

MITES OF THE GENUS *OPLITIS* BERLESE (ACARINA : UROPODIDAE)  
ASSOCIATED WITH ANTS (HYMENOPTERA : FORMICIDAE) IN  
THE SOUTHEASTERN UNITED STATES. PART II<sup>1</sup>.

BY

J. E. HUNTER, III AND M. H. FARRIER

(Department of Entomology, North Carolina State University, Raleigh, N.C., U.S.A.)

ABSTRACT

Nine new species of *Oplitis* were described and *O. moseri* Hirschmann redescribed. Both males and females of *Oplitis exsectoidesorum*, *O. litoralis*, *O. macclellani*, *O. trachymyrmecon* and *O. virgilinus* were described. *Oplitis garibaldii*, *O. granulatus*, *O. piedmontensis* and *O. sarcinulus* were described from females. A key to the species was prepared. Species were collected from colonies of the following ant genera: *Brachymyrmex*, *Crematogaster*, *Formica*, *Lasius*, *Solenopsis*, *Tetramorium* and *Trachymyrmex*, as well as from tree hole organic matter, leaf litter and under bark.

RÉSUMÉ

Description de neuf espèces nouvelles d'*Oplitis* et redescription d'*Oplitis moseri* Hirschmann. Sont décrits : les mâles et les femelles d'*Oplitis exsectoidesorum*, *O. litoralis*, *O. macclellani*, *O. trachymyrmecon*, et *O. virgilinus* ; les femelles d'*Oplitis garibaldii*, *O. granulatus*, *O. piedmontensis* et *O. sarcinulus*. Une clé des espèces est donnée. Les espèces ont été recueillies dans des colonies des genres de fourmis dont les noms suivent : *Brachymyrmex*, *Crematogaster*, *Formica*, *Lasius*, *Solenopsis*, *Tetramorium* et *Trachymyrmex* ainsi que dans de la matière organique de trou d'arbre, de la litière et sous les écorces.

*Oplitis exsectoidesorum* n. sp.

(Figures 23-25)

*Distinguishing Characters.* Dorsal and ventral setae simple, acuminate. Centro-dorsal region separated from latero-dorsal region. Perigenital ring and exopodal shields with shallow, subcircular punctations. Operculum, perigenital shield, anal shield and coxae I without punctations.

*Female. Dorsum* : 504.6-574.2  $\mu$  long, 452.4-504.6  $\mu$  wide (25 specimens) ; holotype 527.8  $\mu$  long, 452-4  $\mu$  wide.

1. This continues the descriptions of new species of *Oplitis* Berlese from Part 1. *Acarologia*, Tome 17, Fasc. 4, pp. 595-623.

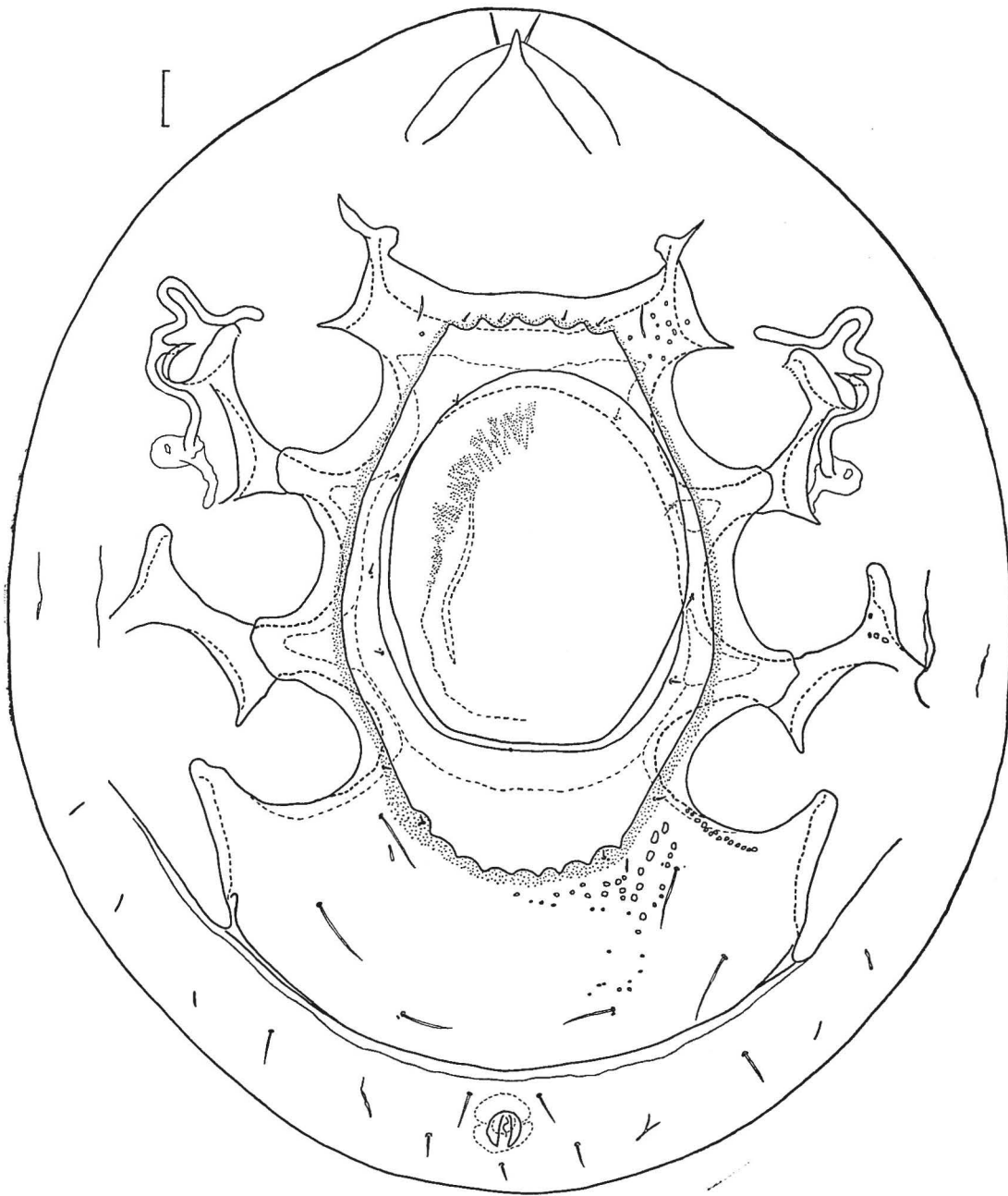


FIG. 23. *Oplitis exsectoidesorum* n. sp. : Female venter

Centro-dorsal region separated from latero-dorsal region. Latero-dorsal region and marginal shield with shallow, subcircular punctations (1.45-5.8  $\mu$ d). Dorsal setae simple, acuminate. Venter : Coxae I without punctations. Perigenital shield length 1.4 times width, anterior margin with 5-6 crenulations, lateral margins entire, posterior margin with 6-9 crenulations and projecting medially beyond posterior margin of coxae IV. Operculum broadly rounded anteriorly and extending from middle of coxae II to middle of coxae IV. Peritreme bi-convolute and with

a medially projecting extension. Perigenital ring and exopodal shields with shallow, subcircular punctations ( $0.55-6.6 \mu\text{d}$ ). Ventral region of perigenital ring with 3-4 pairs of simple, acuminate setae.

*Male Dorsum* :  $458.2-493.0 \mu$  long,  $388.6-429.2 \mu$  wide (11 specimens). Dorsal setae, shields and punctations as on female. *Venter* : Coxae I as on female. Perigenital shield length 1.6 times width, anterior margin with 5-7 crenulations, lateral margins entire, posterior margin with 5-6 crenulations projecting medially beyond posterior limit of coxae IV. Circular, genital aperture on a level with coxae II and covered by a smooth shield. Peritreme uni-convolute and with a medially projecting extension. Perigenital ring and exopodal shields with shallow, subcircular punctations ( $0.55-3.3 \mu\text{d}$ ). Ventral region of perigenital ring with 3-5 pairs of simple, acuminate setae.

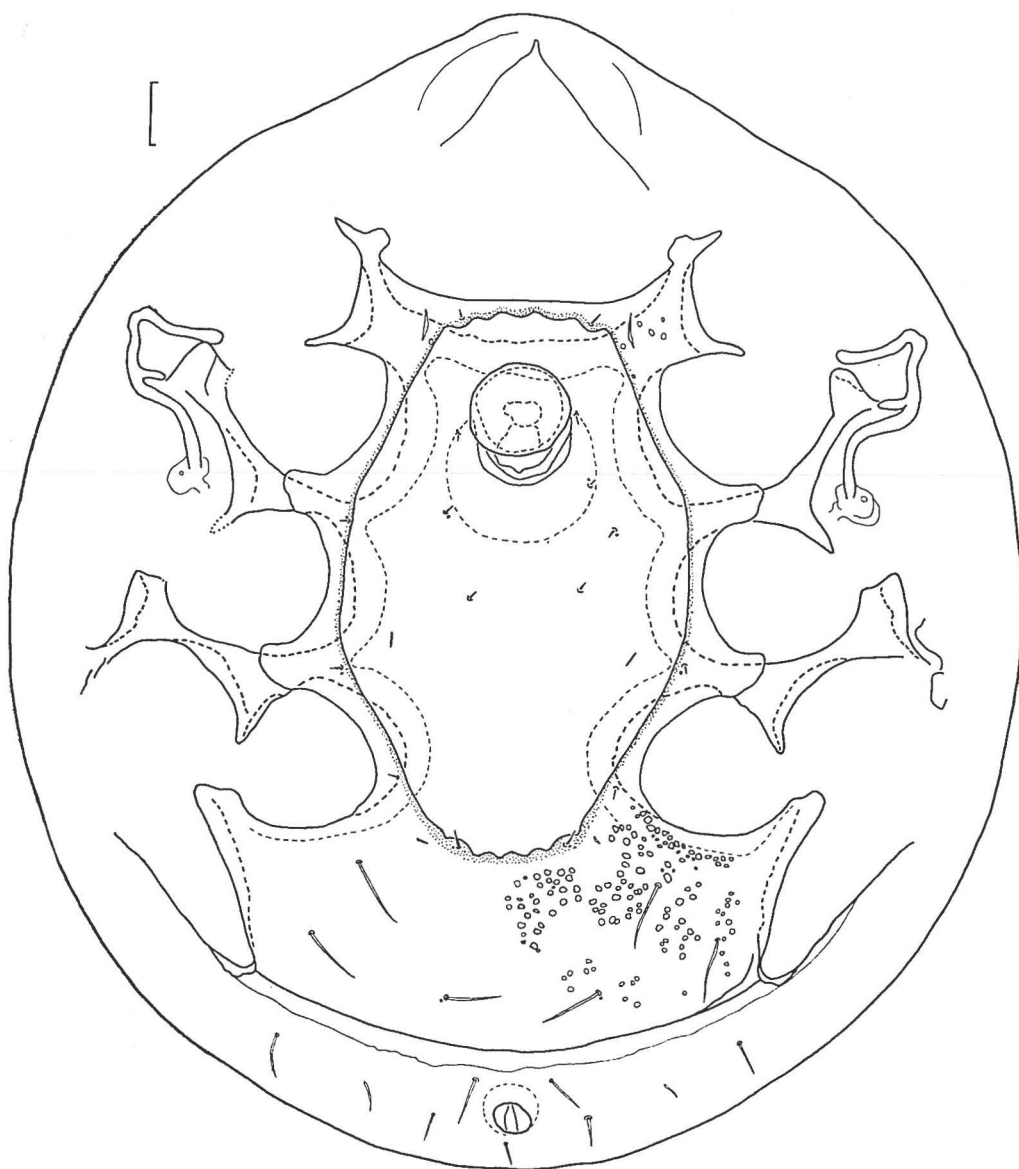


FIG. 24 : *Oplitis exsectoidesorum* n. sp. : Male venter

*Material examined.* Holotype (♀, USNM) and paratypes (1 ♀ and 1 ♂, USNM), (4 ♀ and 2 ♂, NCSU) and (19 ♀ and 8 ♂, JEH), "NORTH CAROLINA, Alleghany Co., 13 May 1971, ex. *Formica exsectoides* Forel, J. F. Cornell & W. Johnson."

*Discussion.* *Oplitis exsectoidesorum* belongs in the *conspicua*-group and resembles *O. pennsylvanica* (Berlese) and *O. uncinata* Zirngiebl-Nicol and Hirschmann. *O. exsectoidesorum* can be distinguished from *O. pennsylvanica* by the shape of the perigenital shield, setal type and position of the male genital aperture and from *O. uncinata* by the absence of punctations on the perigenital shield, the presence of punctations on the dorsum and the peritreme. This species is named after its association with *Formica exsectoides* Forel.

