275
Physopterus ..	205
agrestis ..	205
Pimelodus pati ..	85
Piper nigrum ..	199
Plagiotaenia ..	284
gigantea ..	285
Platessa plana ..	84
Platypalpus ..	39
abdominalis ..	39
albiseta ..	45
caudidiseta ..	45
chionochaeta ..	39
†ferrugineus ..	40
†gentilis ..	40
†incisus ..	41
longirostris ..	45
†orientalis ..	39, 40
†palliditibiae ..	41
Plecia ..	256
Pleciomyia ..	256
Plumatella ..	73, 238
Podonomus ..	154
Pollicipedidae ..	235
Polyodon spathula ..	84
Polypedilum ..	126, 146
†angustiforceps	146, 148
annulatus ..	146, 151
†brumale ..	146, 149
†cristatum ..	146
fasciatipenne ..	146, 150
†kempi ..	146, 147
†milnei ..	146, 148
†purimanus ..	146, 149
tripartitum ..	146, 150
Polypterus bichar ..	88
Pomatomus saltatrix ..	89
Prioptera ..	106, 109
decemsignata ..	109
decimmaculata ..	109
impustulata ..	109
maculipennis ..	109
multiplagiata ..	109
nigricornis ..	110
pallidicornis ..	109
10-pustulata ..	109
westernmanni ..	109
Probezzia ..	165, 192
Prochironomus ..	126
Procladius ..	154, 155
atratus ..	157
†bilobatus ..	155
fumipennis ..	157

	Page
Procladius fuscicornis ..	157
humeralis ..	154
†inconspicuus ..	155, 156
novempunctatus ..	157
ornatissimus ..	157
paivai ..	157
†pallidus ..	155, 156
Prodiamesa ..	153
Prodicoclia ditrema ..	282
Prohelea ..	166
Protanypus ..	154
Protozoa ..	80
Psamathiomyia ..	122
Psammodynastes pulverulentus ..	338
Psectrocladius ..	123
Psectrotanypus ..	154
Pselliophora compedita ..	257, 264
fuscipennis ..	256
gaudeus ..	257
Psettodes erumei ..	294
Pseudophyllidea ..	279
Pseudoxenodon macrops ..	338
Psilocerus ..	122
Psychophaena ..	165
Ptecticus wulpri ..	257, 263
Pteropus niger ..	337
rodricensis ..	337
Pterospilus ..	17
bicolor ..	16, 17
muscarius ..	17
Pterospylus eustylatus ..	16
Ptilocera fastuosa ..	261
Ptilophyllodromia biroii ..	32
Ptychobothriinae ..	282
Ptychobothrium belones ..	86
Ptychophysa ..	283
lineata ..	284
Puellula rubida ..	310
Python molurus ..	282
reticularis ..	282

R

Raia ocellata ..	82
Rana liebigii ..	337
Ranidae ..	303
Rasbora daniconius ..	280
Rawasia ..	212
annulipes ..	212
communis ..	212
ritsemae ..	212
Rhacophorus maculatus himalayensis ..	304
Rhamphomyia ..	23
†griseonigra ..	29
†himalayana ..	28
rostrifera ..	44
sauteri ..	44
†unifasciata ..	29
Rhinoceros sondiacus ..	286
unicornis ..	285
Rhinoptera javanica ..	101
Rhizosolenia setigera ..	339
Rhombus barbatus ..	84
Rhopalocladus ..	123
Rhynchobatis djeddensis ..	98, 96

	Page		Page
<i>Syneches semibrunnea</i> ..	16	<i>Taenia serialis</i> ..	291, 300
(<i>Epiceia</i>) <i>luctifer</i> ..	44	<i>serrata</i> ..	291, 292, 300
<i>pullus</i> ..	44	<i>solium</i> ..	290, 292
<i>Syrirta</i> ..	271	<i>solium</i> var. <i>mediocanellata</i> ..	290
<i>Syrphidae</i> ..	267	<i>tropica</i> ..	290
<i>Syrphus ribesii</i> ..	267	<i>utriculifera</i> ..	283
		<i>vulgaris</i> ..	291
		<i>Taenidae</i> ..	279
T		<i>Taeniidae</i> ..	290
<i>Tabanidae</i> ..	266	<i>Taenioidea</i> ..	283, 284, 287, 289, 290
<i>Tachista bistigma</i> ..	45	<i>Tanytus</i> ..	158
<i>Tachydromia</i> ..	39	<i>Tanytarsus</i> ..	127, 151
<i>Tachydrominae</i> ..	37	† <i>bicornutus</i> ..	151
<i>Taenia</i> ..	290, 291, 298, 299, 300	<i>hydra</i> ..	197
<i>albopunctata</i> ..	293	† <i>pentatomus</i> ..	151, 152
<i>caenurus</i> ..	300	<i>tenuis</i> ..	197
<i>calycina</i> ..	84	<i>viridis</i> ..	151, 153
<i>canina</i> ..	288	<i>Telmatogeton</i> ..	122
<i>canis-lagopodis</i> ..	283, 284	<i>Torpon atlanticus</i> ..	84
<i>cateniformis</i> ..	288	<i>Tendipedariae</i> ..	120, 126
<i>cateniformis-canina</i> ..	288	<i>Tendipedidae</i> ..	140, 246
<i>cateniformis-felis</i> ..	288	<i>Tendipedinae</i> ..	120
<i>cellulosae</i> ..	293	<i>Tendipes</i> ..	126, 127, 129, 147, 197
<i>coenuri canicula</i> ..	292	† <i>aegyptius</i> ..	129, 139
<i>crassicollis</i> ..	292, 300	<i>albiforceps</i> ..	129, 140
<i>cucumerina</i> ..	288	† <i>anomalipes</i> ..	130, 134
<i>cucurbitina</i> ..	290, 291	† <i>armatifrons</i> ..	131, 137
<i>cucurbitina plana pellucida</i> ..	291	† <i>atrophus</i> ..	130, 136
<i>cyclops</i> ..	86	<i>atrosignatus</i> ..	130, 140
<i>cypriniidi</i> ..	86	<i>barbatitarsis</i> ..	131, 141
<i>dentata</i> ..	290, 291	<i>bipunctatus</i> ..	129, 130
<i>dilatata</i> ..	84	† <i>brunettii</i> ..	129, 133
<i>echinococcus</i> ..	291, 293	<i>calligaster</i> ..	130, 140
<i>elliptica</i> ..	288	<i>callithorax</i> ..	131, 142
<i>equina</i> ..	285	† <i>coniger</i> ..	131, 137
<i>filicollis</i> ..	84	† <i>curtitarsis</i> ..	129, 132, 135
<i>fimbriata</i> ..	286	<i>digraphis</i> ..	143
<i>finna</i> ..	293	<i>dolichogaster</i> ..	131, 142
<i>gasterostei</i> ..	86	† <i>erythropterus</i> ..	131, 138
<i>gigantea</i> ..	284, 285	<i>filitarsis</i> ..	132, 143
<i>globipunctata</i> ..	289	<i>flaviventris</i> ..	130, 141
<i>humana armata</i> ..	291	<i>fuscitarsis</i> ..	131, 142
<i>hydatigena-anomala</i> ..	293	† <i>glabrimanus</i> ..	131, 138
<i>hydatigena-squilla</i> ..	293	† <i>glabripes</i> ..	130, 135
<i>inermis</i> ..	290	† <i>heterocerus</i> ..	130, 135
<i>lata</i> ..	290	<i>lamprothorax</i> ..	131, 142
<i>lineata</i> ..	298	<i>leptochirus</i> ..	131, 141
<i>magna</i> ..	285	<i>lobaticeps</i> ..	130
<i>marginata</i> ..	292, 300	<i>lobaticeps</i> var. <i>validus</i> ..	140
<i>marmotae</i> ..	286	† <i>longipalpis</i> ..	129, 132
<i>mediocanellata</i> ..	290	<i>melanophorus</i> ..	132, 143
<i>moniliformis</i> ..	288	<i>melanothorax</i> ..	143
<i>muscularis</i> ..	293	<i>nigromarginatus</i> ..	131, 142
<i>ocellata</i> ..	84	† <i>nitidus</i> ..	130, 134
<i>octolobata</i> ..	84	† <i>orissae</i> ..	131, 137
<i>osculata</i> ..	84	† <i>ornatissimus</i> ..	129, 133
<i>percae</i> ..	86	<i>psilochirus</i> ..	131, 141
<i>plicata</i> ..	285	<i>punctatipennis</i> ..	129, 138
<i>pollochii</i> ..	84	<i>seminiger</i> ..	131, 141
<i>pseudo-cucumerina</i> ..	284	<i>sexpunctatus</i> ..	134
<i>pseudo-elliptica</i> ..	284	<i>striatipennis</i> ..	129, 138
<i>pyriformis</i> ..	293	† <i>tenuiforceps</i> ..	130, 136
<i>saginata</i> ..	290	<i>verrucosus</i> ..	129, 137, 138, 140, 197
<i>salmonis</i> ..	86	<i>viridiventris</i> ..	130, 140
<i>salmonis umbrae</i> ..	86	<i>Tersesthes</i> ..	163
<i>salmonis wartmanni</i> ..	86	<i>Testudinidae</i> ..	64, 76, 78
<i>salvelina</i> ..	86		

	<i>Page</i>		<i>Page</i>
Testudo ..	75, 78	Triplotaenia ..	284
<i>baluchiorum</i> ..	75, 76	Trissocladius ..	124
<i>elegans</i> ..	76, 78, 102	Trogosita ..	116
<i>elongata</i> ..	63, 75, 76, 77, 78	Tropidonotus <i>chrysaergus</i> ..	338
<i>emys</i> ..	76	<i>himalayanus</i> ..	338
<i>forsteni</i> ..	78	<i>parallelus</i> ..	337
<i>horsfieldii</i> ..	75, 76	<i>piscator</i> ..	338
<i>latinuchalis</i> ..	75, 76	<i>stolatus</i> ..	338
† <i>parallelus</i> ..	75, 76, 78	Tropisurus ..	297
<i>platynota</i> ..	76	Trygon <i>centrura</i> ..	89
<i>spengleri</i> ..	64	<i>fluviatilis</i> ..	82
<i>travancorica</i> ..	75, 76, 77, 78	<i>walga</i> ..	295
<i>trijuga</i> ..	67	Trypanorhyncha ..	293
Tetrabothriorhynchus <i>migratorius</i> ..	86	Tunicata ..	243
Tetrabothrium <i>minimum</i> ..	86	Turtur <i>orientalis</i> ..	252
<i>polypteri</i> ..	86	Tylosurus <i>carribaeus</i> ..	84
Tetraphora ..	165	† Typhloperipatus † <i>williamsoni</i> ..	241
Tetraphyllidea ..	293	Typhlops <i>diardi</i> ..	337
Tetrapturus <i>imperator</i> ..	84		
Tetrarhynchobothrium ..	89, 295	U	
Tetrarhynchus ..	86, 279, 293, 295	† Uraeotyphlus <i>menoni</i> ..	301, 302
<i>appendiculatus</i> ..	85	<i>oxyurus</i> ..	302
<i>bisulcatus</i> ..	82	Urinator ..	91
<i>gangeticus</i> ..	295		
<i>grossus</i> ..	86	V	
<i>macrobothrius</i> ..	85	Vallisneria ..	69
<i>morrhuae</i> ..	86	Varanus ..	281, 282
<i>platycephalus</i> ..	295	<i>exacanthematicus</i> ..	282
<i>solidus</i> ..	86	Vermes <i>vesicularis</i> ..	293
Tetrodon <i>stellatus</i> ..	99	Vesicaria <i>finna (suilla)</i> ..	293
Thalassomyia ..	121	<i>hygroma (humana)</i> ..	293
Thermobia <i>domestica</i> ..	57	<i>lobata</i> ..	293
Thienemannia ..	124	Vivipara <i>bengalensis</i> ..	97
Thienemanniella ..	123		
Thysanosoma ..	285, 297	W	
<i>actinioides</i> ..	285, 286	Wallago <i>attu</i> ..	92, 95, 97, 289
Thysanosominae ..	285		
Thysanura ..	51	X	
Tinca <i>tinca</i> ..	83	Xenaspis <i>vespoides</i> ..	275
Tinnunculus <i>alaudarius</i> ..	252	Xenocerus ..	209
Tipula ..	260, 261	<i>andamanensis</i> ..	209
† <i>carmichaeli</i> ..	257	<i>callimus</i> ..	210
<i>flava</i> ..	257	<i>mesosternalis</i> ..	209
† <i>imperfecta</i> ..	260	<i>rectilineatus</i> ..	210
<i>majestica</i> ..	257	<i>variabilis</i> ..	210
<i>pulcherrima</i> ..	257	Xiphias <i>gladius</i> ..	84
Tipulidae ..	256	Xylinades ..	210
Trematoda ..	91	<i>andamanensis</i> ..	210
Triaenophorus <i>anguilla</i> ..	86	<i>annulipes</i> ..	210
Trichaster ..	210	<i>foveatus</i> ..	210
<i>elegans</i> ..	222, 223, 224	<i>plagiatus</i> ..	210
<i>palmiferus</i> ..	222, 223, 224	<i>sulcifrons</i> ..	211
Trichocladius ..	123, 124	Xylota ..	271
† <i>anomalous</i> ..	124	† <i>annulata</i> ..	270
<i>spatulicornis</i> ..	125		
† Trichoperrisia † <i>pipericola</i> ..	199	Y	
† Trichopeza <i>fusca</i> ..	31	Yuhina <i>gularis gularis</i> ..	252
Trichotanypus ..	154	<i>gularis yangpiensis</i> ..	252
<i>microcerus</i> var. ..	155		
<i>photophilus</i> ..	154		
Trionychidae ..	77, 78		
Trionyx <i>gangeticus mahanadicus</i> ..	78		
<i>leithii</i> ..	78		
† Tripelma ..	126, 128		
† <i>pallidum</i> ..	128		

I NOTES ON THE COLLECTION OF COCCI-
DAE IN THE INDIAN MUSEUM

II.—FURTHER OBSERVATIONS ON THE GENUS
MARGARODES.

By E. ERNEST GREEN, *F.E.S.*, *F.Z.S.*

(Plates i—iv.)

The following particulars of the life history of *Margarodes* have been rendered possible by the discovery of fresh material of the two species, *papillosus* and *niger*, by Messrs. I. C. Coleman (Entomologist in the Mysore State) and T. Bainbrigge Fletcher (Entomologist to the Government of the Presidency of Madras), to whose assistance I am greatly indebted.

***Margarodes papillosus*, Green.**

(Pl. i, figs. 1-9; pl. ii, figs. 10-21.)

Adult male. Colour reddish. Legs, notal plates and eyes brown. A long slender backwardly directed tuft of silky white filaments on the dorsum of the abdomen, at the junction of the 7th and 8th segments. Abdomen subglobular, the sides inflated, the ventral segments more densely chitinous. Compound eyes large and prominent, involving the greater part of the head, but more widely separate—above and below—than in the male of *M. indicus*. A single ocellus on hinder edge of each compound eye. Antenna (pl. i, fig. 1) with 10 joints only; the 1st short and broad; the 2nd smallest, hemispherical; the 3rd short, narrowed at base, slightly longer than broad; the remainder elongate, gradually increasing in length to the 10th which is the longest; all the joints clothed with short hair. Legs well developed, with strongly thickened femora, especially those of first and third limbs; anterior leg (pl. i, fig. 2) with tibia short and stout, equal in length to tarsus and claw which are fused together: mid and hind legs (pl. i, figs. 3, 4) with the tibiae elongated and comparatively slender, equal in length to femur (minus trochanter), approximately four times length of tarsus. Claw of first leg simple; that of second leg deeply bifid; that of third leg deeply trifid (pl. i, fig. 5). The spines on the outer edge of tarsus and apical part of tibia of 2nd and 3rd legs are strongly thickened and compressed. Wings with only two conspicuous nervures, and a denser costal area. Halter strap-shaped (pl. i, fig. 6), with a stout blunt hook at extremity, and a

large hyaline spot on costa. The glandular patch on dorsum of abdomen (pl. i, fig. 7) is divided into three contiguous plates or lobes, the anterior lobe situated on a backward extension of the 7th and the two posterior lobes on the 8th segment. Each lobe contains a number of closely packed polygonal cells, with an elongate pore in the centre of each cell communicating with a well-defined sublying tubular gland. Notal plates with numerous spiniform hairs, a transverse series of similar hairs on each of the abdominal sternites and some small hairs on the abdominal tergites. Genital sheath with numerous translucent pores; intromittent organ terminating in a stout falcate point. Total length (exclusive of antennae) 2.5 mm.

It appears (*vide* notes by the collector of the material) that the males pass through a nymphal encysted stage similar to that of the females: but I have, at present, been unable to identify the male cyst.

Adult female reddish, inclining to brick-red in newly emerged examples, but afterwards darkening to purplish brown. The body, after fertilization, becomes more or less covered with white mealy powder and loose wooly secretion. When boiled in potash, the female gives out a deep carmine stain. Body broadly oval; slightly narrower in front; convex above. Margins of abdominal segments slightly prominent.

