

MISCELLANEOUS PUBLICATION
OCCASIONAL PAPER NO. 33

Records of the Zoological Survey of India

**Notes on the Type Collection of the Chewing-lice
(Phthiraptera, Mallophaga S. L., : Insecta)
In the Zoological Survey of India**

By

K. V LAKSHMINARAYANA

Issued by the Director
Zoological Survey of India, Calcutta

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K. V Lakshminarayana

Southern Regional Station, Madras



Edited by the Director, Zoological Survey of India, Calcutta
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NOTES ON THE TYPE COLLECTION OF THE CHEWING-LICE (PHTHIRAPTERA*, MALLOPHAGA S.L., : INSECTA) IN THE ZOOLOGICAL SURVEY OF INDIA

By

K. V LAKSHMINARAYANA*

Zoological Survey of India, Calcutta

Nitzsch was the pioneer on the systematics of the chewing-lice (Mallophaga) after Redi, but he named all the specimens he came across regardless whether they have earlier available names or not. Kellogg (1899 ; 1908a, b) and Harrison (1916) listed the species known to that date, and the latter author was first to apply the *Principle of Priority* to the nomenclature. Clay and Hopkins (1950) rightly stated that no group of insects suffered so much at the hands of authors, who were either ignorant or careless about the *Rules of Nomenclature* as in Mallophaga *s.l.* Even to-day, considerable confusion persists in the nomenclature of species in this group, because the earlier workers based them on inadequate descriptions, imperfect knowledge of contemporary literature, or erroneous host records. In recent years, Emerson (1972a, b), Hopkins (1949), Hopkins and Clay (1952a, b, 1955), Price (1970), Price and Emerson (1966, 1967) have attempted to standardise the nomenclature of the parasite species as well as their hosts. The confusion regarding Linnean or earlier names was also due to the fact that the original type material of all the species described prior to Nitzsch, was lost, or not available and the material of the last named author also incidentally was lost in Halle museum during the second world war. Clay and Hopkins (1950) suggested that this confusion can be avoided by the establishment of neotypes for species the types of which, were lost. Many recent authors in course of their revisionary studies attempted to establish the neotypes.

* *Note.*—Phthiraptera Haeckel 1896, *sensu* Weber, 1939 is being used to cover both the Chewing-lice (Mallophaga Nitzsch, 1819) and the sucking lice, (Anoplura, Leach 1815, Siphunculata Latreille 1825) (for detailed discussion, cf. Lakshminarayana, 1976). However, certain authorities prefer to separate the two groups of lice into two orders viz. Mallophaga, and Anoplura or Siphunculata. Siphunculata is preferable over Anoplura which sometimes was used to cover both groups of lice in much the sameway as Phthiraptera.

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The *International Code of Zoological Nomenclature* (Anonymous, 1961), Art. 75 clearly rules out that "a neotype is to be designated only in connection with revisory work, and then only in exceptional circumstances when a neotype is necessary in the interests of stability of nomenclature" The "exceptional circumstances" are "those cases in which a neotype is essential for solving a complex zoological problem, such as the confused or doubtful identities of closely similar species for one or more of which no holotype, lectotype, or syntype exists" It has also been found that some of the earlier authors did not designate the types, and if designated, failed to explicitly state where the type material was deposited. Some specialists like Kellogg, for example, deposited the material in more than one place, (scientifically a more sound principle, because perchance the type material at the place of the author is lost, in such calamities like war (Halle museum coll.), floods (part of the Z. S. I. colls.), earthquakes (California University Kellogg's types), fire etc., still part of it will be available at other places. But the draw back in such cases is, it involves lot of pain-staking effort on the part of a revisor to locate whether the types are in existence or lost, unless the repositories are clearly referred to by the original author. For example, Emerson (1960) took more than ten years in locating the type material of Herbert Osborn's Mallophaga and even then could only locate 34 species, as against 41 described by that author. A problem of this kind can only be solved, if different repositories/or specialists, publish periodically the list of type collections they had in possession. Hopkins and Clay (1952a, b, 1955) indicated the rich type material the British Museum (Natural History), London, has in possession by an asterisk. Likewise, Emerson (1959, 1960, 1961, 1965, 1967) published records of Osborn, Kellogg and Carriker's types; and Goellner-Scheiding (1973) of material in Museum für Naturkunde an der Humboldt Universität, Berlin, to quote a few. In other cases, the authors have of late, taken care of mentioning the repositories.

In this paper, the type material of Kellogg and Paine (1914) and such other donations to Z. S. I., made by specialists like Hopkins and Clay, etc., not only are listed, their relative status, and comments on the species are outlined, but also attention is invited to some of the more recent papers wherever necessary. This paper incidentally forms the fifth in the series on Kellogg's type

collection, the other four being Carriker (1957) and Emerson (1958, 1961, 1964). It is of interest to note that of the 13 new species described from India and adjacent countries by Kellogg & Paine (1914) the type slides of four species were lost in Varuna floods in Varanasi in 1945.

Hopkins and Clay (1952) stated that an adequate classification of Mallophaga *s.l.*, has yet to be devised, although some attempts were made from time to time, as for example Eichler (1963), and Clay (1970), (cf. Lakshminarayana, 1970b, 1976). The genera, and species have been arranged in alphabetical sequence in the respective families (followed broadly after Hopkins and Clay, 1952). The full list of synonymies of the genera *et* species have not been cited since they can easily be found in Hopkins and Clay (1952a, b, 1955), Emerson (1972a, b), Price (1970), Price and Emerson (1966, 1967), besides the more recent revisionary works, where the authors have provided with long lists of the synonymies. As in all the other groups, in Phthiraptera also, both the conservative lumper school, and radical splitter schools are found, and therefore, the status of a genus and species varies from time to time and according to the taste of the individual specialist. In assessing the status of Z. S. I., type material is concerned, as far as possible it has been based after the more recent revisionary works. In the following list only the appropriate name of the genus and species and its abbreviated original reference alone were cited for the reasons already stated. In the references, only those papers that have been explicitly quoted in the text are given and most of the others can be found in Eichler (1963), Eichler *et al.*, (1969, 1973) Kéler (1960), and Lakshminarayana (1972, 1975, 1976). No attempt has been made to list all recent revisionary works on different genera and species, because they can be easily located either in the above bibliographical works or in publications like *Zoological Records*, *Index Catalogue of U. S. Dept. Agriculture*, etc.

The earlier type material of chewing lice in the Zoological Survey of India (the successor of the Indian Museum collections) was registered in an accession register numbered 16. The entries were later transferred to registers numbered H8 and H12 (registers of miscellaneous insect orders in the Entomology Division); more recently, a separate register numbered H16 was opened exclusively

for the order Phthiraptera and all the concerned entries from H8 and H12 registers have been transferred in to it. Therefore, the new number is cited by the side of the concerned type species and the corresponding old numbers are provided after the legend in parentheses. In the remarks, the distribution of the species in India and adjacent countries is not given, since these details have been given elsewhere (Lakshminarayana, 1979). The species mentioned in this paper are serially numbered in bold print, and those whose types were lost are indicated by an asterisk.

Order PHTHIRAPTERA Haeckel, 1896 *sensu* Weber, 1939
(partim) (= MALLOPHAGA S.L.)

Suborder AMBLYCEROPHTHIRINA Lakshminarayana, 1976
(= AMBLYCERA Kellogg, 1896)

Family GYROPIDAE Kellogg, 1908

Gliricola Mjöberg, 1910

Gliricola Mjöberg, 1910. *Zool. Anz.*, 35 : 292.

1. 123/H16. **Gliricoia porcelli** (Schrank), 1781 (*Pediculus*). *Enum Ins. Austr. indig.* : 500, pl. 1, fig. 1. (Neoparatype 1 ex. male). (Old No. 1690/H8). Off (*Mus porcellus*) = *Cavia porcellus* (Linne), Brazil ; Rio de Janeiro, F. L. W. 82.

Remarks.—The neotype was designated by Clay & Hopkins (1954 : 254), and the Z. S. I., material was donated by these authors. F. L. W. in the legend refers to Dr. F. L. Werneck. Emerson (1972b) listed it as the only species available in N. America.

Family MENOPONIDAE Mjöberg, 1910

Allocolpocephalum Qadri, 1939

Allocolpocephalum Qadri, 1939. *Indian J. Ent* 1 : 66. See *Colpocephalum*.

- 388-389/H16. **Allocolpocephalum frugilegi** Złotorzycka, 1964. *Acta parasit. pol.*, 12 : 186. fig. 9a & photo 13 *Nomen novum pro Colpocephalum subaequale* Burmeister, 1838. See *Colpocephalum*.

Colpocephalum Nitzsch, 1818

Colpocephalum Nitzsch, 1818. *Germar's Mag Ent.*, 3 : 298.

Allocolpocephalum Qadri, 1939, *Indian J. Ent.*, 1 : 66.

2. 388-389/H16. **Colpocephalum (Allocolpocephalum) frugilegi** (Złotorzycka), 1964, (*Allocolpocephalum*), *Acta parasit. pol.*, 12 : 186, fig. 9a & Photo 13. *Nomen nudum pro Colpocephalum subaequale* Burmeister, 1838. (Neoparatypes 1 ex. male (388/H16.), 1 ex. female (389/H16). Off *Corvus frugilegus* Linne, Poland : nr Wrocław, Opatowice, 26. xi. 1951, Dr Mrs J. Złotorzycka, 1/C/9 & 1/C/9-12.

Remarks.—Burmeister's *Colpocephalum subaequale* was described on material from two hosts, viz., *Corvus f. frugilegus* Linne, and *Corvus corax corax* Linne, and received new names thrice, viz., as *C. fregili* Denny (1842), *C. laurencei* Ansari (1955), and *Allocolpocephalum (Allocolpocephalum) frugilegi* Złotorzycka (1964). *Allocolpocephalum* Qadri (1939) was based on type species *C. semicinctum* Rudow which is now considered conspecific with *C. fregili* Denny, 1842. Hopkins and Clay (1952) included *C. fregili* Denny under the genus *Colpocephalum* and Price & Beer (1965) redescribed the species. *C. laurencei* was considered conspecific with *C. fregili* Denny (Price & Beer, 1965 ; Price & Emerson, 1966). The two latter authors also treated *C. frugilegi* as inseparable from *C. fregili*, although Złotorzycka (1964) restricted the name *C. frugilegi* to specimens off *Corvus frugilegus*, since Burmeister drew his material for description from composite hosts. *Corvocephalum* Conci (1942) based on *C. subaequale* also incidentally is synonymous with *Colpocephalum s. str.* Emerson (1972b) followed Price & Emerson (1966). Therefore, the neoparatypes established for *A. frugilegi* Złotorzycka, 1964, for *C. subaequale* off *C. frugilegus* and donated to the Z.S.I. collections during the present author's visit to her laboratory, had to be considered as *C. fregili* Denny, since it has priority over the other two, viz., *laurencei* Ansari, and *frugilegi* Złotorzycka.

Present status.—*Colpocephalum fregili* Denny, 1842.

- * 3. 643/H16. *Colpocephalum thoracicum* Kellogg & Paine, 1914. *Rec. Indian Mus.*, 10 : 230, fig. 3. (Type 1 ex. female), (Old No. 5179/16).
Off *Pavo muticus* Linne, *Burma*, det. Drs V. L. Kellogg & J. H. Paine.

Remarks.—This species was described by Kellogg & Paine (1914) apparently from a juvenile or teneral female example from the green peafowl, *Pavo muticus* Linne from Burma. This slide was registered in register 16, but the entries were not transferred into H8 register. In Z. S. I. collections, there is a slide without a coverslip and the specimen, with a label bearing the collection particulars, but without a name label. The coverslip together with the specimen and the label bearing the name of the species might have been lost in the R. Varuna floods, and therefore, any one who refers either to the type-slide cabinet or the H8 register will not be able to get any idea as to the existence or non-existence of this type. In fact, Price & Beer (1964) while redescribing the species basing on a

male and female from the type host from Siam (Thailand), remarked that Dr. Miss Theresa Clay did not find the type in the Indian Museum collections, and the reasons are obvious. In the new H16 register, the slide has been formally re-registered and indicated that the type was lost, to facilitate the designation of the neotype. The British Museum (Natural History), London, lent a slide through the courtesy of Dr (Miss) Clay with the following details : "*Colpocephalum thoracicum* Kellogg & Paine, 1914, REE, Dr *Robert E. Elbel*" on one label & "*Pavo muticus*, Thailand : Nan, Sa Banphahang, 8 Dec. 1961, Mr *Kitti Thonglongya*, British Museum 1965-630, v-139" on the other label, for study. This material and the material available with Prof. Price in the Department of Entomology, Fisheries, & Wild Life, Minnesota University, St Paul, can be designated as neotype and neoparatypes.