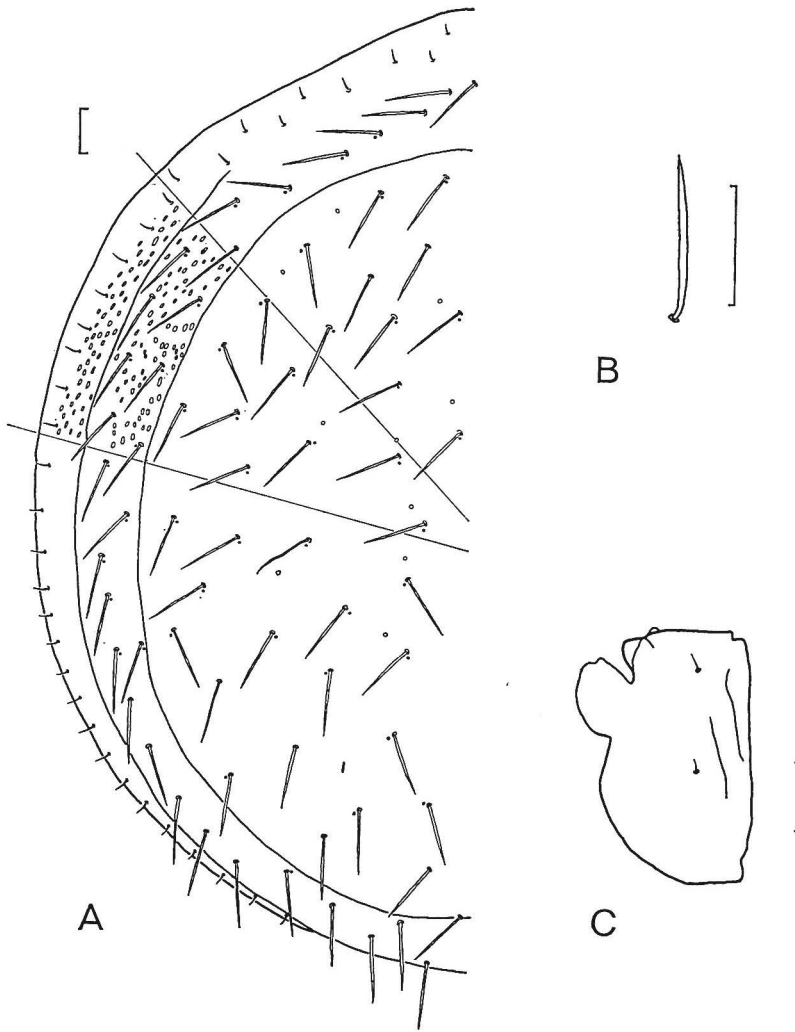


FIG. 25 : *Oplitis exsectoidesorum* n. sp. : (A) Female dorsum, (B) Dorsal shield seta, (C) Coxa I

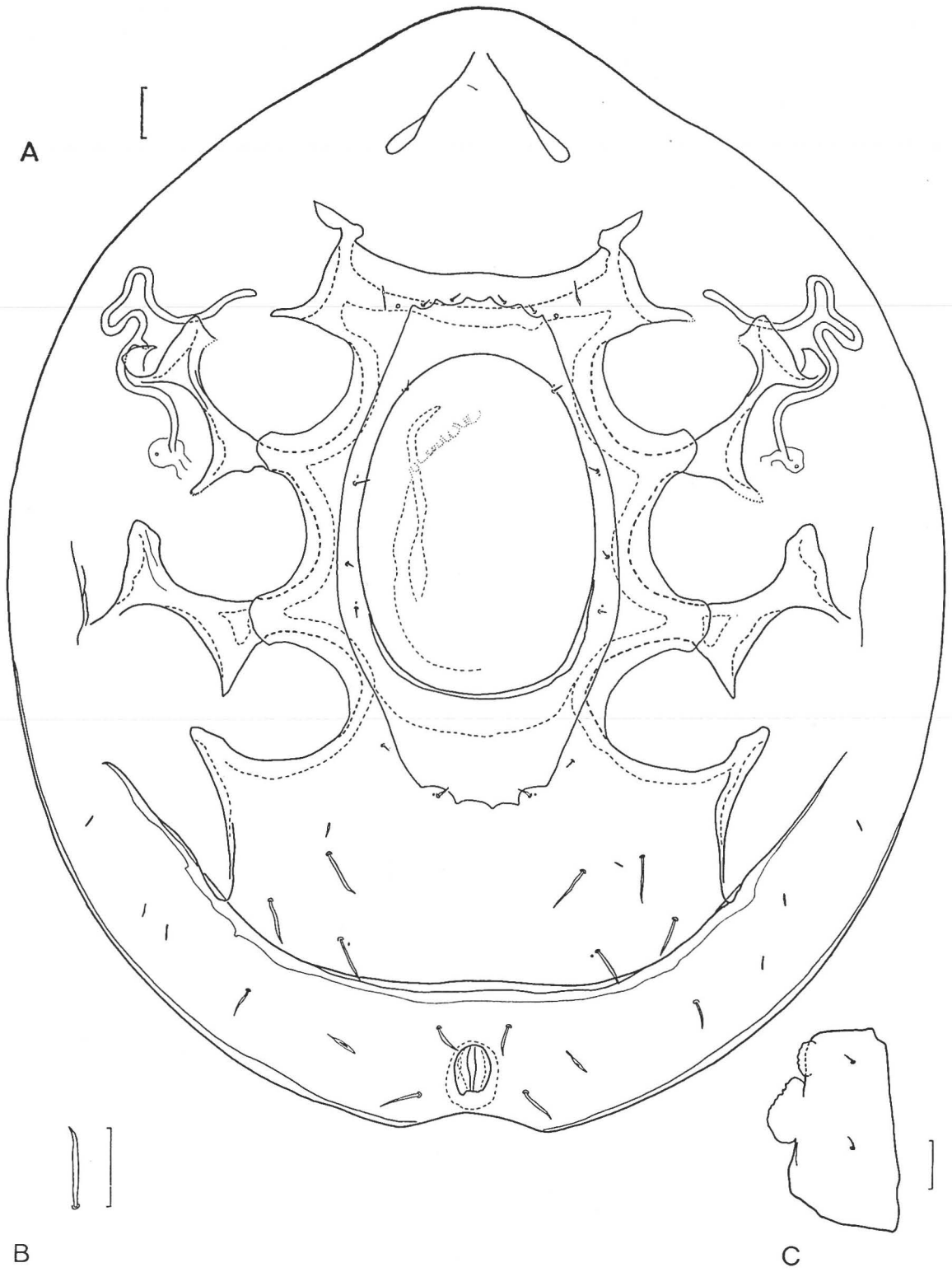


FIG. 26 : *Oplitis garibaldii* n. sp. : (A) Female venter, (B) Ventral seta, (C) Coxa I

**Oplitis garibaldii** n. sp.  
(Figure 26)

*Distinguishing Characters.* Dorsal and ventral setae slender, acuminate. Centro-dorsal and latero-dorsal regions united anteriorly. Centro-dorsal region and venter of idiosoma without punctations.

*Female. Dorsum.* 568.4  $\mu$  long, 475.6  $\mu$  wide, holotype. Centro-dorsal and latero-dorsal regions united anteriorly. Dorsal setae slender, acuminate. Latero-dorsal region and marginal shield with shallow, subcircular punctations (0.7-1.4  $\mu$ d). Venter : Coxae I without punctations. Perigenital shield length 1.8 times width, anterior margin with 5 crenulations, lateral margins entire, posterior margin with 4 crenulations and extending beyond posterior limit of coxae IV. Operculum broadly rounded anteriorly and extending from middle of coxae II to middle of coxae IV. Peritreme bi-convolute and with the presence of a medially projecting extension variable. All ventral regions of idiosoma without punctations. Ventral region of perigenital ring with 3-4 pairs of slender, acuminate setae.

*Male.* UNKNOWN.

*Material examined.* Holotype (♀, USNM), "NORTH CAROLINA, Gaston Co., Belmont, 16 April 1972, with *Lasius alienus* (Foerster), TS#F-55, J. E. Hunter III. "

*Discussion.* *Oplitis garibaldii* belongs in the *paradoxa*-group and resembles *O. paradoxa* G. Canestrini and Berlese. *O. garibaldii* can be distinguished from *O. paradoxa* by the absence of punctations on the perigenital shield and the shape of the peritreme. This species is named after Mr. John GARIBALDI of the Garibaldi community now known as Belmont.

**Oplitis granulatus** n. sp.  
(Figure 27)

*Distinguishing Characters.* Dorsal and ventral setae simple, acuminate. Perigenital shield absent but indicated by a granulate area. Dorsum and venter of idiosoma except exopodal shields without punctations.

*Female. Dorsum :* 403.1  $\mu$  long, 348.0  $\mu$  wide, holotype. Dorsal shield and marginal shield without punctations. Dorsal setae simple, acuminate. Venter : Coxae I without punctations. Perigenital shield indicated by a granulate area. This granulate area extends from in front of coxae II to beyond posterior limit of coxae IV. Operculum broadly rounded anteriorly and extending from middle of coxae II to middle of coxae IV. Peritreme simple and with a medially projecting extension. Exopodal shields with shallow, subcircular punctations (1. 1-2.2  $\mu$ d). Ventral region of perigenital ring with 3 pairs of simple, acuminate setae.

*Male.* UNKNOWN.

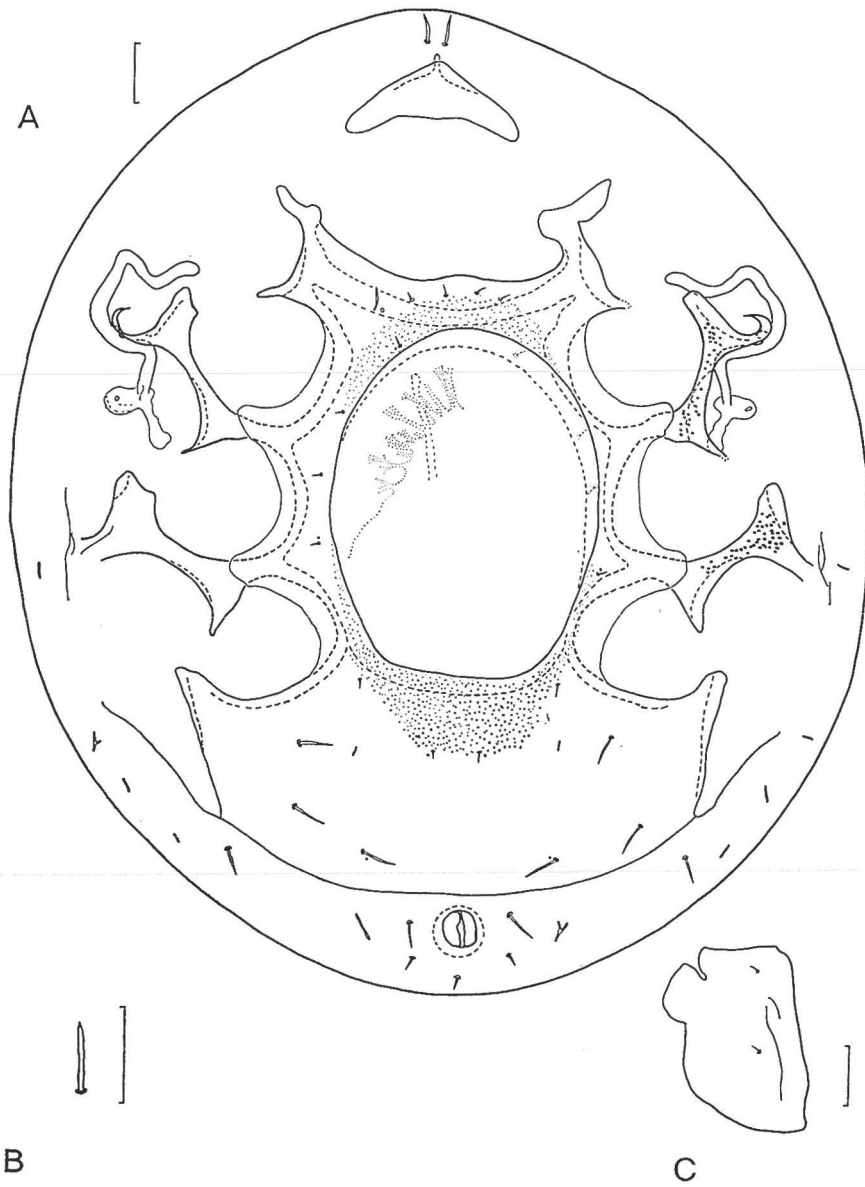


FIG. 27 : *Oplitis granulatus* n. sp. : (A) Female venter, (B) Ventral seta, (C) Coxa I

*Material examined.* Holotype (♀, USNM), "NORTH CAROLINA, Durham Co., Duke Forest Road # 10, 24 March 1973, TS # J-45 (leaf litter), J. E. HUNTER III".

*Discussion.* *Oplitis granulatus* belongs in the *adhaerens*-group and can be distinguished from the other species of this group by the granulate area surrounding the operculum. The granulate area surrounding the operculum suggested the name.

**Oplitis litoralis** n. sp.  
(Figures 28-30)

*Distinguishing Characters.* Dorsal setae laterally flattened, scimitar-shaped. Centro-dorsal and latero-dorsal regions indistinguishable. Perigenital shield absent. Dorsum and venter of idiosoma except male genital shield and anal shield with shallow, subcircular punctations. Coxae I without punctations.