Dorsum (pl. i, fig. 8) with a series of ill-defined chitinous plates on the lateral area of all the abdominal segments (except the 1st and the terminal), and a transverse median plate on the penultimate and antipenultimate segments. Each of these plates bears a series of stout conical papilliform spines, directed forwards; a semilunar series of similar spines on the terminal segment; a small group on the subdorsal area of each abdominal segment; and other backwardly directed groups on the lateral and subdorsal areas of the metathoracic and 1st abdominal segments. The polygonal character of the chitinous areas (described in my previous paper) is not so noticeable in fully matured examples. Immediately anterior to each group of spines are some hairs and series of circular pores. There are similar hairs and pores on the median and lateral areas of the remaining segments. Six small spiracles open dorsally on each side of the abdomen, situated—probably—at the intersegmental areas. There is a gap in the series, between the first and second of these spiracles, but the missing organ is found to be present on the ventral surface. There are, consequently, 7 abdominal spiracles on each side, 6 of which open on the dorsum and 1 on the venter. It is noticeable that, in *M. mediterraneus*, of the six pairs of abdominal spiracles, the uppermost of the series is ventral, while the remainder assume a lateral position.

Venter (pl. i, fig. 9) with a curved series of spines on each side of the terminal segment; a median transverse series on each of the first seven abdominal segments, and a smaller subdorsal series on each side of 2nd to 8th segments; those on the anterior segments containing one or two spines only, those on the 6th to 8th segments

with from five to ten. The spines on the first five segments are more slender and sharply pointed (pl. ii, fig. 15), those on the remaining segments being blunt and papilliform—like the dorsal spines (pl. ii, fig. 16). There are fine hairs and small circular ceriferous pores on the median and submarginal areas. Each hair springs from a conical pit (pl. ii, fig. 15). In my earlier description (vol. vii, part i), drawn up from an imperfect mount of an immature example, the median series of spines were erroneously stated to be dorsal.

There is no trace of buccal apparatus, or of eyes.

Antenna (pl. ii, fig. 10) 7-jointed; the basal joint broadest, the apical joint narrowest and ovoid: all the joints (except the first) with an apical series of stout spiniform hairs.

Anterior limb (pl. ii, fig. 11) large and stout; femur with some longish stout hairs on the side and inner margin; tibia approximately quadrate; tarsus and claw in one piece, stout, strongly falcate, grooved—near the tip—on the inner edge, several stout hairs near the base, probably representing the unguis digitules. Second and third limbs smaller but well developed (pl. ii, fig. 12); tibia elongate; tarsus distinct; claw slender, falcate, swollen at base.

The four thoracic spiracles open on the ventral surface, behind the bases of the first and second limbs respectively. They are large and conspicuous. The opening of each spiracle (pl. ii, fig. 13) is circular consisting of a broad flat chitinous ring, with strongly defined outer margin; within the central cavity is the opening into the trachea and four circular ceriferous pores. Four minute pores are present, close to the outer border of the chitinous ring. The seven pairs of abdominal spiracles, one of which opens on the venter and the remainder on the dorsum, are much smaller. The external aperture is subquadrate (pl. ii, fig. 14) and leads into a thickened chitinous chamber which is connected with paired tracheal vessels. In the mouth of the external opening are four circular ceriferous pores.

Both the anal and the genital apertures open on the venter. The former is small and surrounded by a rather dense chitinous ring. The genital orifice is transversely elongate, and appears to be situated at the junction of the terminal with the penultimate segment.

Dimensions variable, some individuals being more than double the size of others. A corresponding variation is found in the dimension of the limbs. The smallest adult females that I have seen measure 1.5 mm. by 1.15 mm., and the largest 4 mm. by 3 mm.

Female nymph pale yellow, sometimes orange yellow or reddish; subglobular; without limbs or external appendages of any kind. Derm minutely pustular or cellular (*vide* vol. vii, part i, No. 5, p. 74, text figure 1). Internal rostral apparatus (consisting of tentorium and setae) strongly developed in some individuals, but weak in others; the condition probably dependent upon the stage of development of the nymph. On each side of the

rostrum is a truncate conical tubercle (pl. ii, fig. 17), with a deep central pit from which springs a stout bristle: this presumably represents the nymphal antenna. The anus is small but densely chitinous, and the future genital orifice is indicated by a transverse scar (pl. ii, fig. 18). On each side, about midway between the genital scar and the anal aperture, is a circular glandular disc (pl. ii, fig. 19). There are eight pairs of spiracles, all of approximately the same size. Four (2 pairs) of these open on the ventral surface of the thorax; the remainder are disposed near the lateral margin of the abdomen. In one example I find 7 abdominal spiracles on one side and 6 on the other. The structure of abdominal and thoracic spiracles is identical, the former being distinguished solely by their position and by the presence—on one side—of three minute pores which are absent in the abdominal spiracles. Similar pores are associated with the thoracic spiracles of the adult female. The stigmatic aperture opens into a broad cylindrical chamber, at the base of which is a group of prominent ceriferous glands. This is followed by a smaller (? valvular) chitinous chamber communicating with the tracheal vessels (pl. ii, fig. 20).

Nymphal cyst globular or broadly ovoid, smaller examples sometimes irregular in form; smooth; consisting of very thin and brittle nacre; transparent and colourless, or slightly yellowish; the pale golden or honey-yellow appearance being due to the colour of the contained nymph. Empty cysts assume an opaque whitish tint, with a slight pearly lustre, due to decomposition and the presence of air between the lamellae. The cysts 'd,' described on page 71 of my previous paper (loc. cit.), and shown on plate iii, figs. 12, 13, undoubtedly belong to this species and not to *M. indica*. The cysts that I have seen vary in diameter from 1 to 2.5 mm., but much larger cysts must occur, to produce the larger females that I have received.

Living females, placed on fine soil, deposited numerous eggs, amongst a mass of loose woolly secretion. The eggs (pl. ii, fig. 21) are very elongate and narrow; very pale yellow; approximately three times as long as broad,—0.57 by 0.2 mm. These eggs proved infertile and I have been unable to obtain young larvae.

Since my earlier and very imperfect description, I have received ample material of this interesting species, both from Mr. Coleman and from Mr. Fletcher. The former informs me that his specimens were collected by his Assistant at "Honnali, in the Shimoga District, Mysore State, about 120 miles north-west of Bangalore." They are reported to have been found "while digging for egg-pods (of the Jola Grasshopper) in a broad bund at Honnali. They were fairly numerous and were obtained from 5 to 7 inches beneath the soil. The males were also enclosed in shells but emerged soon after excavating, and were observed copulating towards the evening." They are said to have been associated with 'hariali' grass (*Cynodon dactylon*).

Mr. Fletcher's specimens were obtained in the Bellary District, Madras Presidency (on the Mysore frontier), by one of his

Assistants (Mr. Y. Ramachandra Rao), who reports that they were found "while digging the ground for the egg masses of the 'Deccan Grasshopper.' This form was found in all soils—black and red, but seems to be more abundant in clayey soils." He notes that adult males and females were emerging early in June, at which time the cysts "were somewhat reddish in colour." Earlier in the year (in February) the cysts were of a "yellow colour with a pearl-like lustre," and were found, when broken, to contain nothing but a milky fluid.

Margarodes papillosus must be very closely allied to *M. mediterraneus* of Silvestri (described very fully in the "Bulletino della Società Entomologica Italiana," xxxviii, 1906, p. 140 *et seq.*). It differs principally in the colour of the adult female, which is creamy white or straw-coloured in the Mediterranean, and brick-red or purplish red in the Indian species. The disposition of the spines is approximately the same in both species, but they appear to be more numerous and more strongly developed in the Indian form. I am, unfortunately, not in a position to compare the larval characters, which are quite peculiar in *M. mediterraneus*. Silvestri states that his species has 8 pairs of spiracles, against the 9 pairs found in *papillosus*. It is interesting to note that, in both species, one of the abdominal spiracles is placed on the venter.

***Margarodes niger*, Green.**

(Pl. iii, figs. 22-35; pl. iv, figs. 36-45.)

Male not known.

Adult female (pl. iii, fig. 22) oblong oval, slightly narrower in front; subglobose. Colour creamy white, thickly covered with pale reddish brown, very fine but shaggy hair, which is denser and of a deeper colour on the thoracic area. Claws dark brown.

Antenna (pl. iii, fig. 23) 6-jointed; weakly chitinized; all the joints short (broader than long); basal joint largest, the remainder gradually diminishing in size to the extremity; two or three long fine hairs and a few spines at apex of 6th joint, a transverse series of slender truncate spines on 2nd to 5th joints, several long fine hairs on the side of the 2nd and 3rd joints, and a transverse series of similar hairs on the 1st joint.

Anterior limb (pl. iii, fig. 24) large and stout, the claw (pl. iii, fig. 25), which includes the tarsal joint, densely chitinous, of a peculiar form that is quite unlike that of any other known species of *Margarodes*. It is strongly curved in two directions, both the inner face and the apical margin being concave. It has almost the appearance of being chelate, but the opposing points (the outermost of which is longer and more sharply pointed) cannot be approximated. Tibia represented by a small triangular joint between the claw and the femur, with a group of minute pores on its outer face. Femur with some long fine hairs on the disc of the inner face and near the apex of the outer face. Mid and hind

limbs small, short and stout (pl. iii, fig. 26). Coxa comparatively large. Tarsus small, fused with tibia but distinct from claw which is sunk into the apex of the tarsus like the fang of a tooth. The claw itself (pl. iii, fig. 27) is long and slender, strongly falcate. There appears to be a tubular channel from the tip of the claw to its base, communicating with an oval cyst which occupies the greater part of the tarsus. The whole limb clothed with very long slender hairs.

There are four large thoracic spiracles, and eight pairs of small abdominal spiracles. The thoracic spiracles are placed on the venter, in the interspaces between the legs. The external aperture of each is horseshoe-shaped (pl. iii, fig. 28), with a densely chitinous rim, opening into a chamber the sides and floor of which are studded with circular ceriferous pores. A densely chitinous paraphysis, with a broadly expanded extremity, runs inwards from the external stigmata. The abdominal spiracles, though properly belonging to the dorsum, have assumed a ventral aspect owing to the expansion of the dorsal area which overlaps the comparatively narrow venter. The anterior spiracle on each side is shifted outwards until it assumes an almost directly lateral aspect. The external aperture of an abdominal spiracle (pl. iii, fig. 29) has a dense chitinous rim, with a tooth-like projection on its upper and lower edges. There is an irregular ring of ceriferous pores just within the opening.

The anus (pl. iii, fig. 30) is represented by a lunate chitinous bar, within the thickness of which there is a very narrow linear opening.

The derm—both of the dorsum and venter—is studded with small circular multilocular ceriferous pores (pl. iii, fig. 31).

Size very variable. The smallest example in my series measures 3.75 by 3.25 mm., while the largest is 11 by 8 mm.

The nymphs apparently undergo several stages, but I have been unable to determine their exact number. The final stage (which discloses the adult insect) is in the form of a globular or subglobular cyst, of an opaque black colour and dense texture. The cysts are apparently naked, consisting of the hardened cuticle of the nymph, with fragmentary and inconspicuous patches of very thin nacre. They vary greatly in size, those from the Bellary district (pl. iii, fig. 32), with a diameter of 7 to 8 mm., averaging four times the size of those received from the Shimoga district (pl. iii, fig. 33) which range from 3.5 to 5 mm. in diameter. Some of the latter are more irregular in shape, showing a prominence on one side, which probably represents the original point of attachment.

In my earlier observations (loc. cit.) upon this species, it was noted that "after boiling in caustic potash, the black derm becomes partially decolorized and separates into two layers. The outer layer swells and becomes rugulose, but still retains its pustular structure. The inner layer is minutely granular." The later examples, under similar treatment, did not exhibit this

separation into two layers. The outer rugulose pustular layer was not observed. Possibly this may be a temporary phase in the development of the insect. The cleared cysts of these later specimens display a minutely granular but not pustular cuticle. The development of the tentorium varies considerably, being very weakly developed in some, but strongly chitinized in other examples. There is a distinct anal aperture, surrounded by a horseshoe-shaped area of denser derm and, immediately in front of it, are three small translucent cicatrices. The stigmata (pl. iii, fig. 34) are well developed, there being 9 on each side, of which 7 are abdominal and 2 thoracic. They are all of the same size and structure, but the thoracic spiracles are more centrally disposed. There are also 3 (sometimes 5) median series of ill-defined circular glandular plates. The rudimentary antennae are represented by a pair of chitinous tubercles, each bearing two stout curved bristles (pl. iii, fig. 35). These cysts, when exposed in a glass jar, developed a series of white waxy filaments emanating from the stigmata (both thoracic and abdominal), proving that the spiracles remain functional throughout the encysted stage.

Earlier stages of the nymph were found to be attached to the rhizomes of *Cynodon*, partially surrounded by white mealy secretion, in which condition they resemble examples of *Antonina indica*. These were of an irregular rounded form; with a dense opaque black cuticle. The anal aperture and stigmata are of the same form and structure as those found in the final nymphal stage; but these cysts were of very much smaller size, having a greater diameter of not more than 2 mm. On clearing these small cysts, they were found to contain what I suppose to be an intermediate nymphal stage, of an oval form, with a short, pliant and almost colourless cuticle. This intermediate stage (pl. iv, fig. 36) displays a conspicuous series of 9 spiracles on each side, of which 7 are abdominal and open onto the dorso-lateral area, while the remaining two pairs are considerably larger and open onto the venter of the thorax. The mouth parts are well developed, the labium usually displaced to a position anterior to the tentorium. The antennal tubercles (pl. iv, fig. 37) are rudimentary, with a deep central pit from which spring two stout curved bristles. The thoracic spiracles (pl. iv, fig. 38) consist of a broad cylindrical outer chamber, with thickened rim, the base of the chamber studded with small circular translucent pores. Near the base of each thoracic spiracle, on its outer side, is an elongate rugose plate with a few minute pores. The abdominal spiracles are of similar structure but of a considerably smaller size; and they have no rugose plates in association with them. The anal aperture (pl. iv, fig. 39) is surrounded by a sharply defined densely chitinous horseshoe-shaped plate which bears numerous short hairs. There are, on the venter, five longitudinal series of small circular glandular pits; the median series containing 8 (the two uppermost being paired), and the remaining four series each containing 6 of these pits. Each pit consists of several concentric rings (pl. iv, fig. 40), with a

central granular plate at its base. The insect, in this stage, measures 2.5 by 2 mm.

What appears to be a still earlier stage has been observed. It differs from that shown at figure 36 in its smaller size (1.25 by 0.75 mm.), and in the presence of only two series of glandular pits on the venter. It is possible that both of these intermediate forms may be stages in the early development of the male insect, which has not yet been identified.

Newly hatched larva (pl. iv, fig. 41) oblong oval, with a transverse row of stout hairs on each segment. Posterior extremity of body with two very long fine setae, as long as the body of the insect. Rostral apparatus with the labium displaced forwards to a position immediately in front of the tentorium. Antenna (pl. iv, fig. 42) 6-jointed; 1st joint stout, approximately as broad as long, equal in length to 2nd and 3rd together; 2nd joint narrow, cylindrical, longer than broad; 3rd, 4th and 5th short, widest medially; 6th as broad as but longer than 1st, the apex obliquely truncate; hairs disposed as in the figure. Anterior limb very stout; tibia and tarsus fused together to form a stout curved claw. Median and posterior limbs long and slender; with two distinct small joints, presumably representing a divided trochanter, as in certain parasitic Hymenoptera, between the coxa and the femur (pl. iv, fig. 43). Foot (pl. iv, fig. 44) with a long, slender, pointed, almost straight claw, more than three-quarters the length of the tarsus. There are four relatively large thoracic spiracles; abdominal spiracles minute, 7 on each side, the 7th almost obsolete. Length of body, 1 mm.

A single unhatched egg (pl. iv, fig. 45), found amongst a crowd of young larvae, measures 1 mm. by 0.43 mm. This egg contained a fully developed embryo.

The present examples of *M niger* were received from the same localities that produced the fresh material of *M. papillosus*, viz., from Honnali, Shimoga district, Mysore State (*L. C. Coleman*); and from the Bellary district, Madras Presidency (*T Bainbrigg Fletcher*). In both instances they appear to have been found at the roots of *Cynodon dactylon*, and early stages of the insect were found to be actually attached to the rhizomes of this grass. They were also found at the roots of 'Red Gram.' Mr. Fletcher's Assistant (Mr. Y Ramachandra Rao) supplies the following particulars:--'The peculiar globular egg-like bodies were met with at a depth varying from $\frac{1}{2}$ to 3 inches in the soil

.. This form occurred mostly in red soils. The majority of the specimens were perfectly globular, but some had depressions and irregularities on their surface. There was much variation in size; the biggest measured 8 mm. in diameter, while the smallest were less than 2 mm. The shell is very hard in encysted forms, but is soft, tender and purplish brown in colour when the scale is immature. Fresh and carefully collected specimens showed at one spot (the anterior end of the insect) the vestiges of a mouth with two long delicate hairs arising from it. These break off when the shell hardens. .. Towards the end of February and in March,

some of these bodies hatched into stout, soft, hairy, grub-like creatures. (These are the adult females. Specimens kept in my laboratory have continued to hatch out, at irregular intervals, through the past year. E. E. G.). Egg-masses of this Ground Pearl were observed in the soil at a depth of 2-3 inches. The cells in which the eggs were found were long-oval, lined inside with a coating of mealy wax. Hundreds of eggs were found filling up the interior of each cell. The dead mother scale—shriveled and rotten—was to be found at one pole of the cell. When about to hatch it (the egg) assumes a pinkish colour. The just hatched larvae are somewhat flattened, with bright red eyes.’