C. thoracicum K. & P. was redescribed in detail in Price & Beer (1964). It has a counter part on the Indian peafowl, *P. cristatus* Linne described as *C. tausi* (Ansari, 1961). This latter species was also redescribed in Price & Beer (1964) and was discussed in Lakshminarayana (1970b) basing on four females available in Z. S. I. collections. The relative differences were provided in Price & Beer (*op. cit.*). The posterior abdominal segments of the females showing the differences in the two species are figured (figs 1a & 2b) on the basis of the British Museum and Z. S. I. material. The male genitalia of *C. thoracicum* not figured in entirety in Price & Beer (1964) are now figured (fig. 1b); the male of *C. tausi* is however, not available for the present author, but a figure of male genitalial selerite and penis (Fig. 2b) taken from Price & Beer (1964) is provided for comparison.

Prof. Price will be approached for further action in the matter of designation of the neotypes and neoparatype. Since the original description was based on the female, the female will have to be designated as the neotype and all the rest as neoparatypes. **

Dennyus Neumann, 1906

Dennyus Neumann, 1906. *Bull. Soc. zool. Fr.*, 20 : 60.

Nitzschia Denny, 1842 (*nec* Baer, 1827). *Mon. Anopl. Brit.*, : 230.

** Since designated. (Cf. Lakshminarayana, K. V. & Price, R. D. 1980. *Oriental Ins.*, 14 (3) : 383-386.)

4. 65/H16 ; 641-642/H16. *Dennyus minor* (Kellogg & Paine), 1914 (*Nitzschia*). *Rec. Indian Mus.*, 10 : 242, pl. XV fig. 10. (Lectotype 1 ex. female [641/H16] ; Paralectotypes, 1 ex. female (642/H16) & 2 exs females (65/H16)(= 5140/H16 = 1044/H8).

Off (*Cpyselus affinis*) *Apus affinis affinis* (J. E. Gray), India : Calcutta, 12. iv. 1910, coll. *N. Annandale* (Old Nos. 5180/16 ; 1044/H8).

Remarks.—Kellogg & Paine (1914) described the species based on “males and females” from Calcutta, figuring the female. In H8 register only the slide bearing register number 1044 (now 65/H16) was registered. Two slides bearing now register numbers 641-642/H16 were examined by Dr Theresa Clay in 1952. The males seem to have been lost in the Varuna flood, but Ledger (1971) reported that he has examined a co-type in Ferris collections in the University of California, the deposition of which is neither mentioned by the authors, nor in the Z. S. I., registers, or in Emerson’s series of papers.

Ledger (1971) in his revision of the genus considers that this species comes very close to *D. truncatus* (Olfers) and probably conspecific with it, quoting also Bedford in support of his statement. Both *D. truncatus* and *D. minor* are, however, conspecific with *D. hirundinis* (Linne) *s.l.*, which Ledger (op. cit.) redescribed and figured. The neotypes for the latter species were designated by Clay & Hopkins (1950 : 267). Emerson (1973) reported it on *A. acuticaudatus* and *A. affinis* from Thailand and S. E. Asia.

Lectotype and paralectotypes as noted above are herewith selected for taxonomic purposes for *D. minor* (K. & P.).

Present status.—*Dennyus hirundinis* (Linne).

Menacanthus Neumann, 1912

Menacanthus Neumann, 1912. *Archs Parasit.*, 15 : 353.

5. 56/H16 & 644/H16. *Menacanthus monochromateus* (Kellogg & Paine), 1914 (*Menopon*). *Rec. Indian Mus.*, 10 : 240, fig. 1 (Old Nos. 5120/16 ; 1035/H8).

Off (*Graculus graculus*) *Pyrrhocorax graculus* (Linne), China : Tibet, (Khambajong) Khamba Dzang, det. Drs V. L. Kellogg & J. H. Paine. (Lectotype 1 ex. female). (No. 56/H16 = 1035/H8).

Off *Garrulus lanceolatus* Vigors, India : Simla, det. Drs V. L. Kellogg & J. H. Paine, Type 1 ex. female). (644/H16 = 5120/16). (Type specimen lost).

Remarks.—Kellogg & Paine (1914) described this species on the basis of two females, one from *Garrulus lanceolatus* (Simla) and the other from *Pyrrhocorax graculus*. It is curious to note that the material from the former host was not registered in H8 register, and the entry in the latter register pertains to the Tibet material, but the reference given against when checked in the original register 16, the data agrees with Simla material. Dr Theresa Clay examined the slide now numbered 56/H16 and referred it to the genus *Menacanthus* and the species was held valid in Hopkins and Clay (1952). The slide bearing the number 5120/16 (now renumbered as 644/H16 to avoid confusion) is available in Z. S. I. general collections without a coverslip or specimen, which might have been lost in Varuna floods. The slide renumbered 56/H16 is herewith designated as the Lectotype for *Menacanthus monochromateus* (K. & P.), for taxonomic purposes, although in a recent revision Zlotorzycska (1965) while recording the species off *Garrulus G. glandarius* (Linne) fixed the *G. glandarius lanceolatus* as the type host, and presumed the other specimens off *P. graculus* may belong to an unknown species; Price (1975) opined that it is conspecific with *M. eurysternus* (Burmeister) after examining a large series of material from different parts of the world, and on several hosts. Emerson (1972b) reported the species from *Pica nuttalli* (Audubon) from North American hosts.

Present status.—*Menacanthus eurysternus* (Burmeister, 1838)

Menopon Nitzsch, 1818

Menopon Nitzsch, 1818. *Germar's Mag. Ent.*, 3 : 299.

41/H16. *Menopon insoletum* Kellogg & Paine, 1914. *Rec. Indian Mus*, 10 : 238, fig. 4. See *Myrsidea insoletum* (K. & P.).

56/H16. *Menopon monochromateus* Kellogg & Paine, 1914. *Rec. Indian Mus.*, 10 : 240, fig. 1. See *Menacanthus monochromateus* (K. & P.) (now *M. eurysternus* (Burmeister)).

Myrsidea Waterston, 1915

Myrsidea Waterston, 1915, *Entomologist's mon. Mag.*, 51 : 12.

6. 114/H16. *Myrsidea hopkinsi* Bedford, 1939. *Onderstepoort J. vet. Sci. Anim. Ind.*, 12 : 132, fig. 5. (Paratypes 3 exs males, 2 exs females). (Old No. 1681/H8).

Off (*Corvultur albicollis*) *Corvus albicollis* (Latham), Uganda; Mbale, Bugwere, 4. vi. 1939, Mr G. H. E. Hopkins.

Remarks.—The specimens in the Z. S. I. collections described by Dr Bedford might have been obtained through the courtesy of Mr Hopkins. Hopkins and Clay (1952) listed in addition to the species under discussion, the following species from the type host : *M. nigra* (K. & P.) and *M. sjoestedti* (Kellogg). In a recent revision of *Myrsidea* species from African Corvidae, Klockenhoff (1975) included only *M. obovata nigra* (K. & P.) from the type host. *M. obovata* (Piaget) was described from *Corvus albus*; *M. sjoestedti* referred to above together with *M. subanaspila* Bedford were also known on the latter host species. Either all these species may ultimately be proved conspecific or possibly more than one species harbour the hosts.

- * 7. 41/H16. *Myrsidea insolita* (Kellogg & Paine), 1914. (*Menopon*) *Rec. Indian Mus.*, 10 : 238 fig. 4. (Type 1 ex. male, 1 ex. female). (Old Nos. 5093/16; 1020/H8).

Off (*Corvus insolens*) *Corvus splendens insolens* Hume, Burma : Mergui, det., Drs V. L. Kellogg & J. H. Paine.

Remarks.—Kellogg & Paine (1914) described the species basing on the male and female from the type host from Burma. One slide with the details of the host and locality bearing a registered number 1020/H8 is available in Z. S. I. collection. The mounting medium (possibly Canada Balsam) was spread over the coverslip. No specimens are visible either within the field of coverslip, or in the spread out resin. We have to infer that the specimens mounted on this slide are lost. It is also not possible to state, whether a single example was mounted on this slide or both the examples are mounted and lost. The species is however valid, and designation of a Neotype will be necessary.

Nitzschia Denny, 1842 (*nec* Baer, 1827)

Nitzschia Denny, 1842 (*nec* Baer, 1827). *Mon. Anopl. Brit.*, : 230. See *Dennyus* Neumann, 1906.

65/H16. *Nitzschia minor* Kellogg & Paine, 1914. See *Dennyus minor* (K. & P.).

Family RICINIDAE Enderlein, 1921

Ricinus de Geer, 1778

Ricinus de Geer, 1778. *Mem. Hist. Ins.*, 7 : 69.

150/H16. *Ricinus canis* de Geer, 1778. See *Trichodectes canis* (de Geer).

8. 122/H16. *Ricinus dolichocephalus* (Scopoli), 1763 (*Pediculus*). *Ent. Carniolica* : 382. (Neoparatype 1 ex. female) (Old No. 1689/H8).

Off (*Coracias oriolus*) *Oriolus o. oriolus* (Linne), *Cyprus* : Near Limassol, 20. v. 1946, Mr G. Mavromowstakis.

Remarks.—The neotype was designated for this species in Clay & Hopkins (1951 : 13). Rheinwald (1968) thoroughly revised the genus and the species was redescribed in detail. Zlotorzycska (1965) quoted from Clay & Hopkins that the neotype ♂ and 'neoallotypes' ♀ are from N. E. Poland, though, she herself not recorded the species.

Family LAEMOBOTHRIIDAE Mjoeberg, 1910

Eulaemobothrion Ewing, 1929

Eulaemobothrion Ewing, 1929. *Man. ext. Parasites* : 189. (cf. Lakshminarayana, 1967. *Oriental Ins.*, 1 (3 & 4) : 257-260, and Lakshminarayana, 1970. *Oriental Ins.*, 4 (2) : 131-142).

9. 659-663/H16. *Eulaemobothrion biswasi* Lakshminarayana, 1967. *Oriental Ins.*, 1 (3 & 4) : 259, figs. 1, 4, 7, 8, 11, 15. (Holotype 1 ex. male, (659/H16), Paratypes 1 ex. female, 660/H16), 4 ex. (.) (661-663/H16).

Off (*Porphyrio poliocephalus poliocephalus*) *Porphyrio porphyrio poliocephalus* (Latham), *India* : West Bengal, Nalbani (Salt Lakes) (Host coll. Dr B. Biswas, & Mr D. K. Ghosal) 4. i. 1967, coll. Dr K. V. Lakshminarayana.

Remarks.—This species has been described by the present author in detail (Lakshminarayana, 1969). In the British Museum (Nat. History) London, the species from the type host is available with data as follows : 1 ex. ♂, from Deccan, Feb. 1937, Dr. R. Meinertzhagen colls. (No. 8609), and 1 ex. ♂, nymph from Rajasthan, Feb. 1937, Dr. R. Meinertzhagen colls. (No. 8849), and 2 exs. ♀ ♀, from (Ceylon) Sri Lanka, Dr. R. Meinertzhagen colls., (No. 2060), which the author has examined.

Laemobothrion Nitzsch, 1818

10. 118/H16. *Laemobothrion circi* (Fourcroy), 1785 (*Pediculus*), *Entomologiste*, 518. *Nomen novum* for Geoffroy's *Pediculus circi, fuscus, oblongus* (Neoparatypes 1 ex. male, & 1 ex. female) (Old No. 1685/H8).

Off (Busard des marais) *Circus ae. aeruginosus* (Linne), *Kenya* : Naivasha, iii. 1939.

Remarks.—The neotype was designated for the species in Clay & Hopkins (1954 : 258-263). Nelson & Price (1965) in the revision of the genus, have shown that *L. circi* (Fourcroy) as conspecific

with *L. maximum* (Scopoli) (the type species) and several other specific names given from time to time for specimens taken off from different hosts. These two authors have also examined other Neoparatype material from elsewhere. Emerson (1972b) reported it from several hosts in N. America and also from Malaya and Thailand (Emerson, 1973). This species is quite common in our country and Pakistan (Lakshminarayana, 1970b).