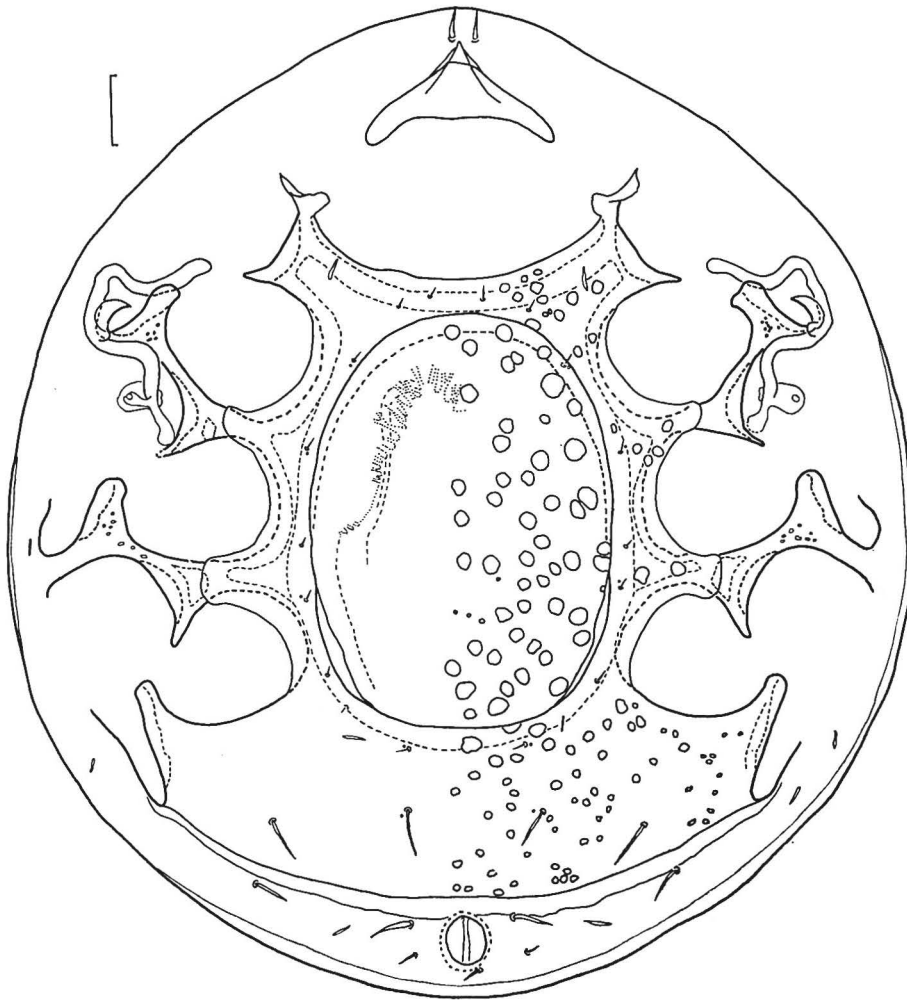


FIG. 28 : **Oplitis litoralis** n. sp. : Female venter

*Female.* *Dorsum* : 348.0-377.0  $\mu$  long, 301.6-330.6  $\mu$  wide (23 specimens) ; holotype 365.4  $\mu$  long, 310.3  $\mu$  wide. Dorsal and marginal shields with shallow, subcircular punctations (1.4-5.8  $\mu$ d). Dorsal setae laterally flattened, scimitar-shaped. *Venter* : Coxae I without punctations. Perigenital shield absent. Operculum broadly rounded anteriorly and extending from middle of



coxae II to posterior limit of coxae IV. Peritreme uni-convolute and with a small medially projecting extension. Perigenital ring, operculum and exopodal shields with shallow, subcircular punctations ( $1.1-8.7 \mu\text{d}$ ). Ventral region of perigenital ring with 2 pairs of acuminate setae.

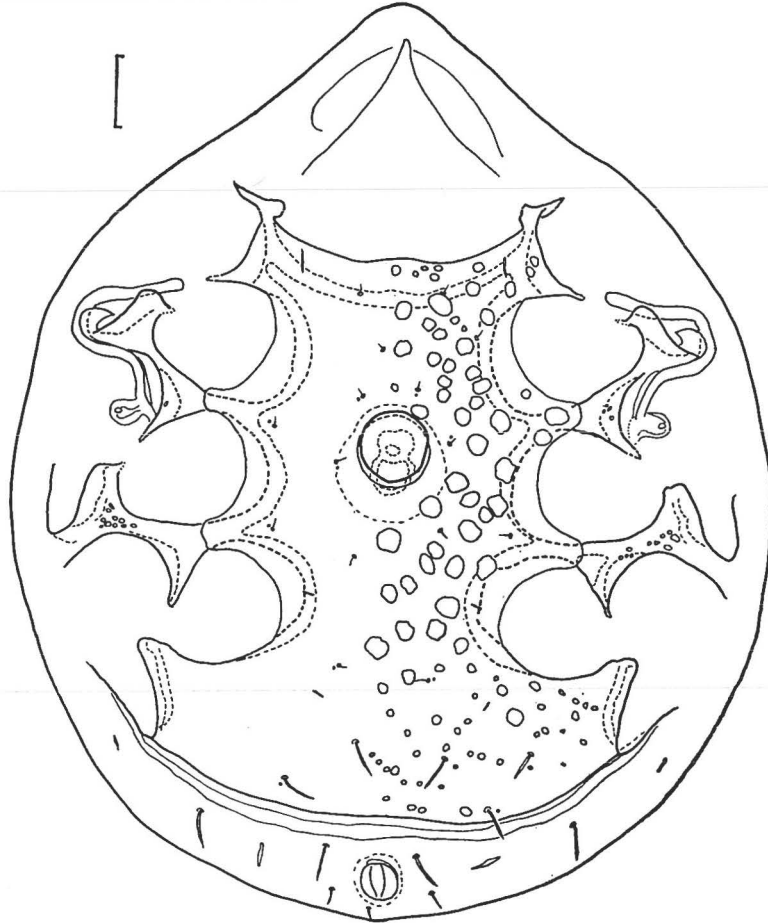


FIG. 29 : *Oplitis litoralis* n. sp. : Male venter

*Male. Dorsum* :  $310.3-324.8 \mu$  long,  $266.8-284.2 \mu$  wide (3 specimens). Dorsal setae, shields and punctations as on female. Venter : Coxae I as on female. Perigenital shield absent. Circular genital aperture on a level with coxae III and covered by a smooth shield. Peritreme simple. Perigenital ring and exopodal shields with shallow, subcircular punctations ( $1.1-4.4 \mu\text{d}$ ). Ventral region of perigenital ring with 2-3 pairs of acuminate setae.

*Material examined.* Holotype (♀, USNM), "NORTH CAROLINA, Carteret Co., Emerald Isle, 21 December 1972, TS # H-34 (leaf litter), J. E. Hunter III-M. H. Farrier" and paratypes (1 ♀ and 1 ♂, USNM), (2 ♀, NCSU) and (7 ♀ and 1 ♂, JEH), N. CAROLINA, Carteret Co., Emerald Isle, 21 December 1972, with *Brachymyrmex depilis* Emery, TS # H-37, J. E. Hunter III-M. H. Farrier. Additional specimens. N. CAROLINA, Carteret Co., Emerald Isle, 21 December 1972, TS # H-30 with ants (1 ♀), TS # H-38 (3 ♀), J. E. Hunter III-M. H. Farrier. N. CARO-

LINA, Dare Co., Pea Island National Wildlife Refuge, 22 November 1974, with *Crematogaster atkinsoni* Wheeler, LLC & PS # F-158 (8 ♀ and 1 ♂), N. H. Newton.

*Discussion.* *Oplitis litoralis* belongs in the *adhaerens*-group. *O. litoralis* can be distinguished from other species of this group by the shape of the operculum, idiosoma dimensions, setal type and dorsal and ventral punctations. This species is named after its collection site — a coastal area.

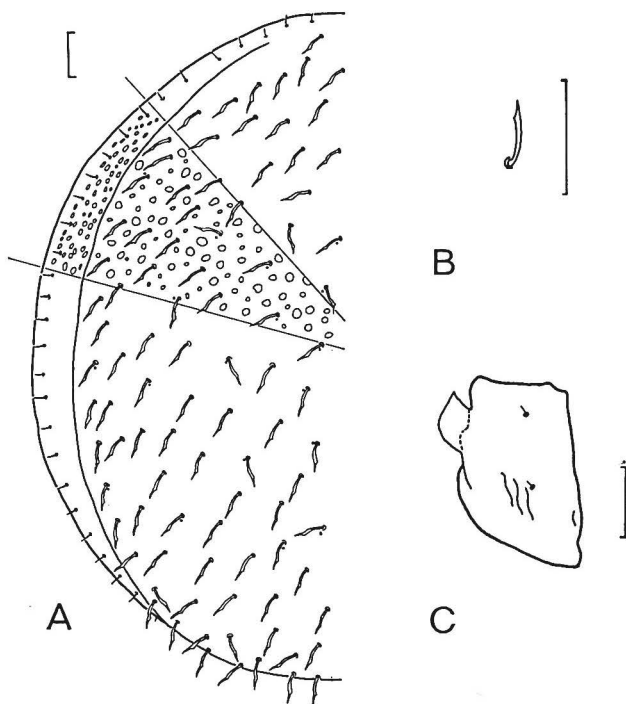


FIG. 30 : *Oplitis litoralis* n. sp. : (A) Female dorsum, (B) Dorsal shield seta, (C) Coxa I

***Oplitis maclellani* n. sp.**  
(Figures 31-33)

*Distinguishing Characters.* Dorsal and ventral setae laterally flattened, scimitar-shaped. Centro-dorsal and latero-dorsal regions united anteriorly. Dorsum and venter of idiosoma except male genital shield and anal shield with shallow, subcircular punctations. Perigenital shield with undulating margins. Coxae I without punctations.

*Female. Dorsum* : 417.6-455.3  $\mu$  long, 348.0-374.1  $\mu$  wide (9 specimens) ; holotype 455.3  $\mu$  long, 348.0  $\mu$  wide. Centro-dorsal region, latero-dorsal region and marginal shield united anteriorly and with shallow, subcircular punctations (0.7-2.2  $\mu$ d). Dorsal shield setae laterally flattened, scimitar-shaped. *Venter* : Coxae I without punctations. Perigenital shield length 1.6 times width, anterior margin, lateral margins and posterior margin undulate and extending to middle of coxae IV. Operculum narrowly rounded anteriorly and extending from middle of

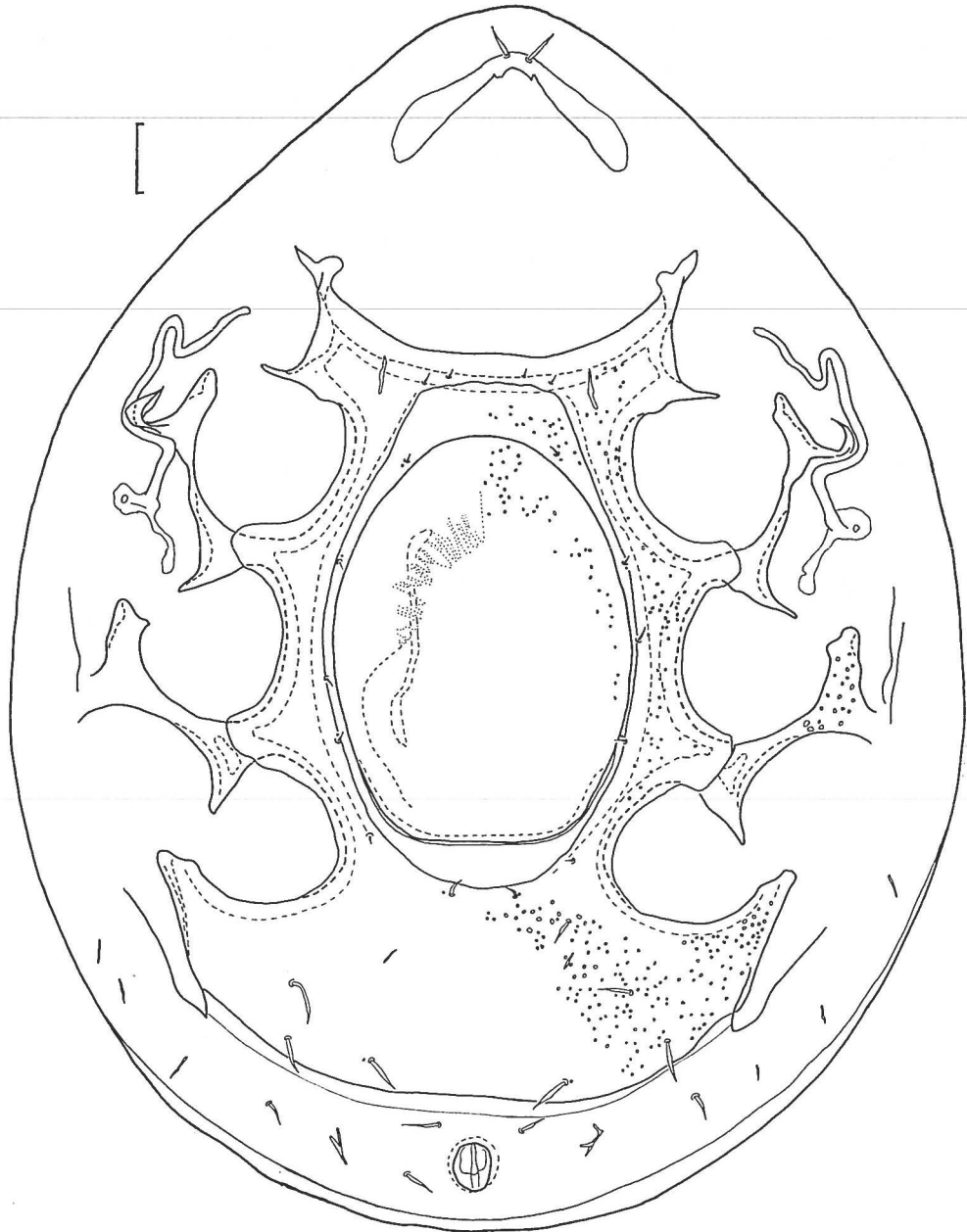


FIG. 31 : *Oplitis maccellani* n. sp. : Female venter

coxae II to middle of coxae IV. Peritreme uni-convolute. Operculum, perigenital shield, perigenital ring and exopodal shields with shallow, subcircular punctations ( $0.55-2.2 \mu\text{d}$ ). Ventral region of perigenital ring with 3-4 pairs of scimitar-shaped setae.

