FOLIA PARASITOLOGICA (PRAHA) 20: 255—261, 1973.

THE FEATHER MITE GENUS MEGNINIA (ACARINA, ANALGIDAE) OF SOME GALLINACEOUS BIRDS

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Abstract. The material reported from 7 species of Galliformes revealed 6 species of the genus *Megninia* three of which, *M. schumiloae*, *M. beaucournui* and *M. alectoriana*, are described as new for science.

The mites of the genus *Megninia* Berlese, 1881 are typical parasites of Galliformes. Their distribution on African hosts of this order has been recently studied by Gaud (1965) who reported 8 species among them 4 new for science. But relatively little is known about the taxonomy of these mites occurring on European gallinaceous birds. *Megninia cubitalis* (Mégnin, 1877) was recorded on *Alectoris graeca* (Vasilev 1957), *Coturnix coturnix* (Dubinin 1950, Vasilev 1957), *Lyrurus tetrix* (Dubinin 1950), *Perdix perdix* (Barysheva 1939, Vasilev 1957) and *Tetrastes bonasia* (Oliger 1940, Vasilev 1957), *Megninia ginglymura* (Mégnin, 1877) on *Perdix perdix* and *Phasianus colchicus* (Kutzer, Gräfner and Betke 1965), *Megninia tetraonis* Trt., 1899 on *Alectoris barbara* (Gaud and Petitot 1948, Gaud 1958). Some of these reports represent findings on European species of Galliformes in extra-European limits. Findings from domestic fowl and birds from zoological gardens are not mentioned.

From these records it may be concluded that the species of *Megninia*, without separate epimerites I, were identified by various authors as *M. cubitalis* or in Gaud's papers as *M. tetraonis*. In the figures accompanying the original description of *M. cubitalis* the male is characterized by Y-shaped sternum, subtriangular opisthosomal lobes with pseudoarticulation, well developed spurs on tibiae I and II, and 2 strong spines (the description says three) on tarsus III, the female is characterized by short semicircular epigynium, well developed tibial spurs and legs IV overpassing the body terminus with tarsus. The later descriptions in Canestrini and Kramer (1899) and in Bonnet (1924) are only brief and do not add anything characteristic for this species. The description given by Dubinin (1950) does not represent *M. cubitalis* (other form of bent adanal sclerites in male, short hind legs in female). *Megninia cubitalis* in Gaud and Mouchet 1959 and Gaud 1965 represents in fact *M. ginglymura* (see Černý 1970). The specimens with V-shaped epimerites in males were identified by Gaud (1965) as *M. tetraonis*. This author considers his *tetraonis* as a probable complex of species. Later on (Gaud in correspondence) he found the African mites not to be conspecific with *M. tetraonis*. On the ground of the material mentioned bellow I fully agree with Gaud's opinion that the species of *Megninia* with fused epimerites I in males represent a complex of closely related species which may be called *Megninia tetraonis*-group.

1. *Megninia cubitalis* (Mégnin, 1877) Fig. 1A

Material examined: 1♂ 3♀ from *Gallus gallus domesticus*, Teheran, Iran, September 1967, lgt. Rak.

These specimens are mentioned here because they are believed to represent the true *M. cubitalis*. This opinion is based on the following facts. 1. The host is domestic chicken like in the original description of Mégnin. Later Canestrini and Kramer (1899) and Radford (1953) report as hosts *Meleagris gallopavo* and other species of Phasianidae, Bonnet (1924) mentions again only domestic chicken. Although a transfer between various species of domestic fowl cannot be excluded, the domestic chicken ought to be considered as the proper host of *M. cubitalis* before establishing the true host-parasite relationships. 2. The male has the Y-shaped sternum like in the original description. The male is in good condition but all the females are deprived of body setae. Some of the characters worth of mention are given in the following paragraph.

