THE FEATHER MITE FAMILY ALLOPTIDAE GAUD.
II — THE OXYALGINAE, NEW SUBFAMILY (ANALGOIDEA) [1]

BY

Paul C. PETERSON [2] AND WARREN T. ATYEO [3].

ABSTRACT.

Oxyalginae, new subfamily of Alloptidae is established ; included genera : *Alloptellus* Dubinin, 1955 ; *Alloptoides* Gaud, 1961 ; *Ceraturoptellus* Černý, 1969 ; *Gaudium*, new genus, type species : *Proctophyllodes* (*Alloptes*) *abbreviatus* Trouessart, 1885 ; and *Oxyalges* Gaud and Mouchet, 1959. Numerous species are redescribed and illustrated, including *Alloptellus pacificus*, n. sp., from *Diomedea nigripes*. The genera *Cryptosikya* Gaud, 1960, and *Zumptia* Gaud and Mouchet, 1959 are assigned to the family Xolalgidae. New synonymy : *Proctophyllodes* (*Alloptes*) *euryurus* Trouessart, 1885 = *Ceraturoptellus nanus* Černý, 1969.

The first paper in a series on the Alloptidae is concerned with the alloptid subfamilies associated with the Apodiformes, Coraciiformes, Piciformes, and Passeriformes (ATYEO and PETERSON, 1971). This second paper deals with a highly modified group which evidently deviated early from primitive alloptid stock. Although now occuring on the same birds as some alloptine species (e.g., *Alloptes*, *Brephosceles*), the few species in the new subfamily have a limited host range and are associated with particular genera or species of hosts.

The genera *Cryptosikya* Gaud, 1960, and *Zumptia* Gaud and Mouchet, 1959, superficially resembling the Oxyalginae, are assigned to the family Xolalgidae.

Oxyalginae, new subfamily.

Type genus : *Oxyalges* Gaud and Mouchet, 1959.

Included genera : *Alloptellus* Dubinin, 1955 ; *Alloptoides* Gaud, 1961 ; *Ceraturoptellus* Černý, 1969 ; *Gaudium*, new genus ; *Oxyalges* Gaud and Mouchet, 1959.

The Oxyalginae are easily recognized by the short, conical and subequal legs, the entire to weakly cleft idiosomata, and in the males, coxal fields IV closed or almost closed. In weakly cleft species, neither setae d_3 nor d_4 are inserted on the inner margin of the terminal lobes. Generally, except for the legs and hysterosomal termini, the females are indistinguishable from species of the Alloptinae.

1. Research supported by the National Science Foundation (GB-15105) and the Youngstown State University.

2. Department of Biology, Youngstown State University, Youngstown, Ohio 44503.

3. Department of Entomology, University of Georgia, Athens, Georgia 30601.

Diagnosis : Alloptid mites ectoparasitic on Procellariiformes, Pelecaniformes, Ciconiiformes, and Anseriformes. Males weakly bilobed or entire, without terminal lamellae ; epimerites I elongated Y ; epimerites II*a* often fused with elements of epimerites III ; epimerites IV*a* + pregenital apodeme incorporated in heavily sclerotized arch across venter with IV*a* often extended anteriorly to enclose coxal fields IV ; genital discs anterior to genital region, often incorporated in heavy medial sclerotizations ; adanal discs atrophied (*Alloptoides*) to well-developed (*Gaudium*) ; genital organ small, reflexed. Female with epimerites I Y-shaped (rarely V-shaped) ; terminus weakly bilobed to entire ; pregenital apodeme free ; setae c_2 posterior to genital discs ; coxal fields IV open or closed. Both sexes with legs short, almost conical and inserted marginally (submarginal in *Oxyalges*), femorogenual articulations fused to partially fused, i.e., 4 functional segments ; ambulacra ovoid, rarely with apical point,median sclerite usually in shape of inverted « T » ; setae : one internal vertical (*vi*) present or absent, external verticals (*ve*) absent ; $d_{2\text{-}5}$, $l_{1\text{-}5}$ usually present ; d_1, d_3, l_3, *pai* may be absent ; $d_{2\text{-}4}$, $l_{2\text{-}4}$ usually microsetae (except *Gaudium*) ; setae l_5 usually represents single pair of long terminal setae ; *KT* on tibiae III, present in only one species.

TABLE 1. — Host-parasite associations of the Oxyalginae.

PROCELLARIIFORMES	
Diomedeidae	
Diomedea nigripes	*Alloptellus pacificus*, n. sp.
Procellariidae	
Pachyptila desolata	*Oxyalges cardiurus* Gaud & Atyeo, 1966
Pelecanoididae	
Pelecanoides georgicus	*Oxyales incertus* (Gaud), 1952
PELECANIFORMES	
Pelecanidae	
Pelecanus onocrotalus	*Alloptellus pelecanus* Dubinin, 1955
Pelecanus rufescens	*Alloptellus pelecanus* Dubinin, 1955
Fregatidae	
Fregata aquila	*Alloptellus coniventris* (Trt.), 1886
CICONIIFORMES	
Threskiornithidae	
Treskiornithinae	
Eudocimus albus	*Gaudium abbreviatus* (Trt.), 1885
Eudocimus ruber	*Gaudium abbreviatus* (Trt.), 1885
Hagedashia hagedash	(?) *Gaudium abbreviatus* (Trt.), 1885
Plataleinae	
Ajaia ajaja	*Ceraturoptellus euryurus* (Trt.), 1885
ANSERIFORMES	
Anatidae	
Anatinae	
Alopochen aegypticus	*Alloptoides gynurus* (Trt.), 1886
Tadorna radjah	*Alloptoides gynurus* (Trt.), 1886
Sarkidiornis melanota	*Alloptoides acanthodiscus* Gaud, 1961
Aythyinae	
Aythya nyroca	*Alloptoides aythinae* (Dubinin), 1951
Netta rufina	*Alloptoides aythinae* (Dubinin), 1951

The host-parasite associations are presented in Table I. As demonstrated, many of the mite taxa are commonly restricted to single host species. When more associations are discovered, it is presumed that the typical relationship for the Oxyalginae will be genus or family specific.

Genus *Oxyalges* Gaud and Mouchet.

Oxyalges Gaud and Mouchet, 1959, Ann. Parasitol. hum. comp., 34 (4) : 480-1 ; Gaud, 1961, Acarologia, 3 (1) : 95 ; Gaud and Atyeo, 1966, Acarologia, 3 (3) : 465-9 ; Atyeo and Peterson, 1970, Pacific Insects Monogr. 23 : 138.

Type species : *Thecarthra incerta* Gaud, 1952.

Males of the genus *Oxyalges* can be recognized from the related *Alloptellus* and *Alloptoides* by the shape of the hysterosomal terminus, the position of specific ventral setae, the development of the adanal discs and the origins of the posterior legs. In the two species, *Oxyalges incertus* and *O. cardiurus*, the hysterosomal terminus is extended to a sharp bearing six pairs of dorsal and ventral setae and the adanal discs are poorly developed, but not atrophied as in *Alloptoides*.

Diagnosis : Oxyalgine mites ectoparasitic on procellariiformes (Pelecanoididae, Procellariidae). Male with idiosoma heavily sclerotized dorsally, laterally, ventrally ; terminus extended as sharp median point ; coxal fields I, II, IV closed ; ventral tridentshaped shield formed by epimerites IV and anteromedial extensions of pregenital apodeme ; setae *sh* anterior and distant from setae *h* ; genital organ extending to setae c_3 ; adanal discs weakly developed. Female similar to *Alloptoides-Alloptellus* complex except idiosoma ovoid, setae *sh* sightly anteroventral to setae *h*, and terminus rounded. Both sexes with legs IV not extending to terminus ; central ambulacral sclerite in shape of T ; setae *vi*, *ve*, *d*, *kT* on tibia III absent.