Present status.—*Laemobothrion maximum* (Scopoli).

Suborder ISCHNOCEROPHTHIRINA Lakshminarayana, 1976
(=ISCHNOCERA Kellogg, 1896)

Family PHILOPTERIDAE Burmeister, 1838

Acidoproctus Piaget, 1878

Acidoproctus Piaget, 1878, *Tijdschr. Ent.*, 21 : 178.

11. 151/H16. *Acidoproctus rostratus* (Rudow), 1866 (*Ornithobius*), *Z. ges. Naturw.*, 27 : 465. (Neoparatypes 3 exs. females). (Old No. 1718/H8).
Off *Dendrocygna viduata* (Linne), *S. Africa*: Transvaal, Mr G. H. E. Hopkins colls.

Remarks.—The neotype was designated by Carriker (1949 : 377-78). The donation of the material was from Mr Hopkins. Timmermann (1962) discussed this species in his review of *Ornithobius*—Complex. This species is represented in Z. S. I. collections. Emerson (1972a) reported it on *D. bicolor* (Vieillot) from N. America.

12. 152/H16. *Acidoproctus taschenbergi* Hopkins, 1938. *Ann. Mag. nat. Hist.*, (11) 2 : 196. (Paratypes 1 ex. male, 3 exs females). (Old No. 1719/H8).
Off (*Chenolopex aegyptiacus*) *Alopochen aegyptiaca* (Linne), *Uganda*: Nsadzi Is., xi. 1932, Mr T. W. Chorley.

Remarks.—The paratypes were donated by the author of the species. Tendeiro (1958) reported it from Angola on *Plectropterus g. gambensis* (Linne).

Ardeicola Clay, 1936

Ardeicola Clay, 1936, *Proc. zool. Soc. Lond.* : 615.

13. 154/H16. *Ardeicola ciconiae* (Linn.), 1758 (*Pediculus*). *Syst. Nat. ed.*, 10 : 613. *Nomen novum* for “*Frisch Ins.*, 8 : 9, taf. 6.” (Neoparatypes 2 exs males, 1 ex. female). (Old No. 1721/H8).
Off (*Ardea ciconia*) *Ciconia C. ciconia* (Linn.), *Uganda*: Bombo, 13. iii. 1934, Mr A. W. Williams.

Remarks.—The neotype was designated by Clay & Hopekins (1950: 253). Tendeiro (1955) figured the species and a detailed redescription was provided in Kumar & Tandan (1971) in their revision of the genus.

Brueelia Kéler, 1936

Brueelia Kéler, 1936, *Arb. morph. taxon. Ent. Berl.*, 3 : 257.

14. 645-651/H16. *Brueelia biguttata* (Kellogg & Paine) 1914 (*Nirmus*): *Rec. Indian Mus.*, 10 : 234, pl. 14 fig. 2. (Lectotype 1 ex. male) (645/H16). Paralectotypes, 1 ex. male (646/H16 = Old No. 5130/16) 1 ex. female (650/H16). 1 ex. female (651/H16 = Old No. 5127/16).

Off (*Graculus graculus*) *Pyrrhocorax g. graculus* (Linne), *China*: Tibet, (Khamba Dzang, det. Drs V. L. Kellogg & J. H. Paine, (3 exs, 645-646/H16); *Afghanistan*: Little Pamir, det. Drs. V. L. Kellogg & J. H. Paine (650-651/H16). Specimens off *Nucifraga multipunctata* Gould, *India*: Gilgit, N. W. Himalaya (647/H16 = Old No. 5125/16): *Graculus graculus*, Sarhad, 10450, *U. S. S. R*: Pamirs, (648/H16 = Old No. 5126/16); *Pakistan*: Chitral (649/H16 = Old No. 5127/16) labelled as "Cotypes" in the register 16, were lost in floods.

Remarks.—Kellogg & Paine (1914) described the species based on "males and females" from *Graculus graculus* Linne (now *Pyrrhocorax g. graculus*) from "Gilgit, Sarhad, and Little Palmir, N. E. Frontier of India; Khambajong, Tibet", and also from *Nucifraga multipunctata* Gould from "Gilgit" Ansari (1956) examined two male syntypes from *P. graculus* (Linne) from "Khambajon (g) (Tibet)" on slide Nos. 5130/16 and labelled one as "Type" and the other "Lectotype" The one with the "type" label has another specimen which is partially damaged. In the redescription of the species, Ansari (*op. cit.*) incorrectly gave the register No. as 513/16; instead of 5130/16. In the Register No. 16, there is an entry "*Brueelia biguttata* (K. & P.), Lectotype made by Dr. A. R. Ansari, *vide* Miss T Clay, British Museum, London, letter dated 30. 12. 1952, and another specimen on the same slide mounted separately now designated as "Type". These entries were not recorded in H8 Register. In 16 Register, entries numbered 5125, Gilgit, N. W. Himal., on *Nucifraga multipunctata* Gould; 5126, from Sarhad, 10450, Pamirs, on *Graculus graculus*, 5128, female, Chitral *Graculus graculus* designated as "Type" were made. The specimens though labelled with the name of the species, they have neither been accessioned in H8 register, nor the specimens except those pertaining to 5127/16 are present in Z. S. I. collections. They have to be treated as lost in the Varuna floods.

In the new register H/16, entries of the two Lecto-and Paralectotype specimens examined by Ansari have been posted, along with the two female examples from Little Palmir (Entry No. 5127/16). The latter examples also have the status of Paralectotypes, since the slide is also from the same syntype series of Kellogg & Paine. Złotorzycka (1964) transferred the species to *Corvonirmus* Eichler, 1944.

Cummingsiella Ewing, 1930

Cummingsiella Ewing, 1930 *Proc. biol. Soc. Wash.*, 42: 125. *Nomen novum* for *Dollabella* Cummings (*nec* Giebel).

15. 162/H16. *Cummingsiella ovalis* (Scopoli), 1763 (*Pediculus*). *Ent. Carniolica* : 384. (Neoparatypes 8 exs males, 12 exs females). (Old No. 1729/H8).

Off (*Scolopax arguata*) *Numenius a. arguata* (Linne), *Britain* : Hoy, Orkney Is., 1. ix. 1938, coll. Dr R. Meinrtzhagen.

Remarks.—The neotype was designated in Clay & Hopkins (1951 : 21), Emerson (1972a) listed the species in North American Mallophaga, and this author (Emerson, 1973) also recorded it on the type host from Asia.

Docophorulus Eichler, 1944

Docophorulus Eichler, 1944, *Stettin. ent. Ztg.*, 105: 80.

Hopkins & Clay (1952) consider this genus inseparable from *Philopterus*.

486/16. *Docophorulus cumulatus* Złotorzycka, 1964. *Acta parasit. pol.*, 12 (37) : 410. See *Philopterus*.

Docophorus Nitzsch, 1818

Docophorus Nitzsch, 1818. *Germar's Mag. Ent.*, 3: 189. An absolute synonym of *Philopterus*.

29/H16, & 31/H16. *Docophorus thryptocephalus* Kellogg & Paine, 1914. *Rec. Indian Mus.*, 10: 232, pl. 14 fig. 1. See *Philopterus*.

Goniocotes Burmeister, 1838

Goniocotes Burmeister, 1838, *Handb. Ent.*, 2: 431.

652/H16. *Goniocotes indicus* Kellogg & Paine, 1914. *Rec. Indian Mus.*, 10: 218, pl. 14 fig. 4. See *Goniodes*.

16. 668-669/H16. *Goniocotes mayuri* Lakshminarayana & Emerson, 1971. *Oriental Ins.*, 5 (1): 98, figs. 5-9. (Paratypes 2 exs males).

Off *Pavo cristatus* Linne, *Nepal* : Parasi Dist., Nawalpur. Tamasi-pur, 1 male (together with a female) (Dr K. C. Emerson colls.) (668/H16); *India* : Assam, Goalpara Dist., Jamduar, 24. iii. 1957, coll. Dr B. K. Tikader (669/H16).

Remarks.—This species has often been confused with its counterpart of a sympatric pair, *G. parviceps* Piaget, and can be distinguished at a glance chiefly by the lanceolate seta on the first antennal segment, and the symmetrical genitalia. The species is well described by Lakshminarayana & Emerson (1971). Recently, Lakshminarayana & Emerson (1978) discussed the evolutionary aspect of the species under discussion as well the host evolution. The holotype is present in the British Museum (Natural History), London, since the main description was drawn from the material available there. No female paratypes have been designated, because the females of *G. mayuri* and *G. parviceps*, are difficult to separate, although the descriptions of the respective females are provided in the papers referred to above. Although we have followed Hopkins and Clay (1952) in treating these two species under the genus *Goniocotes*, but from the general facies especially the antennae, these two species should be transferred to the genus *Goniodes*.

656-657/H16. *Goniocotes nirmoides* Kellogg & Paine, 1914. *Rec. Indian Mus.*, 10 : 219, pl. 15 fig. 5. See *Lagopoecus*.

Goniodes Nitzsch, 1818

Goniodes Nitzsch, 1818, *Germar's Mag. Ent.*, 3 : 293.

17. 168/H16. *Goniodes hopkinsi* Clay, 1940 *Proc. zool. Soc. Lond.*, (B), 110 : 26, fig. 16-17. (Paratypes 2 exs females). (Old No. 1735/H8).
Off *Guttera edwardi sethsmithi* Neumann, *Uganda* : Budongo.

Remarks.—The species was described and figured by Clay (1940) and the specimens are her donation to Z. S. I.

18. 652/H16. *Goniodes indicus* Kellogg & Paine, 1914, (*Goniocotes*).
Rec. Indian Mus., 10 : 218, pl. 4. (Holotype 1 male). (Old Nos. 5182/16 ; 989/H8) :

Off (*Arboricola rufigularis*) *Arborophila r. rufogularis* (Blyth), *India* : Assam (E. Hind. Jorpokri) E. Himalaya, Jorpakuri (7600'), coll. Dr N. Anandale det. Drs V. L. Kellogg & J. H. Paine. Re det. Dr (Miss) T. Clay.

Remarks.—Kellogg & Paine (1914) described the species basing on a single male specimen from *Arboricola rufigularis* (now *Arborophila r. rufigularis*). The slide bearing Register No, 989/H8 (=5182/16) has been labelled by the authors as "*Goniodes processus* K. & P., and *Goniocotes indicus* K. & P., Type" A reference to Register No. 16 shows the species name as "*Lipeurus rubrofasciatus* ♀", which is also present in Z. S. I. collection.

Dr Theresa Clay examined the slide and separated the ♂ *Goniodes indicus* and the ♀ *G. processus* and commented on the slide containing the latter species as "with ♂ *Goniodes indicus*. Unrecognizable ♀ Not mentioned in K. & P."

Goniodes processus K. & P. described, on the basis of two males (Kellogg & Paine, 1914 : 226) differs markedly from *Goniodes indicus* (Kellogg & Paine, 1914 : 218, pl. 14 fig. 4) in the form especially the head, antenna, and genitalia. The type specimen is partially damaged. Clay (1940) studied specimens from *Arborophila r. rufogularis* (Blyth) from Sikkim (India), *A. r. tickelli* (Hume) from Burma, *A. t. torqueola* (Valenciennes) from Sikkim (India), *A. t. batemani* (Ogilvie-Grant) from Burma, and *A. t. millardi* (Stuart Baker) from Central Himalaya. This author figured the ♀ head, terminal abdominal segments, and also the ♂ genitalia and commented that the latter as asymmetrical. A slide with a ♂ and 3 ♀ ♀ examples from *A. r. tickelli* from Tennasserim, Oct. 1897, coll. Dr R. Meinerzhagen (B. M. N. H. 3601) was loaned for study, and the ♂ head antenna genitalia and ♀ antenna, and posterior abdominal segments are also now figured (Fig. 3a-c). The ♂ antenna differs slightly from that of the ♀

Emerson (1973) reported it from Thailand on the type host.

*19. 11/H16. *Goniodes megaceros* Kellogg & Paine, 1913, *Rec. Indian Muss.*, 10 : 227, pl. 15 : 227, figs. 8 & 8a. (Holotype 1 ex. female). (Old Nos. 5146/16 ; 990/H8).