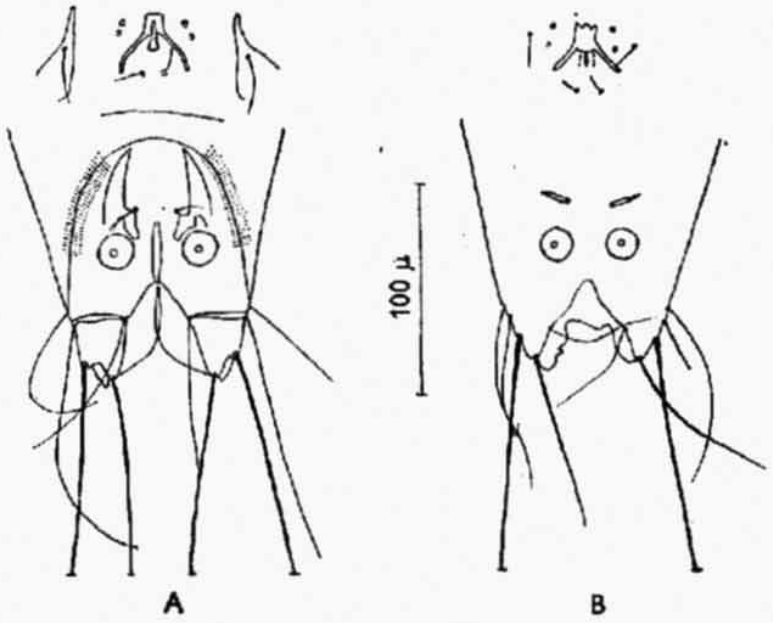

Fig. 1. Males, posterior extremity and genital organ, ventral view. A — *Megninia cubitalis*, B — *M. tetraonis* (some morphological details not seen on the specimen).

Male. (All measurements are given in μ.) Length 328, width 250. Propodosomal shield narrow, 79×43. Setae vi very short, setae sce slightly dilated, reaching to the pseudoarticulation of opisthosomal lobes. The dilated setae l_1 situated on a dorsomedian finger of humeral shield. Hysterosomal shield slightly concave anteriorly and anterolaterally. Setae d_2 very fine, situated on the anterior margin of the shield, l_2 and l_3 dilated. Opisthosomal lobes with pseudoarticulation between pai and l_4. This caudal part measures 28×27. Interlobal cleft subtriangular, 50 deep. A narrow membrane between l_5 and d_5. Ventrally, epimerites I forming a distinctly Y-shaped sternum, epimerites II only slightly curved. Coxa III with 2 opposite triangular sclerotizations, seta cx_3 very long, dilated. The cranial part of genital organ situated in the middle of idiosoma. The branches of genital arch with slight external concavity in anterior half and internal concavity in posterior half. Penis very short. Two longitudinal more intensively sclerotized strips before adanal suckers which are circular in outline, 17×17. Adanal setae setiform. Spurs on tibiae I and II well

developed, 17 and 19 long. Femur I with lateral retrograde rounded protuberance. A similar one, but very weakly developed, on femur II. Seta cG II with fine terminal filamentum. Legs III overpassing the body terminus with 2 distal articles, legs IV with distal half of tarsus. Two moderate acute subapical spines on tarsus III developed.

Female. Pregenital sclerite short, with narrow lateral parts and postero-median projection, situated between tips of epimerites II, not reaching the level of setae c_1. Latigynial apodemes of tocostome well developed, with acute tips, overpassing the level of setae c_3. Tibial spurs similar to male. Femur I with slightly developed lateral protuberance. Legs IV overpassing the body terminus.

2. *Megninia tetraonis* Trt., 1899 — Fig. 1B

Material examined: 2♂ from *Tetrao tetrix* L. (= *Lyrurus tetrix*), Northern Europe. Collection Trouessart No. 64.

The slide is designated as containing the male and female of this species. These specimens were considered to be the holotype and allotype (Naudo, in correspondence). But the slide really contains only 2 males in condition not allowing to recognize some morphological features, with many setae broken. The following characters can be observed in these two specimens. Body length 343 and 390, maximal width immediately before trochanters III 203 and 248. Epimerites I V-shaped. Genital arch with lateral branches straight, its anterior part in the mid-line of idiosoma. Length of setae c_{1-3} 89, 28 and 12. Setae a lanceolate, 16 long. Adanal discs 18×16. Opisthosomal lobes subtriangular, with internal membrane, in one specimen with very delicate transversal lobal line. Tibial spurs of legs I and II well developed, 16 and 20 long. Legs III overpassing the body terminus with 2 distal articles, legs IV with apical part of tarsus. Internal median and subapical spines of tarsus III very strong, 36 and 28 long. The differences between this and other species are given in the following descriptions.