When Gaud and Mouchet (1959) characterized the genus *Oxyalges*, they believed the taxon to be intermediate between the Proctophyllodidae and Dermoglyphidae. The position of the subhumeral setae anterior to the humeral setae, traditionally a non-proctophyllodid character, resulted in the original assignment to the family Dermoglyphidae. Later, Gaud (1961) assigned to the Alloptinae with *Alloptellus* Dubinin, 1955, and the genus *Cryptosikya* Gaud, 1961. We believe that *Cryptiosikya* and *Zumptia* Gaud and Mouchet, 1959, another genus originally assigned to the Alloptinae, should be attached to the family Xolalgidae.

Oxyalges incertus (Gaud).

Thecarthra incerta Gaud, 1952, Mém. Inst. sci. Madagascar, 7 (2) : 164-6 ; Radford, 1958, Revta. bras. Entomol., 8 : 111.

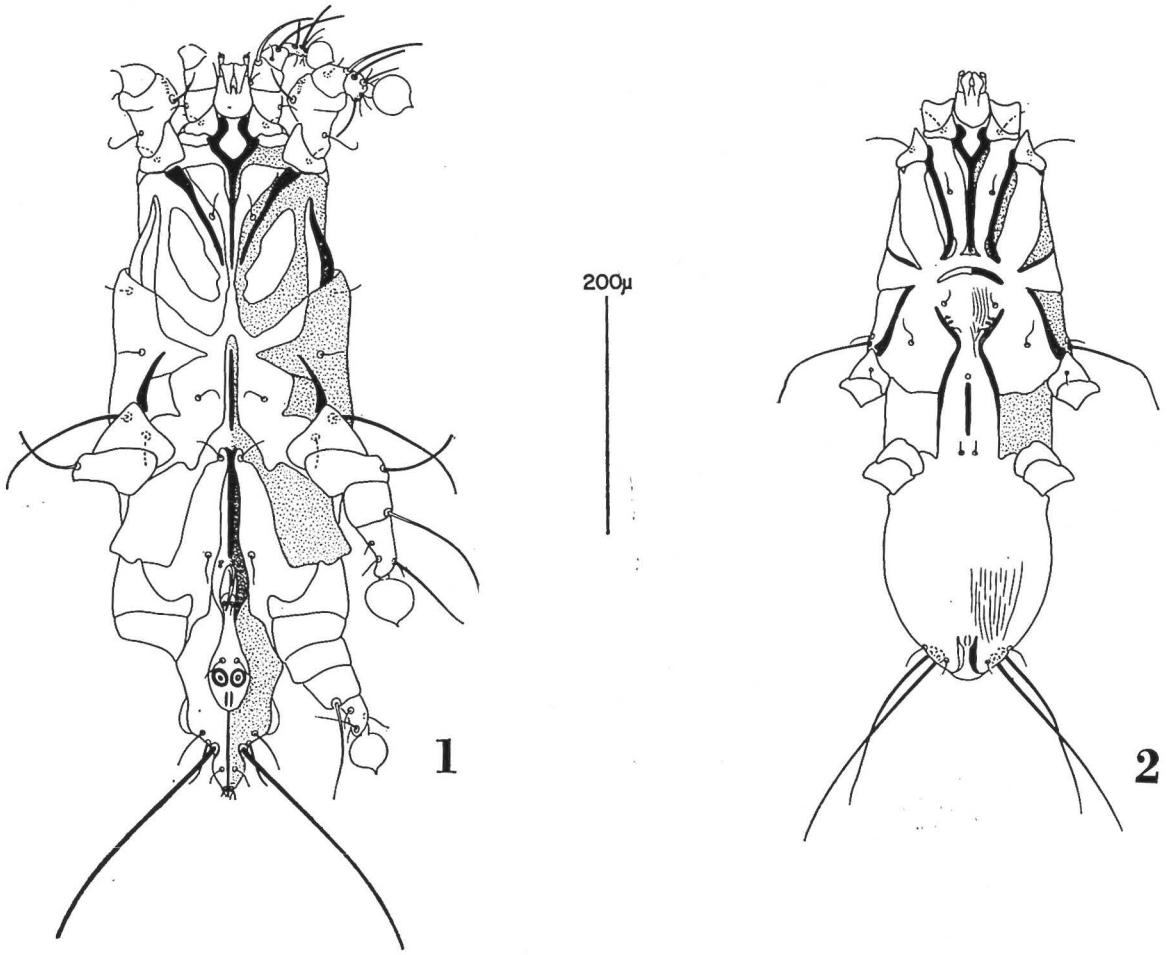
Oxyalges incertus : Gaud and Mouchet, 1952, Ann. Parasitol. hum. comp., 33 (3) : 480-1 ; Atyeo and Peterson, 1970, Pacific Insects Monogr. 23 : 138-9.

To date, this is the only species of the Alloptidae reported from the Pelecanoididae. It was originally described from a single male from *Pelecanoides georgicus* (Procellariiformes) from the Kerguelen Islands ; subsequently it has been recovered from the same host in other geographical areas. We have not figured this species as it is very similar to the following, *Oxyalges cardiurus*.

Oxyalges cardiurus Gaud and Atyeo.
(figs. 1, 2).

Oxalges cardiurus Gaud and Atyeo, 1966, Acarologia, 8 (3) : 465-9 ; Atyeo and Peterson, 1970, Pacific Insects Monogr. 23 : 139.

This species has been adequately described by GAUD and ATYEO (1966). The mite has been collected from the type host, *Pachyptila desolata*, in the Falkland Islands, South Orkney Islands, and Heard Island ; it has never been collected from other species of *Pachyptila*, even though some species are sympatric with P. *desolata*.



FIGS. 1-2 : *Oxyalges cardiurus* Gaud and Atyeo, ventral aspects of male (1) and female (2).

Gaudium, new genus.

Type species : *Proctophyllodes* (*Alloptes*) *abbreviatus* Trouessart, 1885.

Derivation : Named in honor of Dr. Jean GAUD in recognition for his numerous contributions to the knowledge of the Analgoidea.

Male of this monobasic taxon are distinguished from the related *Ceraturalloptes* and *Alloptellus* by the shape of the hysterosomal terminus, development of the coxosternal and pregenital apodemes, shape and development of the propodosomal shield, and modifications and positions of specific dorsal setae. The propodosomal shield is weakly developed (i.e., sclerotized) with irregular margins ; the external scapular setae (*sce*) are not inserted on the shield. The dorsal hysterosoma has setae d_2 and l_2 uniquely enlarged and the weakly bilobed terminus has many of the dorsal and lateral setae clustered around the apex of each lobe. Ventrally, the coxal fields are open near setae c_1 and the pregenital apodeme is fused with epimerites IV*a* forming a trapezoidal-shaped apodeme surrounding the genital apparatus.

Diagnosis : Oxyalgine mites ectoparasitic on Ciconiiformes (Threskiornithidae). Male with propodosomal shield reduced, not bearing external scapular setae ; terminus with small, widely separated lobes forming shallowly curved cleft ; each lobe bearing setae d_{4-5}, l_{3-5}, *pae*, *pai* ; legs IV extending far beyond terminus ; coxal fields I-IV open ; prominent U-shaped sclerotization extending from posterior articulations of legs IV anterior of genital apparatus ; setae *h* antero-lateral to *sh* ; adanal discs well developed. Female similar to *Alloptes* species with rounded terminus. Both sexes with median ambulacral sclerite T-shaped ; setae *vi*, *ve*, d_1, *kT* on tibia III absent.