Off (*Lophophorus impeyanus*) *Lophophorus impejanus* (Latham), India : Calcutta Zoo.

Remarks.—The species has been described on the basis of a single male from a zoo garden host bird. The slide is not available in the Z. S. I. collections. Possibly, it was lost in the Varuna floods. The name entered against 990/H8 refers to *G. megaceros* stating that its original number is 5146/16. The Regd. No. 5146/16 however, refers to *Goniocotes nirmoides* (now *Lagopoccus heterotypus* (Megnin)) also from the same host. The figures provided for these two species indicate that they are different species altogether. Possibly the material consisted of composite species.

Several examples (in alcohol) of *G. eurygaster* Piaget from the same host were mounted and examined by the present author

(Lakshminarayana, 1970b). No ♂ specimens of *G. megaceros* were encountered in that lot. This material was collected on a captive *L. refluens* (now *L. impejanus*), from Calcutta Zoo, in 1914; although this species was reported by Kellogg & Paine, since Calcutta host was not mentioned by them, obviously this particular material has not been examined by them. Kéler (1939) included the species in his key. Clay (1940) figured the male of *G. megaceros* and *G. eurygaster* and they conspicuously differ from each other. This author further remarked that females of the latter are known, while those of the former are unknown, or the females of both species are so close that they are inseparable for the present. Cummings (1916) identified a single male off *L. refluens*, as *G. megaceros* and commented on the male genitalia figured by Kellogg & Paine.

For the taxonomic purposes this species (*G. megaceros*) has been re-entered in the new H/16 register, with a remark that the type was lost. Since the type slide is no more available, a neotype needs to be selected for the species, and perhaps the material available in the British Museum (Natural History) and studied by Clay (1940) would well serve the purpose. One slide (BMHN 3628) with a ♂ & '♀' examples off *Lophophorus impejanus* (Latham), Sikkim, Coll. Dr. R. Meinertzhagen, labelled as ♂ *G. megaceros* was lent for study, of which the male is herewith designated neotype, while the female example on that slide is referable to *G. eurygaster* Piaget (see discussion below). The male antenna and genitalia are also figured (Figs. 4a, b). The diagnostic characters were already outlined in Clay (1940). There is another male with the same history in the British Museum (Natural History) which is designated as a neoparatype.

Clay (1940) while discussing the species stated that five female examples are collected along with the two males (now designated as neotypes) do not differ from the females of *G. eurygaster*. The material from (*L. refluens*) *L. impejanus* referred to above contain nine ♂♂ examples, along with seven ♀♀ examples, and fifteen nymphs. Of these, the males and six female examples undoubtedly belong to *G. eurygaster* Piaget *sensu* Clay (1940). But one female example shows a distinct 'bifid' structure in the form of an inverted 'V' (Fig. 4d) which is not apparent in *G. eurygaster*. Further, the male antenna, genitalia and posterior abdominal segments (Fig. 4e) and the 'valve' differ distinctly from the corresponding ones in *G. eurygaster* (Figs. 5a, b). This female example possibly belongs to *G.*

megaceros K. & P., though no *G. megaceros* males are encountered in this lot, and the former species seems to be rare as compared to *G. eurygaster*. Another factor which prompts the present author to conclude that this particular female as that of *G. megaceros* is that the latter species has been included in Group B in Clay (1940), where the females of other included species possess the 'bifid' structure. In the shape of the structure of the valves the female of *G. megaceros* approach very nearly *G. spinicornis* (Nitzsch) (Fig. 6) from *Tragopan satyra* (Linne), but contamination of the collection under study is ruled out because no material of *G. spinicornis* was collected or processed along with the material under discussion. In Z. S. I. collections there is a single male and female determined by Prof. Kellogg & Nakayama (1915) as *G. bicuspidatus* Piaget (now *G. spinicornis* (Nitzsch) from *Tragopan satyra* (Linne), but in the overall size and the shape of the bifid structure, the female differs considerably from *G. megaceros* female. Therefore, the present author strongly considers that the single large female with the bifid structure and and straight 'valve' undoubtedly belongs to *G. megaceros*, which is so far remained unknown and designates it as the neoparatype.

The details of the collection of the neotype and neoparatypes are as follows :

Neotype (δ) : One example from *Lophophorus impejanus* (Latham), *India* : Sikkim, ... xi. 1901, Coll. *Dr R. Meinertzhagen* (with a female of *G. eurygaster* Piaget) (BMNH No. 3628); Neoparatypes : one δ example with the same data as the neotype ; one ♀ example from (*Lophophorus reflugens*) *Lophophorus impejanus* (Latham), Calcutta Zoo, 23. v. 1914, coll. (with a ♀ example of *G. eurygaster*) (Regd. No. 800/H16).

Measurements of the neotype and neoparatype males have already been provided in Clay (1940). Measurements of the female neoparatype example are given below :

<i>Measurements</i>		
♀		
	<i>Length</i>	<i>Width</i>
Head	1.12	1.76
Prothorax	0.57	0.95
Pterothorax	0.95	1.41
Abdomen	2.47	
Total	4.86	

- 7-8/H16. *Goniodes neumannia* Kellogg & Paine, 1914, *Rec. Indian Mus.*, 10 : 22, 1 pl. 15 figs. 6 & 7. See *Pachyskelotes*.
20. 169/H16. *Goniodes perlatus* Clay, 1940, *Proc. zool. Soc. Lond.*, (B), 110 : 30, figs. 19 & 20. (Paratypes 2 exs males, 4 exs females, 2 (.). (Old No. 1736/H8).
Off *Numida meleagris major* Hartlaub, Uganda : Busoga, 11. viii 1937.

Remarks.—Clay (1940) described the species and deposited paratypes in Z. S. I.

- *21. 553/H16. *Goniodes processus* Kellogg & Paine, 1914, *Rec. Indian Mus.*, 10 : 226, pl. 15 figs. 9, 9a-b. (Types two males). (653/H16). (10/H16 is a female slide and not type for practical purposes).
Off (*Arboricola rufigularis*) *Arborophila r. rufogularis* (Blyth) India : E. Himalaya, Assam, (Jorpokri) Jorpakuri, (7600'), det Drs V. L. Kellogg, & J. H. Paine. (Old Nos. 5182/16 ; 989/H8).

Remarks.—Kellogg & Paine (1914) described the species on the basis of two males. The specimens are not in Z. S. I, and obviously lost in Varuna floods. Dr Theresa Clay examined a slide of *Gonicotes indicus* K. & P., on which the authors inscribed '*Gc. indicus* K. & P., and *G. processus* K. & P. n. sp.', and separated the male as *G. indicus* and the female as an unrecognizable female of *G. processus* (Slide No. 10/H16) (cf. *G. indicus*, *vide supra*). Since the authors did not refer to the female example, though labelled by them, it has no status of a type ; further, it is absolutely unidentifiable as Dr Clay remarked.

Kéler (1939) included the species in his key under a new genus *Gonocephalum*, while Clay (1940) figured and redescribed the species remarking that though she has not examined material from the type host subspecies *s. str.*, material from other subspecies was available for examination. Emerson (1970) reported it from Thailand. The British Museum (Natural History) lent the present author material as follows for study :

One example ♂ & ♀ from *Arborophila rufogularis intermedia* (Blyth), Burma, 1898, coll. Dr R. Meinertzhagen (BMNH 3605) ; one example ♂, from *Arborophila atrogularis* (Blyth), Upper Burma, Myitkyina, 35 miles west, 3. iv. 1915, coll. Dr H. S. Fuller, BM 1947-321 (BMNH 98) ; one example ♀, from *A. atrogularis* (Blyth), with the same data of Dr Fuller's collection. Two unidentified slides lent for study have also now been determined as *G. processus*. The details of these two slides are as follows :

One example ♂ from (*Arboricola rufogularis annamensis*) *Arborophila rufogularis annamensis* (Robinson & Kloss), S. Annam, RP 13. 1918, Brit. Mus.; One example ♂ from (*Arboricola rufogularis*) *Arborophila rufogularis* (Blyth), French Indo-China, S. Annam, 15. iv. 1918, coll. Dr C. Boden Kloss.

Other material examined by Clay (1940) besides the above is from *A. rufogularis tickelli* (Hume) from Burma, *A. t. torqueola* (Valenciennes) from Sikkim & Assam (India), *A. t. millardi* (Stuart Baker) from Central Himalaya, *A. atrogularis* (Blyth) from Assam (India), *A. gingica* (Gmelin) from S. E. China. Specimens from *A. b. brunneopictus* (Blyth), *A. b. henrici* (Oustalet), and *A. erythrophrys* (Sharpe) from Borneo were considered by that author as possibly belong to an undescribed subspecies. Clay (1940) redescribed the species considerably including the undescribed female, figuring its head, and terminal abdominal segments. An outline of male and female heads, male antenna, posterior abdominal segments of both the sexes, and male genitalia are now figured (Figs. 7 a-f).

The male slide of Prof. Kellogg & Paine was registered a new in the H16 registered with a remark that the type slide was lost for taxonomical purposes, since the slides has not been earlier registered at all in Z. S. I. books. Since the type slide was lost, a neotype should be selected for this species. The male figured by the present author from B. M. slide No. 3605 off *Arborophila rufogularis intermedia* (Blyth), referred to above is hereby designated as the neotype and all others specimens as neoparatypes.

22. 9/H16, 654-655/H16. *Goniodes sectus* Kellogg & Paine, 1914, *Rec. Indian Mus.*, 10 : 224, figs. 1 & 2 (Lectotype 1 ex. male (9/H16 = 5154/16 & 988/H8); Paralectotype 1 ex. female ((654/H16 = 5154)16), and slide without specimens (No. 655/H16 = 5155/16). (Old Nos. 5154-5155/H16; 988/H8).

Off *Catreus wallichii* (Hardwicke) 1 ex male, India : West Bengal, Darjeeling, det. Drs V. L. Kellogg & J. H. Paine, (9/H16); also 1 ex. female (654/H16 = 5154/16), and 1 ex. male & female, India : Uttar Pradesh, (Kumaon), Kumaun, Ind. Mus., det. Drs. V. L. Kellogg & J. H. Paine (655/H16 = 5155/16), with no specimens).

Remarks.—Kellogg & Paine (1914) described the species from “males and females” from *C. wallichii* from “Garhwal, Darjiling,

and Kumaon, Himalaya, India” In the type collection only one slide with a ♂ example, now numbered 9/H16, which was remounted by Dr G. F. Ferris and also examined by Dr Clay is available. In the general collections there are two slides, one with a ♀ example (numbered 5154/16 = 654/H16) from the Darjiling host, and another with entries pertaining to a ♂ & ♀ from the Kumaun host. This latter slide is without a coverslip or specimens and therefore, we can conclude that this material and also the Garhwal material was lost in floods. The entry No. 5153 in the Register 16 entered as *Goniodes latefasciatus* Piaget possibly belongs to the species under discussion. Clay (1940) examined two males and females from the type host from Himalaya, and briefly characterised the species. Clay (*op. cit.*) also figured the species and remarked that the male genitalia approach near to the genitalia in *G. ocellatus* (*G. dentatus*). The male and female heads, antennae, and male genitalia are also now figured (Figs. 8a-e), since Dr Clay remarked that the genitalia in her specimens are in poor condition. The lectotype ♂ and paralectotypes ♀ ♀ are now designated from the syntype series. One slide of ♂, with 2 ♀ ♀ specimens from the type host from Himalaya, R. Meinertzhagen colls (BMNH No. 3878) was lent for study.

Lagopoecus Waterston, 1922

Lagopoecus Waterston, 1922, *Entomologist's mon. Mag.*, 58 : 159.

23. 656-657/H16. *Lagopoecus nirmoides* (Kellogg & Paine), 1914 (*Goniocotes*). *Rec. Indian Mus*, 10 : 219, pl. 15 figs. 5, 5a-d. (Lectotype 1 ex. male, (656/H16), Paralectotypes 1 ex. female (656/H16), 2 exs. females, partially damaged (657/H16). (Old No. 5146/16).
Off (*Lophophorus impejanus*) *Lophophorus impejanus*, India : West Bengal, Calcutta, det. Drs V. L. Kellogg & J. H. Paine (5146/16 on 2 slides).

