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Mallophaga Parasitizing within the Bird Families *Columbidae* and *Phasianidae* in Poland

(22 text-figures)

Wszoły *(Mallophaga)* pasożytujące na ptakach z rodzin *Columbidae* i *Phasianidae* w Polsce

Пухоеды *(Mallophaga)* паразитирующие на птицах семейства *Columbidae* и *Phasianidae* в Польше

The material used in my study consists of the *Mallophaga* collected from the following birds of the family *Columbidae*: 11 specimens of *Columba palumbus* L., 3 *Columba livia (dom.)* BON., 1 *Columba oenas* L., 1 *Streptopelia turtur* (L.), 2 *Streptopelia decaocto* (FRIV.), and from the birds of the family *Phasianidae*: 8 *Phasianus colchicus* L., 3 *Perdix perdix* L., 1 *Coturnix coturnix* (L.), 3 *Lyrurus tetrix* (L.), 10 *Tetrao urogallus* L. and 2 *Gallus domesticus* L.

All these birds were derived from Lower Silesia and all the *Mallophaga* species found in them were new to this country.

Besides, I completed my collection with the *Mallophaga* from the birds bred in the Wrocław Zoo, which I managed to collect owing to the kindness of Dir. Karol ŁUKASZEWICZ and help of Eng. Jerzy DANECKI. These are the *Mallophaga* taken from 1 specimen of *Gennaeus nychthemerus* (L.), 1 *Phasianus colchicus mongolicus* BRANDT, 2 *Phasianus reevesi* GRAY, 1 *Pavo pavo* L. and 1 *Meleagris gallopavo* L.

All the birds examined with the exception of those bred in the Zoo were generally heavily infested by the *Mallophaga*, whatever season it was when they were examined. The birds raised in captivity, however, distinguished themselves by the poverty of the *Mallophaga* living on them, which — as I noticed before (ZŁOTORZYCKA 1959) — is a rule so far as the structure of the Mallophagan fauna from the birds of a Zoo is concerned.

LIST OF MALLOPHAGA

Philopteridae

Coloceras damicorne (NITZSCH 1866).

Collected from *Columba palumbus* L. in following localities: Wojnów, 23.4.51, 6 ♀♀, Swojec, 29.8.51, 3 ♀♀ and 4 juv., Opatowice, 25.5.52, 1 juv., 4.6.52, 1 ♂ and 6 ♀♀, Wrocław, 26.6.54, 1 ♀ and 2 juv., Wrocław Zoo, 13.3.56, 3 ♂♂, 2 ♀♀ and 1 juv. and from *Columba oenas* L.: Wrocław, 17.5.50, 2 ♀♀.

This species is typical of *Columba palumbus* L. (HOPKINS a. CLAY, 1952).

Goniodes bituberculatus RUD. 1869

Syn. *Gonocephalus chelicornis* (NITZSCH 1818).

Collected only from *Tetrao urogallus* L. in following localities: Wierzbowa, 21. 3. 1953, 1 juv., Wierzbowa, 21. 3. 53, 2 ♂♂ and 13 ♀♀, Osiecznica, 13. 4. 54, 10 ♂♂, 14 ♀♀ and 2 juv., Wierzbowa, 27. 4. 54, 14 ♀♀, Bolesławiec, 11. 4. 59, 8 ♂♂, 3 ♀♀, Węgliniec, 27. 4. 59, 4 ♂♂, 9 ♀♀ and 2 juv., Bolesławiec, 29. 4. 59, 1 ♂, Węgliniec, 15. 4. 60, 4 ♂♂, 20 ♀♀ and 4 juv., Ruszów, 20. 4. 60, 1 ♂, 5 ♀♀ and 3 juv., Bolesławiec, Apr. 1960, 28 ♂♂, 35 ♀♀ and 21 juv.

Goniodes bituberculatus RUD. is very common: I would find it on all the specimens of *Tetrao urogallus* L. examined. It is typical of this species (HOPKINS a. CLAY 1952).

Goniodes tetraonis (L. 1761).

Taken from *Lyrurus tetrix* (L.) only, from following localities: Węgliniec, 4. 5. 57, 1 ♂, 14 ♀♀ and 8 juv., Węgliniec, 4. 5. 57, 11 ♂♂ and 13 ♀♀, Bolesławiec, 3. 5. 59, 5 ♂♂.

This is a species typical of *Lyrurus tetrix* (L.) (HOPKINS a. CLAY 1952).

Goniodes colchici DENNY 1842

Collected only from *Phasianus colchicus* L. from following localities: Opatowice, 19. 11. 51, 2 ♀♀ and 1 juv., Opatowice, 24. 2. 52, 1 ♂ and 5 ♀♀, Opatowice, 8. 1. 53, 1 ♂.

The species is a typical parasite of *Phasianus colchicus* L. (HOPKINS a. CLAY 1952).

Goniodes pavonis (L. 1758)

1 ♂ found on *Pavo cristatus* L., Wrocław Zoo, 30. 5. 57.

Species typical of *Pavo cristatus* L. (HOPKINS a. CLAY 1952).

Fig. 1. *Coloceras damicorne* (NITZSCH) from *Columba palumbus* L. (silhouette of ♂ and ♀).

Fig. 2. *Goniodes bituberculatus* (RUD.) from *Tetrao urogallus* L. (head of ♂). Ruszów, 20. 4. 60. Scale length = 1 mm.

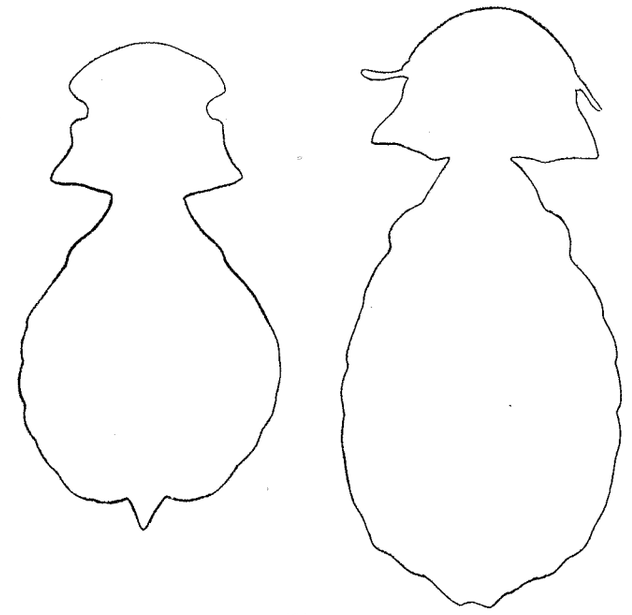

Fig. 1

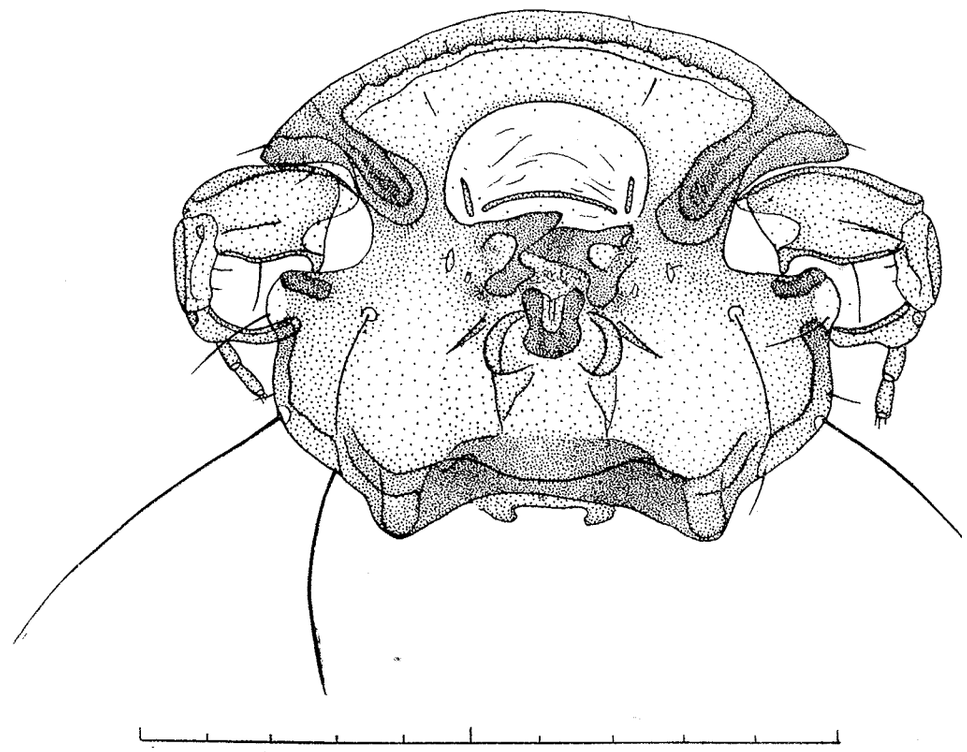

Fig. 2

Chelopistes meleagridis (L. 1758)

1 ♀ and 7 juv. taken from a specimen of *Meleagris gallopavo (dom.)* L. from Wrocław Zoo, 26. 6. 55 and 1 ♀ from *Columba livia* BON., Wrocław Zoo, 10. 8. 55.