3. *Megninia schumiloae* sp.n. — Figs. 2A, 3A

Material examined: Holotype: male from *Tetrastes bonasia* (L.), Shepot, Chernovitskaya region, USSR, 18. 7. 1967. Paratypes: 4♂ 4♀ 12N 1L, the same data; 2♂ 6♀ 7N 1L from *T. bonasia*, Shepot, 20. 7. 1967, all lgt. M. I. Lunkashu.

Male. Very weakly sclerotized. Body length 370, idiosomal length 345, width 231. Propodosomal shield 77×41, with setae vi not overpassing the gnathosoma. Hysterosomal shield with nearly straight anterior margin and slightly concave anterolateral margins. Setae d_2 miniscule, situated on its anterior margin. Setae se slightly dilated, l_{1-3} long, setiform. Opisthosomal lobes with subtriangular terminal part and with faint transversal lobal line. Interlobal cleft 41 deep, of characteristic form, bearing internal membrane with triangular incision. Ventrally, epimerites I V-shaped, epimerites II curved distally, epimerites IIIa and IV coalescent. Anterior part of genital arch in mid-line of idiosoma, its lateral branches straight. Length of setae c_{1-3} 69, 20 and 12. Setae a lanceolate, 14 long. Adanal discs circular, 16×16. Tibial spurs I and II 12 and 15 long. Setae cG II with fine terminal filamentum. Legs III overpassing the body terminus with 2 distal articles, legs IV slightly overpassing the body. Tarsus III with 2 spines, 30 and 24 long.

Female. Body length 394, idiosomal length 366, width 213. Propodosomal shield 83×53. Setae se moderately dilated. Setae l_{1-3} setiform. Pregenital sclerite nearly semicircular, with divergent branches overpassing the level of setae c_1 which are inserted on its inner margin, its anterior part situated between the tips of epimerites

II. Latigynial apodemes nearly reaching the level of setae c_3. Length of setae c_{1-3} 25, 61 and 106. Anus terminal. Tibial spurs I and II weakly developed, 8 and 10 long. Legs IV reaching the body terminus.

Megninia schumiloae sp. n. is very close to *M. tetraonis* in having lanceolate adanal setae and straight branches of genital arch in male. It differs from the latter species in shorter tibial spurs and less developed spines on tarsus III. The females could not be compared. The female of *M. schumiloae* differs from *M. beaucournui* sp.n. in setiform setae l_{1-3} and from *M. alectoriana* sp.n. in the anterior part of pregenital sclerite situated between the tips of epimerites II.

The species is named in honour of Dr. R. P. Schumilo, of the Zoological Institute, Academy of Sciences of the Moldavian SSR, Kishinev, in recognition of her numerous research studies in parasitology.

The holotype is deposited in the collections of the Institute of Parasitology, Czechoslovak Academy of Sciences, Prague (No. PÚ ČSAV 1748), the paratypes in the same institute and in the Zoological Institute, Academy of Sciences of the Moldavian SSR, Kishinev.

4. *Megninia beaucournui* sp.n. Figs. 2B, 3B

Material examined: Holotype: male from *Perdix perdix* (L.), Sablé sur Sarthe, France, September 1967. Paratypes: 3♂ 3♀, the same data. Other material: 1♂ from *P. perdix* Rennes, France, September 1968, all lgt. J. C. Beaucournu; 1♂ from *P. perdix*, Lapushna, USSR, 6. 1. 1968; 1 N from *P. perdix*, Kishinev, USSR, 6. 12. 1966, both lgt. E. I. Tichon.

Male. Body length 348, idiosomal length 327, width 215. Propodosomal shield elongate, 77×37, with setae vi reaching the middle part of gnathosoma. Hysterosomal shield nearly straight anteriorly, slightly concave anterolaterally. Setae d_2 minuscule, situated on the anterior margin of this shield. Setae sce and l_{1-3} slightly dilated. Opisthosomal lobes with triangular terminal part. Interlobal cleft 44 deep, of characteristic form, bearing internal membrane with triangular incision. Ventrally, epimerites I V-shaped, epimerites II curved, epimerites III hook-like, bent medially, epimerites IIIa and IV coalescent. Genital arch behind the mid-line of idiosoma, with straight lateral branches. Length of setae c_{1-3} 75, 29 and 19. Setae cx_3 strong, setae a dilated distally. Adanal discs subcircular, 17×16. Tibial spurs I a II well developed, 16 and 20 long. Setae cG II bifid. Legs III overpassing the body terminus with 2 distal articles, legs IV reaching the body terminus. Tarsus III with 2 spines, 28 and 24 long.