Remarks.—Kellogg & Paine (1914) described the species as *Goniocotes nirmoides* basing on ‘several males and females’ off *Lophophorus impejanus* (Latham) from Calcutta Zoo, possibly along with a male *Goniodes megaceros* K. & P. (See discussion under *G. megaceros*). Clay (1938) in the revision of the genus *Lagopoecus* considered it as conspecific with *L. heterotypus* (Megnin). also reported from the same host and also maintained so in Hopkins & Clay (1952). In the Z. S. I., collections only a single male and three females are available from the type series, no information is available about the other males or females reported by the authors, or whether

Megnin's type material of *L. heterotypus* is available, since Hopkins and Clay (1952) not indicated that they have examined Megnin's types. Clay (1938) also did not specify that she has examined the types of *L. heterotypus* (Megnin). A Lectotype should be selected for *L. nirmoides* (K. & P.), and the present author now designated the male example on slide No. 656/H16 as the Lectotype and, the female on this slide and the two females on slides No. 657/H16 as Paralectotypes. If Megnin's type were lost, the present lectotype and paralectotypes automatically hoped to serve as for Megnin's *L. heterotypus*. The male genitalia is well figured in Clay (1938), but *L. nirmoides* shows some differences in the genitalia and in posterior abdominal segments and the male genitalia are figured afresh (Fig. 9).

Present status.—*Lagopoecus heterotypus* (Megnin).

Nigronirmus Złotorzycka, 1964

Nigronirmus Złotorzycka, 1964, *Acta parasit. pol.*, **12** (24) : 248.

24. 664-666/H16. *Nigronirmus ploceus* Lakshminarayana, 1968. *Oriental Ins.*, **2** (1) : 99, figs 1-2a & b. (Holotype 1 ex. male (664/16); Paratypes 2 exs males (665-666/H16).

Off *Ploceus philippinus burmanicus* Ticehurst, *India* : West Bengal, Salt Lakes (S. L. 64/23), 29. ix. 1964, coll. Dr B. Biswas.

Remarks.—The species was well described by the present author providing figures. The genus belongs to *Brueelia*-complex which requires a thorough revision, and the present author considers the genus *Nigronirmus* deserves a separate status from *Brueelia s. str.*

Nirmus Nitzsch, 1818 (*nec* Hermann, 1804)

Nirmus Nitzsch, 1818 (*nec* Hermann, 1804). *Germer's Mag. Ent.*, **3** : 291. The genus has been rejected and invalid.

645-646/H16 & 650-651/H16. *Nirmus biguttatus* Kellogg & Paine, 1914, *Rec. Indian Mus.*, **10** : 234, pl. 14 figs. 2, 2a & 2b. See *Brueelia*.

40/H16. *Nirmus clypeatus* Kellogg & Paine, 1914. *Rec. Indian Mus.*, **10** : 237, pl. 14, figs 3, 3a, & 3b. See *Quadriceps*.

Ornithobius Denny, 1842

Ornithobius Denny 1842, *Mon. Anopl. Brit.* : 183.

151/H16. *Ornithobius rostratus* Rudow, 1866, *Z. ges. Naturw.*, **27**, 465. See *Acidoproctus*.

Pachyskelotes Kéler, 1939

Pachyskelotes Kéler, 1939, *Nova Acta Leopoldina*, (N. F.) **8** : 55.

25. 7-8/H16 & 688/H16, *Pachyskelotes neumannia* (Kellogg & Paine), 1914, (*Goniodes*). *Rec. Indian Mus.*, 10 : 221, pl. 15 figs. 6 & 7. Lectotype 1 ex. male, (7/H16 = 5176/16 = 986/H8), Paralectotypes 7 exs. females (7/H16 = 5176/16 = 986/H16). 1 ex male 8/H16 = 5176/16 = 987/H8 ; 3 exs female (688/H16 = 5175/16).

Off *Argusianus argus* (Linne), No history, det. Drs V. L. Kellogg & J. H. Paine, (The slide No. 8/H16 has been examined by Dr Clay in 1952 and redetermined it as *P. orthopleurus* (Nitzsch).)

Off *Argusianus argus* (Linne), *Malayasia*, Perak, det. Drs V. K. Kellogg & J. H. Paine (No. 5175/16). Type lost.

Remarks.—Kellogg & Paine (1914) described *G. neumannia* from material off *Argusianus argus* without history (entry No. 5176/16) and from Perak, Malayasia (entry No. 5175/16) in Indian Museum collections. Dr Miss Clay examined a male (slide No. 8/H16) and redetermined it as *P. orthopleurus* (Nitzsch) and placed it as a synonym of the latter. The figures of the male antenna and the genitalia of *P. orthopleurus* (cf. Kéler, 1939) when carefully compared with those in the two males (one examined by Dr Miss Clay and the other now discovered in the general collection) indicate that the two species are quite different ; therefore, the present author considers that *P. neumannia* (Kellogg & Paine) is a valid species. Material pertaining to 5175/16 from Perak was lost.

Kéler (1939) described the genus on the basis of a male of *Goniodes curvicornis* Nitzsch (1866, *Halle epizoa* : 388), and a female specimen of *Liepeurus* Nitzsch (in Giebel, 1874, *Insecta epizoa* : 217), and figured the male and female from Halle Museum collections, which were destroyed in World War II. This author maintained "*L. orthopleurus*" as a junior synonym of *P. curvicornis* (Nitzsch) redescribing the species under the latter name, but erroneously selected the former name as the 'type-species'. Another species labelled as '*G. cervinicornis* Nitzsch off *Gennaesus n. nycthemerus* was selected as the type species of the genus *Gonotyles* Kéler (1939). Hopkins and Clay (1952) maintained *G. curvicornis* and *G. cervinicornis* as valid species under genus *Goniodes*, recognized *P. orthopleurus* (Nitzsch) as the only valid species (not mentioning *G. curvicornis*) under the genus *Pachyskelotes* Kéler ; and therefore, made *G. neumannia* conspecific with it with the assumption that they are inseparable. The page notation for *G. curvicornis* Nitzsch given by Hopkins and Clay (1952) (Nitzsch, 1866, *Z. ges. Natwiss.*, 28 : 388) and Kéler (1939), (*Halle epizoa*, 866 : 388) incidentally are the same though the periodicals

differ, and it has to be inferred that Hopkins and Clay had in mind the same *G. curvicornis* which Kéler figured, and the only author who examined the type collection of the species before they were destroyed. The present author had an opportunity to examine Kéler's material available in Museum für Naturkunde an der Humboldt Universität, Berlin, and *G. curvicornis* or *L. orthopleurus* could not be traced in it (cf. Goellner-Scheidt, 1973). Hence, for all practical purposes one has to assume *G. curvicornis* Nitzsch *sensu* Hopkins and Clay (1952) and *G. curvicornis* Nitzsch *sensu* Kéler (1939) are identical, and therefore, the entry in Hopkins and Clay (1952) against this species needs to be transferred to *Pachyskelotes*.

Kéler (1939) recognized *P. neumannia* Kellogg & Paine (1914) as a distinct species and included it in his key. Kellogg & Paine (*op. cit.*) was aware of *G. curvicornis* Nitzsch and referred to a paper of Taschenberg; in addition they reported the species also in that paper, but the collection is not available now in Z. S. I. Kéler (1939) gave the history of the female *orthopleurus* with a label "*Goniodes curvicornis* Nitz. Gl. Ep. 198" by Taschenberg. Since Kéler based his identification of the genus on specimens with two different names, and since male offers more diagnostic characters in the *Goniodes*-complex as a whole, and that author himself preferred to refer the species, it is desirable that we should restrict the name *P. curvicornis* (Nitzsch) for the species. *P. neumannia* (K. & P.) differs markedly in the antennal and male genitalial characters from *P. curvicornis*. The heads in both sexes, male antenna; male genitalia and genital sclerite, posterior abdominal segments in both ♂ & ♀ are now figured along with the figure of the genitalia given by Kéler, for comparison (Figs. 10a-g.). The character shown with an arrow in the genitalia has been referred to by Kéler in *Gonotylus cervinicornis* Nitzsch, (a distinct species from *P. curvicornis* as dorsal endomere (Figs. 12a-c).

Eichler (1947) described and figured "*Goniodus argus*" on the basis of a male and female from the *Argusianus argus*, which was held as a valid species in Hopkins and Clay (1952). The figure of the male head (WEC 2273h) in Eichler (*op. cit.*) resembles the male of *P. curvinicornis* and also *P. neumannia*, while the female head (WEC 2273e) differs very much from the female head figured by Kéler for *P. curvinicornis* (= *P. orthopleurus*) and also from the specimens identified as *P. neumannia* by Kellogg and Paine in the

head length/width index, (Figs. 13a-b) and possibly the female specimens of Eichler's *G. argus* are referable to a *Goniocotes* rather than *Goniodes* or *Pachyskelotes*. This presumption is partially supported for the fact that Prof. Eichler also reported *P. neumannia* in the same paper and mounted on slide No. 2273 i collected along with *G. argus*. and therefore, he is aware of *Pachyskelotes*. Since many of the Galliform hosts harbour more than one species of *Goniodes-Goniocotes*, whether Eichler's female *G. argus* is identical with *Goniocotes haplogonus* Nitzsch from the same host or not, can only be determined after necessary comparison. Kéler (1939) included *G. haplogonus* in the key under the genus *Dictyocotes*, for which it is the type species.

Emerson (1973) reported both *G. curvicornis* and *P. orthopleurus* from Malaysia, but the material may have to be examined in the light of the above comments.

A Lectotype has been selected for *P. neumannia* (K. & P.) from Kellogg & Paine's type series. The male Lectotype has been selected from the slide No. 7/H16, since the authors figured this specimen in their paper, and the remaining 7 female examples on this slide and the single male examined by Dr Clay on slide No. 8/H16 are designated Paralectotypes.

Philopterus Nitzsch, 1818

176/H16 *Philopterus auratus* Haan, 1829, In Lyonet, *Mem. Mus. Hist. nat. Paris*, 18 : 310, pl. 5 fig. 9. See *Quadriceps*.

26. 174/H16 **Philopterus coarctatus** (Scopoli), 1763 (*Pediculus*). *Ent. Carniolica* : 382. (Neoparatypes 1 ex. male, 4 exs. females). (Old No. 1741/H8).

Off *Lanius collurio* Linne, *Sudan* : (West Medani) Wad Medani, 5. ix. 1942, Mr *W. Rutledge*.

Remarks.—The species was redescribed and figured and a neotype was designated by Clay & Hopkins (1951 : 6). The Z. S. I. material is their donation.

Złotorzycka (1964c) transferred the species to *Docophorus* Eichler (cf. also Złotorzycka & Lucinska, 1976), which was considered inseparable from *Philopterus* by Hopkins & Clay (1952).

27. 486/H16. **Philopterus cumulatus** (Złotorzycka), 1964 (*Docophorus*). *Acta parasit. pol.*, 12 (37) ; 410, photos 3 & 4. (Paratypes 1 male, 2 females).

Off *Emberiza calandra* Linne, Poland: Wrocław, 5. iii. 1961, Dr Mrs J. Złotorzycka, 4/y/12.

Remarks.—The author, Dr Mrs Złotorzycka presented the species to Z. S. I. collections during the present author's visit to her laboratory in 1976. Hopkins & Clay (1952) and Emerson (1972) maintain that the genus is inseparable from *Philopterus*. Further notes was given in Złotorzycka & Lucinska (1976)..

28. 29/H16, 30-31/16. *Philopterus thryptocephalus* Kellogg & Paine), 1914 (*Docophorus*). *Rec. Indian Mus.*, 10 : 232, pl. 14 fig. 1. (Lectotype 1 ex. female, (31/H16=Old Nos. 5129/16; 1010/H8); Paralectotypes 1 ex. male (31/H16=5129/16; 1010/H8); 1 ex. female (29/H16=5128/16; 1008/H8), 1 ex. male, 1 ex. female (30/16=1009/H8).

Off (*Graculus graculus*) *Pyrrhocorax graculus* (Linne), India: Kashmir, Gilgit, det. Drs V. L. Kellogg & J. H. Paine, 1 ex. male & female (31/H16); Pakistan: Chitral, det. Drs V. L. Kellogg & J. H. Paine, 1 ex. female (29/H16); Pakistan: Chitral, det. Drs V. L. Kellogg & J. H. Paine, 1 ex. male & female (30/H16).