This is a typical parasite of *Meleagris gallopavo* L. (HOPKINS a. CLAY 1952). and the only specimen found on *Columba livia* BON. was probably acquired by the latter casually.

Goniocotes chrysocephalus GIEB. 1874

8 ♂♂ and 13 ♀♀ collected from 1 specimen of *Phasianus colchicus* L., Wrocław Zoo, 27. 6. 57. Besides, 1 ♀ was found on *Columba palumbus* L., Wrocław, July 1956.

This species is typical of *Phasianus colchicus* L. (HOPKINS a. CLAY 1952), and 1 ♀ found on *Columba palumbus* L. was in all probability acquired by this bird casually.

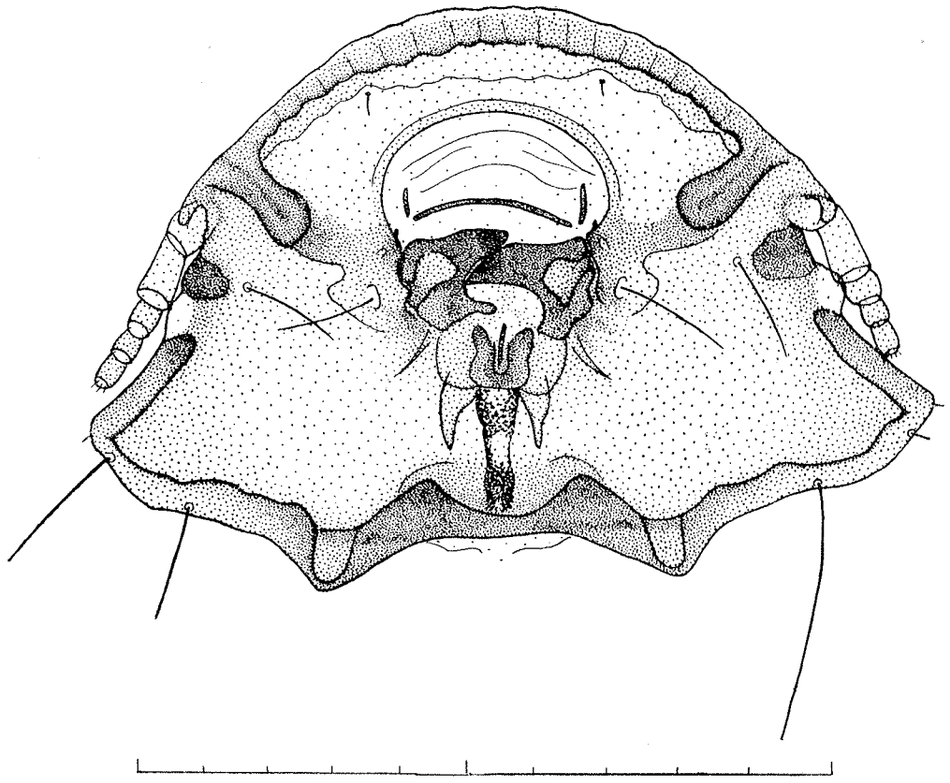

Fig. 3. *Goniodes bituberculatus* (RUD.) from *Tetrao urogallus* L. (head of ♀). Ruszów, 20. 4. 60. Scale length = 1 mm.

Goniocotes albidus GIEB. 1874

2 ♂♂ and 7 ♀♀ collected from 1 specimen of *Gennaeus nychthemerus* (L.), Wrocław Zoo, 27. 6. 57.

The species is typical of *Gennaeus nychthemerus* (L.) (HOPKINS a. CLAY 1952).

Goniocotes gallinae (DE GEER 1778)

Syn. *Goniocotes hologaster* (NITZSCH 1818)

1 ♀ found on *Gallus domesticus* L., Wrocław, 8. 9. 1949.

It is a typical species of *Gallus domesticus* L. (HOPKINS a. CLAY 1952).

Campanulotes bidentatus (SCOP. 1763)

Taken only from *Columba palumbus* L. from following localities: Wojnów, 23. 4. 51, 1 ♂ and 1 ♀, Swojec, 15. 7. 51, 9 ♂♂ and 4 ♀♀, Swojec, 29. 8. 51, 5 ♂♂, 3 ♀♀ and 1 juv., Opatowice, 4. 6. 1952, 1 ♂ and 2 ♀♀, Opatowice, 22. 7. 52, 2 ♀♀, Wrocław, 26. 4. 54, 1 ♂.

The species is a typical parasite of *Columba palumbus* L. (HOPKINS a. CLAY 1952).

Campanulotes compar (BURM. 1838)

Collected from *Columba livia* BON. from following localities: Wrocław Zoo, 11. 5. 55, 1 ♂ and 2 ♀♀, Wrocław, 16. 9. 55, 4 ♂♂ and 2 ♀♀.

The species is typical of *Columba livia* BON. (HOPKINS a. CLAY 1952).

Columbicola claviformis (DENNY 1842)

Collected only from *Columba palumbus* L. from following localities: Wojnów, 23. 4. 51, 1 ♂, 2 ♀♀ and 1 juv., Swojec, 15. 7. 51, 1 ♂, 5 ♀♀ and 2 juv., Opatowice, 25. 5. 52, 4 ♂♂, 4 ♀♀ and 5 juv., Opatowice, 4. 6. 52, 1 ♂, 2 ♀♀ and 1 juv., Kotowice, 26. 6. 52, 2 ♂♂, 13 ♀♀ and 2 juv., Opatowice, 22. 7. 52, 1 ♀, Wrocław, 26. 4. 54, 2 ♂♂, 1 ♀ and 1 juv., Wrocław Zoo, 13. 3. 56, 1 ♂ and 17 ♀♀, Wrocław, 4. 4. 59, 1 ♀.

The species is a typical parasite of *Columba palumbus* L. (HOPKINS a. CLAY 1952).

Columbicola columbae (L. 1758)

Collected from *Columba livia* [*dom.*] BON. from following localities: Wrocław Zoo, 10. 8. 55, 3 ♀♀, Wrocław, 16.9. 55, 2 ♂♂, 5 ♀♀ and 52 juv.

This is a typical parasite of *Columba livia* [*dom.*] BON. (HOPKINS a. CLAY 1952).

Columbicola bacillus (GIEB. 1866)

5 ♀♀ collected from 1 specimen of *Streptopelia turtur* (L.), Kotowice, 26. 6. 52.

The species is typical of *Streptopelia turtur* (L.) (HOPKINS a. CLAY 1952).

Lipeurus maculosus CLAY 1938

Collected from *Phasianus colchicus* L. from following localities: Opatowice, 19. 11. 51, 2 ♂♂ and 1 ♀, Opatowice, 24. 2. 52, 9 ♂♂ and 30 ♀♀; in addition, *Lipeurus* sp. (*? maculosus)* from Wrocaw Zoo, 27. 6. 57, 4 juv. and 2. 11. 57, 1 juv.

This species is a typical parasite of *Phasianus colchicus* L. (CLAY 1938, HOPKINS a. CLAY 1952).

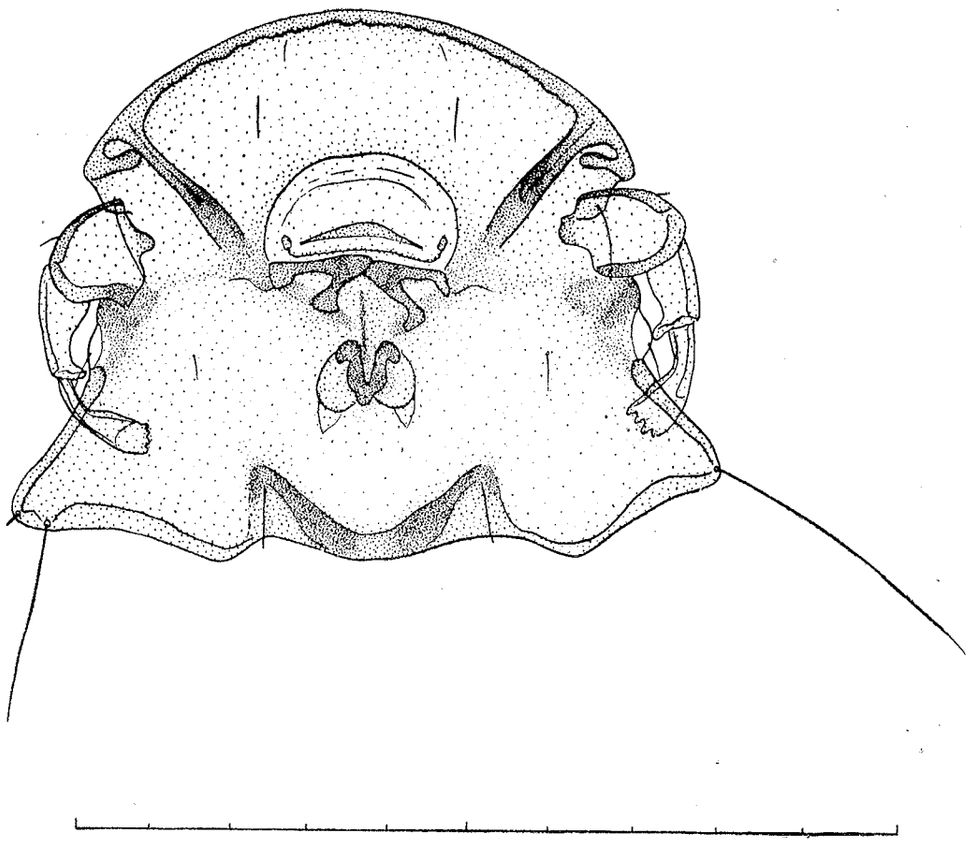

Fig. 4. *Coloceras damicorne* (NITZSCH) from *Columba palumbus* L. (head of ♂). Swojec, 15. 7. 51. Scale length = 1 mm.