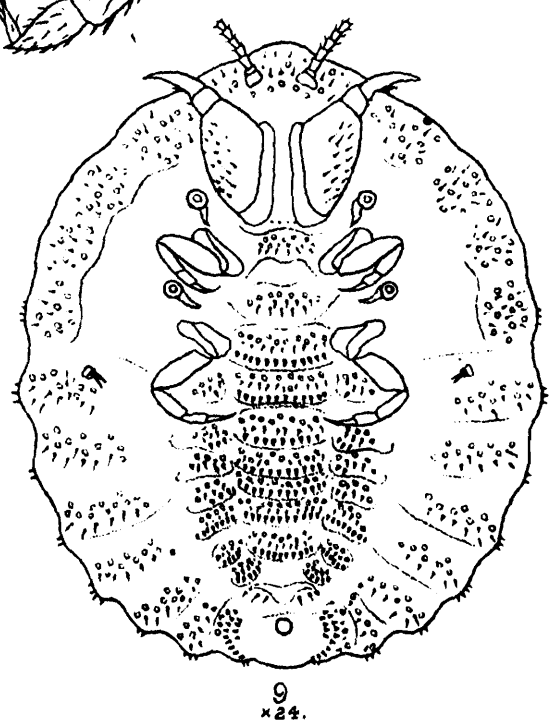
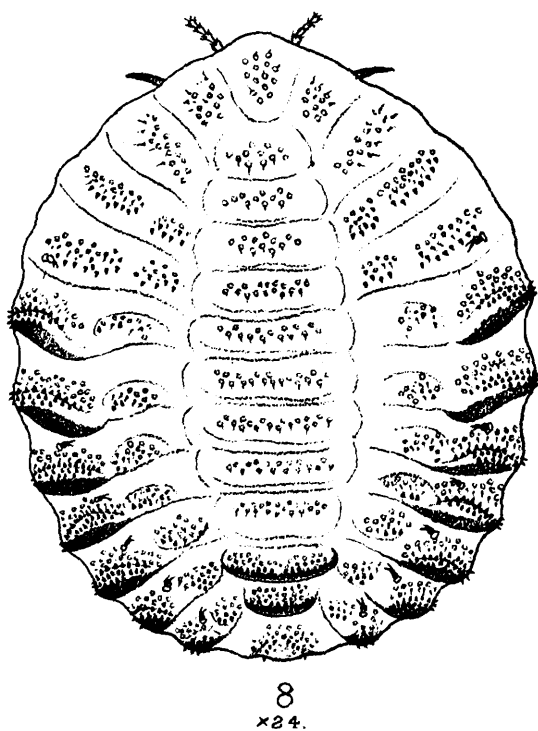
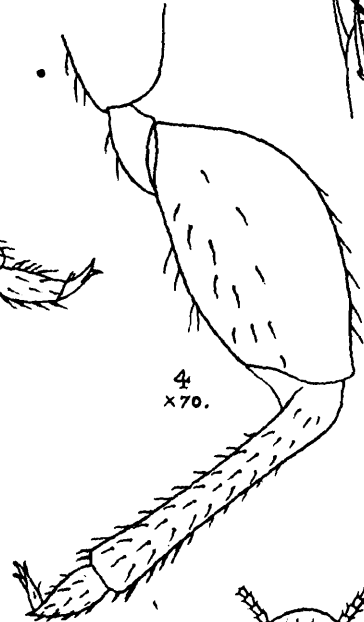
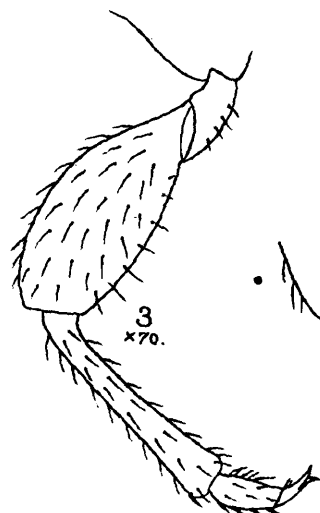
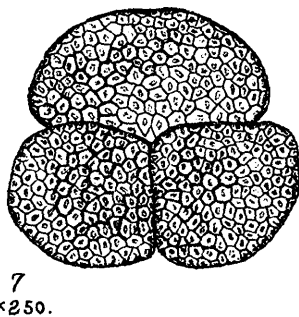
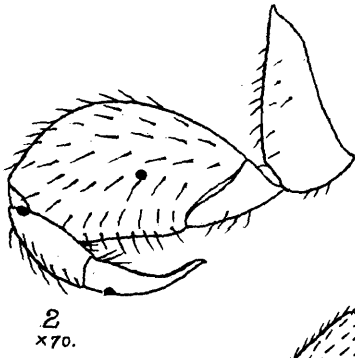
On the strength of Mr. Rao’s careful observations, and having regard to the strong development of the rostral apparatus observed in some of my examples, as well as to the great increase in size that takes place during the nymphal development, my previously expressed opinion (*loc. cit.*, p. 67) that the larva of *Margarodes* “must take in a sufficient store of nutriment to sustain it during the succeeding nymphal and imaginal stages,” must be modified so far as the nymph is concerned.

Our knowledge of the two species just described is not yet complete. Of *M. papillosus* the larva still remains to be observed. Judging by the close resemblance of the adult female to that of *M. mediterraneus*, I anticipate that the larva, when discovered, will be found to possess but a single pair of legs, and that its antennae will be only 3-jointed. Of *M. niger* the male is still unknown. And the serial development of the insect, from the larva to the final stage of the nymph, requires elucidation—in both species. These problems can be solved only by observation on the spot where the insects occur in life.

EXPLANATION OF PLATE I.

Margarodes papillosus.

1. Antenna of adult male, × 70.
2. Anterior leg of „ × 70.
3. Median „ „ × 70.
4. Posterior „ „ × 70.
5. Posterior foot of „ × 250.
6. Halter of „ × 70.
7. Glandular patch from dorsum of adult male, × 250.
8. Adult female, dorsal view, × 24.
9. „ „ ventral „ × 24



J. E. Green, del.

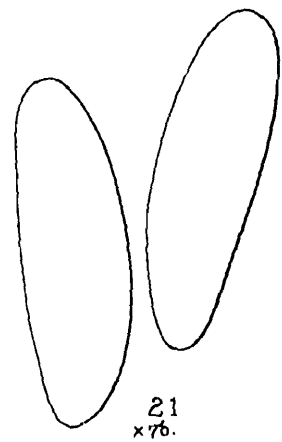
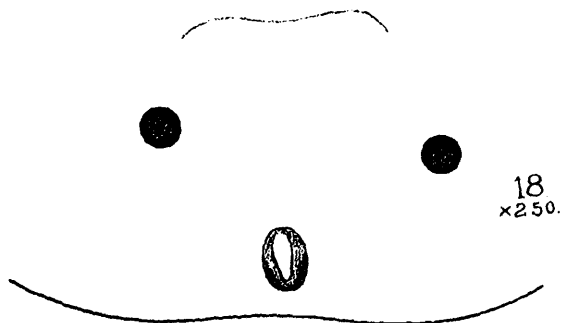
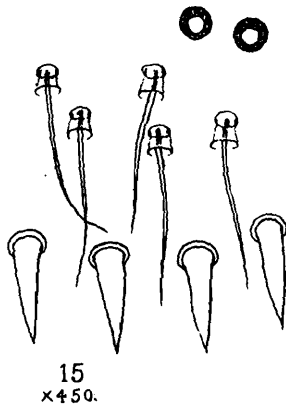
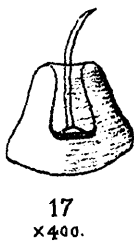
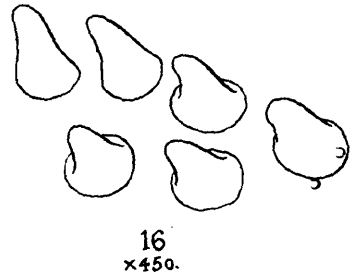
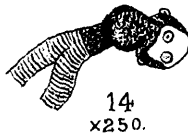
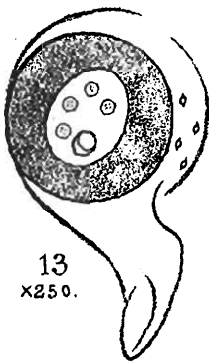
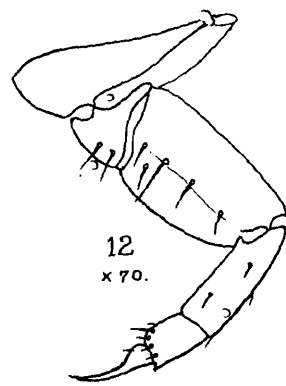
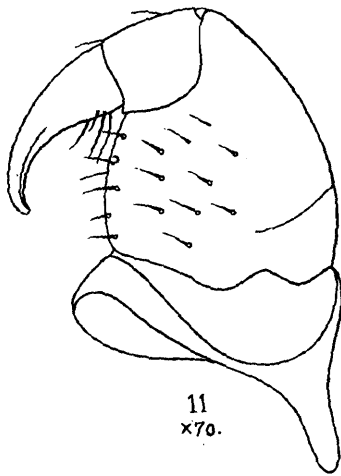
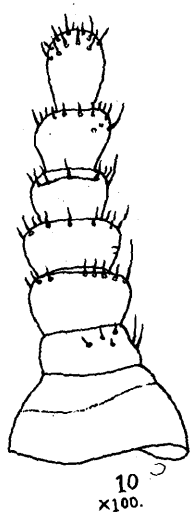
A. C. Chowdhary, lith.

MARGARODES PAPILLOSUS, Green.

EXPLANATION OF PLATE II.

Margarodes papillosus.

10. Antenna of adult female, × 100.
11. Anterior limb of ,, × 70.
12. Posterior ,, ,, × 70.
13. Thoracic spiracle of ,, × 250.
14. Abdominal ,, ,, × 250.
15. Spines, hairs, and pores, from median ventral area of adult female, × 450.
16. Spines from dorsum of adult female, × 450.
17. Antennal tubercle of nymph, × 450.
18. Posterior extremity ,, × 250.
19. Ceriferous disc from posterior extremity of nymph, × 450.
20. Thoracic spiracle of nymph, × 250.
21. Eggs, × 70.



E.E.Green, del.

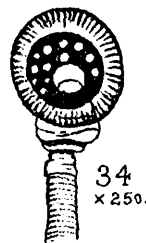
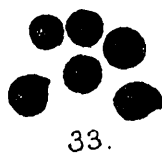
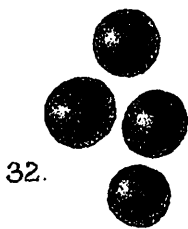
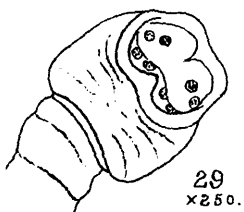
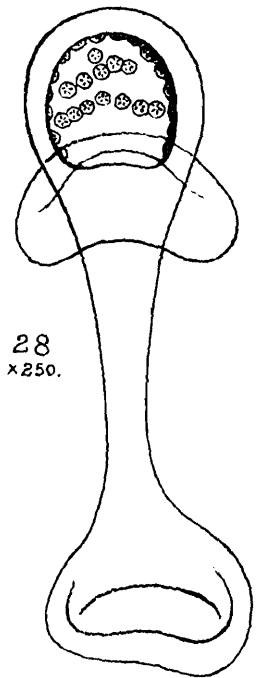
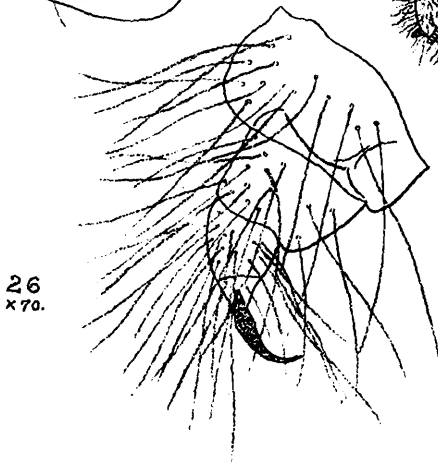
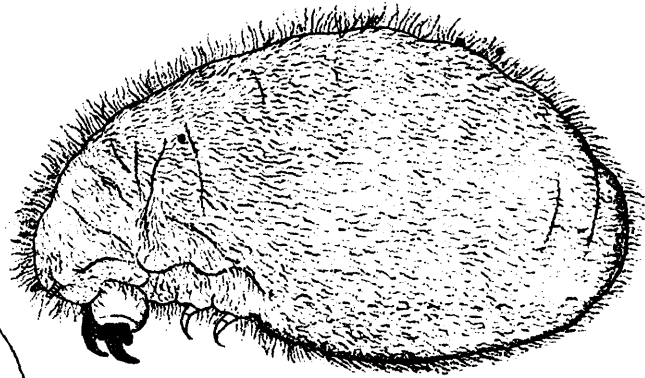
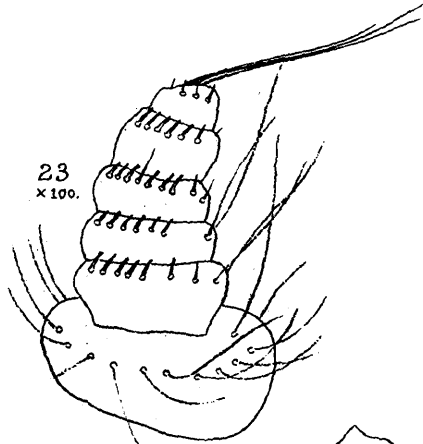
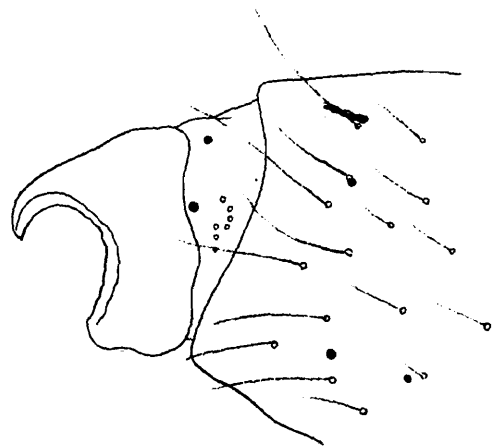
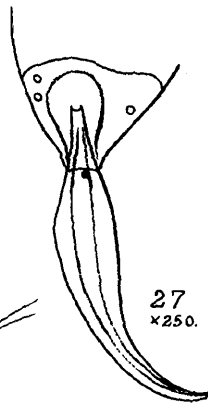
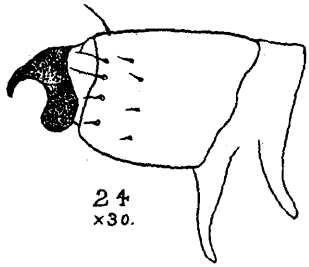
A.C.Chowdhary, lith.

MARGARODES PAPILLOSUS, Green.

EXPLANATION OF PLATE III.

Margarodes niger.

22. Adult female, side view, × 10.
23. Antenna of adult female, × 100.
24. Anterior limb of ,, × 30.
25. Foot of anterior limb of female, × 70.
26. Posterior limb of adult ,, × 70.
27. Claw of posterior limb of ,, × 250.
28. Thoracic spiracle of ,, × 250.
29. Abdominal ,, ,, × 250.
30. Anal aperture of ,, × 250.
31. Dermal gland of ,, × 450.
32. Nymphal cysts (Bellary district), nat. size.
33. ,, ,, (Shimoga district), nat. size.
34. Spiracle of nymph, × 250.
35. Antennal tubercle of nymph, × 450.



E.E. Green, del.

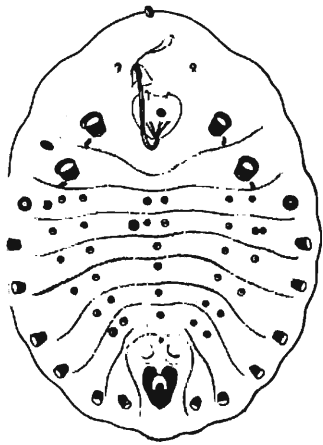
A.C. Chowdhary, lith.

MARGARODES NIGER, Green.

EXPLANATION OF PLATE IV

Margarodes niger.

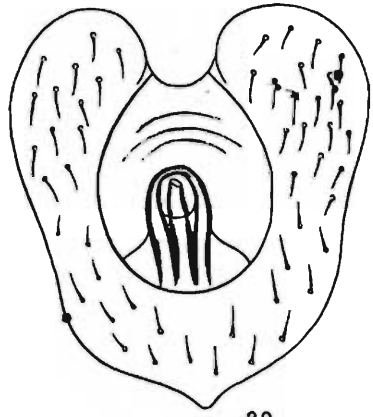
- 36. Intermediate stage of nymph, × 30.
- 37. Antennal tubercle of intermediate stage, × 450.
- 38. Thoracic spiracle of ,, ,, × 250.
- 39. Anal aperture of ,, ,, × 250.
- 40. Ventral gland of ,, ,, × 450.
- 41. Newly hatched larva, × 50.
- 42. Antenna of ,, × 250.
- 43. Basal portion of posterior limb of larva, × 250.
- 44. Foot of posterior limb, × 250.
- 45. Egg, × 70.