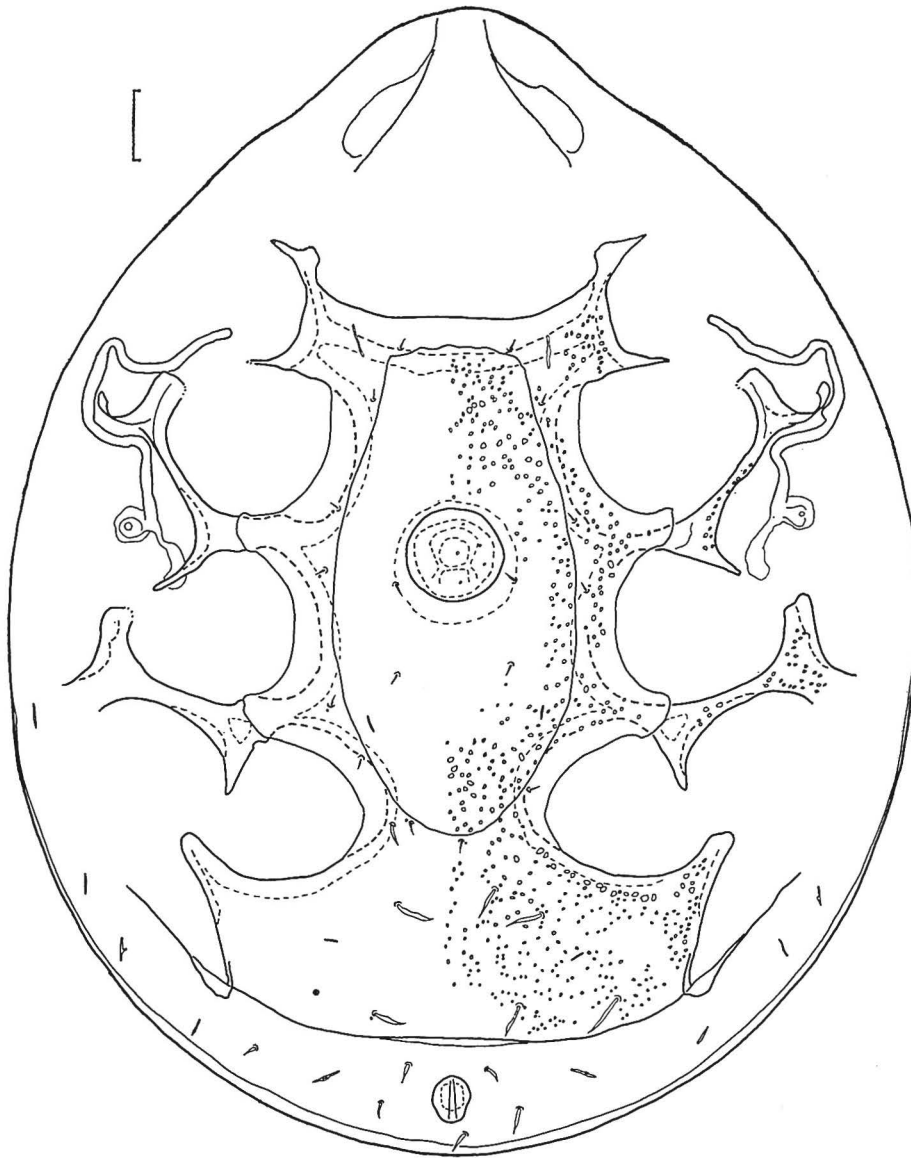


FIG. 32 : *Oplitis macelellani* n. sp. : Male venter

*Male. Dorsum* : 411.8-417.6  $\mu$  long, 321.9-336.4  $\mu$  wide (2 specimens). Dorsal setae, regions, marginal shield and punctations as on female. Venter : Coxae I as on female. Perigenital shield length 2.0 times width, anterior and lateral margins undulate, posterior margin rounded and extending to middle of coxae IV. Circular, genital aperture on a level intermediate between coxae II and III and covered by a shield with shallow, subcircular punctations. Peritreme uni-convolute with a small medially projecting extension variable. Perigenital shield, perigenital ring and exopodal shields with shallow, subcircular punctations (0.7-2.2  $\mu$ d). Ventral region of perigenital ring with 3-4 pairs of scimitar-shaped setae.

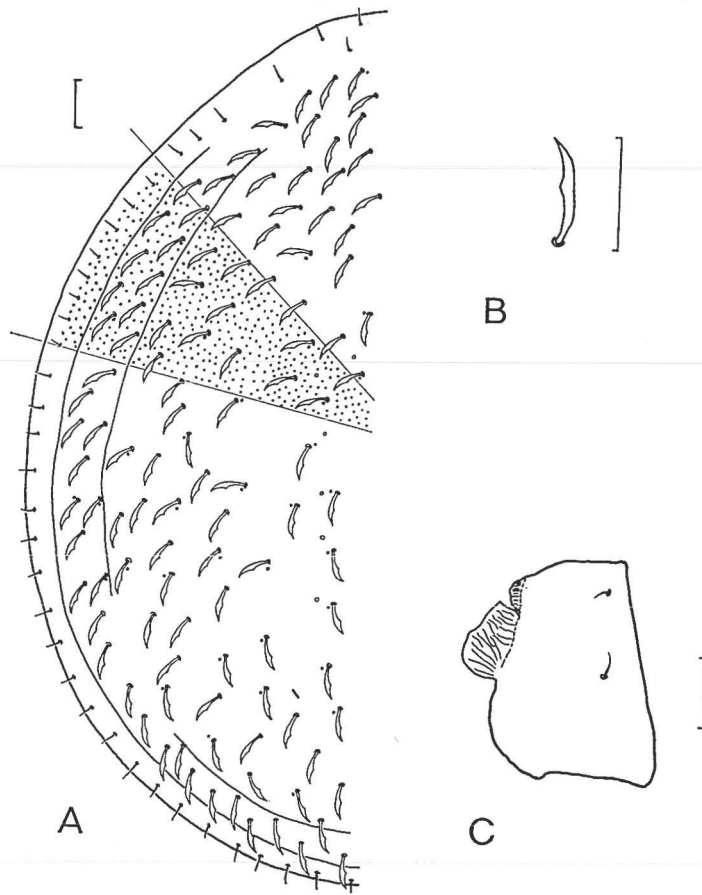


FIG. 33 : *Oplitis macclellani* n. sp. : (A) Female dorsum, (B) Dorsal shield seta, (C) Coxa I

*Material examined.* Holotype (♀, USNM) and paratypes (1 ♀, NCSU) and (1 ♀, JEH), " SOUTH CAROLINA, Charleston Co., McClellanville, G. W. Stowe Duckery, 18 September 1971, with *Pogonomymex badius* (Latreille), TS # F-31, J. E. Hunter III ". Additional specimens. S. CAROLINA, Charleston Co., McClellanville, G. W. Stowe Duckery, 22 April 1973, with *Pogonomymex badius* (Latreille), TS # F-142 (1 ♂), TS # F-143 (6 ♀ and 1 ♂), J. E. Hunter III.

*Discussion.* *Oplitis macclellani* belongs in the *conspicua*-group and resembles *O. stammeri* Hirschmann and Zirngiebl-Nicol. *O. macclellani* can be distinguished from *O. stammeri* by its peritreme, dorsal shield setae, the presence of punctations on the dorsum and number of setal pairs on the ventral region of the perigenital ring. This species is named for Archibald J. McCLELLAN for whom McClellanville, S. C. was named.

*Oplitis moseri* Hirschmann  
(Figures 34-36)

*O. moseri* Hirschmann, *Acarologie* 17:29, Abbildung 36 (1972) ♀.

*Distinguishing Characters.* Dorsal and ventral setae scimitar-shaped. Centro-dorsal and latero-dorsal regions indistinguishable. Perigenital shield absent. Dorsum and venter of idio-

soma except male genital shield and anal shield with shallow, subcircular punctations. Coxae I with shallow, subcircular punctations.



FIG. 34 : *Oplitis moseri* Hirschmann : Female venter

*Female.* *Dorsum* : 452.4-475.6  $\mu$  long, 371.2-406.0  $\mu$  wide (11 specimens). Dorsal and marginal shield united anteriorly and with shallow, subcircular punctations (1.1-8.8  $\mu$ d). Dorsal setae scimitar-shaped. Venter : Coxae I with shallow, subcircular punctations. Perigenital shield absent. Operculum length 1.3 times width, narrowly rounded anteriorly and extending

from anterior margin of coxae II to middle of coxae IV. Peritreme bi-convolute. Operculum, perigenital ring and exopodal shields with shallow, subcircular punctations (1.1-11.0  $\mu$ d). Ventral region of perigenital ring with 5-7 pairs of scimitar-shaped setae.

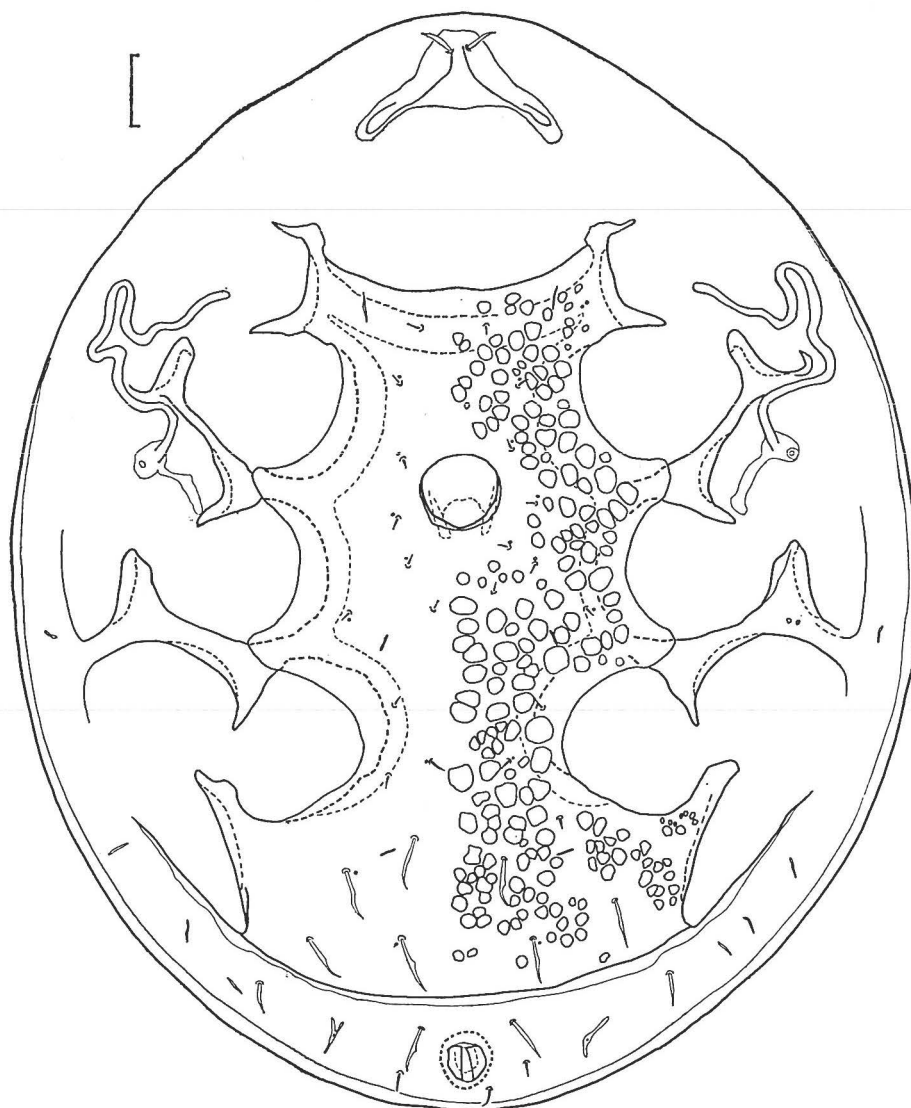


FIG. 35 : *Oplitis moseri* Hirschmann : Male venter

*Male.* *Dorsum* : 359.6-394.4  $\mu$  long, 313.2-330.6  $\mu$  wide (3 specimens). Dorsal setae, shields and punctations as on female. *Venter* : Coxae I as on female. Perigenital shield absent. Circular, genital aperture on a level intermediate between coxae II and III and covered by a smooth shield. Peritreme bi-convolute. Perigenital ring and exopodal shields with shallow, subcircular punctations as on female. Ventral region of perigenital ring with 3-5 pairs of scimitar-shaped setae.

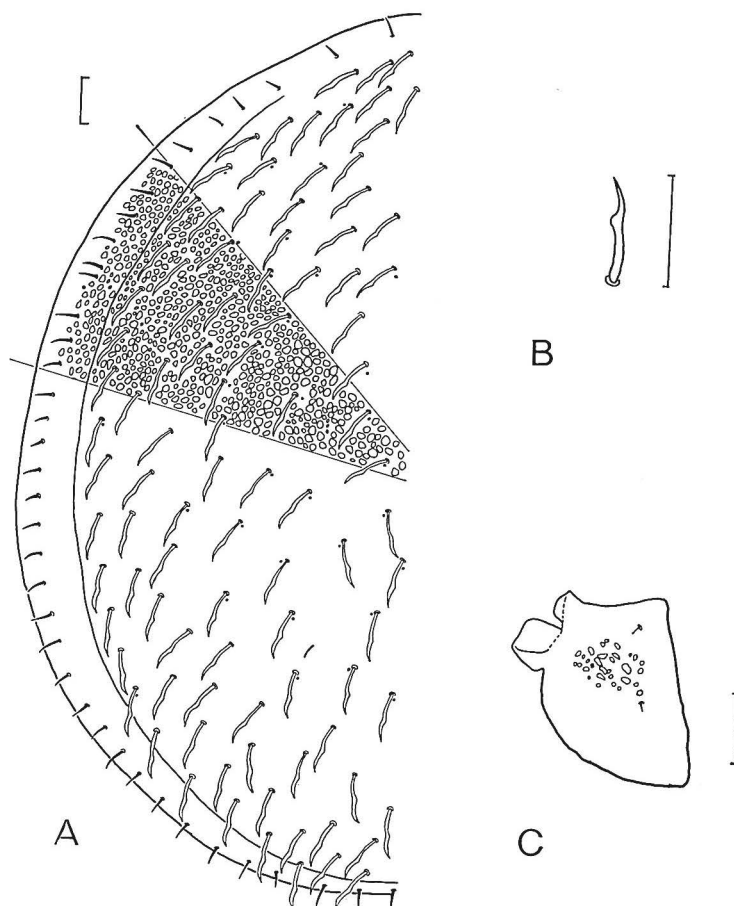


FIG. 36 : *Oplitis moseri* Hirschmann : (A) Female dorsum, (B) Dorsal shield seta, (C) Coxa I

*Material examined.* SOUTH CAROLINA, Charleston Co., McClellanville, 7 October 1972, with *Solenopsis invicta* Buren, PS # F-124 (4 ♀ and 1 ♂), J. E. Hunter III ; S. CAROLINA, Orangeburg Co., US 21 at Edisto River, 4 August 1972, with *Solenopsis invicta* Buren, PS # F-113 (6 ♀ and 2 ♂), J. E. Hunter III ; S. CAROLINA, Charleston Co., McClellanville, G. W. Stowe Duckery, 19 January 1974, with *Solenopsis invicta* Buren, PS # F-150 (1 ♀), J. E. Hunter III.