Remarks.—Kellogg & Paine (1914) described the species off *Graculus graculus* (now *Pyrrhocorax graculus* (Linne) based on several males and females from Chitral and Gilgit. They did not designate a type and their description was mainly based on female specimens. Clay & Hopkins (1952) transferred it from *Docophorus* to *Philopterus* since the the former is an absolute synonym of the latter. The Z. S. I. collection now contains only 2 ♂♂, 3 ♀♀, specimens. Since the type was not designated in the type-series, the female example from Gilgit has been selected as Lectotype and all others were designated as paralectotypes. This slide alone bears an original type label. The entries in H8 and old 16 registers were confusing and now the matter has been straightened. Złotorzycka (1964b) reported the species from Poland.

The dorsal anterior plate, gular plate, and male genitalia are now figured (Figs. 14a-c), since these characters are useful for identification.

Quadriceps Clay & Meinertzhagen, 1939

Quadriceps Clay & Meinertzhagen, 1939, *Ann. Mag. nat. Hist.*, (11) 4: 453.

Haematophagus Timmermann, 1950, *Fauna Islandica*, 2: 1 & 2.

29. 176/H16. *Quadriceps auratus* (Haan), 1829. (*Philopterus* s. g. *Docophorus*). In Lyonet, *Mem. Hist. nat. Paris.*, 18: 310, pl. 5 fig. 9. (Neoparatypes 2 exs. males, 1 ex. female). (Old No. 1743/H8).

Off (Becasse de mer) *Haematopus ostralegus occidentalis* Neumann, U. K. : N. W. England, Morecambe Bay, 24. x. 1938, Mr G. H. E. Hopkins.

Remarks.— Neoparatypes of the species were donated to Z. S. I., by the collector. Timmermann (1950) established the subgenus *Haematophagus*, a monotypic subgenus for accommodating this species to which Eichler (1963) and Złotorzycka (1967) gave it a generic status.

Emerson (1972a) reported it on *H. palliatus* Temminck, and *H. bachmani* Audubon N. America.

30. 184/H16. *Quadriceps junceus* (Scopoli), 1763 (*Pediculus*). *Ent. Carniolica* : 384. (Neoparatypes 3 exs males, 1 ex. female). (Old No. 1751/H8).

Off (*Tringa vanellus*) *Vanellus vanellus* (Linne), U. K. : Hoy Orkney Is, 6. viii. 1938, Mr G. H. E. Hopkins.

Remarks.—The species was redescribed and a neotype was selected in Clay & Hopkins (1951 : 24). The slide is their donation. Złotorzycka (1967) listed the species and provided photomicrographs. Emerson (1971) reported it on the type host from N. America.

31. 40/H16. *Quadriceps clypeatus* (Kellogg & Paine), 1914 (*Nirmus*). *Rec. Indian Mus.*, 10 : 237, pl. 14, fig. 3. (Holotype male). (Old No. 5083/H16).

Off (*Corvus cornix*) *Corvus corone* Linne Error. *Tringa nebularia* (Gunnerus), China : Kashgar, Yarkand, det. Drs V. L. Kellogg & J. H. Paine.

Remarks.—Kellogg & Paine (1914) described the species basing on a single male from Kashgar with a label on the slide “*Nirmus* n. sp. Type” Clay (1952) examined the slide and relabelled it as *Quadriceps similis* (Giebel). Hopkins and Clay (1952) commented that the host record is erroneous, and it may probably be a Charadriiform host, Hopkins and Timmermann (1954) stated that they examined the type of *N. clypeatus* and came to the conclusion that it is conspecific with *Q. similis* (Giebel) from *Tringa nebularia* (Gunnerus). These authors designated neotype and neoparatypes from Uganda, S. Africa, Aden. Britain, Greece, and also examined the Lectotype of *Nirmus interruptus* Piaget. They also considered that material from “*Tringa melanoleuca* (Gmelin)” from U. S. A. and Brazil also belongs to the species. The genitalia was figured and provided with a photomicrograph in Hopkins and Timmermann (*op. cit.*) Emerson (1972) reported it on “*Totanus melanoleucos* (Gmelin)”

from N. America, and Emerson (1973) from India on the type host *Z. otorzycka* (1974) also listed the species with all synonymies and provided photomicrographs.

In Z. S. I. collections there is another slide containing a ♀ with the same data as that of the holotype including the specific name '*N. clypeatus* n. sp.' now renumbered as 658/H16 (Old Nos. 5083/16; 1019/H8). The entry in the old register refers to "*Doc. atratus*" also reported by the authors on p. 233 from *Corvus cornix* from Kashgar. This entry in the species column is obviously an error. This slide is no doubt a female of *Q. similis* (= *Q. clypeatus*), but it can not be given the status of a type, because though labelled as *N. clypeatus*, n. sp. unfortunately Kellogg & Paine (1914) did not mention it while describing the species.

Present status.—*Quadriceps similis* (Giebel).

Family TRICHODECTIDAE Kellogg, 1896

Bovicola Ewing, 1929

Bovicola Ewing, 1929, *Man. ext. parasites* : 121, 123, 193. See *Damalinia*.

Damalinia Mjoeberg, 1910

Damalinia Mjoeberg, 1910, *Ark. Zool.*, 6 (13) : 69.

Bovicola Ewing, June, 1929, *Man. ext. parasites* : 212, 123, 193. A subgenus of *Damalinia*.

32. 124/H16. *Damalinia baxi* Hopkins, 1947, *Revta bras. Biol.*, 7 : 117, figs. 1-5. (Paratypes 1 ex. male, 1 ex. female). (Old No. 1691/H8).
Off *Domaliscus korrigum jimela* (Matschie), *Africa: Tanganyika Ukerewe peninsula*, x. 1944.

Remarks.—Hopkins (1947) described the species and donated the species to Z. S. I. The head of the female specimen was separated from the body. Werneck (1950) redescribed the species giving figures.

33. 125/H16. *Damalinia (Bovicola) bovis* (Linne), 1758 (*Pediculus*). *Syst. nat.* ed 10 : 611. 10 : 611. (Neoparatypes 4 exs females). (Old No. 1692/H8).

Off *Bos taurus* Linne, *U. K. : Ireland, Courmagh*, 7. v. 1935, Mr T Lowden.

Remarks.—The species was discussed in Clay & Hopkins (1950 : 227-228) with the designation of the neotype. Werneck (1950) gave a complete synonymy. Hopkins (1960) quoted Mr Mathysee, that

in this species, the males are rare and the females are also at times parthenogenetic. Emerson (1971) reported it from Nepal, and also from N. America (Emerson, 1972a).

34. 126/H16. *Damalinea hendrickxi* Hopkins, 1947, *Revta bras. Biol.*, 7: 119, figs. 6-11. (Paratype 1 ex. female). (Old No. 1693/H8).
Off *Cephalopus nigrifrons kivuensis* Loennberg, *Uganda: Nabande*, Bupembina, 5. xi. 1940, F. L. W. 2569, Mr G. H. E. Hopkins.

Remarks.—The species was described by Mr Hopkins (1947) and F. L. W., stands for Dr F. L. Werneck, who also redescribed and figured the species (Werneck, 1950).

35. 129-130/H16. *Damalinea (Bovicola) ovis* (Schrank) 1789 (*Pediculus*). *Enum Ins. Austr. India.*; 502, pl. 1 figs. 8 & 9. (Neoparatypes 1 ex. male, (129/H16 = old no. 1696/H8),; 1 ex. female (130/H16 = old no. 1697/H8).
Off *Ovis aries* Linne, *Brazil: Rio de Janeiro*, F. L. W. 879.

Remarks.—The neotype was selected in Clay & Hopkins (1954 : 254-55) and the material belongs to Dr F. L. Werneck. Kéler (1938) gave brief description of the species. Werneck (1950) gave a detailed synonymy of the species. Hopkins (1960) gave the distribution of the species. Emerson (1971) reported it from Nepal, and from N. America (Emerson, 1972).

Stachiella Kéler, 1938

- Stachiella* Kéler, 1938, *Nova Acta Leopoldina*, (n. F.) 5: 428 See *Trichodectes*. Possibly a subgenus.
145-146. *Stachiella ermineae* Hopkins, *Ann. Mag nat. Hist.*, (11) 7: 38. See *Trichodectes*.

Trichodectes Nitzsch, 1818

- Trichodectes* Nitzsch, 1818, *Germer's Mag. Ent.*, 3: 294.
Stachiella Kéler, 1938, *Nova Acta Leopoldina*, (n. F.) 5: 428.
36. 150/H16. *Trichodectes canis* (de Geer), 1778, (*Ricinus*). *Men. Hist. Ins.* 7: 81, pl. 4 fig. 16., (Neoparatype 1 ex. female). (Old No. 1717/H8).
Off (Chien) *Canis familiaris* Linne, S. America, *Brazil: Sao Paulo*, F. L. W.

Remarks.—The neotype was designated in Clay & Hopkins (1954 ; 243-45) from Dr F. L. Werneck's colls. Clay and Hopkins (1954 : 243-45) discussed the species and designated the neotype. Kéler (1938) figured and also redescribed the species ; Hopkins (1960) briefly discussed on the distribution. Recently, Emerson (1971) reported it on *Vulpes bengalensis* Shaw from Nepal. Emerson (1972) also

reported the species from Coyote (*Canis latrans* Say), red Wolf (*Canis niger* Bartram), gray wolf (*Canis lupus* Linne) from N. America, besides dog. The present author examined several collections of the chewing lice off the dog; but not encountered it, and the most common species that is found in India is *Heterodoxus spiniger* (Enderlein).

37. 145-156/H16. *Trichodectes ermineae* (Hopkins), 1941, (*Stachiella*). *Ann. Mag. nat. Hist.*, (11) 7 : 38. (Paratypes (1 ex. male (146/H16), 1 ex. female (145/H16)). (Old Nos. 1712-1713/H8).
Off *Mustela erminea stabilis* Barrett-Hamilton, U. K. : England, Cheshire, Alderby Fdge, Mr. E. Cobex, *F. L. W.* 1006 (146/H16); also Suffolk, May, 1935, *F. L. W.* 1007 (145/H16).

Remarks.—Hopkins (1941) originally described the species under *Stachiella* Kéler, but Hopkins & Cláÿ (1952) later considered *Stachiella* inseparable from *Trichodectes*. The paratype was from the author. Hopkins (1960) recognized *Stachiella* as a subgenus and outlined the distribution of the species. Emerson (1972) reported it on the type host from N. America as *Stachiella ermineae*.

Suborder SIPHUNCULOPHTHIRINA Lakshminarayana, 1976
(= SIPHUNCULATA Latreille, 1825, ANOPLURA Leach, 1815).

Family PEDICULIDAE Samouelle, 1819

Pediculus Linne, 1758

Pediculus Linne, 1758, *Syst. Nat.* ed. 10 : 610.

The genus belongs to the sucking-lice, Siphunculata or Anoplura. Since many of the earlier species of chewing-lice were described under this genus, those species which were earlier referred to this genus and to which neoparatypes are now available in Z. S. I., they are listed under their original names also for convenience. Full reference is not given here as in other cases of transfer, because it is deemed unnecessary

- 125/H16. *Pediculus bovis* Linne, 1758. See *Damalinia* (No. 33).
154/H16. *P. ciconiae* Linne, 1758. See *Ardeicola* (No. 13).
118/H16. *P. circi* Fourcroy, See *Laemobothrion* (No. 10).
174/H16. *P. coarctatus* Scopoli. See *Phlopterus* (No. 26).
122/H16. *P. dolichocephalus* Scopoli, 1763. See *Ricinus* (No. 8).
184/H16. *P. junceus* Scopoli, 1763. See *Quadriceps* (No. 30).
162/H16. *P. ovalis* Scopoli, 1763. See *Cummingsiella* (No. 15).
129-130/H16. *P. ovis* Schrank, 1781. See *Damalinia* (No. 35).
123/H16. *P. dorcelli* Schrank, 1781. See *Gliricola* (No. 1).