Lipeurus caponis (L. 1758)

1 ♂ and 5 ♀♀ taken from 1 specimen of *Gallus domesticus* L. Wrocław, 19. 10. 57.

Species typical of *Gallus domesticus* L. (HOPKINS a. CLAY 1952).

Oxylipeurus mesopelios (NITZSCH 1866)

1 ♀ from *Phasianus colchicus* L., Opatowice, 19. 11. 51.

HOPKINS and CLAY (1952) record this species from *Chrysolophus pictus* (L.) and KÉLER (1958) from *Phasianus colchicus* L.

Oxylipeurus tetraonis (GRUBE 1851)

Collected from *Tetrao urogallus* L. from following localities: Wierzbowa, 21. 3. 53, 2 ♂♂ and 2 ♀♀, Wierzbowa, 21. 3. 53, 12 ♂♂, 10 ♀♀ and 3 juv., Osiecznica, 13. 4. 54, 1 ♂ and 4 ♀♀, Wierzbowa, 27. 4. 54, 12 ♂♂ and 33 ♀♀, Bolesławiec, 11. 4. 59, 1 ♀, Węgliniec, 27. 4. 59, 9 ♂♂ and 5 ♀♀, Bolesławiec, 29. 4. 59, 1 ♀, Węgliniec, 15. 4. 60, 1 ♂ and 7 ♀♀, Ruszów, 20. 4. 60, 6 ♂♂ and 11 ♀♀, Bolesławiec, April 1960, 11 ♂♂, 10 ♀♀ and 2 juv. Besides, 2 ♂♂ and 4 ♀♀ were collected from *Lyrurus tetrix* (L.), Bolesławiec, 3. 5. 59.

The species is regarded as a typical parasite of *Tetrao urogallus* L. (HOPKINS a. CLAY 1952); besides, it is known from *Lagopus albus* (SÉGUY 1944). It has not been hitherto recorded from *Lyrurus tetrix* (L.) but may be typical of this species, as well.

Cuclotogaster heterographus (NITZSCH 1866)

2 ♀♀ collected from 1 specimen of *Phasianus reevesi* GRAY, Wrocław Zoo, 27. 6. 57, 1 ♂ and 2 ♀♀ from 1 *Phasianus colchicus* L., Wrocław Zoo, 27. 6. 57 and 1 ♀ from 1 *Gallus domesticus* L., Wrocław, 8. 9. 49.

The species is typical of *Gallus domesticus* L. (HOPKINS a. CLAY 1952) and its occurrence on the birds of the genus *Phasianus* may happen by accident, which is quite probable under breeding conditions.

Cuclotogaster cinereus (NITZSCH 1866)

1 ♀ and 1 juv. found on *Coturnix coturnix* (L.) from Wrocław Zoo, 29. 4. 58. Species typical of *Coturnix coturnix* (L.) (HOPKINS a. CLAY 1952).

Lagopoecus pallidovittatus (GRUBE 1851)

Collected from *Tetrao urogallus* L. from following localities: Wierzbowa, 21. 3. 53, 2 ♀♀; Wierzbowa, 21. 3. 53, 1 ♂ 9 ♀♀ and 1 juv. Osiecznica, 13. 4. 54, 1 ♂ and 3 ♀♀, Wierzbowa, 27. 4. 54, 1 ♀, Bolesławiec, 11. 4. 59, 4 ♂♂ and 21 ♀♀, Węgliniec, 27. 4. 59, 1 ♂ and 4 ♀♀, Bolesławiec, 29. 4. 59, 1 ♂, Węgliniec 15. 4. 60, 1 ♂ and 5 ♀♀, Ruszów, 20. 4. 60, 2 ♂♂ and 2 ♀♀, Bolesławiec, April 1960, 3 ♂♂ and 8 ♀♀. Besides, 1 ♀ was found on *Columba palumbus* L., Wrocław, 4. 4. 59, which, however, must have occurred on this bird casually.

Lagopoecus pallidovittatus (GRUBE) has been known as a parasite of *Tetrao urogallus* L. (HOPKINS a. CLAY 1952).

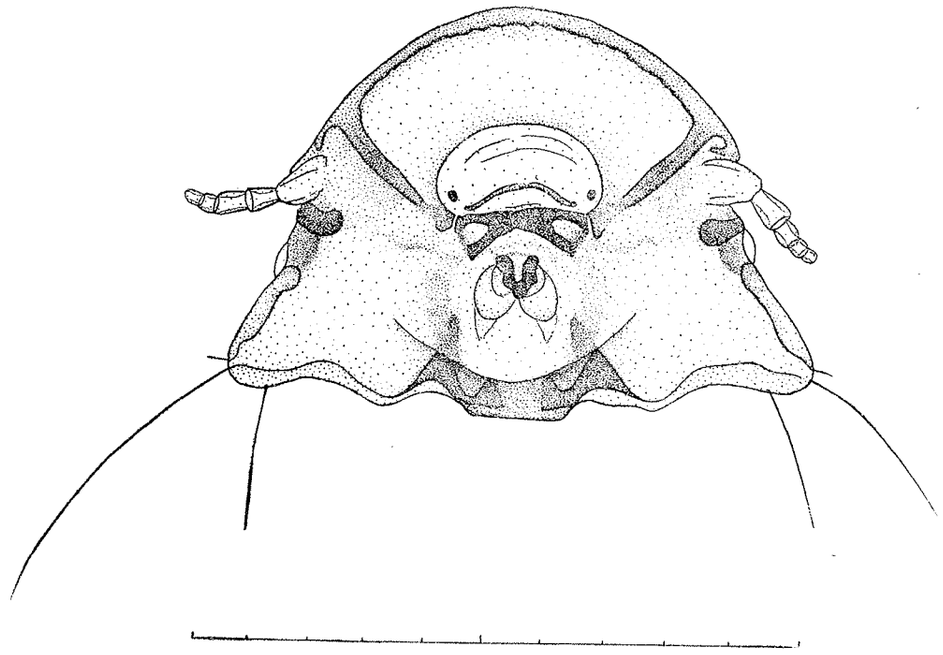

Fig. 5

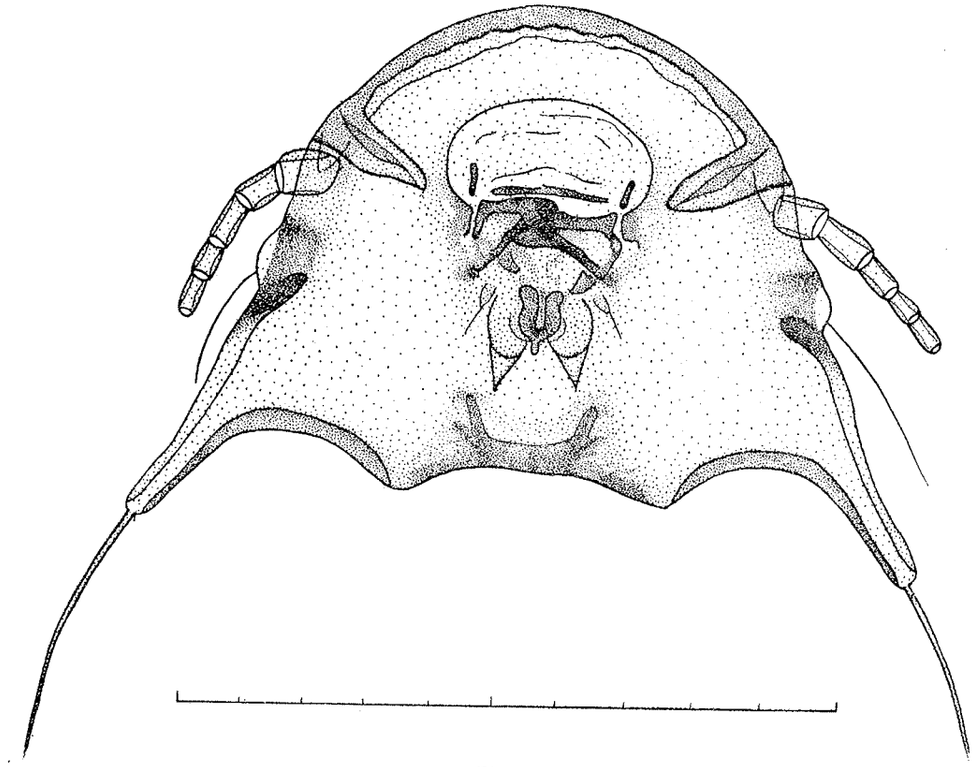

Fig. 6

Lagopoecus affinis (CHILDR. 1836)

Collected from 2 specimens of *Lyrurus tetrix* (L.), Węgliniec, 4. 5. 57, 1 ♀ from one and 1 ♂ and 1 ♀ from the other.