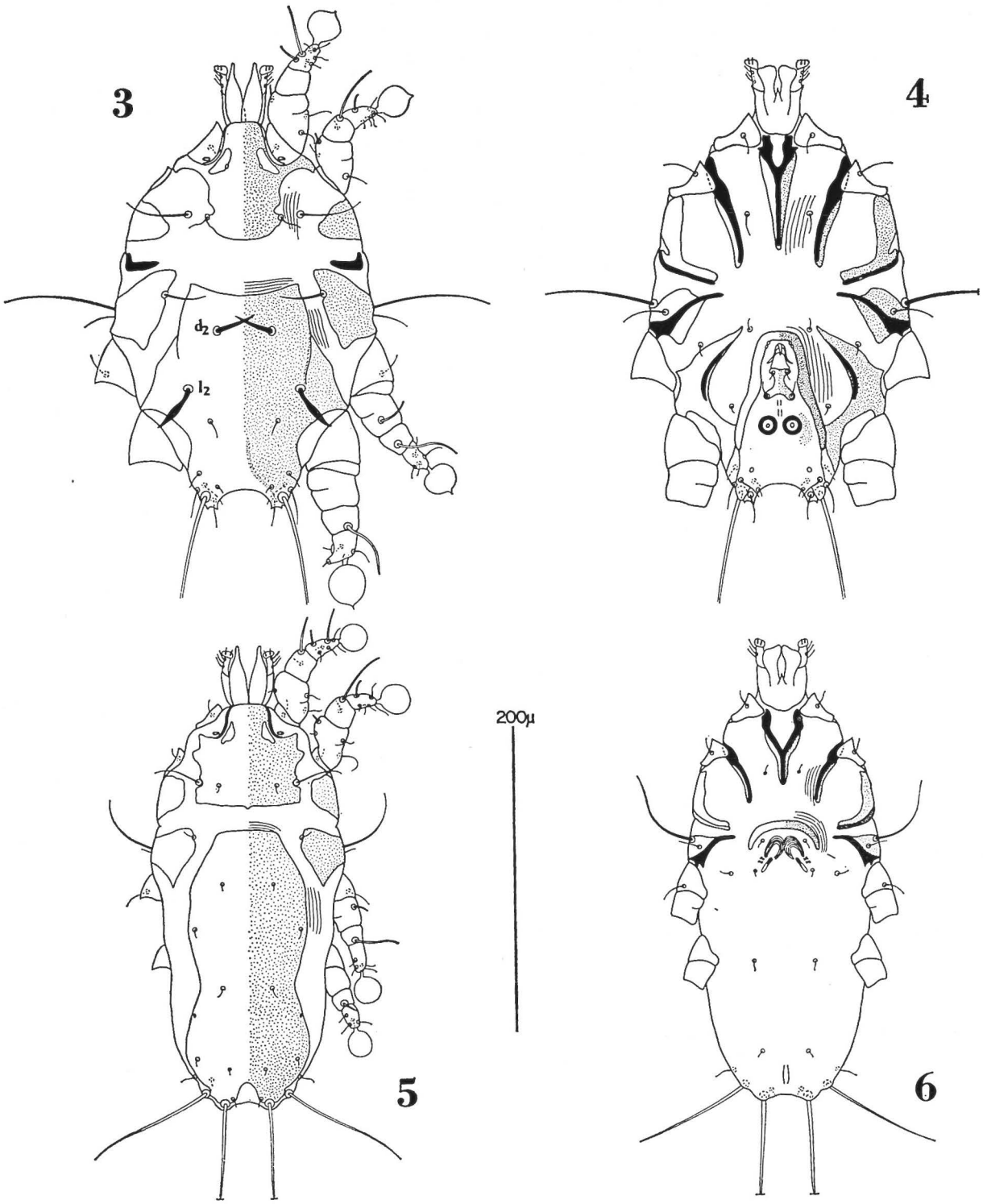
Gaudium abbreviatus (Trouessart), new combination.
(figs. 3-6).

Proctophyllodes (*Alloptes*) *abbreviatus* Trouessart, 1885, Bull. Soc. Etud. sci. Angers, 14 : 69.
Alloptes abbreviatus : Canestrini and Kramer, 1899, Tierreich, 7 : 114 ; Radford, 1953, Parasitol., 43 (3, 4) : 212 ; Radford, 1958, Revta. bras. Entomol., 8 : 115 ; Gaud and Till, 1961, Publ. S.o African Inst. Med. Res., 11 (L) : 240.

Males of Trouessart's species are easily recognized by characters unique in the Alloptidae : the propodosomal shield is reduced in size, setae d_2 and l_2 are greatly enlarged, and the genital apparatus and adanal discs are enclosed by a U-shaped sclerotization.

Male : Length (apices of palps to origins of setae l_5) ; 230 μ ; width, 127 μ. *Dorsal idiosoma* : Propodosomal shield 57 μ in length, 36 μ in width ; setae *sce* positioned off shield ; distance between *sce*, 57 μ, between *sci*, 36 μ. Scapular shields well developed. Humeral shields well developed, bearing setae l_1 on extreme anteromedial margins ; setae l_1 setiform, 40 μ in length ; setae *sh* spiculiform, 19 μ in length and positioned slightly posterior to setae *h*. Hysterosomal shield 108 μ in length ; supranal concavity absent ; setae d_2, l_2 enlarged ; setae posterior to d_3 clustered on widely separated and weakly developed terminal lobes ; setae d_5 spiculiform, positioned on inner margins of lobes approximate to long terminal setae, l_5. Legs IV extending beyond terminus by length of tibia + tarsus ; tarsus IV distally claw-like. *Ventral idiosama* : Surface fields of epimerites I-IV weakly developed. Subgenital shield small, bearing setae c_2, *a* ; genital organ minute, not extending to setae c_2.

Female : Length, 314 μ ; width, 134 μ. Propodosomal shield 79 μ in length, 74 μ in width, setae *sce* positioned off shield ; distance between setae *sce*, 69 μ, between *sci*, 46 μ. Setae *sh* setiform, 12 μ, in length, positioned slightly posterior to setae *h*. Hysterosomal shield 187 μ in length, 86 μ in width ; lateral margins incised at level of setae d_3 ; supranal concavity indistinct. Surface fields weakly developed on epimerites I-II.



FIGS. 3-6 : *Gaudium abbreviatus* (Trouessart), dorsal and ventral aspects of male (3, 4) and female (5, 6).

Type data : From *Eudocimus ruber* (= *Ibis rubra*) (Threskiornithidae), *Amerique Meridionale*.

Material examined ! From *Eudocimus ruber* : 1 ♂, 3 ♀♀, *Amerique Chaude* ; 3 ♂♂, 2 ♀♀, *Guyanes*. From *Eudocimus albus* : 1 ♂, 1 ♀, Mexico.

Remarks : The materials examined from *Eudocimus ruber* are from the TROUESSART Collection and probably represent the type series. However, TROUESSART did not mark either of these slides as « type », and as the locality mentioned in the original description does not agree with the slide material, we hesitate in designating any of the above specimens as the lectohолotype. GAUD and TILL (1961) mentioned that this or a closely related species has been collected in the Cameroons from *Hagedashia hagedash*. We have not examined this species and include in provisionally as *Gaudium abbreviatus*.

Gaudium abbreviatus is another of the poorly known and neglected species described by TROUESSART. Fortunately many of the specimens used by TROUESSART have been preserved as his original descriptions were seldom accompanieb by illustrations. Our drawings and redescription are based on the two specimens collected from *Eudocimus albus*.

Genus *Ceraturoptellus* Černý.

Ceraturoptellus Černý, 1969, Folia Parasitol., 16 : 155-7. Type species : *Proctophyllodes* (*Alloptes*) *euryurus* Trouessart, 1885 (= *Ceraturoptellus nanus* Černý, 1969) (new synonymy).