Female. Body length 350, idiosomal length 325, width 191. Propodosomal shield 73×48. Setae sce, l_1 and l_2 slightly dilated, l_3 setiform. Pregenital sclerite nearly semicircular, with divergent branches overpassing the level of setae c_1 which are inserted on its inner margin, its anterior part situated a little before the level of tips of epimerites II. Latigynial apodemes not reaching the level of setae c_3. Length of setae c_{1-3} 32, 81 and 89. Anus terminal. Tibial spurs I and II 12 and 14 long. Legs IV not reaching the body terminus (in one paratype they do).

Megninia beaucournui sp.n. differs distinctly in male sex from other species of the *M. tetraonis*-group in having the adanal setae dilated. Similar character appears in *M. ginglymura* (Mégnin, 1877) belonging to species with free epimerites I. The female differs from *M. schumiloae* sp.n. in having the setae l_1 and l_2 dilated, and from *M. alectoriana* sp.n. in the anterior part of pregenital sclerite situated between the tips of epimerites II.

The species is dedicated to Dr. J. C. Beaucournu, Faculty of Medicine, Rennes, who contributed considerably to the knowledge of ectoparasites of vertebrates.

The holotype and 4 paratypes are deposited in the collection of Dr. Gaud, Rennes, 2 paratypes in the collection of the Institute of Parasitology, Czechoslovak Academy of Sciences, Prague (No PÚ ČSAV 1749).

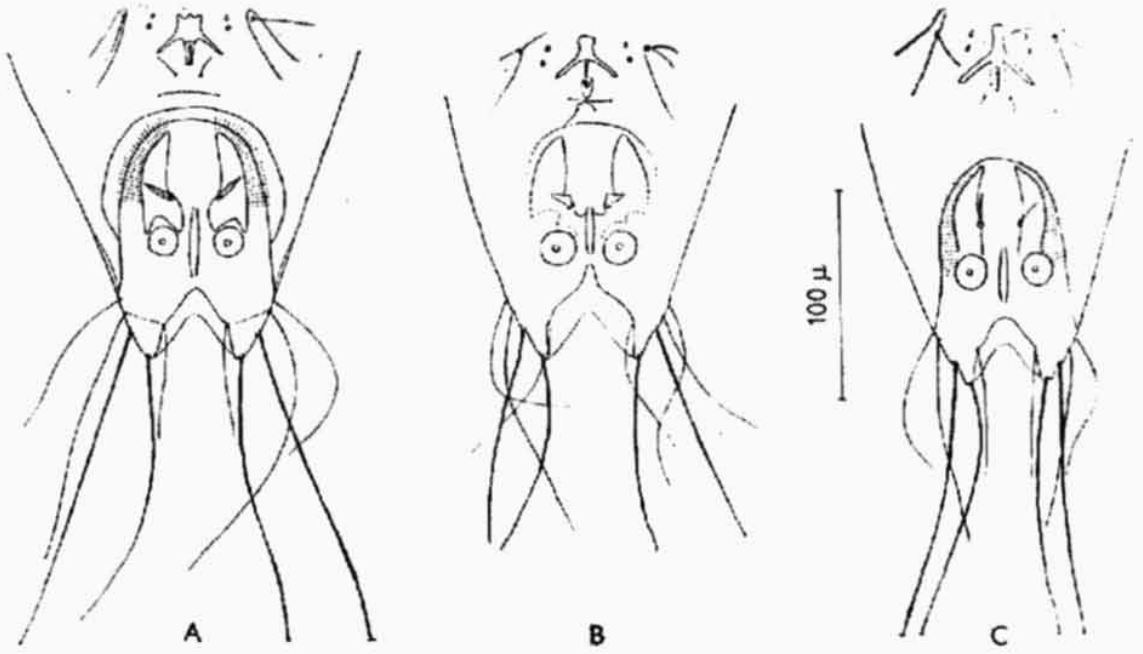

Fig. 2. Males, holotypes, posterior extremity and genital organ, ventral view. A — *Megninia schumiloae*, B — *M. beaucournui*, C — *M. alectoriana*.