The species is regarded as typical of *Lagopus lagopus* L. (HOPKINS a. CLAY 1952). It is probably typical also of *Lyrurus tetrix* (L.).

Menoponidae

Menopon pallens CLAY 1949

syn. *Menopon pallescens* NITZSCH 1866

Collected from *Perdix perdix* (L.) from Wrocław Zoo, 21. 4. 51, 1 ♂ and 1 ♀, Wrocław, 15. 9. 54, 2 ♂♂ and 5 ♀♀.

The species is typical of *Perdix perdix* (L.) (HOPKINS a. CLAY 1952).

Menopon gallinae (L. 1758)

Collected from *Gallus domesticus* L. from Wrocław: 1 ♂ and 1 ♀ on 8. 9. 49 and 4 ♂♂ on 19. 10. 57.

The species is typical of *Gallus domesticus* (L.) (HOPKINS a. CLAY 1952).

Menopon hexapilosus VRAŽIĆ 1955

Collected from *Phasianus colchicus* L. from following localities: Opatowice, 19. 11. 51, 3 ♂♂, 7 ♀♀ and 1 juv. *Menopon* (? *hexapilosus* VRAŽIĆ), Kotowice, 26. 9. 52, 2 juv. *Menopon* (? *hexapilosus* VRAŽIĆ).

VRAŽIĆ (1956, 1957) records this species from *Phasianus colchicus* L.

Amyrsidea megalosoma (OVERG. 1943)

Taken from *Phasianus colchicus* L. from following localities: Opatowice, 8. 1. 53, 1 ♀ and 1 juv., Wrocław, 2.12. 1. 55, 5 ♂♂ and 6 ♀♀, Wrocław, 3. 12. 55, 4 ♂♂, 6 ♀♀ and 7 juv., Wrocław Zoo, 2. 11. 57, 5 ♀♀ and 6 juv. and from *Perdix perdix* (L.) from Psie Pole near Wrocław, 12. 9. 55, 3 ♂♂, 4 ♀♀ and 3 juv.

The species is known as typical of *Phasianus colchicus* L. and *Perdix perdix* (L.) (HOPKINS a. CLAY 1952)

Menacanthus pallidulus (NEUM. 1912)

Collected from *Phasianus colchicus* L. from Kotowice, 26. 9. 52, 2 ♂♂, Wrocław Zoo, 2. 11. 57, 1 ♀.

The species is supposed typical of *Gallus domesticus* L. (HOPKINS a. CLAY 1952). Besides, VRAŽIĆ records it from *Perdix perdix* (L.). *Menacanthus pallidulus* (NEUM.) may live among others on *Phasianus colchicus* L.

Fig. 5. *Coloceras damicorne* (NITZSCH) from *Columba palumbus* L. (head of ♀). Opatowice, 4. 6. 52. Scale length = 1 mm.

Fig. 6. *Chelopistes meleagridis* (L.) from *Meleagris gallopavo (dom.)* (head of ♀), Wrocław Zoo, 26. 6. 55. Scale length = 1 mm.

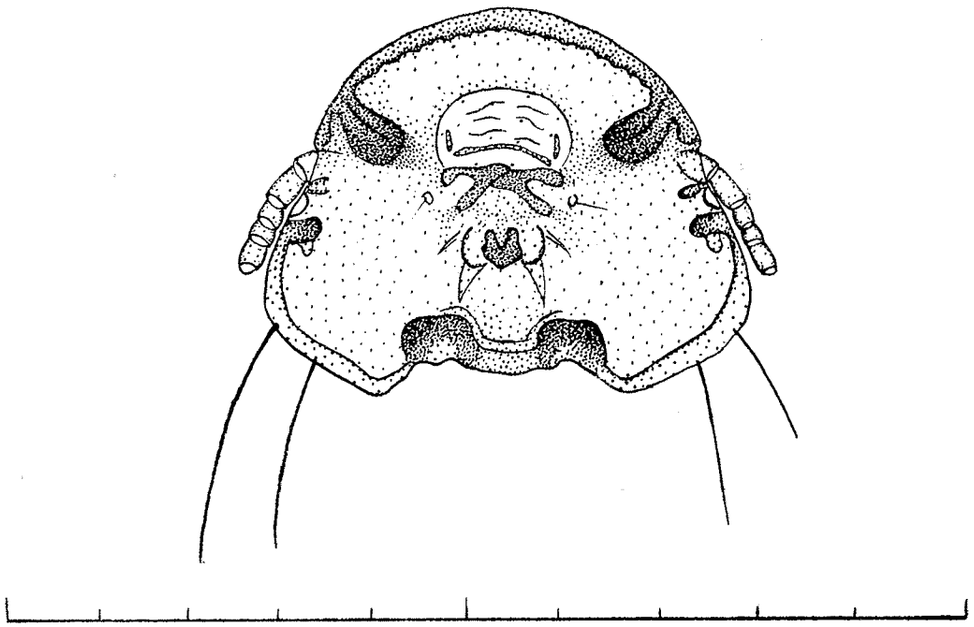

Fig. 7. *Goniocotes albidus* GIEB. from *Gennaeus nychthemerus* (L.) (head of ♀). Wrocław Zoo, 27. 6. 57. Scale length = 1 mm.

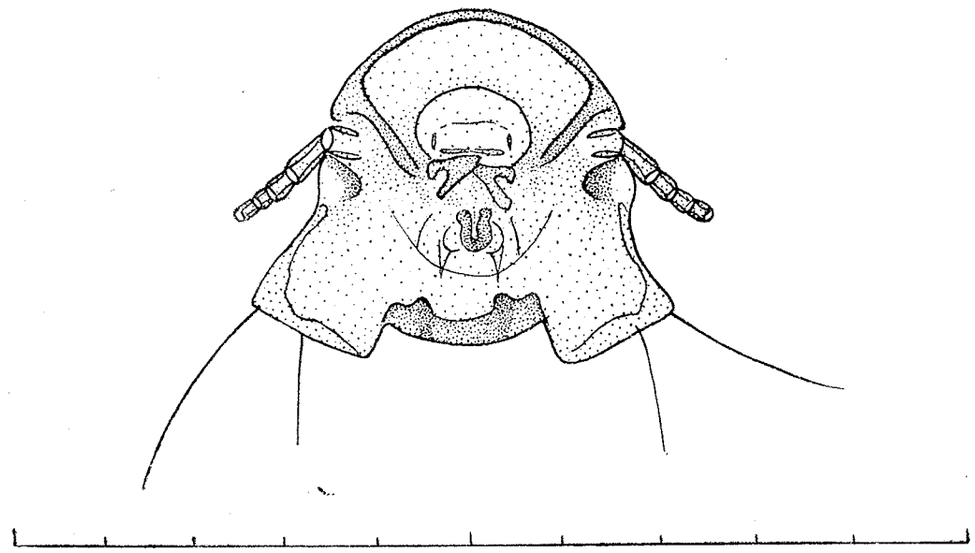

Fig. 8. *Campanulotes bidentatus* (SCOP.) from *Columba palumbus* L. (head of ♂). Wrocław, 26. 4. 54. Scale length = 1 mm.