The two monobasic genera *Ceraturoptellus* and *Gaudium* are obviously similar as evidenced by the modifications of the males : broad idiosomata, enlarged dorsal setae, and hook-like tarsi IV. Presumably the differences (compare figs. 3, 4 with 7, 8) represent modifications to species of birds assigned to different subfamilies of the Threskiornithidae. *Gaudium abbreviatus* has been collected from *Eudocimus albus* and *E. ruber* from the New World and possibly from *Hagedashia hagedash* from Africa (GAUD and TILL, 1961) ; these species of birds are assigned to the subfamily Threskiornithinae. *Ceraturoptellus euryurus* has been collected only from *Ajaia ajaja*, subfamily Plateleinae.

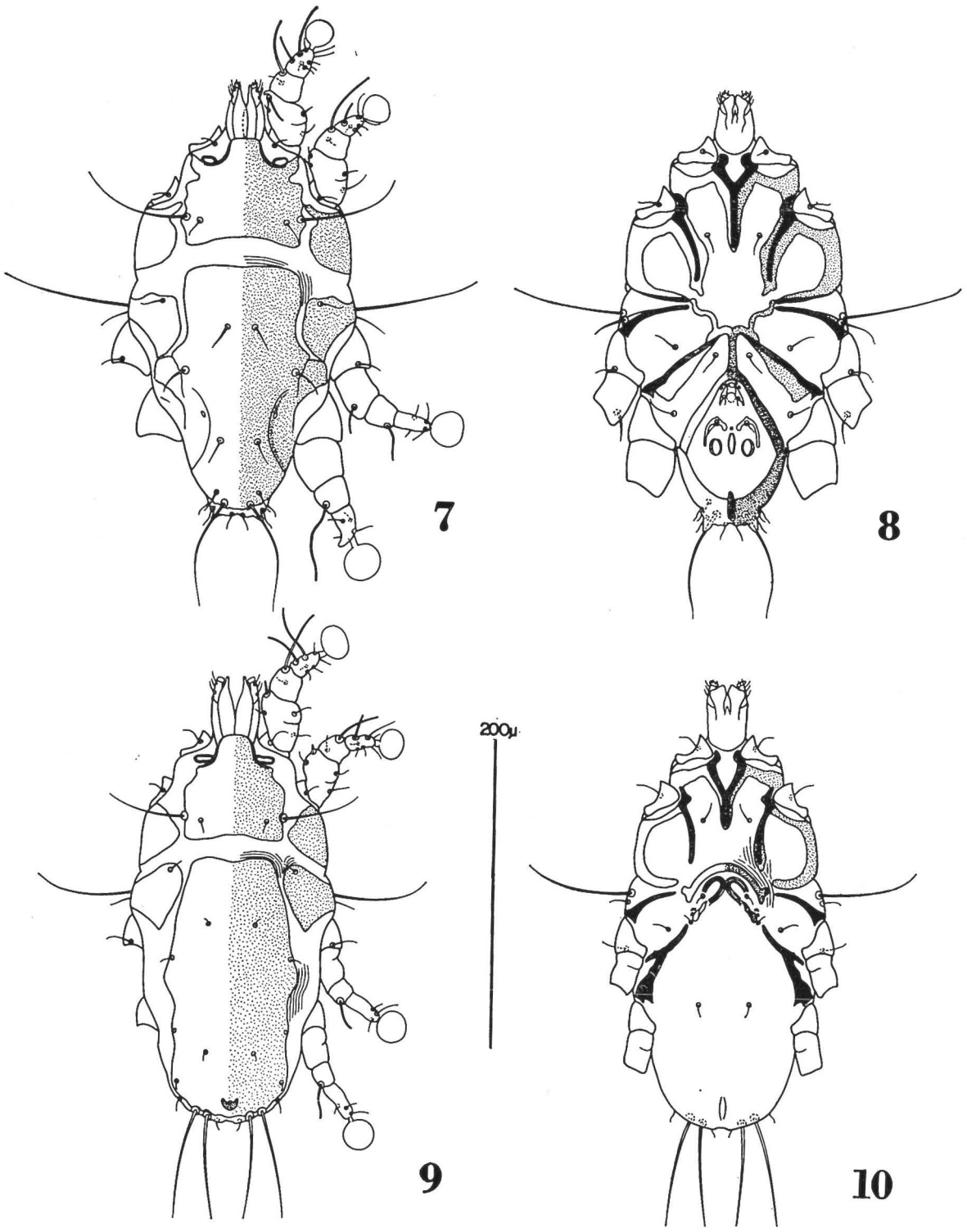
Diagnosis : Oxyalgine mites ectoparasitic on Ciconiiformes (Threskiornithidae). Males with dorsal and lateral shields well developed ; terminus rounded ; coxal fields III-IV closed ; epimerites IV*a* + pregenital apodeme medially fused and anteriorly extended to connect epimerites III*a* + IV ; adanal discs well developed ; setae d_{2-3}, l_2 spiculiform ; setae d_{4-5}, l_{3-5}, *pai*, *pae* approximate on terminus ; tarsi IV claw-like. Female similar to *Gaudium abbreviatus*. Both sexes with legs IV extending beyond terminus ; median ambulacral sclerite with two lateral projections as in *Alloptes* species ; setae *sh* slightly posterior to *h* ; setae *ve*, *vi*, d_1, *kT* on tibiae III absent.

Ceraturoptellus euryurus (Trouessart).

(figs. 7-10).

Proctophyllodes (*Alloptes*) *euryurus* Trouessart, 1885, Bull. Soc. Etud. sci. Angers, 14 : 69-70.
Alloptes euryurus : CANESTRINI and KRAMER, 1899, Tierreich 7 : 114 ; RADFORD, 1953, Parasitol., 43 (3, 4) : 213 ; RADFORD, 1958, Revta, bras. Entomol., 8 : 115.
Ceraturoptellus nanus Černý, 1969, Folia Parasitol., 16 : 155-157 (New synonomy).

The species, *Ceraturoptellus euryurus* (= *C. nanus*), has been adequately described by ČERNÝ (1969) consistent with the terminology established by ATYEO and GAUD (1966). Therefore,



FIGS. 7-10 : *Ceraturoptellus euryurus* (Trouessart), dorsal and ventral aspects of male (7, 8) and female (9, 10).

a redescription of this species is not deemed necessary. However, additional characters unique to the Oxyalginae have been observed in specimens collected by the authors and in specimens of the TROUESSART Collection not reported by ČERNÝ. All males of *C. euryunus* have a small hook on genu I and II located near the solenidia σ_1 and many specimens have epimerites III*a* weakly fused with epimerites II*a*, forming closed coxal fields III.

Type data : For *euryurus* : from *Ajaia ajaja* (= *Platelea ajaja*) (Threskiornithidae) : lectoholotype ♂, South America ; 1 ♂, 6 ♀♀, lectoparatypes, date and locality unknown. For *nanus* : from *Ajaia ajaja*, Cuba. The type series for the two names are deposited respectively in the TROUESSART Collection and the Czechoslovak Academy of Sciences.

Material examined : In addition to the type series, all from *Ajaia ajaja* : 1 ♂, Cuba ; 2 ♂♂, Colombia ; 1 ♂, 3 ♀♀, Mexico ; 2 ♂♂, 1 ♀, Texas.

Genus *Alloptoides* Gaud.

Alloptoides Gaud, 1961, Acarologia, 3 (1) : 91 ; PETERSON and ATYEO, 1968, Bull. Univ. Nebraska St. Mus., 8 (4) : 221.

Types species : *Alloptoides acanthodiscus* Gaud, 1961.