*Discussion.* *Oplitis moseri* Hirschmann has been placed in the *acinaca*-group by Hirschmann.

***Oplitis piedmontensis* n. sp.**

(Figures 37-38)

*Distinguishing Characters.* Dorsal and ventral setae scimitar-shaped. Centro-dorsal and latero-dorsal regions united anteriorly. Dorsum and venter of idiosoma except operculum and perigenital shield with shallow, irregular punctations. Perigenital shield with lateral margins crenulate. Anal shield with punctations extending antero-laterally.



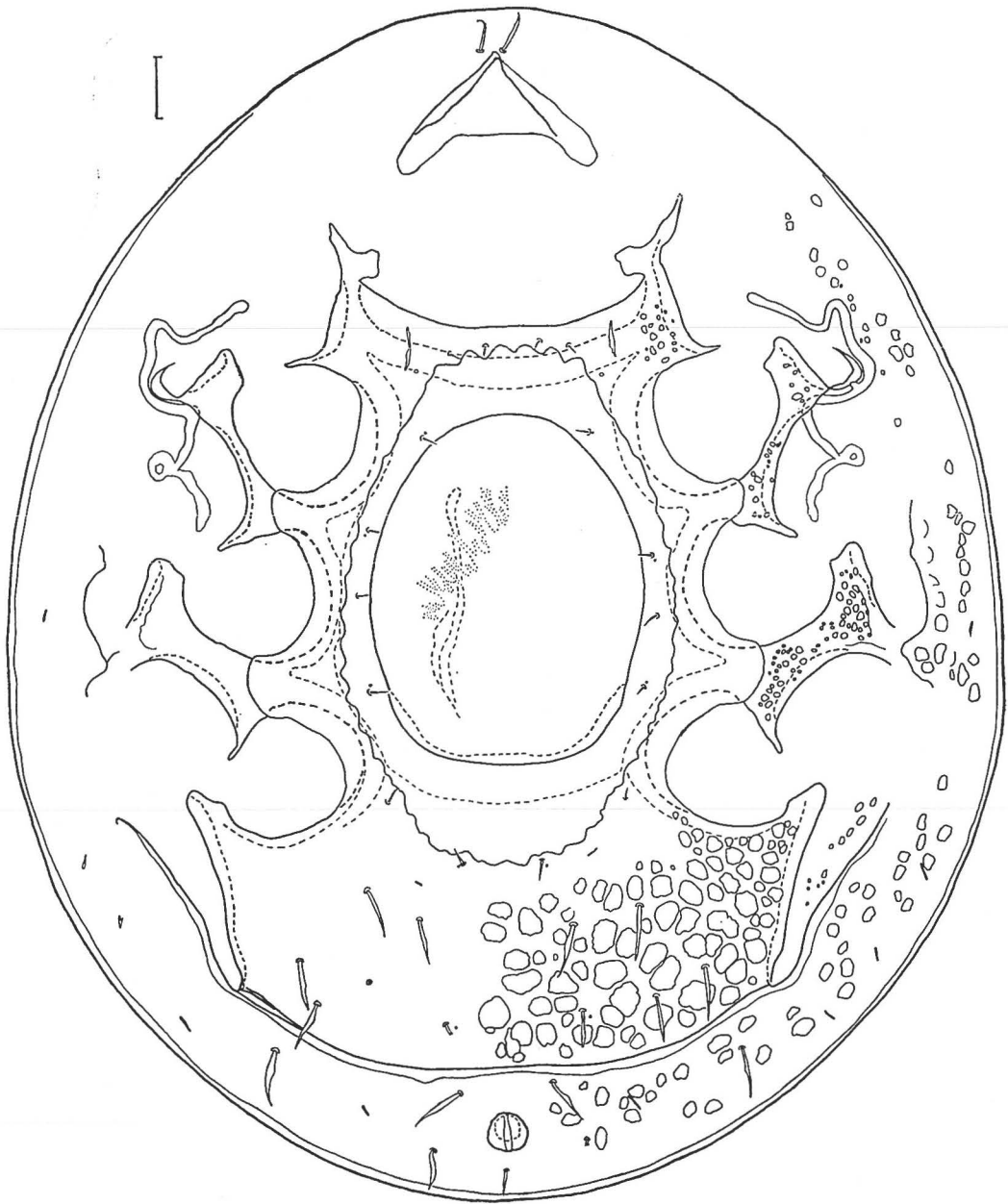


FIG. 37 : *Oplitis piedmontensis* n. sp. : Female venter

*Female.* *Dorsum* : 481.4-487.2  $\mu$  long, 406.0  $\mu$  wide (2 specimens) ; holotype 487.2  $\mu$  long, 406.0  $\mu$  wide. Both dorsal regions and marginal shield united anteriorly and with shallow, irregular punctations (1.4-10.2  $\mu$ d). Dorsal setae scimitar-shaped.

*Venter* : Coxae I with shallow, subcircular punctations. Perigenital shield length 1.5 times width, anterior margin with 5 crenulations, lateral and posterior margins with irregular crenulations and extending to posterior limit of coxae IV. Operculum broadly rounded anteriorly and

extending from middle of coxae II to middle of coxae IV. Peritreme uni-convolute and with a small medially projecting extension. Perigenital ring, anal shield, exopodal shields and foveae pedales with shallow, irregular punctations (1.1-17.6  $\mu$ d). Punctations generally larger on ventral region of perigenital ring (2.2-17.6  $\mu$ d) than other regions. Ventral region of perigenital ring with 11 scimitar-shaped setae. Anal shield with punctations extending antero-laterally to anterior limit of coxae II and within foveae pedales of coxae IV.

*Male.* UNKNOWN.

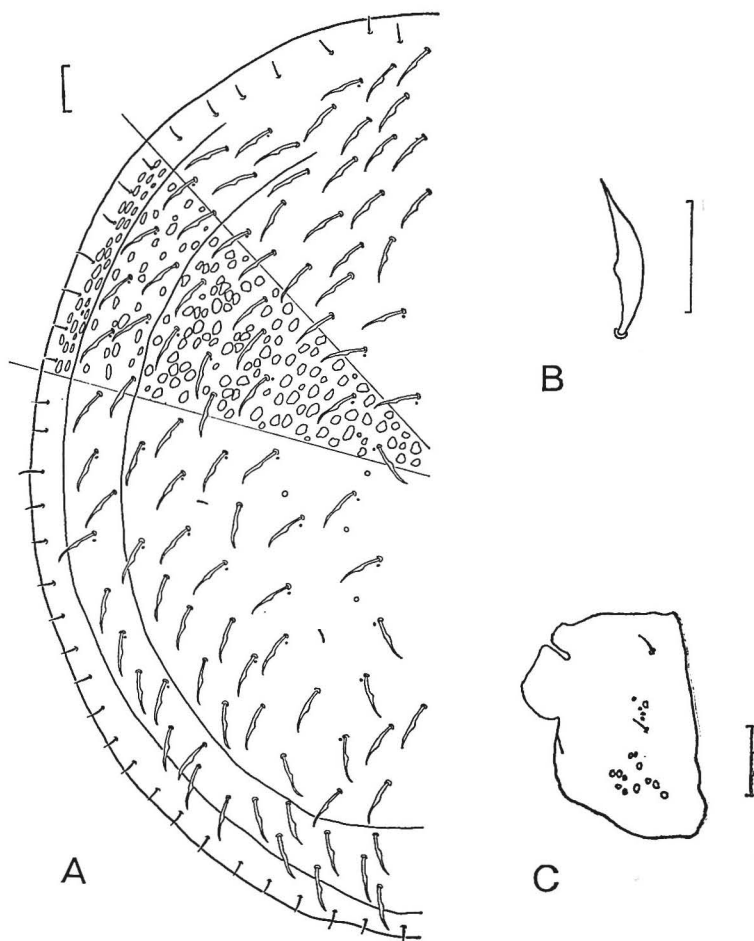


FIG. 38 : *Oplitis piedmontensis* n. sp. : (A) Female dorsum, (B) Dorsal shield seta, (C) Coxa I

*Material examined.* Holotype (♀, USNM) and paratype (1 ♀, JEH), "NORTH CAROLINA, Gaston Co., Kings Mountain Pinnacle, 20 May 1972, under bark, J. E. HUNTER III."

*Discussion.* *Oplitis piedmontensis* belongs in the *minutissima*-group or *conspicua*-group. *O. piedmontensis* can be distinguished from the species of these groups by the crenulate lateral margins of the perigenital shield and the presence and size of the irregular dorsal and ventral punctations. This species is named after its type locality—the piedmont region of North Carolina.



FIG. 39 : *Oplitis sarcinulus* n. sp. : (A) Female venter, (B) Ventral seta, (C) Coxa I

**Oplitis sarcinulus** n. sp.

(Figure 39)

*Distinguishing Characters.* Dorsal and ventral setae scimitar-shaped. Centro-dorsal and latero-dorsal regions united anteriorly. Latero-dorsal region, marginal shield, exopodal shields, sternal region of perigenital ring and coxae I with shallow, subcircular punctations. Operculum and perigenital shield without punctations.

*Female.* *Dorsum* : 493.0  $\mu$  long, 435.0  $\mu$  wide, holotype. Centro-dorsal and latero-dorsal regions united anteriorly. Latero-dorsal region and marginal shield with shallow, subcircular punctations. Dorsal setae scimitar-shaped. *Venter* : Coxae I with shallow, subcircular punctations. Perigenital shield length 1.4 times width, anterior margin with 6 crenulations, lateral margins entire, posterior margin with 7 crenulations and extending to posterior limit of coxae IV. Operculum broadly rounded anteriorly and extending from middle of coxae II to middle of coxae IV. Petrieme tri-convolute. Sternal region of the perigenital ring and exopodal shields with shallow, subcircular punctations (0.7-2.9  $\mu$ d). Ventral region of perigenital ring with 9 slender, scimitar-shaped setae.

*Male.* UNKNOWN.

*Material examined.* Holotype (♀, USNM), "NORTH CAROLINA, Wake Co., Raleigh, NCSU Campus, 24 April 1973, from tibial spur of worker of *Tetramorium caespitum* Linnaeus, R. P. Stype."

*Discussion.* *Oplitis sarcinulus* belongs in the *paradoxa*-group or *conspicua*-group and resembles *O. pennsylvanica* (Berlese). *O. sarcinulus* can be distinguished from *O. pennsylvanica* by its perigenital shield shape, ventral punctations and peritreme. Its phoretic association with *Tetramorium caespitum* Linnaeus suggested the name.

**Oplitis trachymyrmecon** n. sp.

(Figures 40-42)

*Distinguishing Characters.* Dorsal and ventral setae laterally flattened, broad, scimitar-shaped. Centro-dorsal and latero-dorsal regions united anteriorly. Dorsum and venter of idiosoma and coxae I with shallow, subcircular to oval punctations. Anal shield with punctations extending antero-laterally.