SUMMARY

The Zoological Survey of India inherited the Indian Museum Zoological specimens including certain type material. This material and the subsequent additions of type and general collections constitute the National Zoological Collections. The first type and general collections of the Chewing-lice in these National Zoological Collections were those studied by Kellogg & Paine and Kellogg & Nakayama. In this paper, the status and notes on the type species of the Zoological Survey of India possessions of the chewing-lice is presented.

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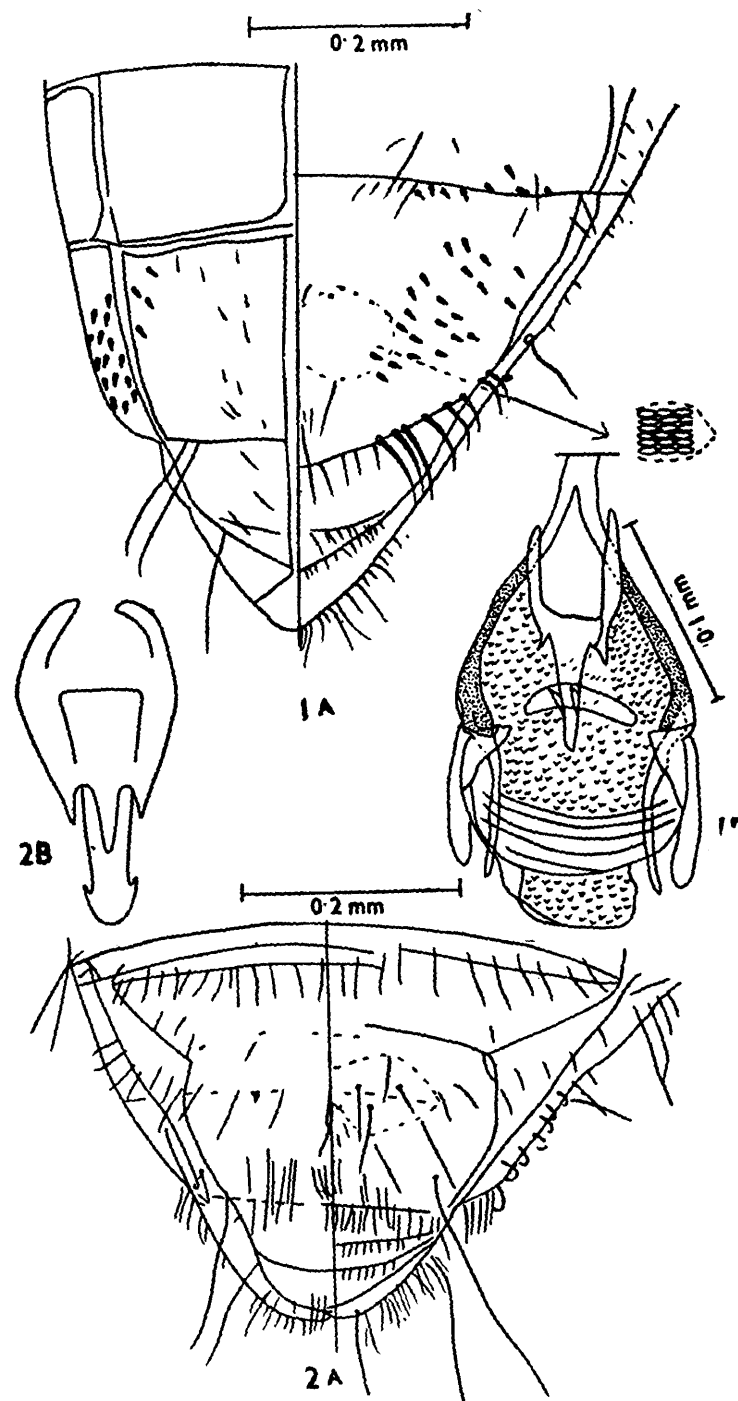
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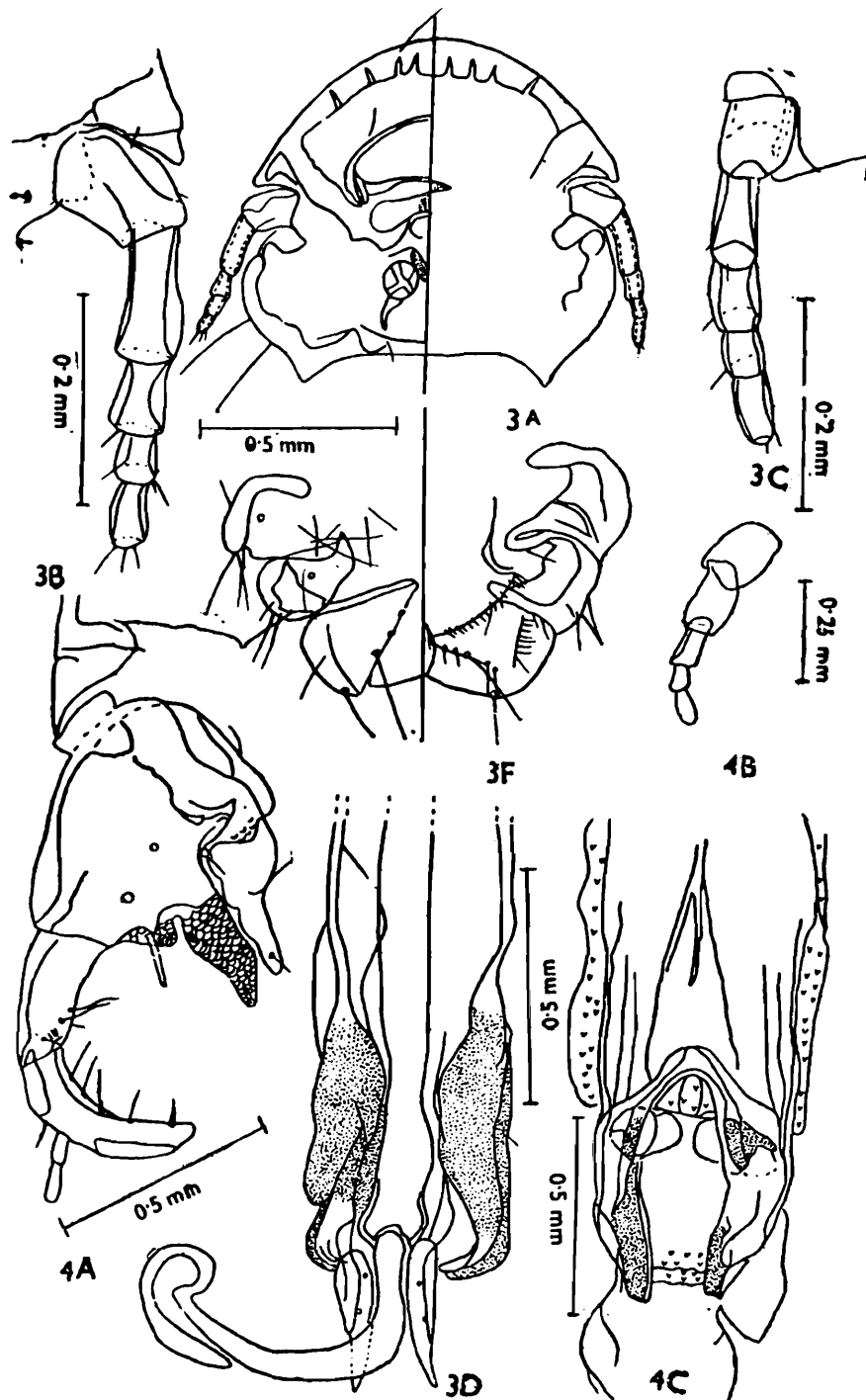
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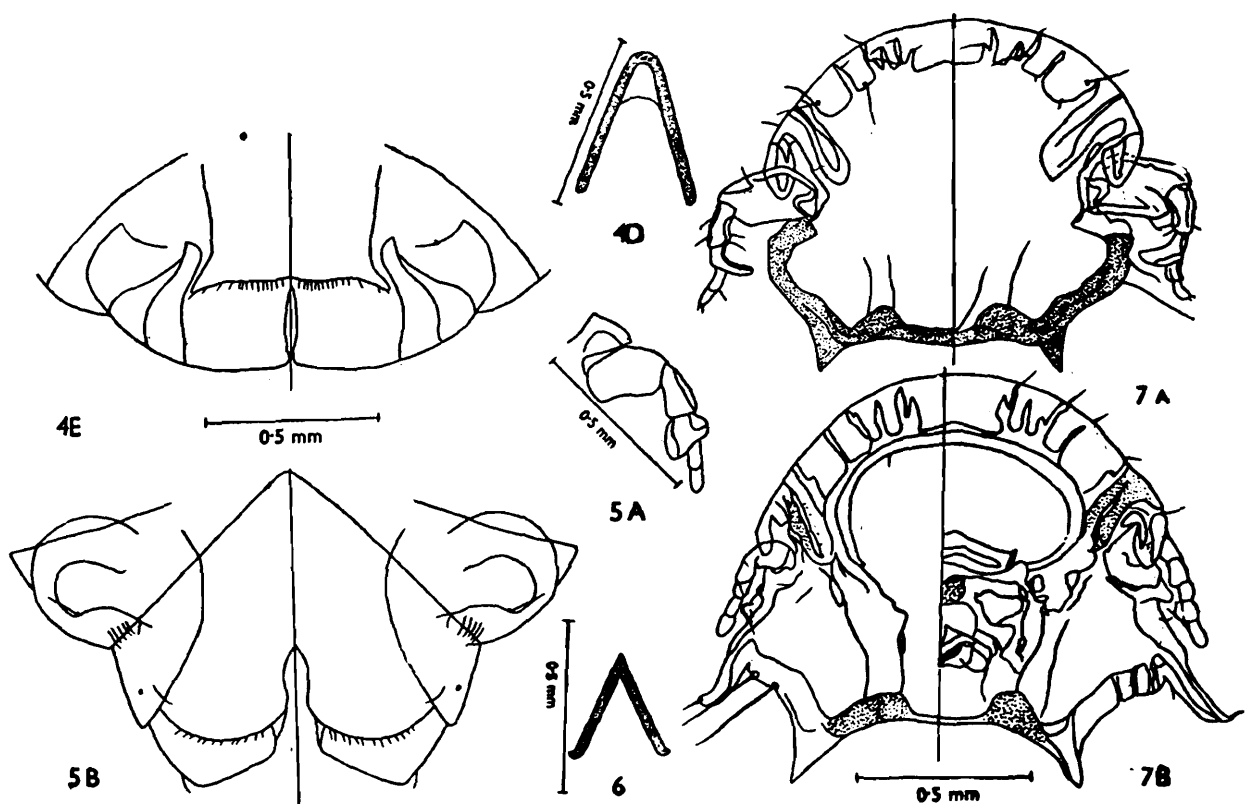
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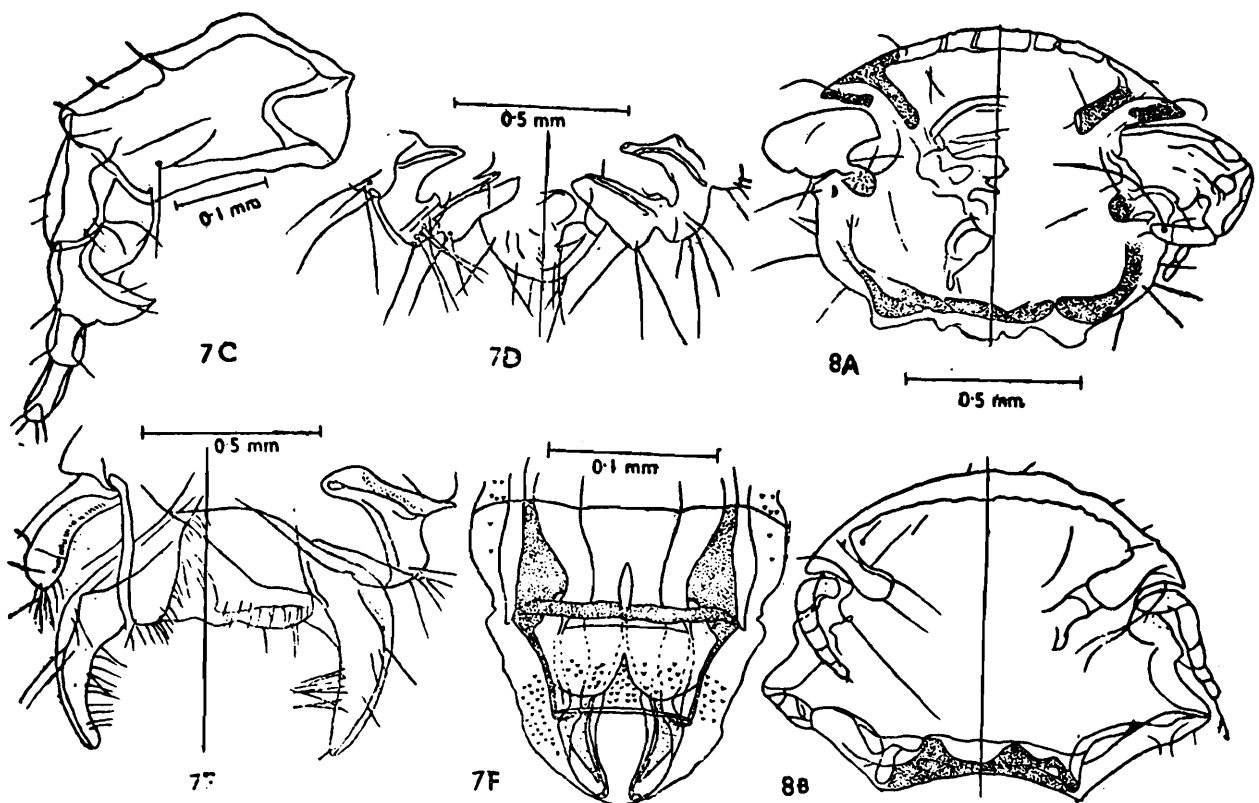
1. *Colpocephalum thoracicum* K. & P. : A. Female posterior abdominal segments ; B. Male genitalia.
2. *Colpocephalum tausi* Ansari : A. Female posterior abdominal segments; B. Male genitalial sclerite & penis (after Price & Beer, 1964).