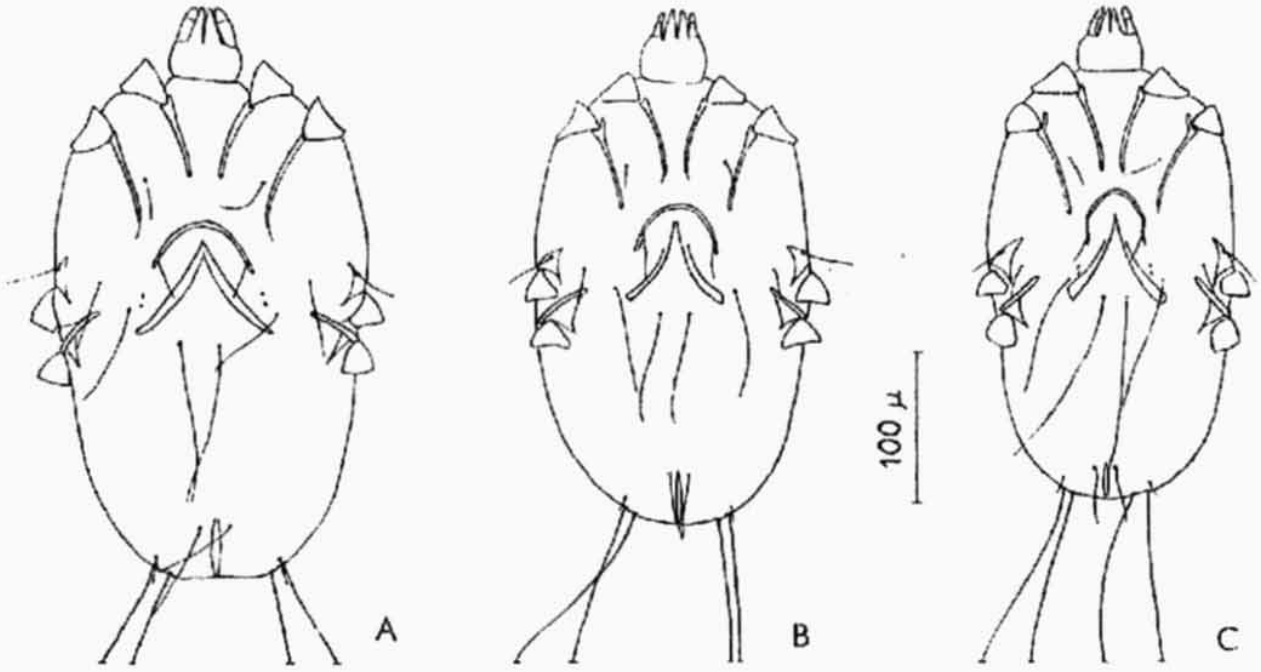

Fig. 3. Females, allotypes, ventral view. A — *Megninia schumiloae*, B — *M. beaucournui*, C — *M. alectoriana*.

5. *Megninia alectoriana* sp.n. Figs. 2C, 3C

Material examined: Holotype: male from *Alectoris barbara* (Bonnaterre), Rabat, Morocco, without date. Paratypes: 8♂ 2♀, the same data. Other material: 2♂ 1♀ 1N from *A. barbara*, Rabat, without date; 1♂ from *Alectoris rufa* (L.). Machecoul, France, without data, all lgt. J. Gaud.

Male. Body length 374, idiosomal length 354, width 215. Propodosomal shield 75×43, with setae vi overpassing the gnathosoma. Hysterosomal shield with irregular anterior margin and shallowly concave anterolateral margins. Setae sce, l_{1-3} dilated. Opisthosomal lobes short subtriangular (with very faint transversal line in some specimens). Interlobal cleft 32 deep, bearing internal membrane with subtriangular incision. A narrow membrane between l_5 and d_5. Ventrally, epimerites I Y-shaped, with short (24) median branch. Epimerites II curved, epimerites III curved and hook-like medially, epimerites IIIa and IV coalescent. Anterior part of genital arch in mid-line of idiosoma, its lateral branches straight. Length of setae c_{1-3} 85, 25 and 15. Setae a slightly lanceolate, 16 long. Adanal discs 16×16. Tibial spurs I and II 19 and 20 long. Seta cGII with fine terminal filamentum. Legs III overpassing the body with half tibia and tarsus. Tarsi of legs IV almost reaching the body terminus. Tarsus III with well developed spines 35 and 30 long.