*Female.* *Dorsum* : 516.2-539.4  $\mu$  long, 429.2-452.4  $\mu$  wide (15 specimens); holotype 533.6  $\mu$  long, 452.4  $\mu$  wide. Centro-dorsal and latero-dorsal regions and marginal shield united anteriorly and with shallow, subcircular to oval punctations (1.45-5.8  $\mu$ d). Dorsal setae laterally flattened, broad, scimitar-shaped. *Venter* : Coxae I with shallow, subcircular to oval punctations. Perigenital shield length 1.8 times width, anterior margin with undulating crenulations, posterior and lateral margins undulate and extending beyond posterior limit of coxae IV. Operculum broadly rounded anteriorly and extending from middle of coxae II to middle of coxae IV. Peritreme

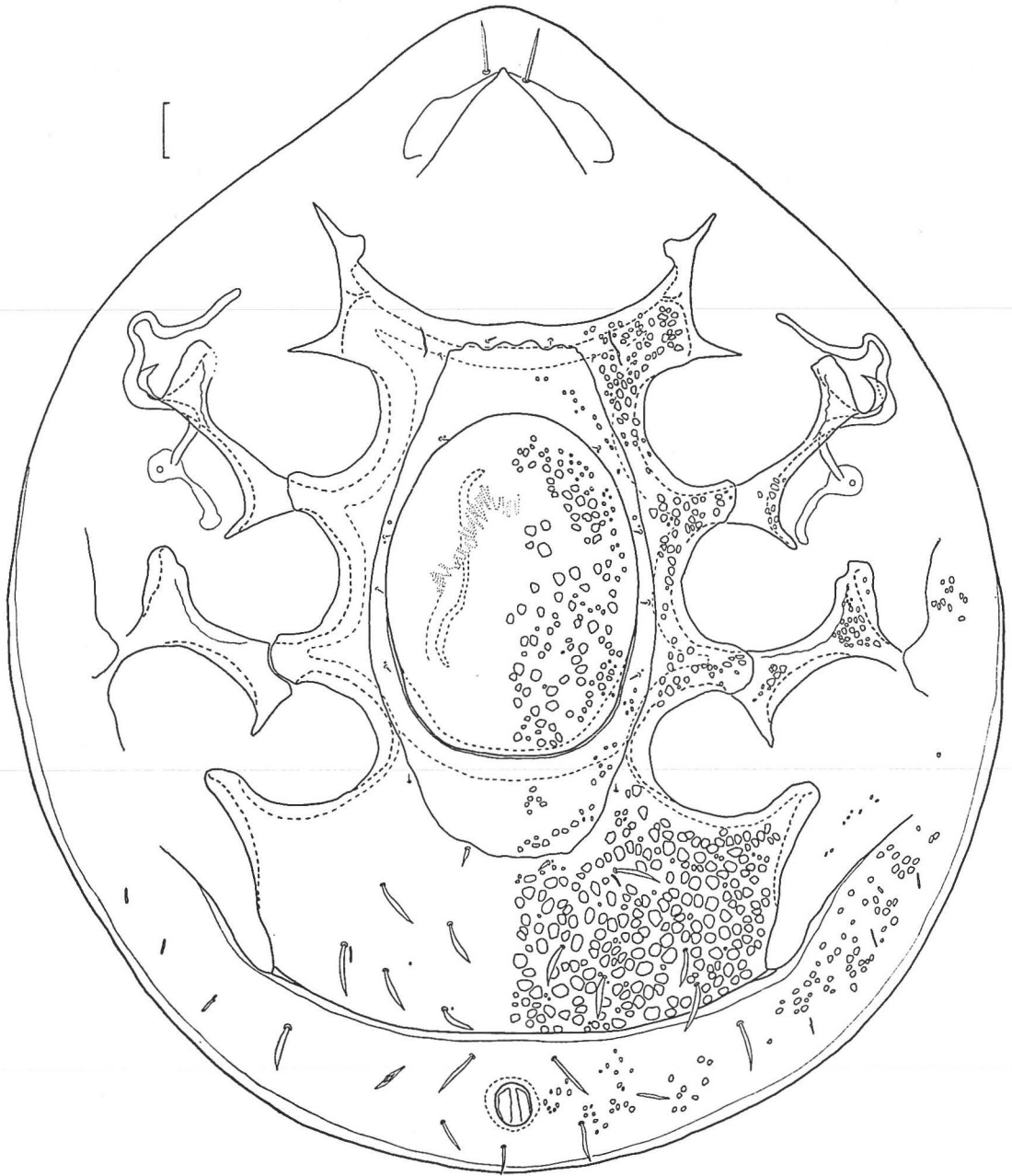


FIG. 40 : *Oplitis trachymyrmecon* n. sp. : Female venter

uni-convolute. All ventral regions of idiosoma with shallow, subcircular to oval punctations (1.1-8.8  $\mu$ d). Ventral regions of perigenital ring with 3-6 pairs of laterally flattened, broad, scimitar-shaped setae. Anal shield with punctations extending antero-laterally to coxae III and within foveae pedales of coxae IV.

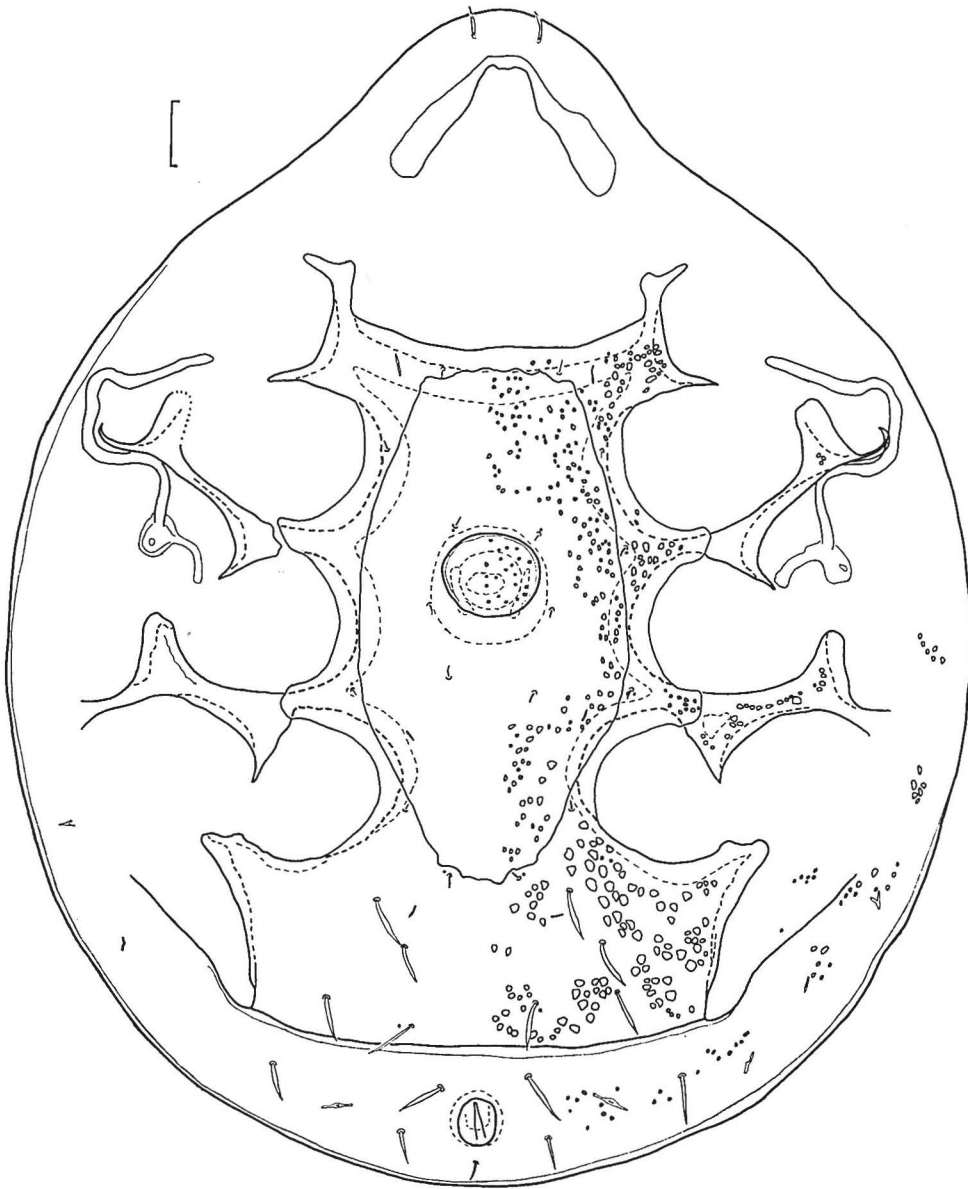


FIG. 41 : *Oplitis trachymyrmecon* n. sp. : Male venter

*Male. Dorsum* : 440.8-446.6  $\mu$  long, 353.8-359.6  $\mu$  wide (2 specimens). Dorsal setae, shield, regions and punctations as on female. *Venter* : Coxae I as on female. Perigenital shield length 2.0 times width, anterior and posterior margins irregularly crenulate, lateral margins undulate and extending beyond posterior limit of coxae IV. Circular, genital aperture on a level intermediate between coxae II and III and covered by a shield with shallow, subcircular to oval punctations. Peritreme simple or uni-convolute. All ventral regions of idiosoma with punctations (1.1-5.5  $\mu$ d) as on female. Ventral region of perigenital ring with 4 pairs of laterally flattened, broad, scimitar-shaped setae.

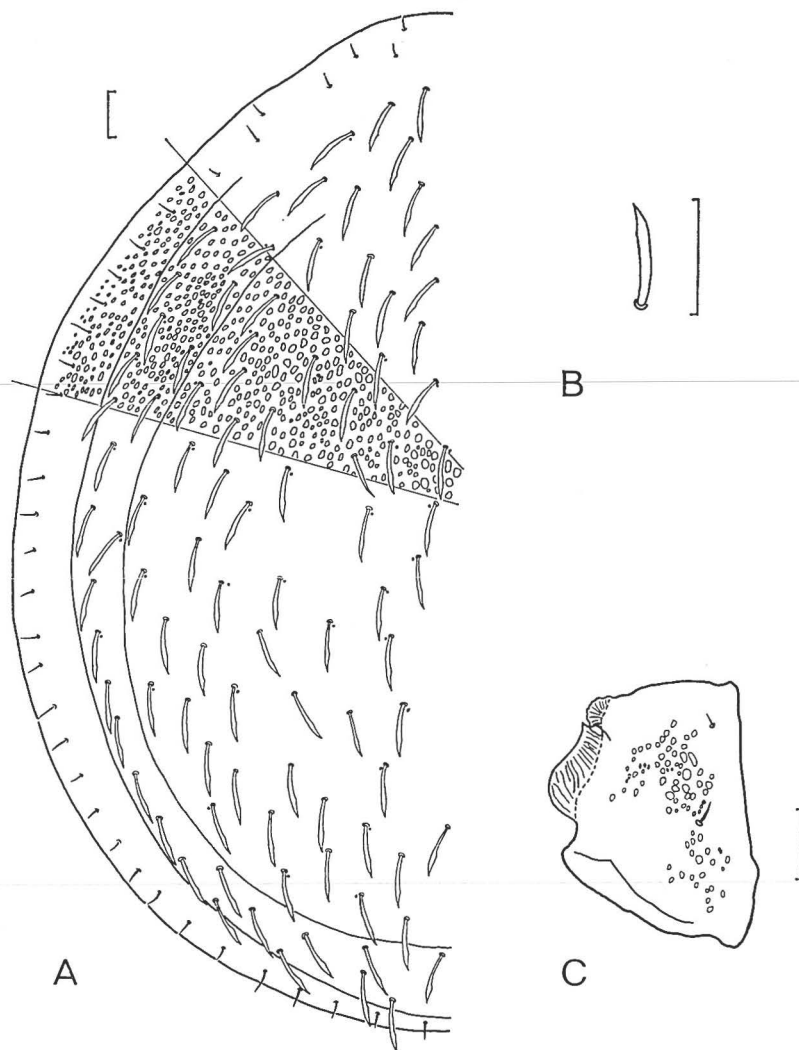


FIG. 42: *Oplitis trachymyrmecon* n. sp. : (A) Female dorsum, (B) Dorsal shield seta, (C) Coxa I

*Material examined.* Holotype (♀, USNM) and paratypes (1 ♀ and 1 ♂, USNM), (4 ♀, NCSU) and (9 ♀ and 1 ♂, JEH), " SOUTH CAROLINA, Berkeley Co., Honey Hill, 22 April 1972, with *Trachymyrmech septentrionalis* McCook), LLC # F-62 (on 21 September 1972), J. E. Hunter III. "

*Discussion.* *O. trachymyrmecon* belongs in the *conspicua*-group. *O. trachymyrmecon* can be distinguished from other species of this group by the shape of the perigenital shield, setal type and dorsal and ventral punctations. The name is derived from its association with *Trachymyrmech septentrionalis* (McCook).

***Oplitis virgilinus* n. sp.**

(Figures 43-45)

*Distinguishing Characters.* Dorsal and ventral setae slender, scimitar-shaped. Centro-dorsal and latero-dorsal regions united anteriorly. Latero-dorsal region, marginal shield and

ventral region of perigenital ring with shallow, subcircular punctations. Operculum, perigenital shield, exopodal shields, anal shield and coxae I without punctations.



FIG. 43 : *Oplitis virgilinus* n. sp. : Female venter

*Female.* *Dorsum* : 435.0-493.0  $\mu$  long, 359.6-429.0  $\mu$  wide (50 specimens) ; holotype 481.4  $\mu$  long, 394.4  $\mu$  wide. Centro-dorsal and latero-dorsal regions united anteriorly. Marginal shield and latero-dorsal region with shallow, subcircular punctations (1.45-5.8  $\mu$ d). Dorsal setae slender, scimitar-shaped.



*Venter* : Coxae I without shallow, subcircular punctations. Perigenital shield length 1.3 times width, anterior margin with 4-6 crenulations, lateral margins entire, posterior margin with 5-7 crenulations and extending beyond posterior limit of coxae IV. Operculum broadly rounded anteriorly and extending from middle of coxae II to middle of coxae IV. Peritreme tri-convolute and with a medially projecting extension. Ventral region of perigenital ring with shallow, subcircular punctations ( $0.55-3.3 \mu\text{d}$ ). Ventral region of perigenital ring with 3-5 pairs of slender, scimitar-shaped setae.