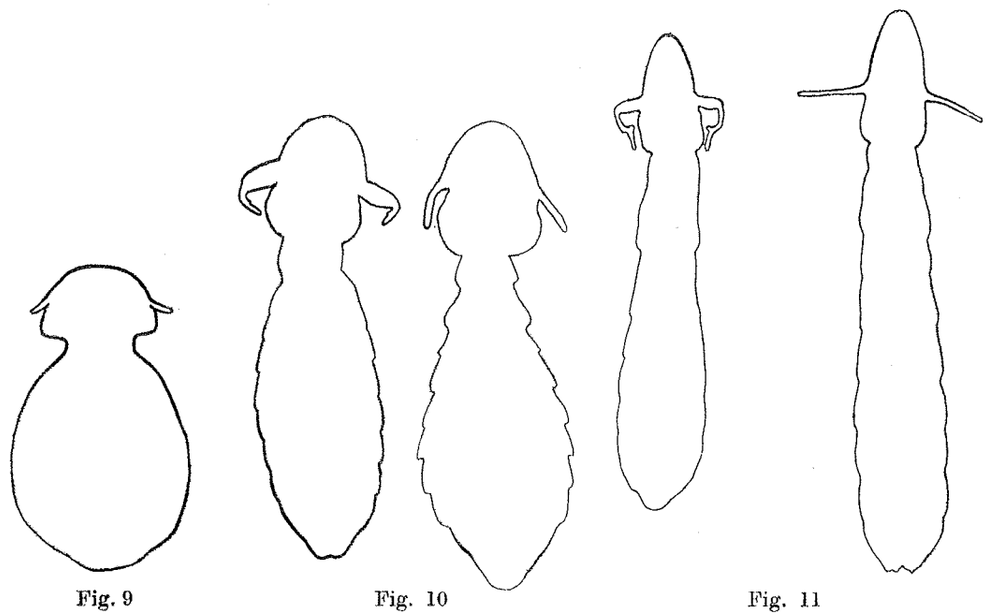

Fig. 9 Fig. 10 Fig. 11

Fig. 9. *Goniocotes gallinae* (DE GEER) from *Gallus domesticus* L. (silhouette of ♀).

Fig. 10. *Cuclotogaster heterographus* (NITZSCH) from *Phasianus colchicus* L. and *Phasianus reevesi* (L.) (silhouttes of ♂ and ♀).

Fig. 11. *Columbicola claviformis* (DENNY) from *Columba palumbus* L. (silhouettes of ♂ and ♀).

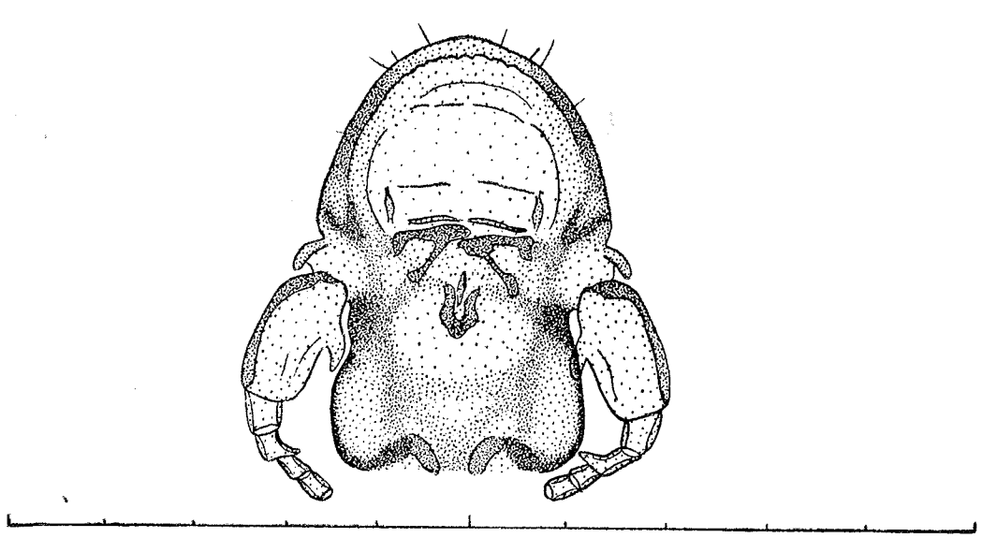

Fig. 12. *Lipeurus maculosus* CLAY from *Phasianus colchicus* L. (head of ♂). Opatowice, 24. 2. 52. Scale length = 1 mm.

Menacanthus stramineus (NITZSCH 1818)

Collected from *Gallus domesticus* L. from following localities: Wrocław, 8. 9. 49, 1 ♀, Wrocław, 19. 10. 57, 1 ♀ and from *Phasianus reevesi* GRAY from Wrocław Zoo, 20. 3. 56, 1 ♂, 10 ♀♀ and 2 juv.

HOPKINS and CLAY (1952) think the species to be a typical parasite of *Meleagris gallopavo domestica* L. SÉGUY (1944) records it also from many other species of birds such as: *Chauna chavaria*, *Phasianus colchicus* L., *Pavo spirifer*, *Gallophasis cuvieri*, *Gallus domesticus* L., *Numida meleagris* L. and *Columba livia* BON.

Colpocephalum sp. (? *turbinatum* DENNY 1842)

4 ♂♂ and 3 ♀♀ collected from *Streptopelia decaocto* (FRIV.) in the Zoo in Łódź, Nov. 1956.

Colpocephalum turbinatum DENNY is a typical parasite of *Columba livia (dom.)* BON. (HOPKINS a. CLAY 1952).

DISCUSSION

I deal with the *Mallophaga* from the birds of the families *Columbidae* and *Phasianidae* jointly, because all the genera of the family *Philopteridae* living on these birds, arranged in suitable groups show such close likeness in external build as is generally seen in the bird lice living on the related genera of birds within one family. The fact deserves special attention, as the families *Columbidae* and *Phasianidae* belong to two different orders *Columbae* and *Galli*. The opinions of the ornithologists vary as regards the establishing of the ties of affinity between these orders. In STRESEMAN'S classification of birds (1936) these orders are placed relatively close to each other. Similarly they are treated by FÜRBRINGER (1880) in his well-known ornithological system based on phylogenetical relationships in birds. On the whole, both the systems have been in general use up to now (DUBININ 1958, SOKOŁOWSKI 1958, FERENS a. WOJTUSIAK 1960).

In the further part of this work I am going to analyse my own material of *Mallophaga* from the birds of the orders *Columbae* and *Galli*, basing myself on the known thesis that the clue in the phylogenesis of the *Mallophaga* and their hosts is the parallelism of their evolution (CLAY 1949, 1957, KÉLER 1957, DUBININ 1958, BLAGOVESHCHENSKY 1959, ZŁOTORZYCKA 1961). To present clearly the correlations between some *Mallophaga* parasitizing the birds of the orders *Columbae* and *Galli* in Poland I keep on the working division of these parasites into groups according to the analogies in their external forms, on the same principle that I used for the analysis of the *Mallophaga* from birds associated with water environment (ZŁOTORZYCKA 1961). Thus, I erect three new groups: „*Goniodes*“, „*Goniocotes*“ and „*Lipeurus*“. In spite of apparent differences separating these groups, it can be seen that all their species have some

features of external build in common. And so, all the species belonging to the groups „*Goniodes*“, „*Goniocotes*“ and „*Lipeurus*“, no matter how much they differ in shape and size, have chitin strengthenings of head in the form of dark pigment patches disposed upon the same pattern. The following similar detail of the external build of the head is particularly manifest: The frons is always rimmed on the outside by a semicircular chitin thickening passing on either side of the head into a more or less big nodus, which often reaches almost as far as the well visible zygoma [1].

Below I give the characteristics of the groups „*Goniodes*“, „*Goniocotes*“ and „*Lipeurus*“.

„*Goniodes*“

In this group I include the genera *Goniodes* and *Chelopistes* living on the *Phasianidae* and *Colocerus* from the *Columbidae*. The species comprised within this group are relatively large, 2—3 mm. long, with a broad head and flattened abdomen (Fig. 1). The head width is greater than its length. Sexual dimorphism is always strongly marked in the build of the antennae and with the exception of *Chelopistes* in the general shape of the head and abdomen. The closest analogies in the external build can be noticed between the *Mallophaga* of the genera *Goniodes* (Figs. 2 and 3) and *Colocerus* (Figs. 4 and 5). Although the genus *Chelopistes* occurs also in the *Phasianidae* as the *Goniodes* does, it differs considerably from the latter in shape and stands apart as regards systematics. It deserves mention that almost all species of the genus *Chelopistes* live on exotic Phasianids. Only one species, *Chelopistes meleagridis* (L.) from *Meleagris gallopavo (dom.)* L., is known from Poland, but this bird is not of Polish origin. This is another evidence that the particular Mallophagan species are appropriate to their particular hosts.

„*Goniocotes*“

This group covers the *Mallophaga* of the genus *Goniocotes* (Fig. 7) living on the *Phasianidae* and those of the genus *Campanulotes* (Fig. 8) parasitizing within the family *Columbidae*. In general, they resemble the *Mallophaga* of the group „*Goniodes*“ (Fig. 9), but differ from them in smaller dimensions. Their body length amounts to about 1 mm. The head is less flattened than in the group „*Goniodes*“, and its width:length ratio is about 1:1. Besides, sexual dimorphism is not visible in the build of the head and antennae.

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[1] The nomenclature for head parts is used after KÉLER (1939).