Female. Body length 345, idiosomal length 315, width 171. Propodosomal shield 77×47. Setae sce, l_1 and l_2 dilated, l_3 very slightly dilated. Pregenital sclerite horse-shoe-shaped, overpassing the level of setae c_1. Its anterior half before the level of tips of epimerites II. Latigynial apodemes slightly overpassing the level of setae c_3. Length of setae c_{1-3} 25, 81 and 108. Anus terminal. Tibial spurs I and II 12 and 17 long. Legs IV reaching the body terminus.

Megninia alectoriana sp.n. is related to *M. cubitalis* (Mégnin) having the epimerites I in male Y-shaped. It differs from the latter species in straight lateral branches of genital arch and absence of retrograde protuberance on femur I and absence of lobar pseudoarticulation. The female of the new species differs from *M. cubitalis* in large pregenital sclerite and legs IV not overpassing the body terminus.

The holotype and paratypes are deposited in the collection of Dr. Gaud, Rennes.

6. *Megninia ginglymura* (Mégnin, 1877)

Material examined: 1♂ from *Phasianus colchicus* L., Rennes, without date, lgt. J. Gaud.

On the ground of the material studied it seems that the European species of the *Megninia tetraonis*-group show monogeneric association. *M. tetraonis* occurs on *Lyrurus*, *M. schumiloae* on *Tetrastes*, *M. beaucournui* on *Perdix*, *M. alectoriana* on *Alectoris*. The true host affinities of *M. cubitalis* have to be established. The males of this group can be identified as follows:

1 Adanal setae dilated distally . . . . . *M. beaucournui*
— Adanal setae of another form 2
2 Epimerites I Y-shaped 3
— Epimerites I V-shaped 4
3 Femur I with lateral retrograde protuberance, opisthosomal lobes with distinct pseudoarticulation . . . . . *M. cubitalis*
— Without femoral protuberance and lobal pseudoarticulation . . *M. alectoriana*
4 Tibial spurs I and II longer (16 and 20 μ), spines on tarsus III strong (36 and 28 μ) . . . . . *M. tetraonis*
— Tibial spurs I and II shorter (12 and 15 μ), spines on tarsus III less developed (30 and 24 μ) . . . . . *M. schumiloae*

The females can be identified in the following way (*M. tetraonis* not seen):

1 Pregenital sclerite short, not reaching the level of setae c_1, legs IV overpassing the body terminus . . . . . *M. cubitalis*
— Pregenital sclerite overpassing the level of setae c_1, legs IV reaching the body terminus 2

2 Anterior part of pregenital sclerite distinctly before the level of tips of epimerites II . . . . . *M. alectoriana*

— Anterior part of pregenital sclerite between the tips of epimerites II . . . 3

3 Setae l_{1-3} setiform . . . . . *M. schumiloae*

— Setae l_1 and l_2 dilated, l_3 setiform . . . . . *M. beaucournui*

Acknowledgements. I am deeply indebted to Dr. J. Gaud (Rennes) and Dr. R. P. Schumilo (Kishinev) for the loan of material from their collections for examination, and to Dr. M. H. Naudo (Paris) for the loan of the type of *Megninia tetraonis*.

ПЕРЬЕВЫЕ КЛЕЩИ РОДА *MEGNINIA* (ACARINA, ANALGIDAE) НЕКОТОРЫХ КУРИНЫХ ПТИЦ

В. Черны

Резюме. В материале, собранном на 7 видах куриных, обнаружено 6 видов перьевых клещей рода *Megninia*, из которых три описаны в качестве новых для науки видов.

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Received 18 October 1972.

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Corrigendum. In a previous note (Černý V., Folia parasit. (Praha) 20: 96, 1973) *Brephosceles formosus* instead of *B. superbus* should be written.