Males of the genus *Alloptoides* are distinguished from the related species of *Ceraturoptellus* and *Alloptellus* by the weakly bilobed hysterosomal terminus, spiculiform subhumeral setae posterior to the humeral setae, narrow band of conjunctiva anterior to the genital region bearing easily seen genital discs, and atrophied adanal discs. In contradistinction, *Ceraturoptellus* and *Alloptellus* males are characterized by a rounded terminus, setiform subhumeral setae usually anterior to the humeral setae, heavily sclerotized band anterior to the genital region in which the genital discs are icorporated, and well-developed adanal discs.

Diagnosis : Oxyalgine mites ectoparasitic on Anseriformes (Anatidae). Male with dorsal shields extremely large, venter posterior to legs IV heavily sclerotized ; terminus narrowly cleft ; coxal fields I open or closed ; coxal fields IV closed ; anteriorly directed apodemes anterior to genital region separated by narrow conjunctival band with genital discs obvious ; setae c_2 and *a* widely separated ; adanal discs small atrophied. Female with epimerites I,V- or Y-shaped, otherwise similar to *Alloptes* species with weakly cleft terminus. Both sexes with legs IV not extending to terminus ; ambulacra each with apical point and T-shaped central sclerite ; setae *sh* spiculiform and positioned posterior to *h* ; setae *ve*, d_1, *kT* on tibiae III absent ; seta *vi* present.

Alloptoides acanthodiscus Gaud.

Alloptoides acanthodiscus Gaud, 1961, Acarologia, 3 (1) : 91.

It is probable that *Alloptoides acanthodiscus* Gaud and *A. aythinae* (DUBININ) are conspecific. The descriptions of these species are similar, and only minor differences could be detected in the few distorted specimens available for study. Until these species are represented by better study material, we prefer to call attention to the possibility of synonymy while maintaining the two names.

GAUD's species was described from specimens collected from *Sarkidiornis melatona*. With the host, GAUD's excellent description, and new illustrations in this paper, a redescription seems unnecessary.

Type data : From *Sarkidiornis melanota* (= *S. africana*) (Anatidae, Anatinae) : Maroua, Cameroons. The types are in the GAUD Collection.

Material examined : Paratypes : 1 ♂, 3 ♀♀.

Alloptoides aythinae (Dubinin).

(figs. 11, 12).

Brephosceles aythinae Dubinin, 1951, Parazitol. Sb. 13 : 226, 227 ; RADFORD, 1958, Revta. bras. Entomol., 8 : 118.

Alloptoides aythinae : PETERSON and ATYEO, 1968, Bull. Univ. Nebraska St. Mus., 8 (4) : 221.

As mentioned above, *Alloptoides acanthodiscus* is probably conspecific with this species, but with limited study material and hosts in different subfamilies of the Anatidae, we are not synonymizing the taxa at this time. Another difficulty is that the male and female examined are not from the type host, but from a related bird of the same subfamily, the Aythyinae.

Type data : From *Netta rufina* (Anatidae, Aythyinae) : Chany, Novosibirsh oblast, Russian S.F.S.R., July 10, 1936. The type series is deposited in the Leningrad Academy of Sciences.

Material examined : From *Netta rufina* (Anatidae, Aythyinae) : 1 ♂, 1 ♀ identified as *A. aythinae* by V. B. DUBININ.

Remarks : The authors wish to thank Dr. Hélène DUBININA for kindly sending the identified specimens of *A. aythinae*. The drawing were prepared from these specimens.

Alloptoides gynurus (Trouessart).

(figs. 13-16).

Proctophyllodes (*Alloptes*) *gynurus* Trouessart, 1886, Bull. Soc. Etud. sci. Angers, 16 : 145-6.

Pterodectes gynurus, Canestrini and Kramer, 1899, Tierreich 7 : 125 ; RADFORD, 1953, Parasitol., 43 (3, 4) : 215 ; RADFORD, 1958, Revta. bras. Entomol., 8 : 119.

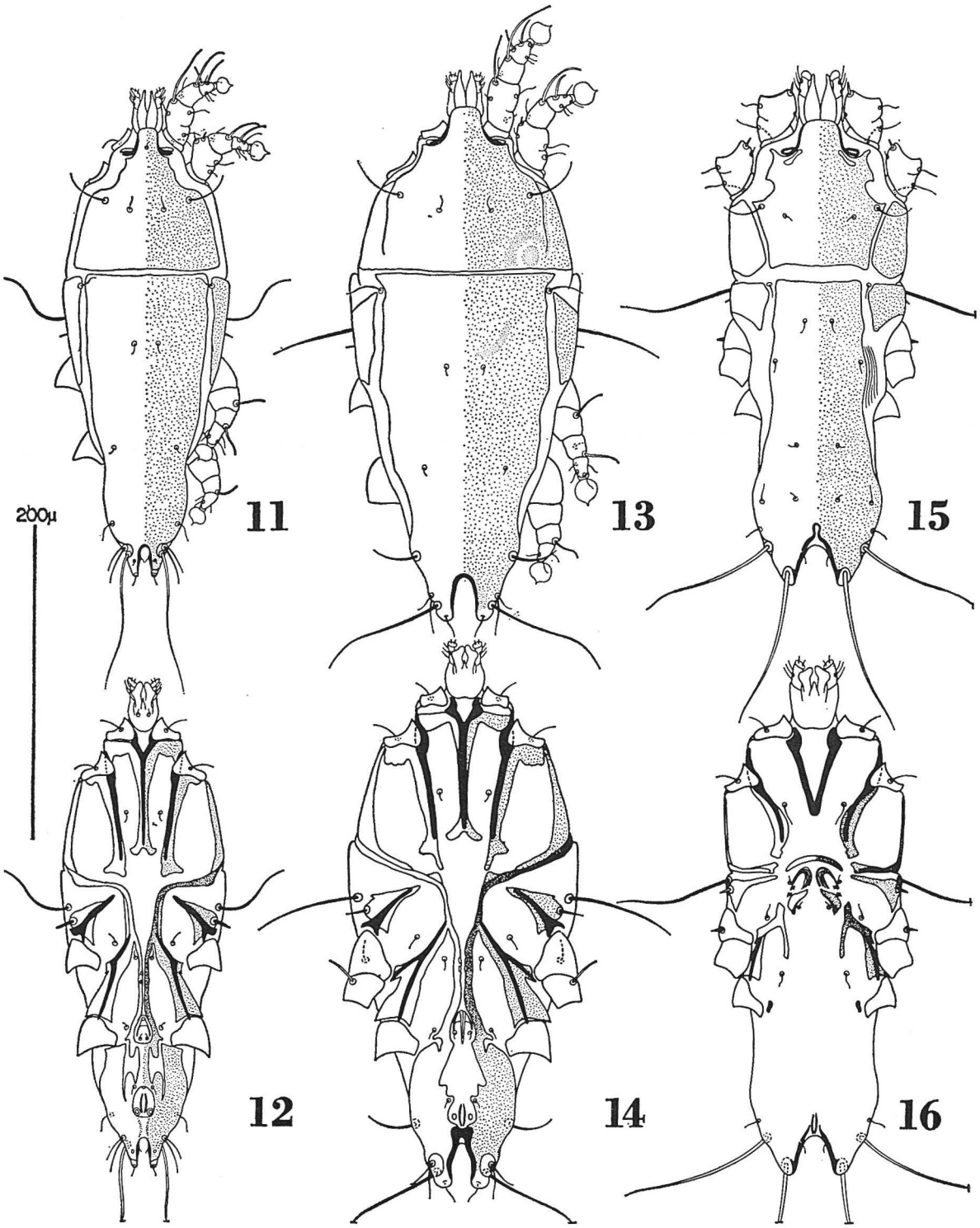
Alloptes gynurus : Gaud, 1953, Ann. Parasitol. hum. comp., 28 (3) : 197.