3. *Goniodes indicus* K. & P. : A. Male head ; B-C. Male and female antennae ; D. Male genitalia ; E. female posterior abdominal segments.
4. *Goniodes megaceros* K. & P. : A-B. Male and female antenna ; C. Male genitalia ;

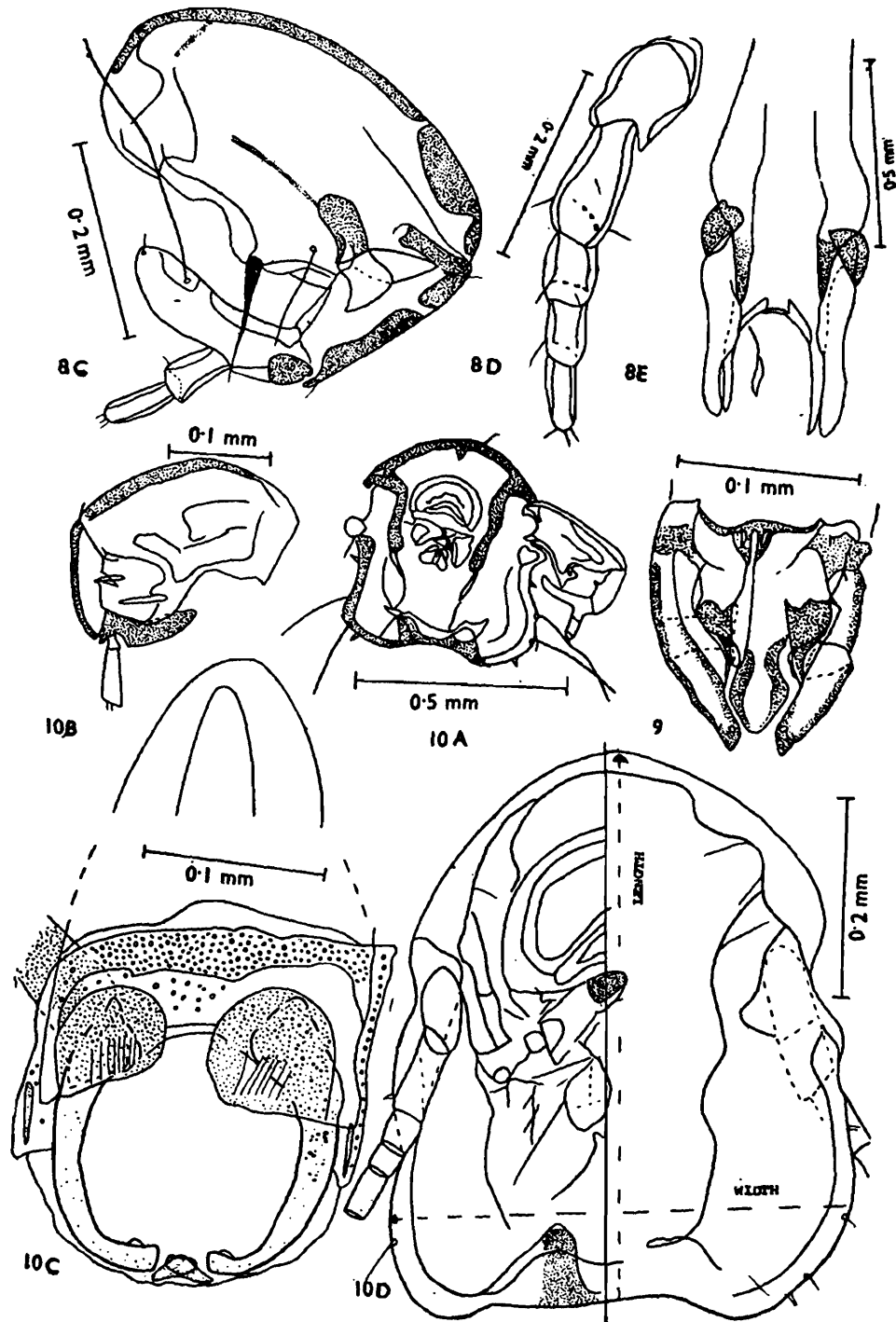


4. *Goniodes megaceros* K. & P. : D. Female 'V'-shaped structure ; E. Female posterior abdominal segments.
5. *Goniodes eurygaster* Piaget : A. Male antenna ; B. Female posterior abdominal segments.
6. *Goniodes spinicornis* Nitzsch : Female 'V'-shaped structure.
7. *Goniodes processus* K. & P. : A. Outline of male head ; B. Female head,

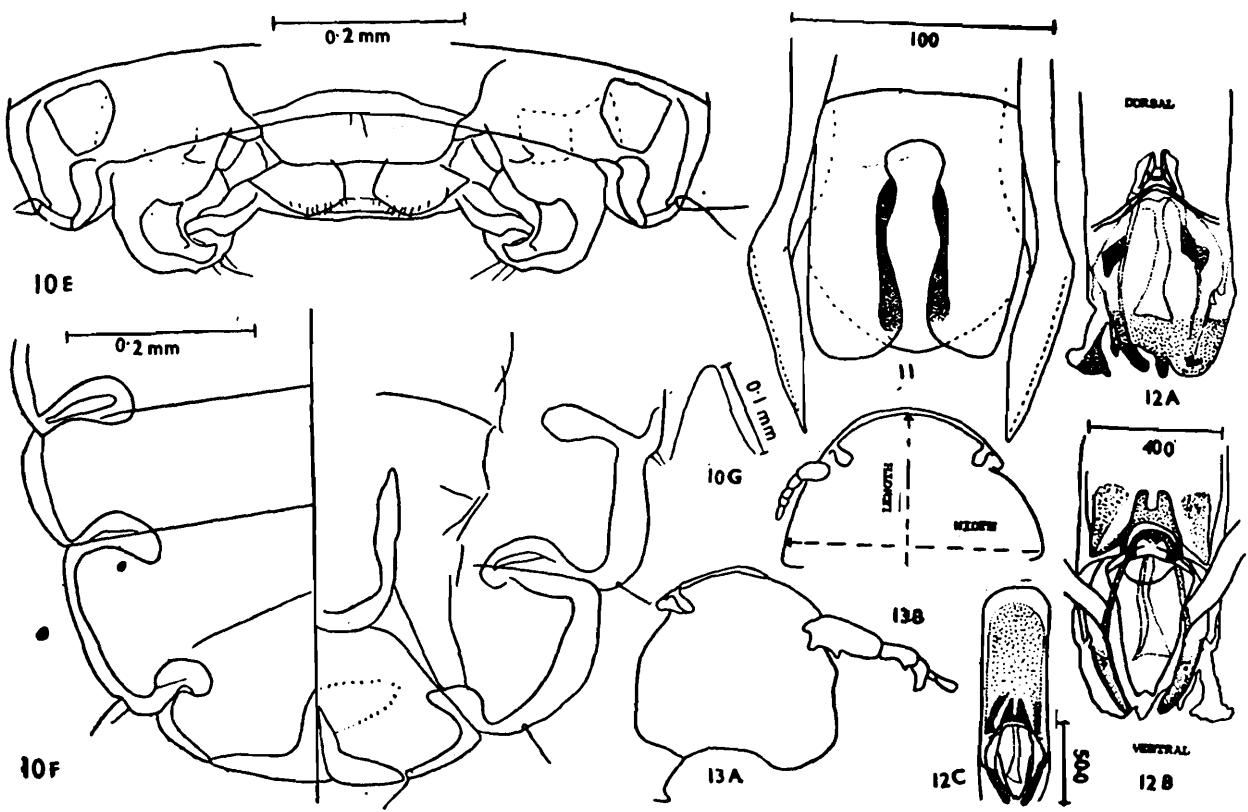


7. *Goniodes processus* K. & P. : C. Male antenna ; D-E. Male and female posterior abdominal segments ; F. Male genitalia.

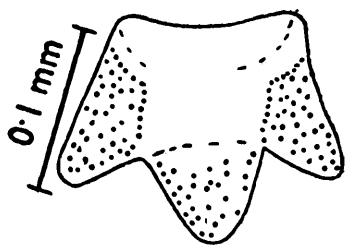
8. *Goniodes sectus* K. & P. : A-B. Male and female head.



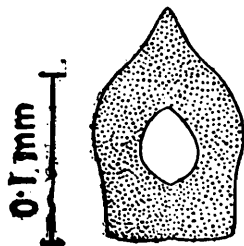
8. *Goniodes sectus* K. & P.: C-D. Male and female antennae; E. Male genitalia.
9. *Lagopoeus heterotypus* (Megnin): Male genitalia.
10. *Pachyskelotes neumannia* (K. & P.): A. Male head; B. Male antenna; C. Male genitalia; D. Female head;



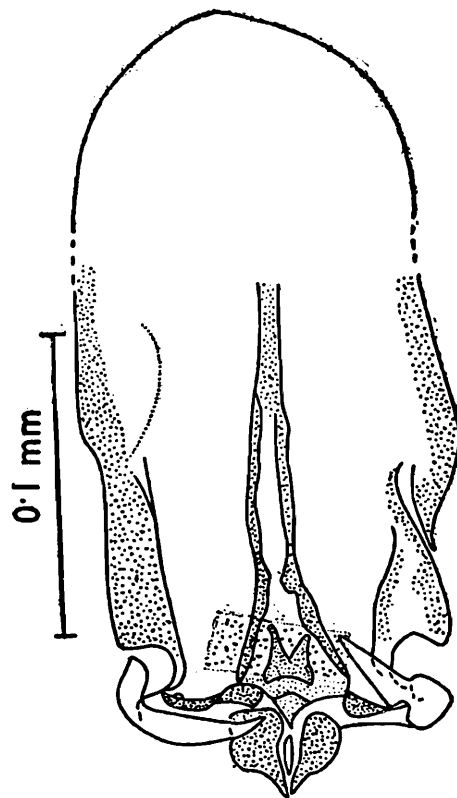
10. *Pachyskelotes neumannia* (K. & P.) : E-F. Male and female posterior abdominal segments ; G. Female genital sclerite.
11. *Pachyskelotes curvicornis* (Nitzsch) : Male genitalia (after Kéler, 1939).
12. *Gonotyles cervinicornis* (Giebel) : A-C. Male genitalia (after Kéler, 1939).
13. "*Goniodus argus*" Eichler : A-B. Male and female heads (after Eichler, 1947).



14A



14B



14C

14. *Philopterus thryptocephalus* (K. & P.): A. Dorsal anterior plate ; B. gular plate ; C. Male genitalia.