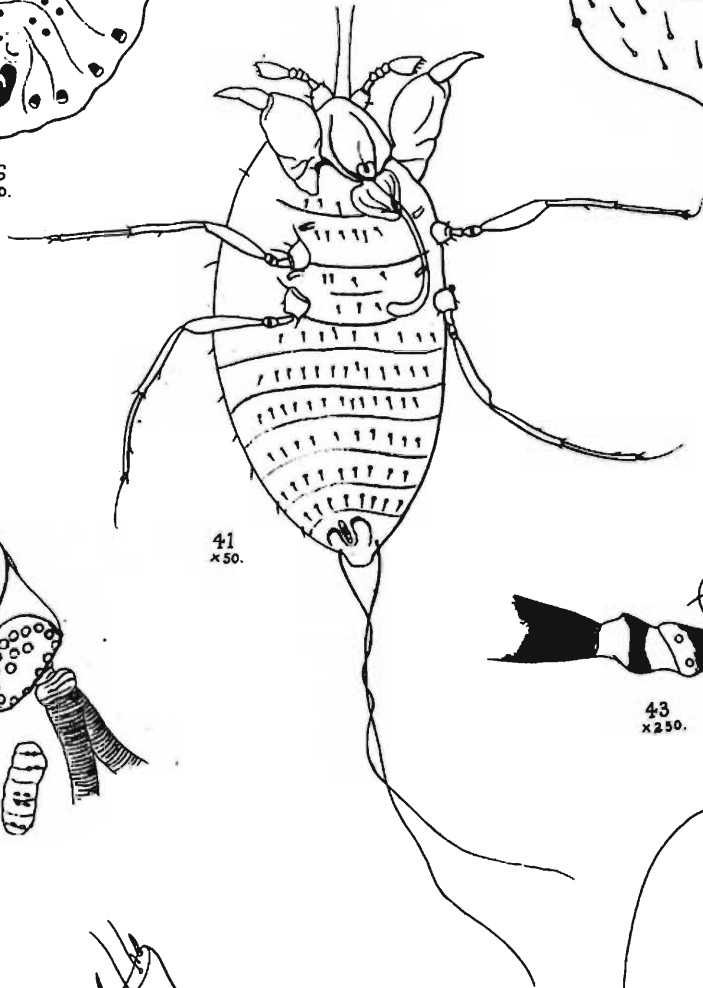
36
x 30.



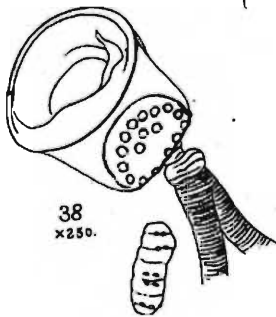
37
x 450.



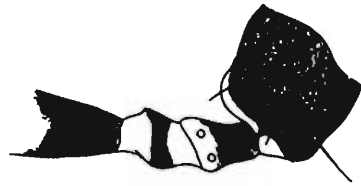
39
x 250.



41
x 50.



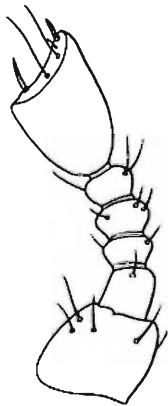
38
x 250.



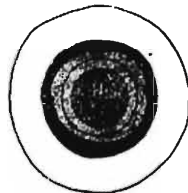
43
x 250.



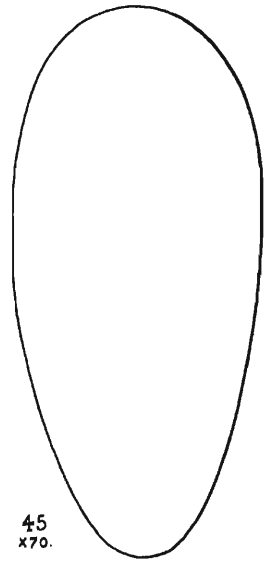
44
x 250.



42
x 250.



40
x 450.



45
x 70.

een, del.

A. C. Chowdhary, lith.

MARGARODES NIGER, Green.

II. NEW INDIAN EMPIDAE.

By E. BRUNETTI.

Over fifty new species of *Empidae* are described in the present paper, all the types of which (except four in the Pusa collection) repose in the Indian Museum. Two new genera, allied to *Cyrtoma*, are established. The previously known oriental species are also listed here under their respective genera.

The family is not known to be rich in species in the tropics, and most of the new ones herein described come from places of some little altitude. The natural home of the *Empidae* is the temperate region of both Europe and North America.

The previously recorded species are listed at the head of each genus.

Sub-family *HYBOTINAE*.

HYBOS, Meig.

brachialis, Rond., Ann. Mus. Gen., vii, 446 (1875). Borneo.
gagatinus, Big., Ann. Soc. Ent. Fr. (1889), p. 127. Assam.
geniculata, Wulp., Termes Fuzet., xx, 137 (1897). Ceylon.
bezzii, Kert., *l.c.*, xxii, 175 (1899). Papua.
papuanus, *id.*, *l.c.*, 175 (1899). Papua.
bisetosus, Bezzi, Ann. Mus. Hung., ii, 324 (1904). East India.
pallipes, Meij., Tijd. v. Ent., liv, 323 ♂ ♀ (1911). Java.
setosa, *id.*, *l.c.*, 324 ♀ Java.

Hybos nigronitidus, mihi, sp. nov.

♂ ♀ Darjiling district.

Long. 3½ mm.

Head.—Black; occiput a little dark grey tinged; proboscis as long as height of head, palpi nearly as long.

Thorax.—Shining black, beset with microscopic reddish hairs. Sides of thorax a little greyish but not at all conspicuously so. Two or three stiff bristly hairs about the base of the wing and one stiff hair on each humerus; a few of unequal length placed in a row on each side of the median line, and at least two of these (the two hindermost) of considerable size; two also at tip of the concolorous scutellum. Both thorax and scutellum bear irregularly placed softer hairs.

Abdomen.—Shining black; in certain lights with a little greyish reflection, a little black pubescence in ♂; in ♀ the hairs brown and more numerous. Genitalia shining black.

Legs.—Black, shortly pubescent. Femora with a row of stiff hairs below, most conspicuous on hind pair; tibiae with some stiff hairs, including two at tip. Knees narrowly brown; under side of tarsi with pale hairs.

Wings.—Pale grey, highly iridescent, venation normal. Stigma small, pale brown, sometimes hardly perceptible. Halteres yellow.

Described from one ♂ and three ♀♀ in the Indian Museum. Type ♂ from Sukna (500 ft.), 1-vii-08 [Annandale]; type ♀ from Darjiling, 29-v-10 [Brunetti]; two additional ♀♀ from Kurseong, 7-8-vii-08.

Hybos apicis, mihi, sp. nov.

♂ Lower Burma.

Long. $3\frac{1}{2}$ mm.

Head.—Black. Proboscis and palpi light brown, shining; ocular orbits narrowly brown, under side of antennae pale.

Thorax.—Wholly shining black; bristly hairs as in *nigronitidus*.

Abdomen.—Black, moderately shining; a few pale hairs at sides. Genitalia shining black.

Legs.—Moderately dark brown, hind femora blackish brown. Tips of middle femora, whole of middle tibiae and major part of middle tarsi, pale yellowish brown. Tips of hind femora rather broadly, base of hind tibiae less broadly, and hind tarsi wholly except tips, pale yellowish brown. Bristly hairs as in *nigronitidus*.

Wings.—Nearly clear; stigma oval, brown, halteres brownish yellow.

Described from one ♂ in the Indian Museum taken by Dr. Annandale in jungle at the western base of the Dawna Hills, Lower Burma, 1-iii-08.

Hybos brunnipes, mihi, sp. nov.

♂ Darjiling district.

Long. $2\frac{1}{2}$ mm.

Head.—Blackish; antennae wholly dark brown.

Thorax.—Black, moderately shining; viewed in certain lights it appears light grey dusted. Two bristly hairs on hind margin of scutellum. (Those on the thorax are mostly broken off.)

Abdomen.—Brownish black, with pale hairs; genitalia small.

Legs.—Moderately dark brown; hind femora with soft grey pubescence. Bristly hairs as in the two preceding species.

Wings.—Clear, iridescent; no stigma; halteres yellow.

Described from one ♂ in the Indian Museum from Kurseong, 8-viii-08.

Hybos niger, mihi, sp. nov.

♀ Darjiling district.

Long. $5\frac{1}{2}$ mm.

Head.—Black. Eyes with upper facets distinctly though not greatly larger than lower ones, both blackish brown, but with tinges

of red in the former. Occiput dark brownish grey, ocular orbit with a fringe of black, well separated hairs, vertex with two long bristly hairs. Antennae, proboscis and palpi all black, the latter as long as the proboscis.

Thorax.—Blackish, shining, tending to greyish towards the sides, anterior margin and shoulders. Two narrow well separated inconspicuous grey dorsal stripes. Dorsum with soft short hairs, and, viewed from certain directions, with brownish tomentose reflections; some longer bristly hairs in the usual situations. Scutellum concolorous, with two long bristles and some short stiff hairs. Pleurae and metanotum moderately dark grey.

Abdomen.—Blackish, with a moderate amount of pale pubescence, belly similar.

Legs.—Wholly black, anterior tibiae with long stiff bristly hairs; hind femora with a row of small teeth below; each bearing a strong bristle.

Wings.—Nearly clear, stigma distinct but not sharply defined, brown, filling nearly the apical half of the marginal cell and extending to the costa. Halteres bright yellow.

Described from a single ♀ in the Indian Museum from Kurseong, 26-vi-10 [*Annandale*].

***Hybos tenuipes*, mihi, sp. nov.**

♂ Darjiling district.

Long. 3 mm.

Head.—Black, upper eye facets red, and much larger than the lower ones, which are black. Antennae black, arista four times as long as 3rd joint, and distinctly pubescent for the basal two-thirds, the remainder quite bare.

Thorax.—Black, shining, sides and metanotum similar; scutellum broad, brownish yellow, the colour extending to the posterior angles of the thoracic dorsum.

Abdomen.—Dark brown, with pale pubescence; belly similar.

Legs.—Pale yellow. Fore tibiae with a single long bristle in the middle; middle tibiae with two such, one at one-third of its length, on the outer side, the other just before the middle, and placed on the under side. Hind femora with a row of a few long stiff hairs below; remainder of legs with short pubescence.

Wings.—Pale grey, inclining to yellowish on the costa; stigma indistinct; halteres yellow.

Described from a ♂ in the Indian Museum, from Kurseong, 27-vi-10 [*Annandale*].

***Hybos nitens*, mihi, sp. nov.**

♀ Bihar.

Long. 2 mm.

This species has considerable general resemblance to both *brunnipes*, mihi, and *fuscipennis*, mihi.

The head is dull black, including the very short proboscis, the palpi and the antennae. Body shining black, with soft, rather

numerous pale hairs. Legs very dark brown, nearly black, with distinct though rather short pale pubescence.

Wings distinctly brown, paler on apical and posterior parts; stigma very distinct and large, dark brown; venation normal, halteres brown.

H. nitens is distinguished from *brunnipes* by the very brown wings and conspicuous large stigma; by the nearly black legs, and especially by the very shining black thorax and abdomen.

From *fuscipennis* it is separated by the shining black thorax and abdomen, the black proboscis, the very dark legs and its smaller size, 2 mm. as compared with 3 mm.

Described from one ♀ in the Pusa collection taken at Pusa, April 1908.

Hybos flavipalpis, mihi, sp. nov.

♂ Darjiling district.

Long. 3 mm.

Head.—Eyes with upper facets much smaller than usual, but larger than lower ones; antennae black; proboscis black, shining; palpi yellowish. Occiput blackish, with a row of well separated, curved, black stiff hairs, placed some distance behind the eye margins. Two bristles on vertex.

Thorax.—Shining black, stiff bristly hairs laterally towards posterior margins and two on the shining black scutellum.

Abdomen.—Black, moderately shining, yellowish grey; rather long and ragged hair at the sides. Tip of abdomen enlarged; genitalia very large, black, shining, with a little whitish soft hair.¹

Legs.—Mainly black, but anterior tibiae and tarsi more nearly dark brown; hind tibiae distinctly brown towards tips, and slightly enlarged there; hind tarsi also distinctly brown. All the legs normally minutely pubescent, tibiae with several long stiff bristly hairs on outer side. Hind femora with two rows of small teeth below, bearing bristles.

Wings.—Pale grey; stigma present but weak, brownish; halteres yellow.

Described from one ♂ in the Indian Museum from Kurseong, taken 25-vi-10 by Dr. Annandale.

Hybos auripes, mihi, sp. nov.

♂ ♀ Darjiling.

Long. 5 mm.

Head.—Black; proboscis not much longer than head, brownish yellow tipped; palpi rather long, pubescent.

Thorax.—Blackish grey; when seen from certain directions, brownish grey dusted. Sides dark grey. (Bristles on thorax broken off, but from those remaining apparently consistent with the arrangement in the other species herein described.)

¹ The claspers being tightly closed, no more detailed description can be given.

Abdomen.—Blackish grey, with a brownish cinereous dust; a few pale hairs at the sides; genital organs in ♂ large, robust, conspicuous, consisting of an upper and lower thick cup-shaped piece, the former ending in two narrow blunted hairy points, the latter ending in two short obtuse bare points, the two pieces together enclosing a large ventral chamber in which are some smaller intermediate processes of a yellow colour, the whole of the genitalia, otherwise, being black, with stiff black hairs on the outside. In the ♀ the organs are small, pale and inconspicuous.

Legs.—Black, pubescent. Hind femora with a row of about twenty small teeth on under side, each bearing a short spine. In addition, a row of long stiff bristles. Anterior tibiae with at least two long bristles on inner and two on outer side of each. Tarsi black, with pale hair on under side, that on under side of hind pair golden yellow, and there is a little such golden yellow hair at the tips of the hind tibiae on the under side.

Wings.—Pale brownish grey; stigma oval, brown, not very conspicuous; halteres yellow.

Described from a type ♂ from the Botanical Gardens, Darjiling, 12-viii-09 [*Paiva*], and a type ♀ from Kurseong, 7-ix-09 [*Annandale*], both specimens in the Indian Museum.

Hybos gagatinus, Big.

The type of this species is in the Indian Museum collection, and I therefore add a few details to Bigot's very short description. The specimen is in fairly good condition except that the head is a little crushed, and the antennae gone. A pre-alar bristle is evident, two on the scutellum, nearly erect, and one or two on the sides of the thorax. The under side of the thorax is dark bluish grey. The legs are best described as moderately dark shining brown. The anterior tibiae, the hind knees, broadly, and all the tarsi, light brownish yellow. Legs pubescent, with two long bristles on upper part of outer side of middle tibiae, and two similar apical ones. The hind femora have a row of about 10 long but not very strong spines on the under side. The wings are quite clear, very iridescent, 6th vein somewhat faint; halteres yellowish.

Long. 4 (not 5) mm. Moreover the locality (Margherita) is in Assam, not in India proper.

SYNDYAS, Loew.

parvicellulata, Bezzi, Ann. Mus. Hung., ii, 321 (1904).

Ceylon and Papua.

eumera, *id.*, *l.c.*, 323. Papua.

elongata, Meij., Tijd. v. Ent., liii, 67 (1910) Java.

brevior, *id.*, *l.c.*, 68. Java.

SYNECHES, Walk.

1. Sub-genus *Syneches* (s. str.).

bigoti, Bezzi, Ann. Mus. Hung., ii, 360 (*nom. nov.*), (1904).
India.

Pterospilus bicolor, Big., Ann. Soc. Ent. Fr. (1889), 126.

N.B.—The name *bicolor* is preoccupied by Walker's *Hybos bicolor*, a species now referred to this genus.

dichaetophorus, Bezzi, Ann. Mus. Hung., ii, 330 (1904).
Papua.

semibrunnea, Meij., Tijd. v. Ent., liv, 325 (1911). Java.

2. Sub-genus *Epiceia*, Walk.

bicolor, Walk., Proc. Linn. Soc. Lond., iii, 91 (*Hybos*) (1859).
Aru Is. and Papua.

deficiens, Walk., *loc. cit.*, iii, 129 (*Hybos*) (1859). Papua,
Key Is.

ferruginea, Walk., *l.c.*, v, 149 (1861). Amboina, Mysol,
Ceram.

eustylata, Big., Ann. Soc. Ent. Fr. (1889), 126 (*Pterospilus eustylatus*). Papua and "Indian Archipelago."

hyaloptera, Bezzi, Ann. Mus. Hung., ii, 331 (1904). Papua.
minor, *id.*, *l.c.*, 332. Papua.

? **stigma**, Walk., Proc. Linn. Soc. Lond., viii, 111 (*Hybos*)
(1865). Papua.

N.B.—This last species referred here with a doubt.

3. Sub-genus *Harpamerus*, Big.

signatus, Big., Rev. Mag. Zool. (1859), 7. Ceylon.

dinoscelis, Bezzi, Ann. Mus. Hung., ii, 333 (1904). Papua.

velutinus, Meij., Nov. Guin. Results, v, 79 (1906). Papua.