Brephosceles gynurus : GAUD and TILL, 1961, Publ. So. Afr. Inst. Med. Res., 11 (L) : 242.

Alloptoides gynurus : PETERSON and ATYEO, 1968, Bull. Univ. Nebraska St. Mus., 8 (4) : 221.

Alloptoides gynurus is the third binominal encountered in the genus *Alloptoides* and here too there are difficulties. The types are evidently lost and the study material, although identified by TROUESSART, is from *Tadorna radjah*, not from the type host, *Alopochen aegypticus*. Next, the females in TROUESSART's preparations are not typical of the subfamily Oxyalginae, but are typical for the genus *Brephosceles*.

MALE : Length, 347 μ ; width, 148 μ. *Dorsal idiosoma* : Propodosomal shield 125 μ in length, 110 μ in width ; distance between *sce*, 62 μ, between *sci*, 28 μ. Scapular shields well developed, weakly fused with lateral margin of propodosomal shield. Humeral shields well developed, bearing setae l_1 on extreme anteromedial angle ; setae *sh* spiculiform, 12 μ in length, positioned



FIGS. 11-12 : *Alloptoides aythinae* (Dubinin), dorsal and ventral aspects of male.
FIGS. 13-14 : *Alloptoides gynurus* (Trouessart), dorsal and ventral aspects of male.
FIGS. 15-16 : Female, probably a *Brephosceles* species improperly associated with male of *Alloptoides gynurus*, dorsal and ventral aspects.

posterior to setae *h*. Hysterosomal shield 230 μ in length ; supranal concavity absent ; terminus weakly bilobed. Legs IV extending slightly beyond setae l_3 ; tarsus IV simple. *Ventral idiosoma* : Surface fields of epimerites I-IV weakly developed. Genital arch independent of epimerites ; genital organ extending slightly beyond setae c_2. Setae c_2, c_3 (on coxae IV) at same levels ; setae *a* anterior to atrophied adanal discs at edges of ventrolateral sclerotizations.

FEMALE : Unknown.

Type data : From *Alopochen* (= *Chenalopex*) *aegypticus* (Anatidae, Anatinae) : Congo. Location of types : unknown.

Material examined. From *Tadorna radjah* (Anatidae, Anatinae) : 3 ♂♂, 3 ♀♀, New Guinea from TROUESSART Collection ; 1 ♂, New Guinea, collected April 15, 1931.

Remarks : In our many attempts to recollect any of the *Alloptoides* species, we have been able to find only one male of *A. gynurus*, never any females. Although we have included illustrations of a female, we are reasonably certain that it represents a *Brephosceles* species.

Genus *Alloptellus* Dubinin.

Alloptellus Dubinin, 1955, Trudy zool. Inst., Leningr., 18 : 282-6 ; GAUD, 1961, Acarologia, 3 (1) : 93, 95.

Types species : *Alloptellus pelecanus* Dubinin, 1955.

Modifications of the dorsal and lateral idiosomal shields have been noted for other genera. In *Alloptellus* males a progression in shield development can be observed. On the propodosomata of *A. pelecanus* and *A. coniventris*, the propodosomal shield is independent and ends posteriorly at or near the insertions of the internal scapular setae. In *A. pacificus*, new species, this shield is fused to the scapular shields and is continued posteriorly to the sejugal suture. Conversely, the two species with the smaller propodosomal sclerotizations have complex hysterosomal shields while *A. pacificus* has the hysterosomal elements independent. In this latter species, there are two dorsolateral shields (metapodosomal shields) at the hysterosomal midlength continuous with the ventral epimerites. In *A. coniventris*, the metapodosomal shields have lost their connections with the venter and have fused with the hysterosomal shield ; the line of fusion is evident and a secondary suture has developed across the hysterosomal shield midway between the levels of setae d_2 and l_2 ; the humeral shields, although remaining free, appear to be enlarged. In the thirds species, *A. pelecanus*, the humeral and metapodosomal shields have been expanded and fused white the hysterosomal shield resulting in a complete dorsal protection flexible only through the well-developed secondary (transverse) suture.

The female of *A. coniventris* in some aspects has evolved as the males of *A. pacificus*. The propodosomal and scapular shields have formed a complete encasement for the dorsal and lateral propodosoma and the lines of fusion have been obliterated. A farther consolidation of shields is seen with the combined hysterosomal and humeral shields ; again, the line of fusion is no longer evident.

The males of *Alloptoides* and *Alloptellus* have certain similarities. Each has the genital and anal regions encircled by heavy sclerotizations which are extented anteriorly from the genital region, elongate epimerites I and II, posterior legs not reaching the hysterosomal terminus, and dorsal shields well developed. *Alloptellus* species can be distinguished by the bluntly rounded terminus, setiform *sh* positioned at same level as *h*, and mesal area anterior to genital region without band of conjunctiva. The males of *Alloptoides* have the terminus cleft, spiculiform

sh posterior to *h*, and the conjunctival band along the meson between legs III and IV is distinct.

Males of the three *Alloptellus* species each have quite different positioning or development of certain ventral and terminal structures. In comparing figures 18 (*pelecanus*), 22 (*pacificus*) and 24 (*coniventris*), the first two species have setae l_5 as the long terminal setae and the pair internal to these setae d_5) relatively large. In *A. pacificus*, new species, setae l_4 are the long setae and all setae internal to these (d_5, l_5, *pai pae*) are small. The positions of the anal setae (*a*) and the second pair of genital setae (c_2) are distant from each other with setae *a* approximate to the adanal discs in *A. coniventris* and *A. pacificus*, white the two pairs of setae are approximate to each other and distant from the adanal discs in *A. pelecanus*. The shields in the genital and anal regions are different in the three species. In *A. pelecanus*, a subgenital shield is absent and two adanal shields are present ; in *A. coniventris*, in addition to the adanal shields, there is a small subgenital shield supporting the terminations of the genital arch ; in *A. pacificus*, the adanal shields are absent and the subgenital shield almost covers the area between the genital arch and the adanal discs. The various conditions of the dorsal shields will be discussed under each species (compare figures 17, 21, and 23).

Diagnosis : Oxyalgine mites ectoparasitic on Procellariiformes (Diomedeidae) and Pelecaniformes (Pelecanidae). Males with dorsal shields well developed ; hysterosomal shield may be fused with humeral shields and/or divided transversely at level of legs III or IV ; terminus rounded ; venter with coxosternal elements surrounding genital region and forming midventral shield extending approximately to level of setae *sh* thereby enclosing coxal fields III-IV or IV ; setae c_3 on coxae IV anterior to genital structures and setae c_2 ; adanal discs well developed. Female with propodosomal shield fused to scapular shields and/or extensive hysterosomal shield fused to humeral shields ; otherwise similar to *Alloptes* female with rounded terminus. Both sexes with legs IV not extending to terminus ; rounded ambulacra with modified T-shaped central sclerite ; setae *ve*, d_1 absent ; *vi* present ; *kT* on tibiae III present or absent ; setiform *sh* at level of *h*.