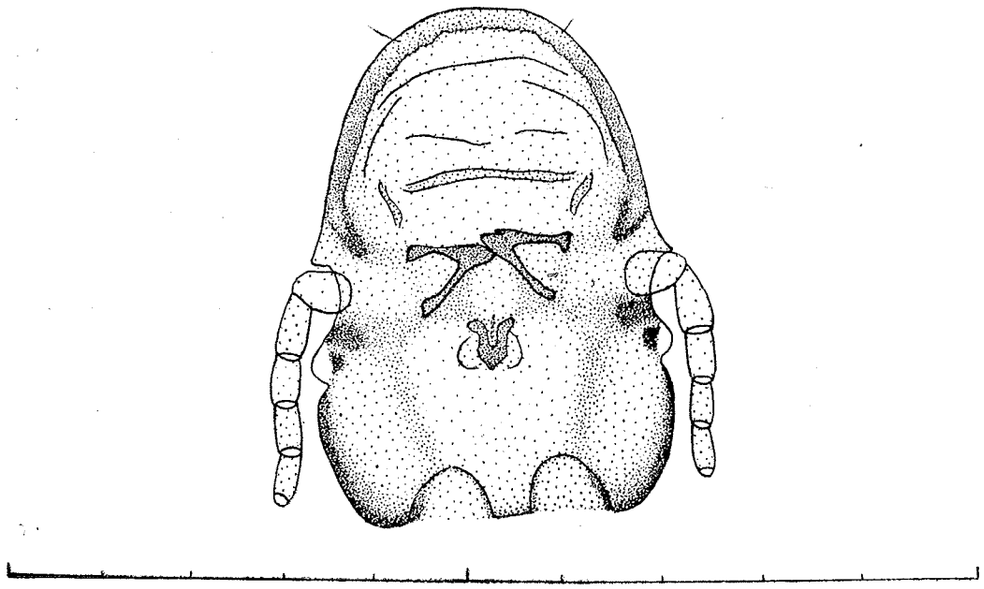

Fig. 13

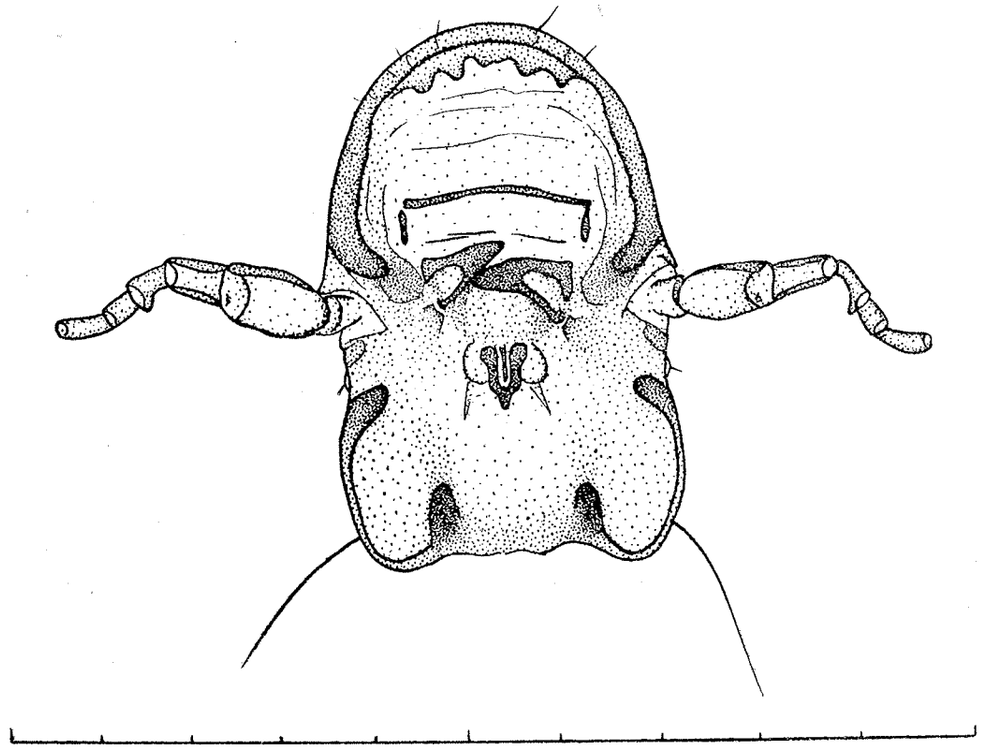

Fig. 14

„*Lipeurus*“

In this group I classified the *Mallophaga* of the genera *Lipeurus*, *Oxylipeurus*, *Cuclotogaster* and *Lagopoecus*, all living on the *Phasianidae* and those of the genus *Columbicola* from the *Columbidae*. The *Mallophaga* of these genera, with the exception of *Lagopoecus*, have narrow and elongated bodies and heads. The average length of the body is about 2—3 mm. Sexual dimorphism is conspicuous in the build of the antennae (Figs. 10—11) except for the genus *Lagopoecus*. The most numerous resemblances are noticeable among the genera *Lipeurus* (Figs. 12—13), *Oxylipeurus* (Figs. 14—15) and *Cuclotogaster* (Figs. 16—17). The *Mallophaga* of the genus *Columbicola* parasitizing the *Columbidae* come apparently near to them (Figs. 18—19), though the difference between them is greater than that between the genera *Goniodes* and *Coloceras* in the group „*Goniodes*“. Besides, it is remarkable that as regards their external form they approach to the *Mallophaga* of the genus *Ardeicola* from the *Ardeidae* (Fig. 20), which I included in the group „*Esthiopterum*“ (Złotorzycka 1961). As to the set of the genera *Lipeurus*, *Oxylipeurus* and *Cuclotogaster*, these seem to be associated in many details of their build with the genus *Rhynonirmus* typical of the *Charadriidae* (Fig. 21) classified by me within the group „*Nirmus*“ (Złotorzycka 1961).

The genus *Lagopoecus* typical of the *Phasianidae* (Fig. 22), systematically standing apart, differs from the remaining genera of the group „*Lipeurus*“ in the lack of sexual dimorphism, in the shape of the head and the build of the antennae as well as in its stouter general structure. Moreover, it has no corresponding genus associated morphologically within the *Columbidae*. The genus *Lagopoecus* makes an impression that it has considerable connexions regarding its external build with the genus *Degeeriella* typical of the *Falconidae* (cf. Fig. 17, Złotorzycka 1961), which I numbered in the group „*Nirmus*“.

I think that it is still premature to make use of the resemblances between the *Mallophaga* of the group „*Lipeurus*“ and those of the groups „*Estiopterum*“ and „*Nirmus*“ for disclosing phylogenetic connexions among their hosts.

In the birds of the family *Phasianidae* I found also the *Mallophaga* belonging to the genera *Menopon*, *Amyrsidea* and *Menacanthus* of the family *Menoponidae*, which complete the list of the genera classified in the group „*Menopon*“, and in the *Columbidae* I found the genus *Colpocephalum* numbered by me in the group „*Colpocephalum*“ (Złotorzycka 1961). As the *Mallophaga* of the genera *Menopon*, *Amyrsidea*, *Menacanthus* and *Colpocephalum* belong to the groups „*Menopon*“ and „*Colpocephalum*“, which are poorly specialized and widely

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Fig. 13. *Lipeurus maculosus* Clay from *Phasianus colchicus* L. (head of ♀). Opatowice, 24. 2. 52. Scale length = 1 mm.

Fig. 14. *Oxylipeurus tetraonis* (Grube) from *Tetrao urogallus* L. (head of ♂). Bolesławiec, Apr. 1960. Scale length = 1 mm.

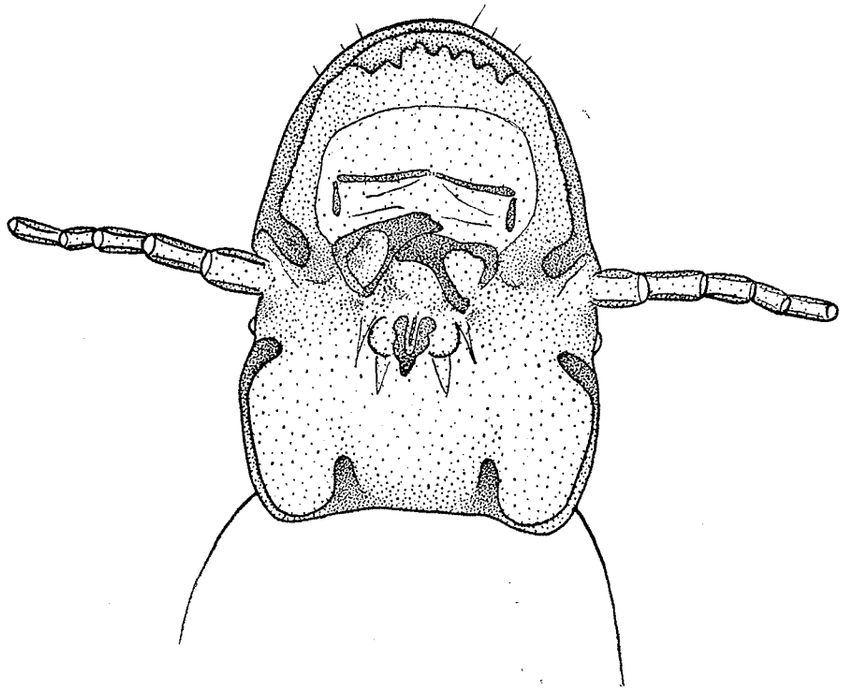


Fig. 15. *Oxylipeurus* (GRUBE) from *Tetrao urogallus* L. (head of ♀). Bolesławiec, Apr. 1960. Scale length = 1 mm.