N.B.—These genera *Syneches*, *Epiceia* and *Harpamerus* do not appeal to me with sufficient clearness for me to be sure of their validity, and therefore the following new species must be regarded as belonging to *Syneches*, *sensu lato*. Of these *inaequalis* has slightly incrassated towards the tip, but much *lengthened* hind femora, and is certainly a true *Syneches*, *sensu stricto*, whilst *insignis* has the femora thickened throughout their length, and also belongs to this section.

Note on Syneches bigoti, Bezzi.

Bigot's original name for this species was *Pterospilus bicolor*, but through Walker's *Hybos bicolor* being now referred to *Syneches*, the name has had to be altered.

Two points now arise ; the first being that the present species is remarkably akin to the European *Pterospilus muscarius*, Rond , the only points of difference being the brown thorax with two dorsal more or less distinct yellowish stripes, and the brownish yellow or entirely yellow scutellum. In *muscarius* the thorax is blackish and the scutellum dark, but in the few specimens of Bigot's species present in the collection considerable variability is shown in various characters. The depth of colour of the thorax, also the width and colour of the thoracic stripes, are pale yellowish in one specimen and moderately dark brownish yellow in others. In one example the scutellum is yellow, in others dark brownish yellow. The proboscis is brownish yellow, and in a European example of *muscarius* (identified in Europe) it is also wholly yellowish, though Schiner describes it as black. The colour of the hind legs also varies considerably both in the ground colour (yellowish to rather dark brown) and in the width and intensity of the two hind femoral bands (basal and apical) ; the anterior legs being however fairly uniform in colour, pale yellowish.

Secondly the dividing line between *Hybos* and *Syneches* appears a very slender one, the distinction as given by Prof. Bezzi being that in the former the 2nd longitudinal vein begins near the middle of the wing, and in the latter near the base of the wing.

My three new species *niger*, *apicis* and *auripes*, placed in *Hybos*, might almost as well be placed in one genus as the other, the origin of that vein occurring at an intermediate stage.

Schiner's distinction between *Hybos* and *Pterospilus* is that in the former the anal cell is longer than the 2nd basal and that it is rounded in front, the wings being clear ; whilst in *Pterospilus* the anal cell is of equal length with the 2nd basal and is pointed in front, the wings being marked. This applies well enough regarding the single species *muscarius*, but the distinction fails as applied to oriental species, since the length of the 2nd basal and anal cells are so nearly equal in many species, referred to both *Hybos* and *Syneches* ; moreover there is no fine distinction in the distal extremity of the cell, which generally takes the form of a well curved arc meeting a straight line.

Again, the wing is only distinctly marked (apart from the stigma, which may be conspicuous or weak, according to the species) in *bigoti* (*bicolor*, Big.), and this is not a generic character.

In my new species referred to *Hybos* the stigma is almost absent in some and quite conspicuous in others.

The degree of incrassation of the hind femora also varies with the species ; likewise the size of the tooth-like processes on their under side, and also the strength and length of the spines or bristles placed there.

Bigot's type ♂ is from Margherita. Assam, the Indian Museum specimens are from Pallode, S. India, 15-xi-08 [*Annandale*] and Peradeniya, i-1911. I have several in my own collection from Ceylon and Mr. Green has it from Kandy, v-1910.

Syneches palliditarsis, mihi, sp. nov.

♀ Darjiling district.

Long. 5 mm.

Head.—Black; the narrow face a little grey dusted. Eyes above antennae absolutely contiguous, the upper facets reddish brown, the lower facets, which are much smaller, darker brown. Proboscis shining brown, projecting considerably beyond head (in one specimen twice as long as head). Palpi very short, nearly black. Antennae moderately light brown.

Thorax.—Shining black; when viewed from certain directions it appears distinctly brownish grey dusted; the anterior part bare; some long soft hairs on posterior half and on scutellum, on which is a row of long stiff hairs on the margin.

Abdomen.—Black, a little shining, with brownish yellow hair, which is a little more plentiful than in the other Indian species of this genus. A peculiar feature in this species is the presence on the under side of the 5th segment of two parallel rows, placed longitudinally a short distance apart, of long soft golden yellow hairs. Genitalia elongate.

Legs.—Dark brown or blackish. Tibiae and tarsi mainly brownish yellow, but base of former and tips of latter darker. Femora with rather copious long soft hair; tibiae with similar hair, less regular and not so long, and with a row of longer stiffer hairs. First two joints of tarsi with two longer stiff hairs at their tips.

Wings.—Brownish grey, darker anteriorly; stigma brown, oval, moderately large. Halteres dark brown.

Described from 3 ♀ ♀ in the Indian Museum taken at Sukna (500 ft.), base of Darjiling Hills, by Dr. Annandale, 2-vii-8 (*type*) and 1-vii-08 (two others).

N.B.—The palpi in *Hybos* are theoretically of a length approaching that of the proboscis but in this species they are quite short, certainly not a fifth part as long as the proboscis.

Syneches fratellus, mihi, sp. nov.

♀ Western Himalayas.

Long. 2½ mm.

Very like *palliditarsis*, but quite distinct. Eyes wholly black; antennae wholly black. Abdomen without the two fringes of yellow hair on belly, and the dorsal pubescence of the abdomen is more whitish than yellow. The legs have only the tarsi and extreme tips of the tibiae yellow, the remainder being black. The wings are nearly clear. It is a much smaller species. One ♀ in the Indian Museum from Bhowali, Kumaon District (5700 ft.), 29-vi-10 [*A. D. Imms*].

Syneches immaculatus, mihi, sp. nov.

♂ Ceylon.

Long. 4 mm.

Head.—Dark grey. Upper facets of eyes reddish brown, very much larger than the lower ones, which are coffee brown. Proboscis about as long as height of head, yellow; palpi very

small, yellow, with a long bristle at the tips. Antennae bright pale yellow, with a very long bisinuate drooping black arista.

Thorax.—Bright brownish yellow, with a few sparse hairs and four bristles towards posterior margin. Scutellum concolorous, with two long apical bristles. Metanotum concolorous; sides of thorax also, an irregular elongate dark brown spot or streak from the shoulder to the base of the wings.

Abdomen.—Wholly black, with a little black pubescence on upper and under sides; genitalia small.

Legs.—Yellow; fore femora a little brown above, with short golden yellow pubescence; all the tibiae with a row of well separated long stiff dark hairs.

Wings.—Pale grey, unmarked except for the distinct brownish yellow stigma; halteres brown.

Described from one ♂ in the Indian Museum taken by Mr. E. E. Green at Peradeniya, Ceylon, April 1911.

N.B.—This appears to be allied to *S. pullus*, Bezzi, from Ceylon.

Syneches insignis, mihi, sp. nov.

♂ Western Himalayas.

Long. $2\frac{1}{2}$ mm.

Head.—Occiput blackish grey; proboscis yellowish on apical half. Eyes with upper facets much larger than lower ones. Antennal 1st joint black (remainder missing).

Thorax.—Blackish grey, with microscopic brownish grey pubescence and soft black hairs variously dispersed; humeral calli black, shining, rather prominent, yet small. Remainder of thorax, with scutellum and metanotum blackish, the scutellum with at least two long bristly hairs.

Abdomen.—Blackish, with a slight deep blue tinge and sparse pale pubescence.

Legs.—Black, with a slight deep blue tinge; anterior knees, tips of anterior tibiae, and all the tarsi wholly yellowish. The middle tibiae brown. All the legs with soft black pubescence, hind femora considerably thickened; a row of small teeth and a row of isolated long stiff bristly hairs on under side.

Wings.—Grey. Stigma very large, quite circular, dark brown, placed in the rather distinct curve downwards taken by the 2nd longitudinal vein.

Described from one ♂ in the Indian Museum, taken by Dr. A. D. Imms at Bhowali, Kumaon District (5700 ft.), 2-vii-10.

Syneches inaequalis, mihi, sp. nov.

♂ Darjiling district.

Long. 3 mm.

Head.—Occiput dark grey; proboscis about as long as head; antennae blackish grey, arista considerably pubescent.

Thorax.—Shining black.

Abdomen.—Dull blackish grey (if viewed from in front it appears a lighter grey); towards tip greyish. Pale hairs laterally. Genitalia comparatively large, apparently normally formed.

Legs.—Wholly yellowish, except tips of femora exceedingly narrowly black. Legs softly and distinctly pubescent, the tibiae with three or four long stiff bristly hairs each.

Wings.—Pale brownish yellow; stigma oval, indistinct, of moderate size.

Described from a single ♂ from Kurseong, 3-vii-08, taken by Dr. Annandale. In the Indian Museum.

Syneches minutus, mihi, sp. nov.

♂ Lower Burma.

Long. 2 mm.

Head.—Upper facets of eyes large, reddish; lower ones nearly black, much smaller; vertex and occiput black; three distinct small yellowish ocelli. Antennae brown, pale if viewed from above, as is also the arista. Proboscis light brownish yellow, a little longer than the head.

Thorax.—Very highly arched; dark blackish brown, a little shining. Seen from certain directions the hinder half has a brown dusted tinge. Some long stiff hairs laterally. Scutellum with a distinct brown or brownish grey tinge, and with long stiff hairs.

Abdomen.—Blackish brown, with a little dark hair. Genitalia black, apparently normally shaped and of moderate size.

Legs.—Pale brownish yellow; coxae and sometimes extreme base of anterior femora and extreme tips of tarsi dark. Legs almost bare except for one or two long stiff hairs on tibiae.

Wings.—Pale brown, stigma imperceptible, halteres black.

Described from four ♂♂ in the Indian Museum, taken by Dr. Annandale at the western base of the Dawna Hills, Lower Burma, 1—2-iii-08.

Syneches rusticus, mihi, sp. nov.

♂ Darjiling.

Long. 3½ mm.

Head.—Eyes with upper facets red, the lower smaller ones coffee brown. Three large ocelli, pale yellow and very distinct. Antennae blackish grey, 3rd joint and the rather thick arista paler. Proboscis longer than head.

Thorax.—Black, only a little shining; some stiff hairs laterally and on posterior margin of scutellum.¹ Viewed from a low angle at the sides, the anterior part of the mesonotum appears brown dusted.

Abdomen.—Uniformly dark blackish brown, with yellowish brown hairs laterally. Genitalia concolorous, inconspicuous.

Legs.—Yellowish, pubescent; coxae, major part of anterior femora, tips of all femora (very narrowly) and apical half of all tarsi, black. Hind femora with a row of stiffer long hairs below.

Wings.—Distinctly brown, but not deeply so, highly iridescent; stigma ill defined but distinct. Halteres blackish brown.

¹ Most of the bristly hairs are broken off and therefore cannot be described with exactitude.

Described from one ♂ in the Indian Museum taken by me at Darjiling, 26-v-10.

ACARTERUS, Loew.

pallipes, Bezzi, Ann. Mus. Hung., ii, 335 (1904). "Oriental India."

orientalis, Meij., Tijd. v. Ent., 1, 250, pl. vi, 17 (1907). Java.

Acarterus fuscipennis, mihi, sp. nov.

♂ Ceylon.

Long. 3 mm.

Head.—Eyes wholly contiguous, the upper facets much larger than the lower ones, bright reddish brown. Proboscis reddish yellow, as long as the height of the head; palpi brownish yellow, very small. Antennae brownish, with long arista. Back of head blackish.

Thorax.—Dull black, highly arched, with a few hairs, a few lateral long stiff hairs, also some towards posterior margin. Sides similarly coloured or dark grey; scutellum with a fringe of long dark hairs.

Abdomen.—Black, scarcely pubescent; belly a little pale.

Legs.—Bright light brownish yellow, a little pubescent; coxae and basal half of femora black; tarsi tips blackish. Under side of hind femora and outer side of posterior tibiae with a few long stiff hairs.

Wings.—Brownish, stigma darker brown; halteres large, black.

Described from two ♂ ♂ taken by Mr. E. E. Green at Peradeniya, Ceylon, vi-10 (*type*, in Indian Museum), and v-11 (in Mr. Green's collection).

PARAHYBOS, Kert.

iridipennis, Kert., Termes. Fuz., xxii, 176 (1899). Papua.

chaetoproctus, Bezzi, Ann. Mus. Hung., v, 565 (1907).

Formosa.

infuscatus, Meij., Tijd. v. Ent., liv, 326 ♂ (1911). Java.

pusillus, *id.*, *l.c.*, 327 ♂. Java.

Parahybos flavipes, mihi, sp. nov.

♂ Darjiling District.

Long. 3 mm.

Head.—Eyes above reddish, closely contiguous, the lower facets coffee brown and much smaller. Antennae yellowish, arista very long, 2nd joint bristly, 3rd with a single bristle above. Face deeply sunk, greyish.

Thorax.—Wholly dull black, some soft hairs towards posterior margin and on scutellum, which latter with the metanotum is concolorous.

Abdomen.—Wholly dull, very dark blackish brown with pale pubescence.

Legs.—Rather bright brownish yellow except coxae and basal half of femora; traces of black at tips of femora and tarsi. Soft yellow pubescence on legs, no conspicuous bristly hairs.

Wings.—Pale grey, stigma indistinct, brown; halteres black.

Described from a single ♂ in the Indian Museum taken at Sukna, base of Darjiling Hills, 1-vii-08, by Dr. Annandale.

N.B.—An immature specimen, probably a ♀, from near Bhowali, Kumaon, Western Himalayas, taken by Dr. A. D. Imms, 13-vi-10, is apparently this species.

I am inclined to doubt the distinction between *Acarterus* and *Parahybos*; Professor Bezzi's difference being only that the 3rd antennal joint is more or less elongate, with apical arista in the former, whilst it is nearly round, with preapical arista in the latter. In the present species both these characters are difficult to decide, and appear of an intermediate nature. *Acarterus*, Loew, has priority.

Sub-family *EMPINAE*.

BREVIOS, mihi, gen. nov.

Near *Cyrtoma*, Mg.

Type *B. longicornis*, sp. nov.

Auxiliary and 1st longitudinal veins united, ending at about middle of wing in the costa which latter vein ends at the tip of the 4th longitudinal; 2nd longitudinal ending before the wing tip, 3rd vein simple, ending approximately at wing tip or a little below it; the 4th more or less parallel to 3rd but diverging at their middles, then converging and again slightly diverging at their tips; 5th vein nearly straight, 6th moderately long, parallel to hind border of wing, ending opposite tip of 1st vein. Basal cells about equal in width and length, not attaining middle of wing. Anterior cross vein placed just beyond base of 3rd vein, short; posterior cross vein barely proximad of anterior cross vein, very sloping. Anal cell half the length of the 2nd basal, the anal cross vein forming an acute angle with the 5th longitudinal vein, so that the anterior side of the anal cell is longer than the posterior one. No discal cell.

First two antennal joints very short, subequal, 3rd very long, elongate conical, three times as long as 1st and 2nd together, with long pubescent style as long as the 3rd joint itself. Eyes closely contiguous. Proboscis and palpi very short. Thorax well arched; legs with only the middle femora slightly incrassated; fore coxae small. Abdomen cylindrical, normal; genitals small, concealed.

Brevios longicornis, mihi, sp. nov.

♂ Nepal.

Long. 2 mm.

Head.—Occiput blackish grey, with pale yellowish grey pubescence; eyes closely contiguous; antennae blackish, 3rd joint

and its style with rather dense whitish pubescence. Proboscis shorter than height of head, yellowish.

Thorax.—Bright ferruginous, also scutellum and metanotum. A short black streak above each wing apparently joined together near posterior margin by an irregular blackish mark. (Thorax slightly damaged in this spot by the pin). Sides grey.

Abdomen.—Black, roughened, nearly bare. Genitalia rather large, black.

Legs.—All wholly pale brownish yellow, with soft pubescence, middle femora slightly thickened.

Wings.—Pale grey, highly iridescent; a slight obliteration of the veins at tips of basal cells. Venation in accordance with the generic diagnosis. Halteres brownish yellow.

Described from a single ♂ from Sarath, Nepal, 24-ii-08. In the Indian Museum.

HOWLETTIA, gen. nov.

Allied to *Cyrtoma*, Mg. and *Brevios*, mihi.

Eyes separated above by a moderately broad frons, and only very narrowly separated below antennae. Antennae of three distinct joints, the first two short, subequal, the third shortly conical with long terminal arista. Proboscis about equal to height of head, perpendicular; palpi half the length of proboscis or a trifle longer.

Thorax not more arched than in normal species of *Empis* and *Rhamphomyia*. Abdomen a little longer than thorax, somewhat compressed. Legs rather long and slender; fore coxae short, middle femora distinctly but not conspicuously incrassated. All the tarsi longer than the tibiae.

Wings with 1st longitudinal vein rather further from the costa than usual, ending beyond middle of wing; 2nd vein beginning at one-fourth of the wing, ending towards tip of costa. The 3rd vein begins at the middle of the wing, the anterior cross vein placed just beyond the origin of the 3rd vein (which latter ends at about the wing tip); the 4th vein very nearly straight, ending just below wing tip; 5th nearly straight; 6th (anal) very long, complete to the border of the wing, a short distance below the tip of the 5th. Posterior cross vein joining 4th vein at the spot where the anterior cross vein meets it, but not in a straight line with it. Anal cross vein forming acute angle with 5th vein. The 2nd basal cell very little longer than the 1st, the anal cell barely half as long as 2nd basal. No discal cell.

The ♀ only present.

The genus is named after Mr. F. M. Howlett, of the Agricultural Research Institute at Pusa.

Howlettia flavipes, mihi, sp. nov.