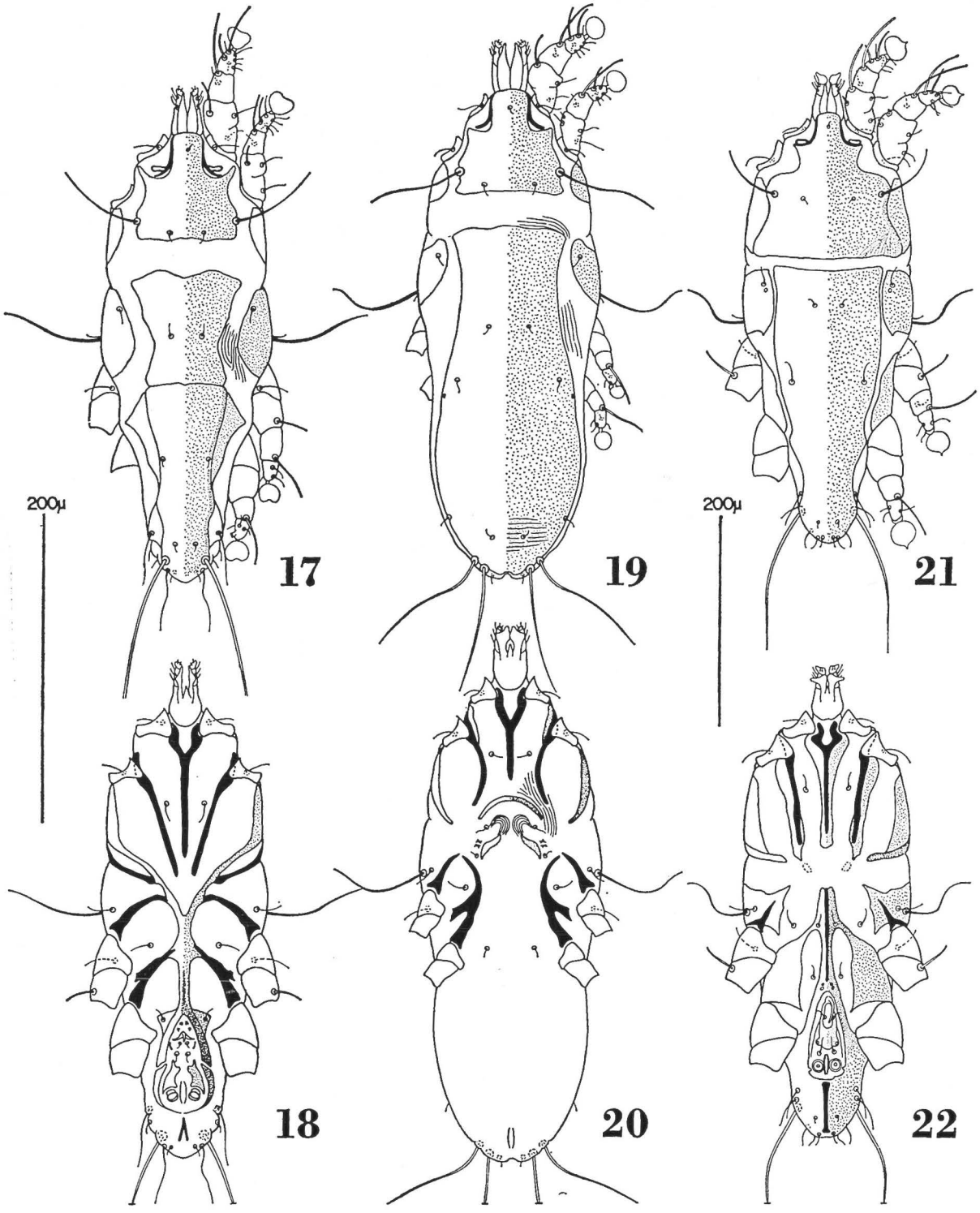
Alloptellus pelecanus Dubinin.

(figs. 17-20).

Alloptellus pelecanus Dubinin, 1955, Trudy zool. Inst., Leningr., 18 : 286 ; GAUD, 1961, Acarologia, 3 (1) : 92-93.

The male of this species is similar to *Alloptellus pacificus*, new species, however, in *A. pelecanus* the hysterosomal shield is interrupted by a transverse suture near the level of legs III and coxal fields III are closed. Additional differences include the lengthened genital organ and the fusion of the adanal shields in *A. pacificus* rather than a short genital organ and separate adanal shields in *A. pelecanus*.

MALE : Lenght, 336 μ ; width, 120 μ. *Dorsal idiosoma* : Propodosomal shield 72 μ in lenght, 72 μ, in width ; distance between *sce*, 74 μ, between *sci*, 31 μ. Scapular shields well developed ; ventral extensions continuous with midventral sclerotizations of hysterosoma. Humeral shields large, bearing setae l_1 ; setae *sh* setiform, positioned at same level or slightly anterior to setae *h*. Hysterosomal shield 209 μ in length, with transverse suture at level of legs III ; fused with metapodosomal shields ; terminus smoothly rounded. *Ventral idiosoma* : surface fields of epimerites I-II absent, III-IV weakly developed to form closed coxal fields III-IV. Adanal sclerites separate,



FIGS. 17-20 : *Alloptellus pelecanus* Gaud, dorsal and ventral aspects of male (17, 18) and female (19, 20).

FIGS. 21-22 : *Alloptellus pacificus*, new species, dorsal and ventral aspects of male.

extending almost to setae c_2 ; genital discs visible. Legs IV not extending to terminus ; setae *kT* on tibia III absent.

FEMALE : Length, 374 μ ; width, 120 μ. Propodosomal shield 79 μ in length, 72 μ in width ; distance between setae *sce*, 67 μ, between *sci*, 36 μ. Humeral shields not extending to venter, not bearing setae *h*, *sh* ; small, setiform *sh* positioned slightly anterior to setae *h*. Hysterosomal shield 240 μ in length ; supranal concavity absent ; setae l_4, *pae*, *pai* apparently absent. Surface fields on epimerites not developed. Setae *kT* on tibiae III absent.

Type data : From *Pelecanus onocrotalus* (Pelecanidae) : Volga Delta, other data unknown. Location of types : Leningrad Academy of Sciences.

Material examined : From *Pelecanus onocrotalus* : 1 ♂, Hungary. From *Pelecanus rufescens* : 2 ♂♂, 2 ♀♀.

Remarks : In addition to the above mentioned hosts, DUBININ (1955) reports collecting specimens from *Pelecanus crispus* on the Volga Delta. DUBININ also states that the mite occurs on the inner primaries and outer secondaries and that in June and July he found *Alloptellus pelecanus* in large numbers — on to twently parasites per feather. The drawings and redescriptions are based on the specimens from *P. rufescens*.

Alloptellus dendrocygnus Dubinin.

Alloptellus dendrocygnus Dubinin, 1955, Trudy Zool. Inst., Leningr., 18 : 286 (*nomen nudum*).

DUBININ (1955) reports this species of *Alloptellus as* being represented by four poorly preserved females collected from species of the Dendrocyninae : *Dendrocygna bicolor helva*, *D. autumnalis* and *D. guttata* from Texas and the Celebes. DUBININ states that *A. dendrocygnus* would remain undescribed until additional specimens had been obtained.

Alloptellus pacificus, new species.

(figs. 21, 22).

This new species is distinguished from both of the previously described species by the lack of a transverse suture on the hysterosomal shield, by the nonfusion of the hysterosomal shield to the humeral and/or metapodosomal shields, and by the relative development and positioning of the genital and adanal structures (fig. 22).

MALE (holotype) : Length, 451 μ ; width, 168 μ. *Dorsal idiosoma* : Propodosomal shield 133 μ in length ; distance between *sce*, 106 μ, between *sci*, 55 μ. Scapular shields well developed, fused with propodosomal shield ; no ventral extensions connecting epimerites. Humeral shields independent, bearing setae l_1, *h*, *sh* ; setiform *sh* positioned at same level as setae *h*. Hysterosomal shield 243 μ in length, 113 μ in width ; without transverse suture ; not fused to metapodosomal shields ; terminus rounded. *Ventral idiosoma* : Surface fields of epimerites I-II well developed, III-IV well developed but only coxal fields IV closed. Single subgenital (or adanal) shield not bearing setae *a*, c_2 ; genital discs not visible ; long terminal setae are l_4 ; setae l_5 small. Legs IV extending to terminus ; setae *kT* present on tibiae III.