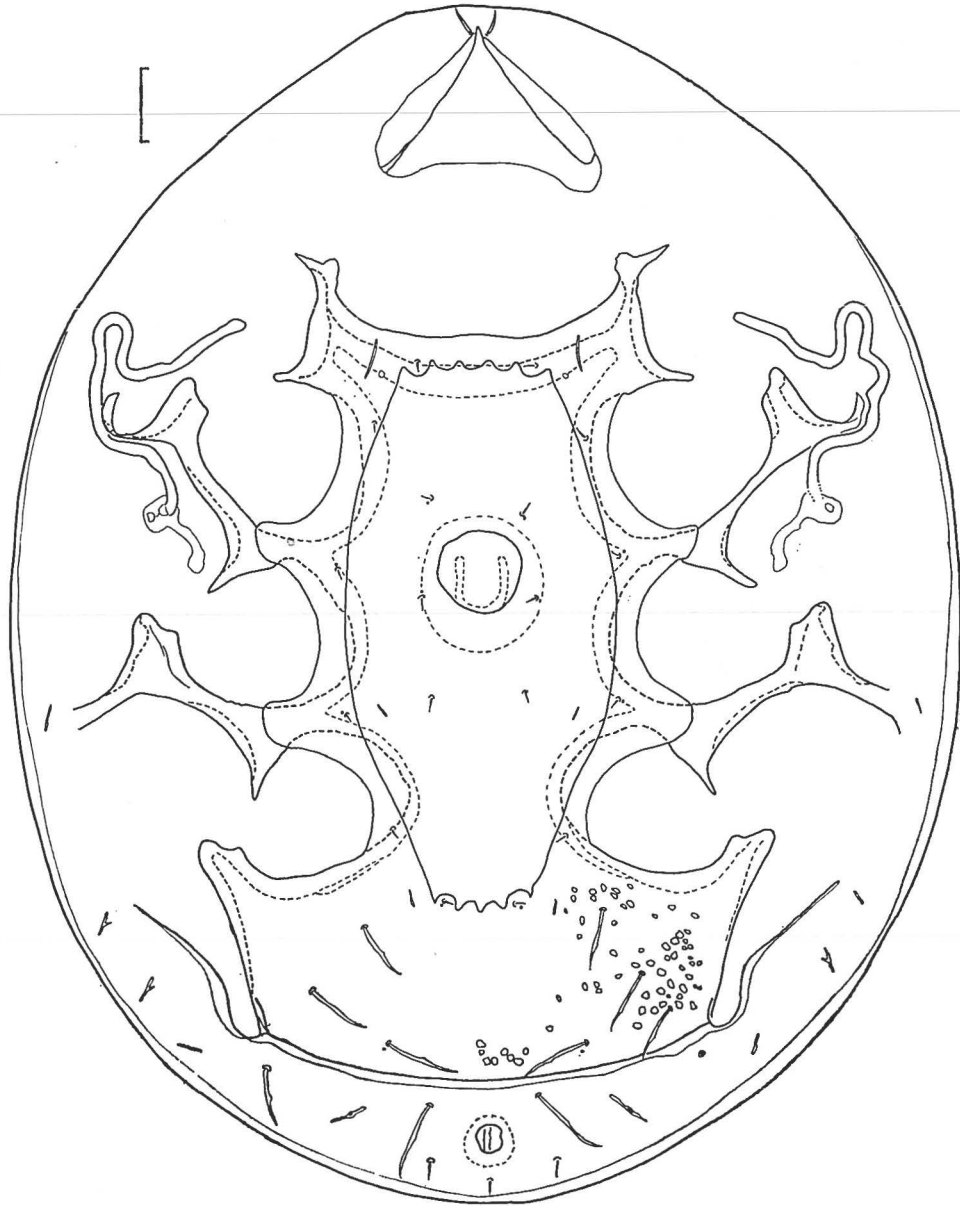


FIG. 44 : *Oplitis virgilinus* n. sp. : Male venter

Male. Dorsum :  $382.8-440.8 \mu$  long,  $307.4-353.8 \mu$  wide (31 specimens). Dorsal setae, shields and punctations as on female. Venter : Coxae I as on female. Perigenital shield length 2.0

times width, anterior margin with 4-5 crenulations, lateral margins entire, posterior margin with 3-4 crenulations and extending beyond posterior limit of coxae IV. Circular, genital aperture on a level intermediate between coxae II and III and covered by a smooth shield. Peritreme uni-convolute with the presence of a medially projecting extension variable. Shallow, subcircular punctations present as on female. Ventral region of perigenital ring with 3-4 pairs of slender, scimitar-shaped setae.

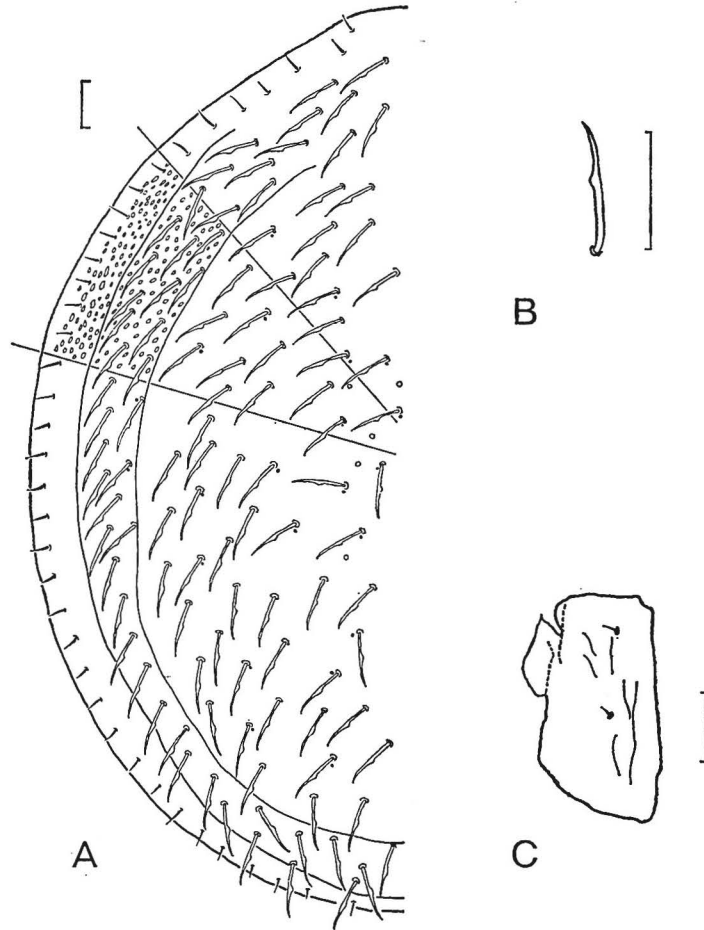


FIG. 45 : *Oplitis virgilinus* n. sp. : (A) Female dorsum, (B) Dorsal shield seta, (C) Coxa I

*Material examined.* Holotype (♀, USNM) and paratypes (1 ♂, USNM), (1 ♂, NCSU) and (1 ♂, JEH), "NORTH CAROLINA, Carteret Co., Beaufort, 11 June 1971, with *Solenopsis invicta* Buren, PS # 26, J. E. Hunter III-M. H. Farrier." Additional specimens. N. CAROLINA, Carteret Co., Beaufort, 13 August 1970, with *Solenopsis invicta* Buren, PS # 3 (1 ♀), J. E. Hunter III-M. H. Farrier. N. CAROLINA, Carteret Co., Newport, Mill Pond Road, 28 June 1971, with *Solenopsis invicta* Buren, PS # S8 (1 ♂), J. E. Hunter III-M. H. Farrier. N. CAROLINA, Wake Co., Raleigh, NCSU Campus, 16 May 1971, TS # J-12 (tree hole) (1 ♂), J. E. Hunter III. VIRGINIA, Virginia Beach, 5 June 1971, TS # J-15 (leaf litter) (7 ♀ and 1 ♂), J. E. Hunter III. SOUTH CAROLINA, Charleston Co., McClellanville, G. W. Stowe Duckery, 23 April 1972, TS # J-22 (tree base) (18 ♀ and 15 ♂), J. E. Hunter III. S. CAROLINA, Georgetown Co., 21 April

1972, with *Formi schaufussi dolosa* Wheeler, TS # F-57 (10 ♀ and 8 ♂), J. E. Hunter III. N. CAROLINA, Dare Co., Pea Island National Wildlife Refuge, 22 November 1974, with *Creमतogaster atkinsoni* Weeler, LLC & PS # F-158 (13 ♀ and 2 ♂), N. H. Newton.

*Discussion.* *Oplitis virgilinus* belongs in the *paradoxa*-group and resembles *O. paradoxa* G. Canestrini and Berlese and *O. leonardiana* (Berlese). *O. virgilinus* can be distinguished from *O. paradoxa* and *O. leonardiana* by the presence of dorsal punctations. *O. virgilinus* can also be distinguished from *O. paradoxa* by peritreme shape and from *O. leonardiana* by the presence of punctations on the ventral region of the perigenital ring. This species is named after Virginia and the Carolinas.

KEY TO THE MALES AND FEMALES OF *OPLITIS* BERLESE  
OF THE SOUTHEASTERN UNITED STATES<sup>1</sup>

- |       |   |   |
|-------|---|---|
| 1.    | Perigenital shield present (Figures 1, 2, 4, 5, 37).....  | 4   |
|       | Perigenital shield absent (Figures 28, 29, 34, 35) or represented by granulate area (Figure 27 A).....  | 2   |
| 2(1). | Operculum and perigenital ring with shallow, subcircular punctations (Figures 28, 29, 34, 35); dorsal shield setae scimitar-shaped (Figures 30B, 36B); peritreme simple, uni-convolute or bi-convolute (Figures 28, 29, 34, 35); perigenital shield absent (Figures 28, 29, 34, 35).... | 3   |
|       | Operculum and perigenital ring without punctations (Figures 27A); dorsal shield setae simple, acuminate (Figure 27B); peritreme simple (Figure 27A); perigenital shield represented by granulate area (Figure 27A).....   | <b>Oplitis granulatus</b> , new species (p. 25-v <sup>o</sup> 18)     |
| 3(2). | Coxae I with shallow, subcircular punctations (Figure 36C); idiosoma greater than 400 μ in length; peritreme bi-convolute (Figures 34, 35); operculum narrowly rounded anteriorly (Figure 34).....  | <b>Oplitis moseri</b> Hirschmann (p. 32-v <sup>o</sup> 18)            |
|       | Coxae I without punctations (Figure 30C); idiosoma less than 400 μ in length; peritreme uni-convolute (female, Figure 28) or simple (male, Figure 29); operculum broadly rounded anteriorly (Figure 28).....  | <b>Oplitis litoralis</b> , new species (p. 27-v <sup>o</sup> 18)      |
| 4(1). | Dorsal shield with centro-dorsal and latero-dorsal regions (Figures 3A, 6A, 9A, 12A, 16A, 22A, 25A, 33A, 45A).....  | 5   |
|       | Dorsal shield without centro-dorsal and latero-dorsal regions (Figure 19A).....   | <b>Oplitis communis</b> , new species (p. 617-v <sup>o</sup> 17)      |
| 5(4). | Perigenital shield with punctations (Figures 1, 2, 7, 8, 40, 41).....   | 6   |
|       | Perigenital shield without punctations (Figures 10, 11, 20, 21, 23, 24, 37).....  | 11  |
| 6(5). | Anal shield with punctations (Figures 4, 5, 7, 8, 13A, 14A, 40, 41).....  | 7   |
|       | Anal shield without punctations (Figures 1, 2, 15, 31, 32).....   | 17  |
| 7(6). | Coxae I with shallow, subcircular punctations (Figures 6C, 9C, 13C, 42C).....   | 8   |
|       | Coxae I without punctations (Figure 14C).....   | <b>Oplitis carteretensis</b> , new species (p. 611-v <sup>o</sup> 17) |
| 8(7). | Perigenital shield extending beyond posterior limit of coxae IV (Figures 4, 5, 13A, 14A, 40, 41).....   | 9   |
|       | Perigenital shield not extending beyond posterior limit of coxae IV (Figures, 7, 8).....  | <b>Oplitis anisus</b> , new species (p. 604-v <sup>o</sup> 17)        |
| 9(8). | Posterior margin of perigenital shield with uniform crenulations (Figures 4, 5).....  | <b>Oplitis alienorum</b> new species (p. 601-v <sup>o</sup> 17)       |
|       | Posterior margin of perigenital shield without uniform crenulations (Figures 13A, 40, 41).....  | 10  |

1. Males of *Oplitis blufftonensis*, *cheleuta*, *garibaldii*, *granulatus*, *piedmontensis* and *sarcinulus* and females of *O. carteretensis* are unknown and therefore not included. *O. attae* Hirschmann, *O. dictyooides* Zirngiebl-Nicol and Hirschmann, *O. paradoxa* G. Canestrini and Berlese and *O. pennsylvanica* (Berlese) which are known or reported from North America are not included.