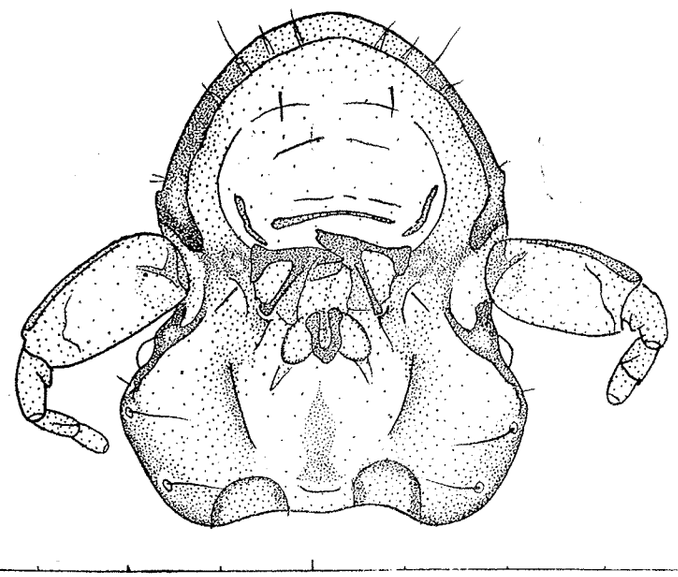


Fig. 16. *Cuclotogaster heterographus* (NITZSCH) from *Phasianus colchicus* L. (head of ♂). Wrocław Zoo, 27. 6. 57. Scale length = 1 mm.

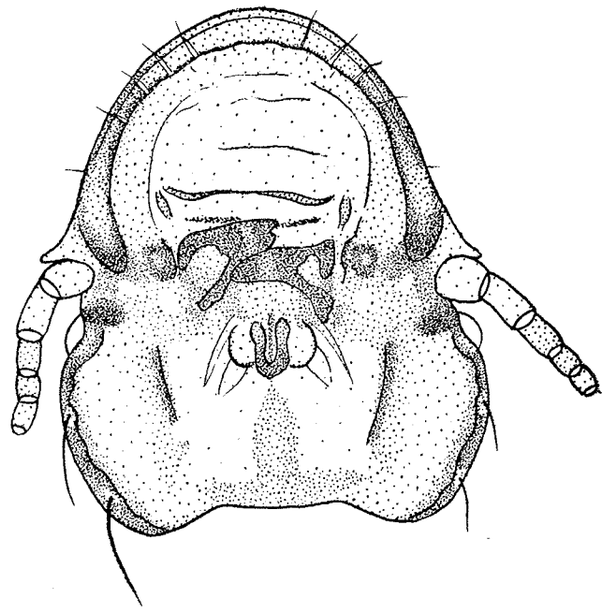


Fig. 17. *Cuclotogaster heterographus* (NITZSCH) from *Phasianus reevesi* (L.) (head of ♀). Wrocław Zoo, 27. 6. 57. Scale length = 1 mm.

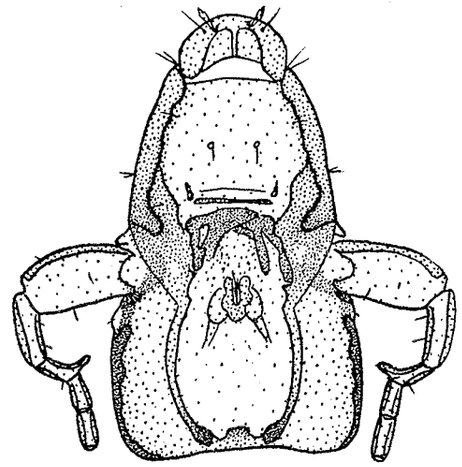


Fig. 18. *Columbicola claviformis* (DENNY) from *Columba palumbus* L. (head of ♂). Wrocław, 26. 4. 54. Scale length = 1 mm.

dispersed over various orders of birds, or in other words, which are characteristic not only of the *Phasianidae* and *Columbidae*, I have not included them in the present work.

The resemblance observed by me in the external structure of the *Mallophaga* of the groups „*Goniodes*“, „*Goniocotes*“ and „*Lipeurus*“ indicates an affinity between the *Mallophaga* belonging to these groups. KÉLER (1957) drew the same conclusion, when analysing the build of the extremities in the *Mallophaga*.

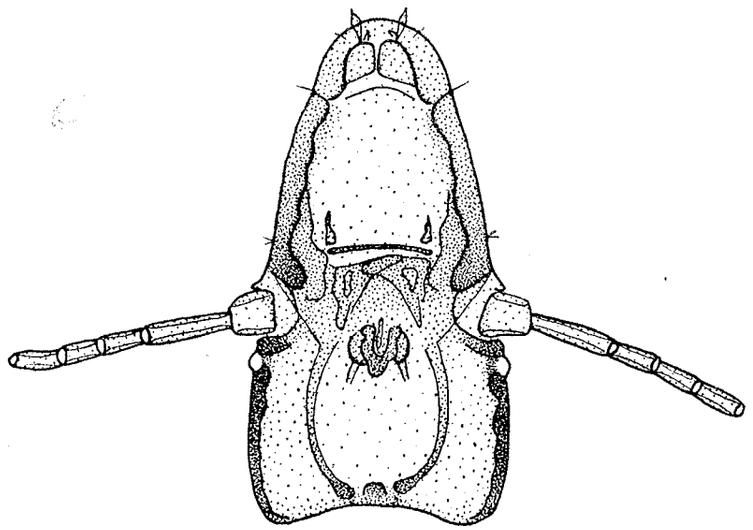
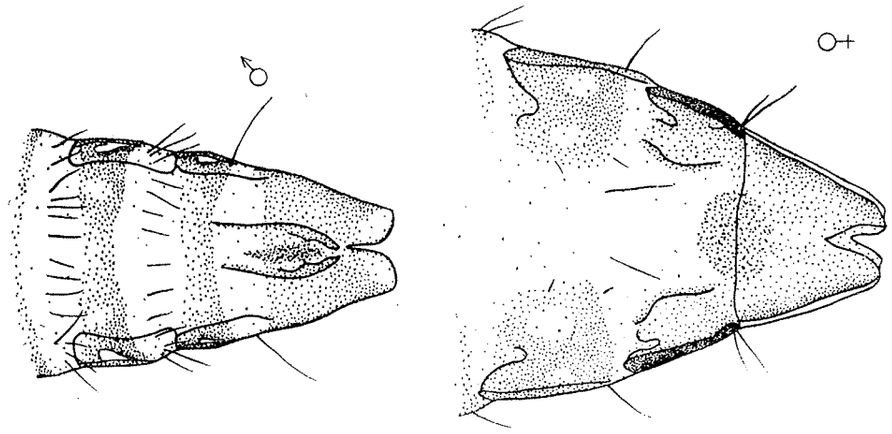


Fig. 19. *Columbicola claviformis* (DENNY) from *Columba palumbus* L. (head of ♀). Wrocław, 26. 4. 54. Scale length = 1 mm.

He thinks that the *Mallophaga* which I have classified in the groups „*Goniodes*“, „*Goniocotes*“ and „*Lipeurus*“ differentiated from the common trunk called by him *Pramenoponidae* through radiation in the Tertiary.

Besides, the degree of similarity in the *Mallophaga* examined indicates their weakly developed morphological specialization as compared with the differentiation in their hosts of the orders *Columbae* and *Galli*. Thus if we assume that the *Columbae* and *Galli* are related to each other, these facts seem to confirm the theory that the phylogenetic development of the *Mallophaga* advances slowlier than that of their hosts (CLAY 1949, BLAGOVESHCHENSKY 1959).

Finally, it is characteristic of the groups „*Goniodes*“, „*Goniocotes*“ and „*Lipeurus*“ that the native *Mallophaga* of these groups live on the birds of the orders *Galli* and *Columbae* only.