♀ Western Himalayas.

Long. $2\frac{3}{4}$ mm.

Head.—Blackish, proboscis dark brown, palpi brownish yellow, ocellar triangle rather prominent.

Thorax.—Shining black, with very short whitish pubescence towards the margins of the dorsum. Sides of thorax and dorsum of scutellum slightly grey dusted. A few weak prealar bristly hairs.

Abdomen.—Black, a little shining, belly brownish yellow, a little very short whitish pubescence.

Legs.—Brownish yellow, minutely pubescent, middle femora a little incrassated, with a row of very short bristles on under side. Tarsi blackish.

Wings.—Clear; iridescent; venation in accordance with generic diagnosis. Halteres dull brownish yellow.

Described from a single ♀ in the Pusa collection taken by Mr. F. M. Howlett at Mussoorie, ix-06.

'EMPIS, L.

ceylonica, Bezzi, Ann. Mus. Hung., ii, 343 (1904). Ceylon.

papuana, *id.*, *l.c.*, 344. Papua.

jacobsoni, Meij., Tijd. v. Ent., 1, 251 (1907). Java.

abbrevinervis, *id.*, *l.c.*, liv, 328 ♀ (1911). Java.

Empis subcilipes, mihi, sp. nov.

♀ Western Himalayas.

Long. 5½ mm.

Head.—Ash grey, frons about one-fourth the width of the head. Some short black stiff hairs behind the eyes, and a little soft white hair on lower part of occiput. Antennae reddish brown, rather long, black streaked on upper side and with a whitish shimmer on the inner side in certain lights. Antennal style of moderate length. Proboscis nearly three times the height of the head, reddish brown, with the under side black.

Thorax.—Moderately dark ash grey. A broad brownish grey median stripe from the anterior margin and a less distinct much shorter stripe each side, not extending to the shoulders. Surface of dorsum with short setae more or less irregularly placed, but a distinct double row in the centre and a number towards each shoulder. Some stiff bristles above and in front of each wing, and four on posterior margin of scutellum, which latter with the metanotum are both light mouse grey. Sides dark grey.

Abdomen.—Rather dark grey; 1st segment with a little black and grey pubescence; remainder of segments with scattered pale very short hairs. Belly tawny; genitalia very dark brown.

Legs.—Brownish yellow, coxae a little bluish grey on basal half. Femora more or less blackish in middle and on upper side generally; tarsi mainly black. Upper and lower sides of four posterior femora with thick but short black ciliated hair. Rest of legs finely black pubescent.

Wings.—Pale grey, veins brownish yellow on basal part, blackish distally. Stigma imperceptible. Halteres brownish yellow.

Described from a single ♀ in the Indian Museum taken at Mundali, Jaunsa division, Dehra Dun district (9000 ft.), 12-v-10.

***Empis rostrata*, mihi, sp. nov.**

♀ Western Himalayas.

Long. 7 mm.

Head.—Occiput grey, with a few bristly black hairs above. Frons and face concolorous grey, the former comparatively wide, with parallel edges, the latter much wider. Antennae black, 2nd joint very distinctly bright brownish yellow. Palpi bright brownish yellow, short. Proboscis two and three quarter times the height of the head; when extended on the under side reaching beyond the base of the abdomen; brownish yellow in colour, a little blackish in the middle on under side. A few whitish hairs on under side of head.

Thorax.—Dorsum (somewhat discoloured in the centre) light brownish grey, with a narrow median darker brown stripe and a wider one on each side not quite extended to anterior margin of thorax; and laterally two brownish spots, one in front of and one behind the pre-sutural depression. Sides, scutellum and metanotum concolorous, or a little more nearly ash grey. (Thorax denuded of bristles).

Abdomen.—Light grey, brownish at base of each segment, the colour broader in the centre; genitalia slender, cylindrical, terminated by two thin finger-like lamellae, concolorous. Belly light grey, unmarked.

Legs.—Between light brown and tawny; coxæ a little grey dusted and with a little soft whitish hair; tarsi more or less blackish on upper side; extreme tips of femora very narrowly black. Posterior femora with thick but short bristly black or blackish brown hairs above. Posterior tibiae with blackish brown scales, much thicker and larger on hind pair, on which they occur below the metatarsi also, and are even continued on a less pronounced scale-like form on the under side of the remaining tarsal joints. The legs generally with minute black stiff hairs.

Wings.—Brownish yellow; stigma practically imperceptible. Halteres brownish yellow.

Described from a single ♀ in the Indian Museum taken by Dr. Annandale, 1-v-07, at Theog, Simla district (8000 ft.).

***Empis griseonigra*, mihi, sp. nov.**

♂ Western Himalayas.

Long. 5 mm.

Head.—Occiput blackish. Eyes absolutely contiguous above antennae; face dark grey; antennae black; palpi black. Proboscis one and a quarter times the height of the head, dark brownish yellow, black on under side.

Thorax.—Brownish grey, with three moderately wide brown dorsal stripes, the median one attaining the anterior margin, the outer ones only extending as far as the shoulders. Some short bristly hairs on shoulders, soft black pubescence over the dorsum generally, and stiffer hairs and bristles distributed as in the other species. Sides of thorax a little darker grey, pleurae light grey.

Abdomen.—Blackish, with short sparse black pubescence; whitish pubescence at sides of the first two segments. Genitalia blackish.

Legs.—Blackish, with black pubescence. Knees reddish brown, with a trace of this colour over some of the other joints.

Wings.—Pale grey; stigma imperceptible; halteres bright yellow.

Described from one ♂ in the Indian Museum from Mundali, Jaunsa division, Dehra Dun (9000 ft.), 12-v-10.

Empis elegans, mihi, sp. nov.

♀ Western Himalayas.

Long. 3 mm.

Head.—Black; antennae black; palpi large, yellow; proboscis twice the height of the head, black or blackish brown.

Thorax.—Shining black, including sides, scutellum and metanotum; wholly unmarked; a little whitish soft hair. Distinct bristles apparently absent; a few stiff pale hairs towards hind margin and on scutellum.

Abdomen.—Darker brown, nearly bare; genitalia slender, normal, elongate, concolorous.

Legs.—Brownish yellow. Hind coxae, tips of tibiae and all the tarsi blackish. Femora quite bare; tibiae with only a few short stiff hairs towards tips; tarsi pubescent.

Wings.—Clear, highly iridescent; anterior cross vein very near base of discal cell; stigma barely perceptible. Halteres brownish yellow.

Described from two ♀ ♀ in the Indian Museum from Mundali, 12-v-10, taken in company with *E. griseonigra*.

Empis centralis, mihi, sp. nov.

♀ Western Himalayas. Long. 5 mm. (extreme length).

Head.—Occiput black, with black hairs above, a little white hair below. Frons and face proportioned as in *E. rostrata*, but blackish, as are also the antennae, but the face, viewed from below, shows dark grey reflections. Palpi bright brownish yellow. Proboscis one and a half times the height of the head, the upper side brownish yellow.

Thorax.—Light brownish grey, with soft black pubescence, and bristly hairs laterally and towards the hind margin. Two narrow median well separated brown stripes from anterior margin extending three-fourths of the distance to the scutellum. A

lateral broader stripe on each side, practically formed of three irregularly shaped elongate spots placed, one on the shoulder, one in front of and one behind the pre-sutural depression, the spots contiguous and the hind one attaining the posterior margin of the dorsum. Some bristles laterally and towards hind margin of mesonotum, also four on the scutellum. Sides of thorax and metanotum light grey, dorsum of scutellum brownish grey.

Abdomen.—Darker grey, with short sparse black hairs; posterior margins of segments more or less black. Genitalia elongate, concolorous, much as in *E. rostrata*. Belly dark grey.

Legs.—Coxæ dark grey, remainder of legs brownish yellow extreme tips of femora blackish, and tips of tarsal joints more broadly blackish. All the legs with black pubescence. Posterior femora with blackish bristly hair above; hind femora with scales. Posterior tibiae with blackish brown scales on front and hind sides, as in *E. rostrata*, but much less strong, and apparently confined to the basal half of the hind pair. On the hind side of the hind tibiae a row of moderately long, well separated bristles.

Wings.—Very pale grey, nearly clear. Anterior cross vein directly over the middle of the discal cell. Halteres bright brownish yellow.

Described from one ♀ in the Indian Museum from Mundali, Jaunsa division, Dehra Dun, 12-V-10.

***Empis carbonaria*, mihi, sp. nov.**

♂ Ceylon.

Long. 4 mm.

Wholly and uniformly coal black, moderately shining. Eyes separated by a narrow frons. Antennal 3rd joint distinctly longer than the first two together, and its distal half rather suddenly narrow, style thick, half as long as the joint. Proboscis nearly twice the height of the head, labium bifid at the tip. Head, thorax and abdomen covered with long, soft, but not copious pubescence. Legs with rather soft black hairs; fore femora almost bare. Fore and hind metatarsi distinctly incrassated, cylindrical, lengthened, the fore pair with longer black hair. Posterior tibiae and tarsi with a row of well separated long stiff hairs. Genitalia small, rounded, not conspicuous. Wings clear, stigma slightly brownish, small. Halteres black.

Described from 2 ♂♂ in the Indian Museum and one in Mr. E. Green's collection, all collected by that gentleman on the Horton Plains, Ceylon, in May 1911.

Type in Indian Museum.

***Empis squamata*, mihi, sp. nov.**

♀ Ceylon.

Long. 2½—3 mm.

Wholly coal black. Proboscis three times as long as the head. Antennae normal. Thorax with soft black hairs. Abdomen nearly bare, roughened, shining; belly similar; ovipositor small, elongate,

normal. Legs with a dense row of long closely placed dark brown or blackish elongate scales on the upper and lower sides of all the femora and tibiae, except the upper side of the fore femora. The middle and hind legs have a few but much smaller such scales on the upper side of the metatarsi. Only the unscaled parts of the legs bear a little black pubescence. Wings pale brown, stigma black, halteres black.

Described from several ♀♀ collected by Mr. E. E. Green on the Horton Plains, Ceylon, May 1911.

Type (and some other of the specimens) in the Indian Museum.

***Empis inconspicua*, mihi, sp. nov.**

♂ Northern India.

Long. $2\frac{1}{4}$ mm.

Head.—Blackish; antennae black; palpi a little yellowish. Proboscis twice the height of the head, yellow above, black below.

Thorax.—An intermediate shade between light and dark grey, with comparatively long and rather stiff hairs. Four long stiff hairs on scutellum, which, with sides of thorax and metanotum are concolorous, but just below shoulders a lighter grey.

Abdomen.—Concolorous, rather broad and flat, with parallel sides, and black soft pubescence. Genitalia blackish, with reddish brown bisinuate terminal hooks. Belly blackish.

Legs.—Uniformly dark brown, pubescent; middle tibiae with four long stiff hairs on outer side; hind tibiae with long hair on hinder side.

Wings.—Pale grey; stigma brownish, ill defined, much elongated and reaching the costal margin. Halteres yellow.

Described from two ♂♂ in the Indian Museum from Lucknow, 17-i-08 (*type*) and 9-ii-08. Sent by the Lucknow Museum.

***Rhamphomyia himalayana*, mihi, sp. nov.**

♀ Western Himalayas.

Long. barely 3 mm.

Head.—Black. Occiput moderately dark grey, with black hairs. Frons wide, dark grey. Three distinct ocelli on vertex, with a pair of divaricate bristles between the two upper ones. Antennae black; proboscis blackish, about as long as the head.

Thorax.—Moderately dark ash grey, with two median very narrow whitish lines from the anterior margin. Dorsum with short blackish pubescence. Sides, scutellum and metanotum concolorous.

Abdomen.—Dark grey, with short blackish pubescence; belly similar. Genitalia very elongate, terminating in two unusually long finger-like lamellae.

Legs.—Dark brown, with blackish pubescence; femora and tibiae with a row of stiff hairs; hind femora with thick short black hair above and dark brown scales on lower side; hind tibiae with thicker and more bristly black hair.

Wings.—Pale brownish grey. Stigma absent; halteres yellow.

Described from a single ♀ taken by Dr. Annandale at Matiana, Simla district (8000 ft.), 28—30-iv-07. In the Indian Museum.

***Rhamphomyia unifasciata*, mihi, sp. nov.**

♂ Western Himalayas.

Long. 3 mm.

Head placed on a neck of moderate length, blackish. The 1st and 2nd antennal joints rounded, a little broader at the tips, 3rd as long as 1st and 2nd together, elongate-oval; arista placed at the extreme tip of the dorsal side.

Thorax.—Bright brownish yellow. An oval black spot on anterior part of dorsum, drawn out to a point on anterior margin; sometimes not narrowed in front but diminished in intensity, and in some cases extended posteriorly towards the hind margin. Traces of two narrow lines from the hinder corners of the spot towards posterior margin, and a trace of a small blackish spot between these lines; scutellum concolorous, rather wide, a little blackish at the base.

Abdomen.—Shining, dark blackish brown; belly more or less yellowish; genitalia withdrawn.

Legs.—Brownish yellow; tibiae and tarsi barely darker.

Wings.—Very pale grey, nearly clear; stigma present but indistinct. Halteres brownish yellow.

Described from two ♂♂ in the Indian Museum from Mundali, Jaunsa division, Dehra Dun (9000 ft.), 12-v-10 (*type*) [C. W. Beebe] and Simla, 12-v-08, the latter taken by Dr. Annandale.

***Rhamphomyia griseonigra*, mihi, sp. nov.**

♂ Western Himalayas.

Long. 4 mm.

Head.—Eyes dark reddish brown, upper facets much the larger. Occiput grey, with black stiff hairs. Antennae blackish, 3rd joint elongate, with distinct, elongate style; face dark grey; proboscis blackish, shining, brownish towards tip.

Thorax.—Dark cinereous grey, lighter grey on shoulders and pleurae. The centre of the dorsum is slightly brown tinged, with two indistinct longitudinal narrow black stripes. The whole dorsum with short black stiff hairs irregularly situated, and some longer bristly hairs in the neighbourhood of the wings. Scutellum concolorous, with black hairs on posterior margin but apparently no very strong ones; metanotum dark grey.

Abdomen.—All blackish grey, with very short black hairs.

Legs.—Black, shortly black pubescent; tibiae with a few stiff black hairs; hind femora apparently with only microscopic pubescence, hind tibiae with soft black hairs on outer side, becoming longer towards the tips, where these tibiae themselves are gradually thickened; hind metatarsi lengthened and enlarged.

Wings.—Pale brown, stigma an indistinct darker brown streak. Halteres dirty brownish yellow.

Described from a single ♂ from Mundali (9000 ft.), Dehra Dun, 12-v-10. In the Indian Museum.

***Empimorpha rufithorax*, mihi, sp. nov.**

♂ Darjiling.

Long. nearly 4 mm.

Head.—Occiput, frons, which is moderately wide, with parallel linear edges, and face all black, with a few black bristles. Vertex with three distinct large reddish ocelli, with a pair of strong divaricate bristles between the upper ones. Antennae yellow, 3rd joint elongate onion shaped, with a long closely pubescent black arista, ending in a small bare black pointed bristle. The first two antennal joints with some short bristles near their tips. Proboscis about the height of the head, the basal half yellowish, the apical half blackish; palpi very long, longer than proboscis, somewhat broadened and flattened at the tips, with a few yellowish hairs.

Thorax.—Bright light yellowish brown, with three black dorsal stripes, of which the median one is of moderate width, the outer ones are broad enough to extend over the lateral margins, and all three attain the anterior margin of the dorsum. A few bristly hairs about the roots of the wings and much smaller ones on the dorsal stripes. Sides a little more yellowish than the dorsum, with which latter the scutellum and metanotum are concolorous, the scutellum bearing a few stiff black hairs on the hind margin; the metanotum a little dusky in the centre.

Abdomen.—Dark blackish brown, with black pubescence. Genital organs dark grey, with a little pubescence. Belly similar to dorsal side of abdomen.

Legs.—Coxae and femora yellowish; tibiae dark brownish yellow, tarsi dark brown. All the legs shortly pubescent; tibiae with two rows of five or six long stiff hairs.

Wings.—Pale brown; stigma vague, very elongate, a little darker brown. Halteres yellowish brown.

Described from a single type ♂ in the Indian Museum taken by me at Darjiling, 29-v-10, on the hillside.

HILARA, Mg.

bares, Walk., List Dipt. Brit. Mus., iii, 491 (1859). East India.

N.B.—This is the only previously recorded species of *Hilara* from the East.

***Hilara compacta*, mihi, sp. nov.**

♂ Western Himalayas.

Long. barely 2½ mm.

Head.—Blackish; frons rather narrow. Antennae with greyish reflections viewed from certain angles. Proboscis about as long as height of head; shining black above; labium, which is

shining yellowish, much longer than the hypopharynx and sharply pointed. Palpi large, nearly as long as proboscis, brownish yellow, pubescent.

Thorax.—Wholly dark grey, including sides, scutellum and metanotum; a little black pubescence, and some stronger hairs on dorsum laterally.

Abdomen.—Blackish, pubescent, sometimes pale below at base. Genitalia a little broader than the abdomen.

Legs.—Pale yellowish brown, pubescent. Tibiæ with a row of longer stiff hairs on outer side; front metatarsi much thickened, as wide as the tibiæ, and longer than the remaining fore tarsal joints. Posterior metatarsi normal, not so long as the remaining tarsal joints.