- 10(9). Lateral wing of coxae I with length two times width (Figures 42C); dorsal and ventral setae broad, acuminate (Figure 42B)..... **Oplitis trachymyrmecon** new species (p. 39-v<sup>o</sup> 18)  
Lateral wing of coxae I with length about equal to width (Figure 13C); dorsal and ventral setae scimitar-shaped (Figure 13B)..... **Oplitis blufftonensis**, new species (p. 611)
- 11(5). Perigenital ring or exopodal shields with punctations (Figures 20, 21, 23, 24, 37, 39A, 43, 44). 13  
All ventral regions of idiosoma without punctations (Figures 10, 11, 26A)..... 12
- 12(11). Ventral region of perigenital ring with simple, acuminate setae (Figure 26A); latero-dorsal region and marginal shield with shallow, subcircular punctations; idiosoma greater than 550  $\mu$  in length.  
**Oplitis garibaldii** new species (p. 25-v<sup>o</sup> 18)  
Ventral region of perigenital ring with slender, scimitar-shaped setae (Figures 10, 11); latero-dorsal region and marginal shield without punctations (Figure 12A); idiosoma less than 550  $\mu$  in length..... **Oplitis arboricavi**, new species (p. 607-v<sup>o</sup> 17)
- 13(11). Ventral region of perigenital ring with punctations (Figures 23, 24, 37, 43, 44)..... 14  
Ventral region of perigenital ring without punctations (Figures 20, 21, 39A)..... 16
- 14(13). Anal shield with punctations (Figure 37); lateral margins of perigenital shield crenulate (Figure 37) ..... **Oplitis piedmontensis**, new species (p. 35-v<sup>o</sup> 18)  
Anal shield without punctations (Figures 23, 24); lateral margins of perigenital shield entire (Figures 4, 5) ..... 15
- 15(14). Dorsal shield setae simple, acuminate (Figure 25B); centro-dorsal and latero-dorsal regions separate (Figure 25A); male genital aperture on a level with coxae II (Figure 24).....  
**Oplitis exsectoidesorum** new species (p. 20-v<sup>o</sup> 18)  
Dorsal shield setae slender, scimitar-shaped (Figure 45B); centro-dorsal and latero-dorsal regions united anteriorly (Figure 45A); male genital aperture on a level intermediate between coxae II and III (Figure 44)..... **Oplitis virgilinus**, new species (p. 42-v<sup>o</sup> 18)
- 16(13). Coxae I with shallow, subcircular punctations (Figure 39C); sternal region of perigenital ring with shallow, subcircular punctations (Figure 39A); latero-dorsal region with punctations....  
**Oplitis sarcinulus**, new species (p. 621-v<sup>o</sup> 17)  
Coxae I without punctations (Figure 22C); sternal region of perigenital ring without punctations (Figures 20, 21); latero-dorsal region without punctations (Figure 22A).....  
**Oplitis exopodi**, new species (p. 621-v<sup>o</sup> 17)
- 17(6). Dorsal shield setae simple, acuminate (Figures 3B, 16B)..... 18  
Dorsal shield setae scimitar-shaped (Figure 33B). **Oplitis macclellani**, new species (p. 29-v<sup>o</sup> 18)
- 18(17). Anal shield reticulate antero-laterally (Figure 15); centro-dorsal and latero-dorsal regions united anteriorly (Figure 16A); punctations of the venter greater than 7.0  $\mu$  in diameter (Figure 15)  
**Oplitis cheleuta**, new species (p. 614-v<sup>o</sup> 17)  
Anal shield without reticulations (Figures 1, 2); centro-dorsal and latero-dorsal regions separate (Figure 3A); punctations of the venter less than 7.0  $\mu$  in diameter (Figures 1, 2) .....  
**Oplitis aktius**, new species (p. 598-v<sup>o</sup> 17)

#### DISCUSSION

Of the eighteen new species described above, sixteen meet the characteristics of *Oplitis* Berlese, 1884 *sensu stricto*, one species which lacks a perigenital shield meets the characteristics of *Uroplitana* Sellnick, 1926 *sensu stricto* now placed in *Oplitis* by Hirschmann and one new species, *Oplitis granulatus*, which due to a granulate area instead of a perigenital shield represents an intermediate position between *Oplitis* and *Uroplitana* and is placed in *Oplitis*.

HIRSCHMANN and ZIRNGIEBL-NICOL (1973) divided the species of *Oplitis* Berlese into eleven groups: (1) *acinaca*-group including *Uroplitana* Sellnick, 1926; (2) *adhaerens*-group including *Margi-nura* Sellnick, 1926; (3) *bisparata*-group including *Chelenuropoda* Sellnick, 1954; (4) *nitida*-group including *Urodiscella nitida* Womersley, 1959; (5) *ricasoliana*-group including species in *Urodiscella*

Berlese, 1903, without a pre-anal suture but with a perigenital shield ; (6) *testigosensis*-group including *Cariboplitis* Sellnick, 1963 ; (7) *wasmanni*-group including species in *Urodiscella* Berlese, 1903, without a perigenital shield or a pre-anal suture ; and (8) *brasiliensis*-, (9) *conspicua*-, (10) *minutissima*- and (11) *paradoxa*-group including species in *Oplitis* Berlese, 1884, *sensu stricto* with a perigenital shield and a pre-anal suture.

The new species and those previously known are arranged in the species-groups of HIRSCHMANN and ZIRNGIEBL-NICOL (1973) :

*acinaca*-group — *O. acinaca* (Sellnick), *O. baloghi* Zirngiebl-Nicol and Hirschmann, *O. baloghisimilis* Zirngiebl-Nicol and Hirschmann, *O. moseri* Hirschmann and *O. retrobarbatula* (Berlese) ;

*adhaerens*-group — *O. adhaerens* (Sellnick), *O. apicata* (Banks), *O. attaae* Hirschmann, *O. fraterna* (Banks), ***O. granulatus*** n. sp., *O. internata* (Banks), *O. interrupta* (Berlese) and ***O. litoralis*** n. sp. ;

*bispirata*-group — *O. athiasae* Zirngiebl-Nicol and Hirschmann, *O. bispirata* (Sellnick) and *O. similibispirata* Zirngiebl-Nicol and Hirschmann ;

*brasiliensis*-group — ***O. aktius*** n. sp., *O. brasiliensis* (Sellnick), *O. castrisimilis* Zirngiebl-Nicol and Hirschmann and *O. mahunkai* Zirngiebl-Nicol and Hirschmann ;

*conspicua*-group — ***O. blufftonensis*** n. sp., *O. calceolata* (Berlese), ***O. carteretensis*** n. sp., *O. conspicua* (Berlese), *O. donisthorpii* (Hull), *O. endrodyi* Zirngiebl-Nicol and Hirschmann, ***O. exsectoidesorum*** n. sp., ***O. macebellani*** n. sp., *O. mahunkaisimilis* Zirngiebl-Nicol and Hirschmann, *O. pennsylvanica* (Berlese), *O. stammeri* Hirschmann and Zirngiebl-Nicol, ***O. trachymyrmecon*** n. sp. and *O. uncinata* Zirngiebl-Nicol and Hirschmann ;

*minutissima*-group — ***O. alienorum*** n. sp., ***O. anisus*** n. sp., *O. minutissima* (Berlese), *O. minutissima* var. *vilosella* (Berlese), *O. ovatula* (Berlese) and *O. reticulata* Zirngiebl-Nicol and Hirschmann ;

*nitida*-group — *O. nitida* (Womersley) ;

*paradoxa*-group — ***O. arboricavi*** n. sp., *O. castrii* Zirngiebl-Nicol and Hirschmann, ***O. cheleuta*** n. sp., ***O. communis*** n. sp., ***O. exopodi*** n. sp., ***O. garibaldii*** n. sp., *O. inopina* (Hull), *O. kaszabi* Zirngiebl-Nicol and Hirschmann, *O. kaszabisimilis* Zirngiebl-Nicol and Hirschmann, *O. leonardiana* (Berlese), *O. maeandralis* Zirngiebl-Nicol and Hirschmann, *O. paradoxa* G. Canestrini and Berlese, *O. pusilla* (Berlese), *O. termitophila* Zirngiebl-Nicol and Hirschmann and ***O. virgilinus*** n. sp. ;

*ricasoliana*-group — *O. ghanaovalis* Zirngiebl-Nicol and Hirschmann, *O. nontransversaria* Zirngiebl-Nicol and Hirschmann, *O. potchefstroomensis* (Ryke), *O. ricasoliana* (Berlese) and *O. zicsii* Zirngiebl-Nicol and Hirschmann.

*testigosensis*-group — *O. testigosensis* (Sellnick) ;

*wasmanni*-group — *O. alophora* (Berlese), *O. dictyoeides* Zirngiebl-Nicol and Hirschmann, *O. franzi* Hirschmann and Zirngiebl-Nicol, *O. philoctena* (Trouessart), *O. schmitzi* (Kneissl) and *O. wasmanni* (Kneissl).

***Oplitis piedmontensis*** n. sp. was intermediate between the *conspicua*- and *minutissima*-group of Hirschmann and Zirngiebl-Nicol.

***Oplitis sareinulus*** n. sp. was intermediate between the *conspicua* — and *paradoxa*-group of Hirschmann and Zirngiebl-Nicol.

Hirschmann and Zirngiebl-Nicol did not place *O. beccarii* (Berlese), *O. delicta* Fox, *O. meliponarum* (Turk), *O. signata* (Hull) and *O. zavattarii* Valle in their groups and without studying specimens of these species, their placement remains uncertain.

Most of the species of *Oplitis* Berlese are myrmecophilous or termitophilous and the others have been taken from habitats which were or may have been in association with ants ; such as decaying straw-heaps, moss, tree hole organic matter and leaf litter. The species described in this paper were collected from the following hosts or habitats.

***O. aktius*** n. sp. — *Camponotus abdominalis floridanus* and *Camponotus nearcticus*.

***O. alenorum*** n. sp. — *Lasius alienus*.

***O. anisus*** n. sp. — *Pogonomyrmex badius*.

***O. arboricavi*** n. sp. — Tree hole organic matter with several formicid species, *Solenopsis geminata* and litter from under logs.

- O. blufftonensis** n. sp. — *Camponotus abdominalis floridanus*.  
**O. carteretensis** n. sp. — *Solenopsis invicta*.  
**O. cheleuta** n. sp. — *Formica pallidefulva pallidefulva* and litter from under logs.  
**O. communis** n. sp. — *Solenopsis invicta*, *Solenopsis geminata*, moss and leaf litter with several formicid species.  
**O. exopodi** n. sp. — *Solenopsis xyloni* and *Brachyponera solitaria*.  
**O. exsectoidesorum** n. sp. — *Formica exsectoides*.  
**O. garibaldii** n. sp. — *Lasius alienus*.  
**O. granulatus** n. sp. — Leaf litter with several formicid species.  
**O. litoralis** n. sp. — *Brachymyrmex depilis*, *Crematogaster atkinsoni* and leaf litter with several formicid species.  
**O. macelellani** n. sp. — *Pogonomyrmex badius*.  
*O. moseri* Hirschmann — *Solenopsis invicta*.  
**O. piedmontensis** n. sp. — Under bark.  
**O. sarcinulus** n. sp. — *Tetramorium caespitum*.  
**O. trachymyrmecoon** n. sp. — *Trachymyrmex septentrionalis*.  
**O. virgilinus** n. sp. — *Solenopsis invicta*, *Formica schaufussi dolosa*, *Crematogaster atkinsoni*, tree hole organic matter and leaf litter with several formicid species.

#### LITERATURE CITED

- BERLESE (A.), 1884. — Acari, Myriopoda et Scorpiones hucusque in Italia reperta. Fascicle 11. Number 9. Portici, Padova, Italy.
- BERLESE (A.), 1903. — Acari nuovi. Manipulus I. — *Redia* 1 (2) : 226-252.
- BERLESE (A.), 1904 [1903]. — Illustrazione iconografica degli Acari mirmecofili e liveri. — *Zoologischer Anzeiger* 27 : 12-28.
- CAMIN (J. H.) and (F. E.) GORIROSSI, 1955. — A revision of the suborder Mesostigmata (Acarina) based on new interpretations of comparative morphological data. — Chicago Academy of Sciences Special Publication No. 11 : 1-70.
- CANESTRINI (G.) and (A.) BERLESE, 1884. — Sopra alcune nuove specie di Acari italiani. — *Atti della Società Veneto-Trentina di Scienze Naturali* 9 : 175-182, tabella 3-5.
- EVANS (G. O.), 1957. — An introduction to the British Mesostigmata (Acarina) with keys to families and genera. — *Journal of the Linnean Society (Zoology)* 43 : 203-259.
- EVANS (G. O.), 1964. — Some observations on the chaetotaxy of the pedipalps in the Mesostigmata (Acari). — *Annals and Magazine of Natural History* (13) 6 : 513-527.
- EVANS (G. O.), 1972. — Leg chaetotaxy and the classification of the Uropodina (Acari : Mesostigmata). — *Journal of Zoology (London)* 167 : 193-206.
- HIRSCHMANN (W.), 1972. — Gangsystematik der Parasitiformes. Teil 103. Von J. C. Moser gesammelte Uropodiden aus Nordamerika und 2 neue *Oplitis*-Arten. — *Acarologie* 17 : 28-29, Abbildung 36-37.
- HIRSCHMANN (W.) and (I.) ZIRNGIEBL-NICOL, 1973. — Gangsystematik der Parasitiformes. Teil 175. Adultengruppen und Peritrema-Bestimmungstabelle von 51 *Oplitis*-Arten. — *Acarologie* 19 : 130-135.
- LINDQUIST (E. E.) and (G. O.) EVANS, 1965. — Taxonomic concepts in the Ascidae, with a modified setal nomenclature for the idiosoma of the Gamasina (Acarina : Mesostigmata). — *Memoirs of the Entomological Society of Canada* No. 47 : 1-64.
- SELLNICK (M.), 1926. — Alguns novos Acaros (Uropodidae) myrmecophilos e termitophilos. — *Archivos do Museu Nacional do Rio de Janeiro* 26 : 29-56.

- SELLNICK (M.), 1954. — Neue Milben aus Brasilien I. *Chelonuropoda bispirata*, n. gen., nov. spec. (Acar. Urop.). — *Dusenía* 5 : 195-208, 17 figures.
- SELLNICK (M.), 1963. — Karibische Landmilben I. Uropodina. — *Studies on the Fauna of Caraçao and other Caribbean Islands* 16 : 1-58.
- TRÄGÅRDH (I.), 1942. — Further contributions towards the comparative morphology of the Mesostigmata. Where are the metasternal shields of the Uropodina ? — *Arkiv for Zoologi* 34A : 1-10.
- TRÄGÅRDH (I.), 1943. — Further contributions towards the comparative morphology of the Mesostigmata. IV. — *Entomologisk Tidskrift* 64 : 9-111.
- TRÄGÅRDH (I.), 1944. — Zur Systematik der Uropodiden. — *Entomologisk Tidskrift* 65 : 173-186.
- TRÄGÅRDH (I.), 1946. — Outlines of a new classification of the Mesostigmata (Acarina) based on comparative morphological data. — *Lunds Universitets Arsskrift Ny Fölgd* (2) 42 (4) : 1-37.
- WILSON (E. O.), 1972. — Chemical communication among workers of the fire ant *Solenopsis saevissima* (Fr. Smith). I. The organization of mass-foraging. — *Animal Behaviour* 10 (1 & 2) : 134-146.
- WOMERSLEY (H.), 1959. — A new species of *Urodiscella* (Acarina, Uropodidae) from Australia. — *South Australian Museum Records, Adelaide* 13 : 349-353.

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