FEMALE : Unknown.

Type data : From *Diomedea nigripes* (Diomedeidae) : holotype ♂, 7 ♂♂ paratypes, Midway Island, February 20, 1963. The primary type is deposited at the National Museum of Natural History ; secondary types are deposited at the Department of Entomology, University of Georgia, and the collection of Dr. J. GAUD, Rennes, France.

Alloptellus coniventris (Trouessart), new combination.
(figs. 23-26).

Proctophyllodes (*Alloptes*) *coniventris* Trouessart, 1886, Bull. Soc. Etud. sci. Angers, 16 : 144.
Trouessartia coniventris : Canestrini and Kramer, 1899, Tierreich, 7 : 122 ; RADFORD, 1953, Parasitol., 43 (3, 4) : 214 ; RADFORD, 1958, Revta. bras. Entomol., 8 : 114.

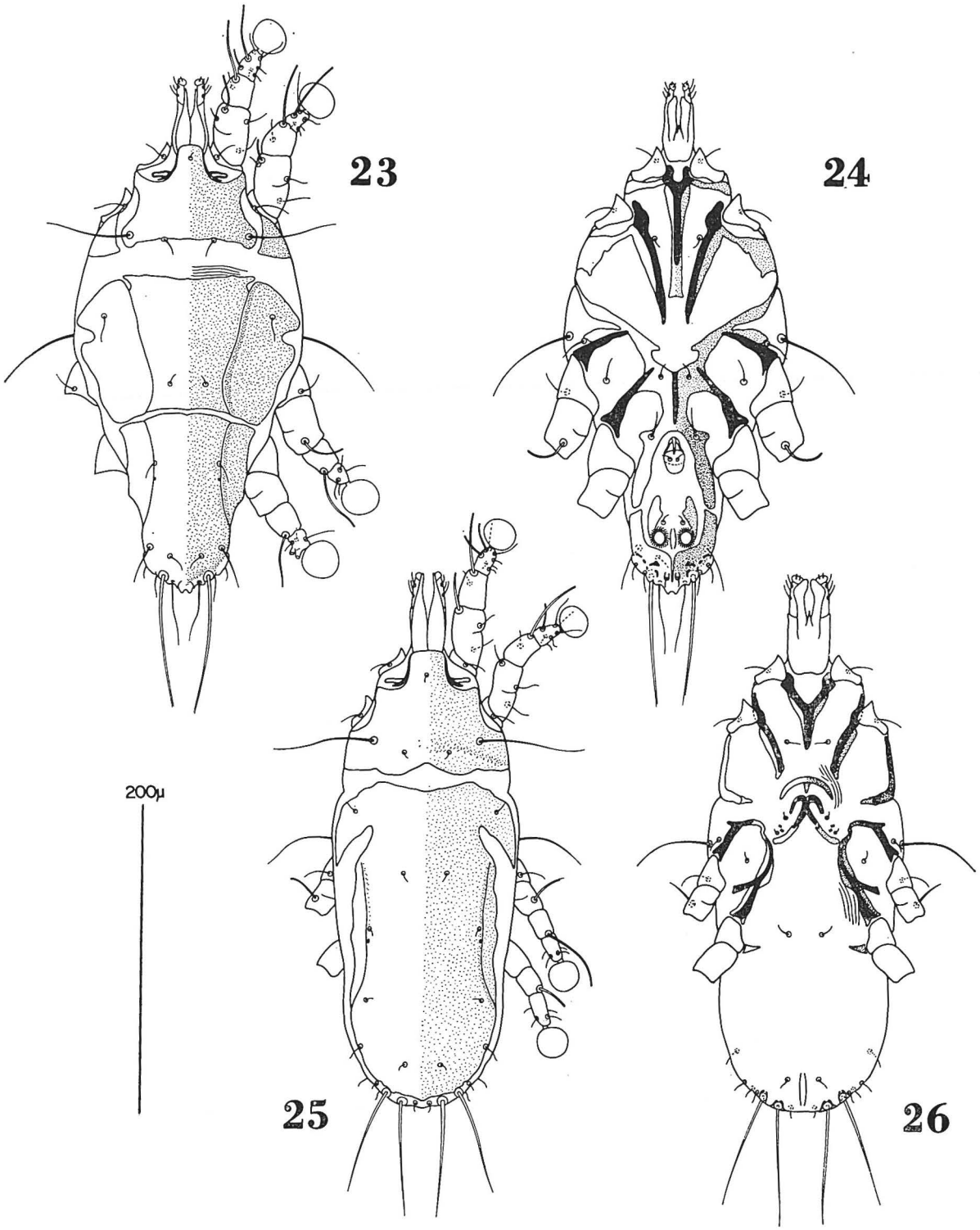
Although males of this species and those of *Alloptellus pelecanus* each have the metapodosomal shields fused to a transversely divided hysterosomal shield, the two species are easily differentiated. In *A. pelecanus*, setae *a* are approximate to setae c_2 and distant from the adanal discs, the genital discs are prominent, and the terminus is rounded. In *A. coniventris*, setae *a* are positioned anterior to the adanal discs, the genital discs are incorporated in the ventral sclerotizations, and the idiosoma terminates in a small, bilobed protuberance between the terminal setae. The females can also be differentiated ; those of *A. pelecanus* have the humeral and scapular shields independent whereas, females of *A. coniventris* have these shields fused to the hysterosomal and propodosomal shields.

MALE : Length, 335 μ ; width, 158 μ. *Dorsal idiosoma* : Prododosomal shield 62 μ in length, 91 μ, in width ; distance between *sce* 79 μ, between *sci*, 36 μ. Scapular shields moderately developed ; ventral extensions continuous with midventral sclerotizations of hysterosoma and epimerites II. Humeral shields extremely large, bearing setae l_1 ; fused to hysterosomal shield ; setae *sh* setiform, positioned at same level as setae *h*. Hysterosomal shield with broad transverse suture ; fused anterior of suture to humeral shields, fused posterior to suture with metapodosomal shields ; terminus rounded, with small bilobed protuberance. *Ventral idiosoma* : Surface fields of epimerites I-II weakly developed, III-IV, well developed to enclose coxal fields III-IV. Adanal sclerites separate, small ; genital discs not visible. Legs IV extending almost to terminus ; setae *kT* on tibiae III absent.

FEMALE : Length, 360 μ ; width, 129 μ. Propodosomal shield 72 μ in length ; distance between *sce*, 76 μ, between *sci*, 36 μ. Scapular shields fused with propodosomal shield. Humeral shields not extending to venter and fused dorsally with hysterosomal shield ; small, setiform *sh* positioned at same level as setae *h*. Hysterosomal shield 218 μ in length ; supranal concavity absent ; terminal setae present. Surface fields on epimerites I-II slightly developed. Setae *kT* on tibiae III absent.

Type data : From *Fregata* (= *Tachypetes*) *aquila* (Fregatidae) : lectoholotype ♂, 3 lectoparatype ♀♀, Seycelles. These types are in the TROUESSART Collection

Additional material : From *Fregata aquila* : 2 ♂♂, 2 ♀♀, Lusan Island. From *Fregata magnificens* : 2 ♂♂, 1 ♀, Dominican Republic ; 1 ♂, 3 ♀♀, Lesser Antilles ; 1 ♂, Guatemala. From *Fregata minor aldabrensis* : 3 ♂♂, 1 ♀, Aldabra Island.



FIGS. 23-26 : *Alloptellus coniventris* (Trouessart), dorsal and ventral aspects of male (23, 24) and female (25, 26).

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