Wings.—Pale grey; stigma elongate, pale brownish, ill defined. Halteres dirty brownish yellow.

Described from three ♂♂ from Simla, 16-v-09 (*type*) and 9-v-09, taken by Dr. Annandale. In the Indian Museum.

Sub-family OCYDROMINAE.

Leptozepe vitripennis, mihi, sp. nov.

♂ ♀ Western Himalayas and Burma. Long. 2 mm.

Head.—Blackish. Proboscis horizontal, as long as the length of the head, shining black; palpi short, porrect, black. Antennae with elongate conical 3rd joint and long apical bristle.

Thorax.—Very highly arched, shining black in middle of dorsum with short whitish hairs laterally.

Abdomen.—Shining black, with short whitish pubescence, belly similar.

Legs.—Rather pale pitch brown, a little pubescent.

Wings.—Very clear and iridescent; halteres black.

Described from a *type* ♂ from Oncha Gaon, Naini Tal district, 1-6-iv-07 and a *type* ♀ and a second ♀ from Rangoon, 24-ii-08, taken by Dr. Annandale.

The three specimens in the Indian Museum.

"*Ocydromia cothurnata*," Big., nom. nud.

A headless specimen thus labelled is present in the Indian Museum collection. Unless cotypes exist in the Bigot collection or elsewhere, the name must be abandoned. Moreover the specimen is not even an *Ocydromia* but belongs to the subfamily Hybotinae.

Sub-family HEMERODROMIINAE.

Trichozepe fusca, mihi, sp. nov.

♀ Darjiling district. Long. 3 mm., wing 4½ mm.

Head.—Blackish, eyes sub-contiguous. Antennae with very long cylindrical 1st joint, short large sub-globular 2nd joint and

very elongate conical 3rd joint, which has a very long thick curved minutely pubescent style.

Thorax.—Dark brown, lighter at the sides. Scutellum and metanotum concolorous with dorsum.

Abdomen.—Dark brown, but a little lighter than the thorax; very sparsely pubescent; genitalia inconspicuous, belly brownish yellow.

Legs.—Long and slender, uniformly pale yellowish except the blackish tarsi. Fore coxae twice as long as the others, but one-third the length of the fore femora. The whole of the femora are approximately equal in length. The tibiae are very little shorter than the femora, the hinder pair a little incrassated at the tips. The tarsi are about as long as the tibiae, blackish. All the femora possess a few isolated long stiff hairs on the under side, and the middle femora have one on the front side near the tip. All the tibiae with one such stiff hair on outer side a little before the first third of the length, and a few shorter ones on hinder side of middle tibiae, also a single one on the hinder side of the hind tibiae at about one-third of the length.

Wings.—Very pale grey, very iridescent. The 3rd longitudinal vein widely forked beyond half its length; prongs of upper branch of 4th longitudinal vein issuing wide apart from the discal cell, the latter being large, long, pointed basally, about equal in length to the 2nd posterior cell. The 1st basal cell a little longer than the 2nd, which latter is about as long as the anal cell. Halteres yellow.

Described from a unique ♀ taken by Mr. Gravely, 25-iii-10, at Kurseong. In the Indian Museum.

N.B.—The peculiar nature of the antennae ought to easily distinguish this species from all other Indian Empidae.

HEMERODROMIA, Mg.

orientalis, Meij., Tijd. v. Ent., liv, 330, pl. xix, 25 ♂ (1911).
(*Microdromia*). Java.

PTILOPHYLLODROMIA, Bezzi.

Ann. Mus. Hung., ii, 344 (1904).

biroi, Bezzi, *loc. cit.*, 345. Papua.

Chelipoda flavida, mihi, sp. nov.

♂ ♀ Chota Nagpur, E. Himalayas and Lower Burma.

Long. 2 mm.

Head.—Yellowish, three ocelli on the black vertical triangle, which also carries two divaricate long bristles. Frons moderately broad. Occiput with four long curved bristles placed equidistantly. Seen from behind, the occiput has a greyish tinge, as has

sometimes the frons also. Eyes black, rounded, almost contiguous immediately below the antennae for a short space, the face broadening below. The latter, seen from above, appears silvery white. Proboscis very short, half the height of the head, conical, sharply pointed, yellowish, the upper part (hypopharynx) narrow, hard, shining. First two antennal joints yellowish, with some short bristles at the tips of each, 3rd joint dark brown, elongate onion-shaped, with long brown microscopically pubescent arista.

Thorax.—Very variable; generally brownish yellow, with more or less blackish colour, either in the form of a dorsal stripe, a lateral irregular and somewhat indistinct border, or the posterior part of the dorsum more or less blackish. Sides generally lighter, in some specimens attaining a pinkish fawn colour.

Abdomen.—Variable; brownish yellow, more or less blackish in part or wholly. Belly brownish yellow; genitalia small, concolorous. Tip of abdomen in ♂ stump-like; in ♀ tapering, the two terminal lamellae pale yellowish.

Legs.—Yellowish or pale yellow. Front coxae narrow, cylindrical, nearly as long as the femora, the latter slightly brownish at tips, and considerably incrassated, with two yellow bristles near the base on the under side, and a row there also of microscopic spines. Posterior coxae and femora of normal size, the former a little brownish, as are also the tarsi tips.

Wings.—Very pale grey, veins black; halteres brownish yellow.

Described from several specimens in the Indian Museum from Paresnath (4000—4300 ft.), Chota Nagpur, 9—13-iv-09 [*Anmandale*], including *type* ♂ (9-iv-09); Dawna Hills (2—3000 ft.), 2-iii-08, *type* ♀ [*Anmandale*]; Darjiling, 28-v-10 [*Brunetti*]. The Paresnath specimens were taken on stones where they were in considerable numbers hidden in undergrowth at the edge of a spring.

Type ♂ and ♀, with the other examples, in the Indian Museum.

Chelipoda dorsalis, mihi, sp. nov.

♂ ♀ Western Himalayas.

Long. 2 mm

Head.—Blackish. Proboscis pale yellowish, very stout at the base; the upper piece prolonged into a long hard shining rostrum. Antennae wholly pale yellowish white.

Thorax.—Brownish yellow; dorsum black or dark brown, the colour extending more or less over the sides; scutellum and metanotum concolorous with dorsum.

Abdomen.—Brownish yellow. The dorsum of each segment black, thus forming a continuous black stripe from base to tip, but the hind borders of some of the segments escape the black colour. Belly brownish yellow. Genitalia in ♂ large, wholly black, rather complex, comprising at least a pair of claspers which are stout at the base and with flexible finger-like appendages; also a long narrow ventral style.

Legs.—Very pale yellow. Fore femora with a row of very short microscopic spines, fore tibiae possessing two such rows. The fore femora also have a row of long stiff bristly hairs on the under side, and two still longer ones below near the base.

Wings.—Clear, veins brown; halteres pale brownish yellow.

Described from three specimens in the Indian Museum, taken by Dr. Annandale at the edge of a small stream at Barogh, in the Simla Hills (5000 ft.), 10-V-10.

Clinocera obscura, mihi, sp. nov.

♂ Western Himalayas.

Long. 2 mm.

Head.—Blackish grey, some stiff hairs on occiput and frons, which latter is very broad. Proboscis short, half the height of the head, shining black, with a much swollen apical part (this latter in one specimen partly brownish yellow). Palpi very small, brownish yellow. Antennal 3rd joint elongate oval, with long black arista.

Thorax.—Brownish grey, including scutellum. Sides and metanotum bluish ash grey. Some dorso-central and lateral bristly hairs.

Abdomen.—Dark brown, softly pubescent; genitalia extremely long and conspicuous, blackish, with a few pale hairs, egg-shaped, convex, bent under the belly, the narrower end pointing towards the base of the abdomen. Posteriorly (*i.e.* from the broader end) project some yellowish filamentous appendages.

Legs.—Brownish yellow; coxae ash grey, especially the posterior pairs; tarsi a little darker. Fore femora with a few soft pale longer hairs; remainder of legs microscopically pubescent.

Wings.—Very pale grey, wholly unmarked, highly iridescent; halteres brownish yellow.

Described from two ♂ ♂ taken by Dr. Annandale at Simla, 10-V-09.

Clinocera (s. str.) fluviatilis, mihi, sp. nov.

♂ Western Himalayas.

Long. 3 mm., wing 4 mm.

Head.—Brownish grey, with isolated black bristles on the occiput, and a few on the frons; frontal tubercle bearing two divergent bristles. Antennae black, 1st and 2nd joints subequal, 3rd onion-shaped, with moderately long, nearly bare arista. Proboscis and palpi blackish, both short.

Thorax.—Very dark brownish grey, nearly black, a whitish grey stripe on the sides from just below the shoulder to as far as below the ends of the transverse suture. Ventral part of thorax also whitish grey. Dorsum bearing several isolated bristles (many of these are broken off), of which one is present on the shoulder, and one towards but not at, the hinder corner. The scutellum bears two long bristles.

Abdomen.—Dark grey, normally pubescent; genitalia large, consisting of a ventral dark grey plate, a large concave lower piece

and a pair of claspers above, these latter constituted of a large oval basal concolorous joint and an elongate brownish yellow horny bifid second joint. The whole of the genitalia a little pubescent.

Legs.—Long and slender, uniformly dark brownish grey, practically bare.

Wings.—Very pale grey. The 3rd longitudinal vein forked beyond three-fourths of its length, the branches approximate to one another and parallel; anterior cross vein before middle of discal cell, and at about one-third the length of the wing. Branches of upper branch of 4th longitudinal vein issuing close together from discal cell, thence gradually diverging; the discal cell much longer on its anterior border than its posterior one. Lower branch of 4th vein nearly straight, rather more strongly developed; 2nd basal cell short, lying against the middle third of the upper basal cell; anal cell barely longer than 2nd basal; 6th vein very short. Halteres, stem yellow, clubs dark grey.

Described from a single specimen from Bhowali, Kumaon district, 12-vi-10 [*Imms*], on stones on banks of stream.

A specimen which probably belongs to this species, but showing a discrepancy in the shape of the discal cell, is amongst the diptera recently collected by Mr. Kemp on the Abor Expedition.

Dolichocephala septemnotata, mihi, sp. nov.

♂ Western Himalayas.

Long. $1\frac{1}{2}$ mm.

Head.—Blackish. Frons broad, some stiff hairs on both frons and occiput. Epistome (the whole of the head below the eyes) conical, short, half the height of the rest of the head. Antennae black; 3rd joint conical with long black thick arista, microscopically pubescent. No palpi apparent.

Thorax and Abdomen.—Wholly black, moderately shining, practically bare except for a few stiff hairs laterally on the former. Genitalia small, rounded, simple.

Legs.—Pale yellowish, upper side of fore femora and tips of tarsi a little brownish.

Wings.—Very pale brown, with seven very distinct moderate sized circular pale spots. Six of these are placed in two parallel rows of three in each; the upper row just above the 3rd longitudinal vein, the lower row a little above the hind margin of the wing, so that the spots appear like 3 pairs situated longitudinally. The first pair (*i.e.* the basal spots of both rows) is situated a little before the middle of the wing; the 2nd pair a little beyond the middle; the 3rd pair half way between the 2nd pair and the wing tip, the upper spot being in the middle of the submarginal cell. Of the spots in the longer row, the first is placed a little before, the second a little beyond the lower branch of the 5th longitudinal vein; the third is in the middle of the 2nd posterior cell. The seventh spot is near the wing tip, at the end of the 1st posterior cell. The 3rd, 4th and 5th longitudinal veins are all wavy, the 3rd

is forked at two-thirds the length of the wing, the submarginal cell narrowed in the middle, with the marginal cross vein just beyond the cell's base, uniting it to the 2nd longitudinal vein just before its tip. The 4th longitudinal vein, although wavy, is mainly in a straight line, and divides the wing into nearly equal parts, ending just below the wing tip. Anterior cross vein very near base of wing; posterior cross vein at middle of wing, joining the upper branch of the widely forked 5th vein, soon after the furcation. Anal cell oblong, very short. Halteres brownish yellow.

Described from one ♂ from Simla, 10-v-09, taken by Dr. Annandale. In the Indian Museum.

Litanomyia indica, mihi, sp. nov.

♀ Darjiling.

Long. 2 mm.

Head.—Black. Antennae large, the 1st and 2nd joints yellowish; 3rd black, oblongo-conical, cupshaped at bottom, and furnished with a long arista. Face whitish grey, occiput and underside of head dark grey, the lower part of the head projects forward somewhat, in accordance with the generic character; the proboscis is short, pointed and slightly curved.

Thorax.—Nearly as long as abdomen, oblongo-ovate, blackish grey, moderately shining. There are three conspicuous bristles towards each side of the thorax, placed, one on the shoulder, one towards the hind corner of the dorsum and one about equidistantly between these two, this middle pair being rather closer to each other (that is, to the middle line of the thorax) than the others are; yet still a considerable distance apart. There is also one on the side of the thorax, in front of the wing. Scutellum with two bristles.

Abdomen.—Dark brown, almost devoid of pubescence.

Legs.—Wholly pale yellow; fore femora much enlarged, fore coxae and fore tibiae each very slightly longer than the fore femora, the latter being spiny and bristly below. Hind tibiae very slightly enlarged, at the tip only.

Wings.—Very pale grey, a little yellowish towards base and costa, unmarked.

Described from one ♀ in the Indian Museum taken by me at Darjiling, 29-v-10 (7000 ft.), on the hillside, in mixed herbage.

N.B.—Only two species are known of this genus, both hailing from North America, but there seems little if any doubt of the present species belonging here; the only discrepancy in *indica* from the description of *Litanomyia* given by Melander, its author, being that the antennae are distinctly large, whilst he notes them as small, and that an additional pair of bristles occur on the thorax (those in front of the wings, on the pleurae). The presence of the three pairs of widely separated bristles, placed respectively on the shoulders, mid thorax and towards the hind corners of the dorsum, is in itself a convincing coincidence. The proportions of the divisions of the forelegs are exactly as in *Litanomyia*; the

absence of spurs to the tibia tips and the slight enlargement of the tips of the hind tibiae are all in accordance with Melander's description. The wing also agrees exactly with his figure.

It may be observed that Prof. Kertész sinks this genus in *Chelipoda*, Macq.

Sub-family *TACHYDROMINAE.*

DRAPETIS, *sensu stricto.*

- aenescens*, Wied., Auss. Zweifl., ii, 649. Formosa.¹
obscuripennis, Bezzi, Ann. Mus. Hung., ii, 351 (1904). Papua.
xanthopyga, *id.*, *l.c.*, 352. Papua.
divergens, *id.*, *l.c.*, 353. Papua.
bahamata, *id.*, *l.c.*, 353. Papua.
callosotibia, *id.*, *l.c.*, 354. Papua.
lutea, Meij., Tijd. v. Ent., liv, 332 ♂ ♀ (1911). Java.
binotata, *id.*, *l.c.*, 333 ♀ Java.

Sub-genus **CTENODRAPETIS**, Bezzi.

Ann. Mus. Hung., ii, 351 (1904).

- gracilis*, Bezzi, *loc. cit.*, 354. Papua.
discoidalis, *id.*, *l.c.*, 355. East India.
rubrithorax, *id.*, *l.c.*, 356. Papua.
strigifera, Meij., Tijd. v. Ent., liv, 333 ♂ (1911). Java.

N.B.—This subgenus appears a weak one, as intermediate forms are almost certain to occur, and as a matter of fact Kertész sinks it in *Drapetis* in his catalogue of the World's Diptera. My new species must be taken to refer to *Drapetis*, *sensu lato*.

Drapetis brevior, mihi, sp. nov.

♂ Burma and India.

Long. 2—2½ mm.

Head.—Very dark grey, the eyes contiguous for a considerable distance, rounded; vertical triangle dark grey, with three ocelli, and two strong long proclinate bristles. Two equally long ones behind the eyes, curved towards each other, with also some smaller ones. Antennae with first two joints dark brownish yellow, the 3rd black, as long as the first and second taken together, with a very long black apical arista, microscopically setulose. Face very narrow, dark grey. Proboscis moderately long, bluntly but not shortly conical, a patch of pale hairs on upper part of dorsal surface.

Thorax.—Well arched, shining black, with light short yellowish grey pubescence and some bristles laterally. Scutellum and metanotum shining black.

Abdomen.—Shining black, short, conical, very stout, covered rather freely with pale yellowish grey hairs; the belly similar; the genitalia imperceptible.

¹ Wiedemann described it from the Cape but Bezzi records it from Formosa.

Legs.—Bright brownish yellow, wholly clothed with rather copious yellow hairs. The femora broadly black to a variable extent, leaving sometimes only the tips pale; the tarsi tips black or blackish.

Wings.—Clear, microscopically setulose, highly iridescent; veins yellowish or brownish. Halteres small, yellow.

Described from several examples in the Indian Museum from Mandalay, 12-iii-08, type [Annandale]; Rangoon, 26-ii-08 [Annandale]; Calcutta, 23-x-07; and Puri, Orissa coast, 24-ii-08 [Paiva]. One specimen in the Pusa collection from Pusa, 26-xi-08.

***Drapetis fascifemorata*, mihi, sp. nov.**

♀ Darjiling district.

Long. 2 mm.

Very near *brevior*, but the 3rd antennal joint is onion-shaped, much shorter than in that species. The legs are wholly reddish yellow, with a black streak on the upper side of the femora.