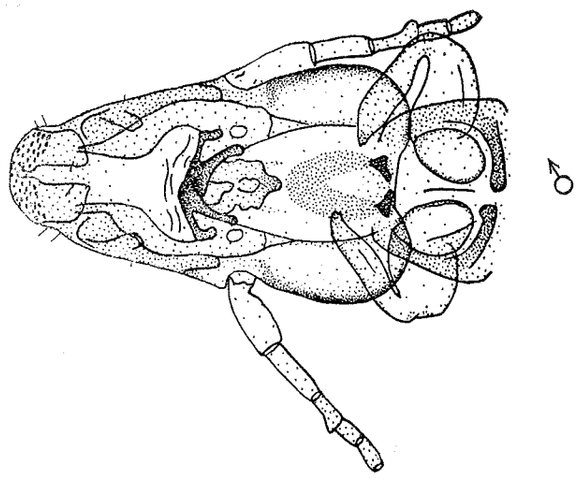


Fig. 20. *Avdeicola stellaris* (DENNY) from *Botaurus stellaris* L. head and terminal abdominal segments of ♂ and terminal abdominal segments of ♀). Opatowice, 30. 3. 58. Scale length = 1 mm

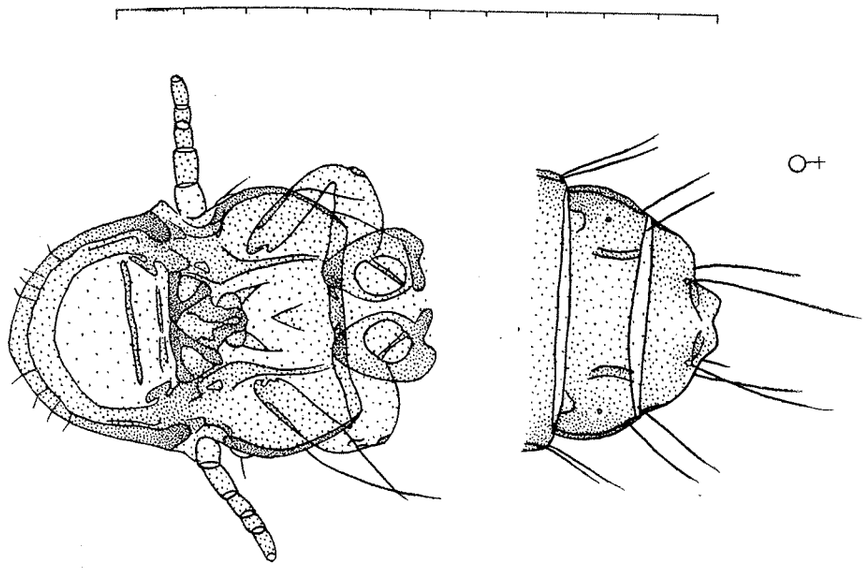


Fig. 21. *Rhynonirmus helvolus* (BURM.) from *Scolopax rusticola* L. (head and terminal segments of abdomen of ♂ and ♀). Kotowice, 26. 3. 57. Scale length = 1 mm.

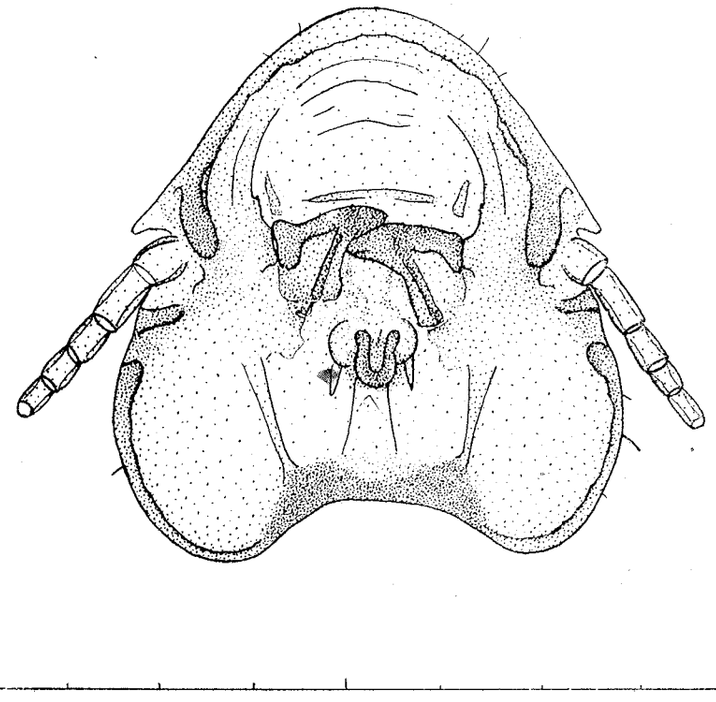


Fig. 22. *Lagopoecus pallidovittatus* (GRUBE) from *Tetrao urogallus* L. (head fo ♀). Bolesławiec, Apr. 1960. Scale length = 1 mm.

All the aforecited facts seem to indicate the existence of comparatively close phylogenetic connexions between the orders *Columbae* and *Galli*. The data presented by DUBININ (1958) can be used to support this thesis. He made the same conclusions on the base of his investigations on ticks *(Analgesiidae)*, which, like *Mallophaga*, are characterized by specific pertinence to their peculiar hosts. Moreover, CLAY (1957), sketching the pedigree of the birds on the base of the affinities in the *Mallophaga*, derives the order *Columbae* from the *Galli*.

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STRESZCZENIE

Praca ta dotyczy wszołów pasożytujących na ptakach z rodziny *Columbidae* i *Phasianidae*. Wzbogaca ona wykaz wszołów nowych dla Polski o 29 gatunków, które wraz z ich żywicielami podano na stronie 85.

Przeprowadzono analizę systematyczną wszołów z rodziny *Philopteridae*, zebranych z krajowych ptaków z rodziny *Columbidae* (rząd *Columbae*) i *Phasianidae* (rząd *Galli*). W tym celu wszoły podzielono na trzy grupy: „*Goniodes*", „*Goniocotes*" i „*Lipeurus*". Podział ten opiera się na podobieństwach zewnętrznych wszołów, które odpowiadają ich pokrewieństwu. Ponieważ w każdej z trzech grup występują wszoły żyjące tylko na *Columbae* i *Galli*, można te rzędy ptaków uważać za spokrewnione z sobą.

Praca została wykonana dzięki pomocy finansowej Komitetu Parazytologicznego Wydziału Nauk Biologicznych PAN.

РЕЗЮМЕ

Работа эта касается пухоедов паразитирующих на птицах семейства *Columbidae* и *Phasianidae*. Она обогащает перечень новых в Польше пухоедов количеством 29 видов, которые поданы пониже вместе с их кормильцами.

Philopteridae

Coloceras damicorne (NITZSCH)	— *Columba palumbus* L.
	— *Columba oenas* L.
Goniodes bituberculatus RUD.	— *Tetrao urogallus* L.
Goniodes tetraonis (L.)	— *Lyrurus tetrix* (L.)
Goniodes colchici DENNY	— *Phasianus colchicus* L.
Goniodes pavonis (L.)	— *Pavo cristatus* L.
Chelopistes meleagridis (L.)	— *Meleagris gallopavo (dom.)* L.
Goniocotes chrysocephalus GIEB.	— *Phasianus colchicus* L.
Goniocotes albidus GIEB.	— *Gennaeus nychthemerus* (L.)
Goniocotes gallinae (DE GEER)	— *Gallus domesticus* L.
Campanulotes bidentatus (SCOP.)	— *Columba palumbus* L.
Campanulotes compar (BURM.)	— *Columba livia (dom.)* BON.
Columbicola claviformis (DENNY)	— *Columba palumbus* L.
Columbicola columbae (L.)	— *Columba livia (dom.)* BON.
Columbicola bacillus (GIEB.)	— *Streptopelia turtur* (L.)
Lipeurus maculosus CLAY	— *Phasianus colchicus* L.
Lipeurus caponis (L.)	— *Gallus domesticus* L.
Oxylipeurus mesopelios (NITZSCH)	— *Phasianus colchicus* L.
Oxylipeurus tetraonis (GRUBE)	— *Tetrao urogallus* L.
	— *Lyrurus tetrix* (L.)
Cuclotogaster heterographus (NITZSCH)	— *Gallus domesticus* L.
	— *Phasianus reevesi* GRAY
	— *Phasianus colchicus* L. [1].
Cuclotogaster cinereus (NITZSCH)	— *Coturnix coturnix* (L.)
Lagopoecus pallidovittatus (GRUBE)	— *Tetrao urogallus* L.
Lagopoecus affinis (CHILDR.)	— *Lyrurus tetrix* (L.)

Menoponidae

Menopon pallens CLAY	— *Perdix perdix* (L.)
Menopon gallinae (L.)	— *Gallus domesticus* L.
Menopon hexapilosus VRAŽIĆ	— *Phasianus colchicus* L.
Amyrsidea megalosoma (OVERG.)	— *Phasianus colchicus* L.
	— *Perdix perdix* (L.)
Menacanthus pallidulus (NEUM.)	— *Phasianus colchicus* L.
Menacanthus stramineus (NITZSCH)	— *Gallus domesticus* L.
	— *Phasianus reevesi* GRAY
Colpocephalum (?*turbinatum* DENNY)	— *Streptopelia decaocto* (FRIV.)

[1] *Cuclotogaster heterographus* (NITSCH) быть может найден был случайно на обу фазанах.

Анализировано пухоеды семейства *Philopteridae*, собранные на польских птицах семейства *Columbidae* (отряд *Columbae*) и *Phasianidae* (отряд *Galli*). С эуой целью разделено пухоеды на три группы: „*Goniodes*“, „*Goniocotes*“ и „*Lipeurus*“. Разделение это основывается на наружных сходствах пухоедов; сходства соотвечают их родству. Так как в каждой из этих групп выступают пухоеды живущие только на *Columbae* и *Galli* — можно эти отряды птиц считать как филогенетически близкие.

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