Described from a single ♀ in the Indian Museum taken 4-vi-08 by Dr. Annandale at Kurseong.

N.B.—This might have been considered provisionally the ♀ of *brevior* as the likeness between the two species is so great, and the difference in colour of the legs might easily be a sexual one only; but the different structure of the antennae points to it being specifically distinct.

***Drapetis rotundicornis*, mihi, sp. nov.**

♂ East coast of India.

Long. 2½ mm.

Very near *brevior*, from which it differs in the 3rd antennal joint being nearly round, drawn out to a slight point at the tip, from which the long arista projects. The anterior legs are all reddish yellow, the hind femora have the middle part blackish on the upper side.

Described from a single ♂ in the Indian Museum from Puri, Orissa coast, 18—19-i-08, taken by Dr. Annandale.

N.B.—In this species again I should have regarded it as a mere variation of *brevior* but for the different structure of the antennae.

***Drapetis rufipes*, mihi, sp. nov.**

♂ Eastern Bengal.

Long. 2 mm.

Very near *brevior*. The 3rd antennal joint is obconical, black in colour, with apical arista. Legs entirely reddish yellow; tarsi tips brown.

Described from a single ♂ in the Indian Museum taken by Dr. Annandale "at light" on board a steamer at Damukdia ghat, eastern Bengal, 30-vi-08.

N.B.—Although these three species are all so very near *brevior* they have every appearance of being actually distinct, otherwise

they would not have been erected by me upon such slender material.

Drapetis variegata, mihi, sp. nov.

♂ Burma.

Long. $2\frac{1}{2}$ mm.

Head.—Occiput and frons shining black; eyes as in *brevior*. First two joints of the antennae dark brown, 3rd black, very elongate conical, with long apical arista. Proboscis short, brownish yellow, with yellow hairs.

Thorax.—Dark shining brown on anterior part, with three black, not very obvious stripes (with, however, linear edges), all of which begin on the anterior margin. Posterior half of thorax more or less blackish. Scutellum yellowish with blackish dorsum and two long curved apical bristles; metanotum shining brown.

Abdomen.—Dorsum with very sparse pale yellow hairs. Basal third (except the extremely narrow black actual base) yellowish; middle third blackish; apical third yellowish or brownish yellow. Belly yellowish (in one example somewhat blackish across the middle).

Legs.—Wholly bright yellow; coxae brown, tarsi hardly, if any darker.

Wings.—Pale yellowish grey, iridescent, veins and halteres yellowish.

Described from two ♂♂ from Rangoon, 25-ii-08, taken by Dr. Annandale. A very marked and handsome species. In the Indian Museum.

COLOBONEURA, Mel.

Tr. Am. Ent. Soc., xxviii, 229.

argyropalpa, Bezzi, Ann. Mus. Hung., ii, 358 (1904). Papua.

PLATYPALPUS.

abdominalis, Wied., Auss. Zweifl., ii, 12 (*Tachydromia*) (1830). South China.

chionochaeta, Bezzi, Ann. Mus. Hung., ii, 359 (1904). Papua.

Platypalpus orientalis, mihi, sp. nov.

♀ Darjiling.

Long. 3—4 mm.

Head.—Occiput and frons covered with close pale yellowish grey tomentum, the frons with almost parallel sides, the ocelli placed just below the vertex, with two proclinate bristles between them and with two similar bristles just behind the vertex, each of the latter placed in a minute black spot on the surface. Two rows of distinct yellow hairs behind the eyes, below the vertical margin, and some on the lower part of the back of the head. Antennal basal joints bright reddish yellow, 3rd joint darker brown, elongate onion-shaped, with normally formed arista. Face grey, with pale grey hairs which give it a whitish reflection when viewed from certain directions. Proboscis about half the height of the

head, shining black, elongate conical, bare; the palpi nearly half as long as the proboscis, yellow, of moderate size, cylindrical, with a few hairs.

Thorax.—Dorsum with close very short yellowish grey or cinereous tomentum, and some lateral bristles. Scutellum concolorous, with two strong apical converging bristles, and a smaller pair outside of these; metanotum concolorous, or in some examples more blackish grey.

Abdomen.—Dark mahogany brown or blackish brown, with a little short pale pubescence, a little broader on the middle segments, the apical half conical; the genitalia elongate, dark grey; the belly similar to upper side.

Legs.—Bright brownish yellow; the femora, especially the posterior pairs, darker, or with a tinge of brown. The tips of the joints of the tarsi are also narrowly brown.

Wings.—Pale but distinctly yellow, veins a little deeper yellow; halteres yellowish.

Described from several ♀♀ in the Indian Museum taken by me at Darjiling (7000 ft.), 29-v-10.

Platypalpus gentilis, mihi, sp. nov.

♀ Himalayas.

Long. $2\frac{1}{4}$ mm.

Head.—Wholly blackish; antennae and proboscis dull brownish yellow, the latter when fully protruded about as long as the height of the head; yellow at the base, black tipped. Palpi about half as long as the proboscis, stoutly cylindrical, pale yellow, with a few hairs.

Thorax.—Dorsum shining black, with sparse yellow hair and a few lateral bristles. Sides a little grey dusted, as is more or less the metanotum; scutellum shining black, with four yellow bristles.

Abdomen.—Black, moderately shining, shortly conical, almost bare; genitalia elongate; belly much as upper side.

Legs.—Pale brownish yellow; femora and the tarsi tips barely darker, the middle femora incrassated, and armed below as in *orientalis*.

Wings.—Clear; halteres yellowish.

Described from four ♀♀ in the Indian Museum taken by me at Darjiling, 26-29-v-10 (*type* 28-v-10); and one from Simla, 10-v-09 [*Annandale*].

Platypalpus ferrugineus, mihi, sp. nov.

♀ Darjiling district.

Long. 2 mm.

Head.—Rather dark brownish yellow; proportions, pubescence and bristles as in *orientalis* and *gentilis*. Face blackish. Antennae with first two joints yellow, the 3rd blackish. Proboscis as long as height of head, blackish; palpi short, rather thick, pale yellowish.

Thorax.—Rather bright ferruginous brown, shining, with a moderately broad black, median dorsal stripe beginning on the anterior margin, and a much shorter one on each side of it, these two not attaining either the anterior or posterior margin. Short sparse pale yellowish hairs over the dorsum and sides, most conspicuous just below the shoulders; two strong pre-alar bristles each side, and one towards the posterior corner of the dorsum. Scutellum shining black, with very minute pale yellowish hairs, and two long apical converging spines. Metanotum black, shining, with minute pale yellow hairs. Sides of thorax black.

Abdomen.—Black, a little shining, almost bare; belly similar; genitalia pale yellowish, elongate.

Legs.—Bright yellow, fore femora a little thickened, middle femora considerably thickened and with two rows of very small black spines and also a row of long stiff hairs, all placed on the under side. The middle tibiae have a short but distinct spur-like tooth at the tip, and possess a single row of minute black spines on the under side.

Wings.—Pale yellowish grey, veins a deeper yellow; surface of wing with short hairs and also microscopically setulose. Halteres yellowish.

Described from a single ♀ taken by Dr. Annandale at Kurseong, 4-vii-08. In the Indian Museum.

***Platypalpus palliditibiae*, mihi, sp. nov.**

♂ Western Himalayas.

Long. $1\frac{1}{2}$ mm.

Head.—Blackish; frons and occiput with microscopic whitish hairs, some also on under side of head. Antennae black; proboscis mainly black, not so long as height of head; palpi nearly white, half as long as the proboscis.

Thorax.—Wholly blackish, with microscopic pale yellowish hairs; scutellum, metanotum and sides all similar. Bristles distributed as in the three previous species.

Abdomen.—Black, with sparse pale hairs, tip stump-like, genitalia of moderate size, rounded exteriorly, mainly withdrawn. Belly as upper side.

Legs.—Yellowish; femora mainly blackish, as are the tarsi tips.

Wings.—Clear; halteres, stem black, clubs whitish.

Described from one ♂ from Simla, 11-v-08 [Annandale]. In the Indian Museum.

***Platypalpus incisus*, mihi, sp. nov.**

♂ Western Himalayas.

Long. $2\frac{1}{4}$ mm.

Head.—Blackish, occiput with short whitish grey hairs. Frons moderately narrow, widened a little in the middle, at which place are situated the three limpid ocelli in the form of a triangle. Proboscis brownish yellow, half the height of the head; palpi pale yellow, with a few black bristles. Antennae large, the 2nd

joint yellowish with a row of subapical short bristles, the 3rd dark brown, with minute pale pubescence, squarish or nearly V-shaped at tip, a long thick arista from the upper angle at the tip.

Thorax.—Wholly shining black, bare, except for microscopic yellow hairs and two or three notopleural bristles. Scutellum with two apical bristles.

Abdomen.—Black, moderately shining, practically bare, belly similar. Genitalia rather large, black, a pair of claspers with large basal joint with long crooked terminal black hook-like appendages.

Legs.—Brownish yellow, fore coxae half as long as the femora; anterior femora incrassated, hind femora not thickened, long; tarsi more or less brown. All the legs minutely pubescent.

Wings.—Venation normal, anal cell absent; the anal cross vein present but incomplete. Wings microscopically setulose, pale brown, no stigma.

Described from a single ♂ in the Indian Museum taken by Dr. Annandale at Simla, 20-vii-11.

ELAPHROPEZA, Macq.

exul, Os. Sac., Berl. Ent. Zeits., xxvi, 113 (1882). Philippine Is.

fulvithorax, Wulp, Termes Fuzet., xx, 138 (1907). Ceylon.

spuria, Bezzi, Ann. Mus. Hung., ii, 347 (1904). Papua.

metatarsata, *id.*, *l.c.*, 348. Ceylon.

basalis, *id.*, *l.c.*, 349. Ceylon.

formosae, *id.*, *l.c.*, v, 566 (1907). Formosa.

palpata, Meij., Tijd. v. Ent., liv, 330 ♂ (1911). Java.

lineola, *id.*, *l.c.*, 331 ♀ Java.

calcarifera, Bezzi, Ann. Mus. Hung., v, 568 (1907).

Elaphropeza variegata, mihi, sp. nov.

♂ ♀ Bengal, Assam and Orissa. Long. barely 2 mm.

Head.—Black; occiput with microscopic pale hairs. Eyes contiguous except for a small vertical triangle which carries the three ocelli. Antennae with first two joints brownish yellow, a few bristles at the tip of the 2nd; the 3rd elongate conical, blackish, with long pubescent arista. Proboscis short, base much thickened, brownish yellow; palpi much shorter, pale yellow.

Thorax.—Bright ferruginous, a little blackish about the base of the wings and a thin black median stripe present or absent. Scutellum and metanotum concolorous with thoracic dorsum. A few lateral bristles on the latter, a few towards the posterior border and two on the scutellum.

Abdomen.—The tip stump-like in ♂, tapering in ♀; dull yellowish on basal and apical thirds, the middle third black; in some examples the basal third is more brownish than yellowish. Belly similar to upper side; genitalia small, concolorous.

Legs.—All yellowish, except for the slightly brown coxae; femora not at all thickened; hind tibiae with two long stiff hairs.

on outer side, placed equidistantly so as to divide the limb into three equal parts; middle tibiae with a long single stiff hair near the tip.

Wings.—Pale yellowish grey, no sign of any anal cell; 2nd basal cell twice as long as 1st; halteres very pale yellow.

Described from several ♂♂ and ♀♀ in the Indian Museum. Calcutta, 5-xii-07, *type* ♂ [*Annandale*], 14-ix-09, *type* ♀ [*Paiva*]. The other specimens are also from Calcutta, 31-i-08; 17-ii-08; 16-viii-07; 2-15-xii-07, and include one from Puri, 18-19-i-08. One specimen is amongst the diptera collected on the recent Abor Expedition.

N.B.—A very striking and easily recognized species.

***Elaphropeza ferruginea*, mihi, sp. nov.**

♂ Eastern Himalayas and Lower Bengal. Long. $1\frac{3}{4}$ mm.

Head.—Eyes closely contiguous above and below the antennae for the whole distance, vertex with three rather large ocelli. Occiput light brownish yellow, with numerous stiff bristly hairs above and pale softer hairs on lower part. Antennae with first two joints brownish yellow, the 1st much shorter than the 2nd, which latter is considerably setose at tip, the 3rd joint very elongate conical, blackish, closely pubescent, with long microscopically pubescent arista. Proboscis very short, brownish yellow; palpi shorter still, pale yellow, each with a very long bristle.

Thorax.—Wholly brownish yellow, with numerous very short pale yellow hairs and the usual pre-alar stiff bristles. Scutellum blackish, with two long bristles. Sides of thorax concolorous with dorsum, metanotum blackish.

Abdomen.—Blackish, with a very little pale pubescence, ovipositor pale yellow, short.

Legs.—Wholly pale brownish yellow from coxae to tarsi tips.

Wings.—Pale yellow, halteres pale yellow.

Described from a *type* ♂ from Lower Lebong, Darjiling Hills (4500 ft.), 2-9-vi-09 [*Howlett*], and three other ♂♂ from Port Canning, 24-xii-07 [*Howlett*]. All in the Pusa collection.

***Elaphropeza bicoloripes*, mihi, sp. nov.**

♀ Eastern Himalayas. Long. $1\frac{3}{4}$ mm.

Head.—Eyes absolutely contiguous above and below antennae for the full distance; occiput blackish with stiff hairs above and softer hairs below; vertex with three whitish ocelli and two long stiff bristles. Antennae rather large, both the first joints yellowish, wider at tips than bases, the 2nd spinose on margin, the 3rd joint brownish, elongate conical, pubescent, with very long arista. Proboscis blackish, palpi short.

Thorax.—Shining black, lateral margins in front of wing narrowly brownish, dorsum with soft short, pale hairs. Pre-apical stiff

hairs as usual. Scutellum black, shining, with two convergent apical long bristles. Sides of thorax shining black.

Abdomen.—Shining black; apparently a tendency to a little paleness at base and to a dark brown towards tip; very sparsely pubescent. Belly similar.

Legs.—Brownish yellow; hind femora, except broadly at base, fore and hind tibiae wholly dark brown.

Wings.—Pale yellowish grey, iridescent, venation normal; halteres dirty brown.

Described from a single ♀ in the Pusa collection taken by Mr. F. M. Howlett at Lower Lebong (4500 ft.), 2-9-vi-09.

ADDENDUM.

Whilst this paper was passing through the press, Prof. Bezzi has published descriptions of a number of new Empidæ from Formosa, in the Ann. Mus. Hung., vol. x (1912). These species are appended here.

Hybos major, ♂ ♀, 454.

„ *tibialis*, ♂ ♀, 455.

Syneches (s. str.) *praestans*, ♂, 458.

„ (*Epiceia*) *luctifer*, ♀, 459.

„ „ *pullus*, ♂ ♀, 460.

Parahybos incertus, ♂, 461.

„ *melas*, ♀, 461.

„ *simplicipes*, ♂ (♀?), 462.

„ *chiragra*, ♂ ♀, 463.

„ *sauteri*, ♂ ♀, 464.

Cyrtoma (*Bicellaria*) *spuria*, Fln.? (with a doubt).

Rhamphomyia rostrifera, ♂ ♀, 465.

„ *sauteri*, ♂ ♀, 466.

Empis raptoria, ♀, 468.

„ (*Coptophlebia*) *hystrichopyga*, ♂ ♀, 469.

„ „ *inclinata*, ♀, 470.

„ „ *plorans*, ♀, 470.

„ „ *velutina*, ♂, 471.

„ „ *tenuinervis*, ♂, 471.

„ (*Pterempis*) *scopulifera*, ♂ ♀, 472.

„ (s. str.) *hyalogyne*, ♂ ♀, 473.

Hilara orientalis, ♂ ♀, 474.

„ *melanochira*, ♂ ♀, 474.

Leptopeza biplagiata, ♀, 475.

Chelipoda (s. str.) *pictipennis*, ♂, 476.

„ (*Phyllodromia*) *fusciseta*, ♂ ♀, 477.

„ „ *fuscicornis*, ♂ ♀, 478.

Drapetis pubicornis, ♂ ♀, 482.

„ *brevis*, ♀, 483.

„ *femorialis*, ♀, 484.

„ (*Ctenodrapetis*) *hamifera*, ♀, 485.

- Elaphropeza pictithorax*, ♂ ♀, 486.
 „ *kerteszi*, ♂ ♀ 486.
 „ *scutellaris*, ♂ ♀ 487.
 „ *xanthocephala*, ♂, 488.
 „ *calcarifera*, ♂ ♀, 488.
 „ *marginalis*, ♂ ♀ 489.
 „ *melanura*, ♂ ♀, 489.
Tachista bistigma, ♀ 490.
Halsanalotes fuscipes, ♀, 490.
Platypalpus longirostris, ♀ 491.
 „ *caudidiseta*, ♀, 492.

Bezzi also records two European species from Formosa; *Platypalpus albiseta*, Panz., and (with a doubt) *Cyrtoma (Bicellaria) spuria*, Fln. He also includes in his list *Drapetis phaeopterus* and *distans*, Bezzi, from Papua, *Elaphropeza kerteszi*, Bezzi, from Formosa, and *E. binotata* and *lutea*, Meij., from Java, but of all these species I can trace no reference. Of his previously described species *Drapetis obscuripennis* and *divergens* he says nothing.

