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MITES OF THE FAMILY PHYTOSEIIDAE FROM CENTRAL AFRICA, WITH REMARKS ON THE GENERA OF THE WORLD

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The generic revision of the family Phytoseiidae that is here presented is conservative, intended to emphasize relationships rather than small differences among natural groups of species. Divergent species are discussed, and a number of generic transfers are made.

Six broad genera are recognized that may form the basis for tribes: *Typhlodromus* Scheuten, *Phytoseius* Ribaga, *Chantia,* n. gen., *Amblyseius* Berlese, *Macroseius* Chant, Denmark, and Baker, and *Iphiseius* Berlese. New subgenera are *Phytoseius (Pennaseius), Amblyseius (Pennaseius),* and *Iphiseius (Trochoseius).*

The following new species are described:

Typhlodromus (Seiulus) sentus
Typhlodromus (Typhlodromus) magdalenae
Typhlodromus (Neoseiulus) ndibu
Phytoseius (Pennaseius) amba
Phytoseius (Phytoseius) yira
Phytoseius (Phytoseius) ferox
Chantia paradoxa
Amblyseius (Amblyseius) teke
Amblyseius (Amblyseius) lula
Amblyseius (Amblyseius) sundi
Amblyseius (Amblyseius) genya
Amblyseius (Amblyseius) rykei
Amblyseius (Amblyseius) shi
Amblyseius (Amblyseius) olombo
Amblyseius (Amblyseius) havu
Amblyseius (Amblyseius) hima
Amblyseius (Amblyseius) hutu
Amblyseius (Amblyseius) tutsi
Amblyseius (Amblyseius) swaga
Amblyseius (Amblyseius) hum
Amblyseius (Amblyseius) lokele
Amblyseius (Amblyseius) talinga
Amblyseius (Amblyseius) bwende
Amblyseius (Amblyseius) mba
Amblyseius (Amblyseius) fustis
Amblyseius (Amblyseius) ntandu
Amblyseius (Amblyseius) dossei
Amblyseius (Amblysiella) athiasae
Amblyseius (Ptenoseius) horrifer
Iphiseius (Trochoseius) glomus
Iphiseius (Trochoseius) gongylus

H I L G A R D I A

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MITES OF THE FAMILY PHYTOSEIIDAE FROM CENTRAL AFRICA, WITH REMARKS ON THE GENERA OF THE WORLD[1]

A. EARL PRITCHARD and EDWARD W. BAKER[2]

DURING RECENT YEARS the taxonomy, bionomics, and control of phytophagous mites have become subjects of intensive study. Phytoseiids, the most important mite predators of plant-feeding mites, are now receiving attention from entomologists with regard to their taxonomy, bionomics, and the effects of agricultural chemicals on their populations.

Gilliat (1935), Lord (1949), and Herbert (1952) regarded phytoseiid mites as among the most important predators of spider mites in Nova Scotia orchards. Mathys (1958) stated that mites of the genus *Typhlodromus* appear to be an effective factor limiting populations of spider mites in Swiss vineyards. Snetsinger (1959, 1960) found *Typhlodromus* to have a deterrent action on the development of spider mites on apple trees in Illinois. Chant (1958, 1960), however, regarded phytoseiids as of little importance in reducing spider-mite populations on deciduous fruit trees in England.

In California, Smith and Summers (1949) found that a phytoseiid played an important part in controlling a heavy infestation of spider mites in a large acreage of strawberries, and Allen (1959) stated that another phytoseiid is the most important enemy of spider mites on strawberries. Huffaker and Kennett (1956) demonstrated the vital role of predation by still another phytoseiid in the control of the cyclamen mite on California strawberries. Fleschner (1958) indicated that phytoseiids may significantly control spider mites on citrus and avocado in southern California, and reasons for this effectiveness were advanced by Chant and Fleschner (1960).

Chant (1959) and Chant and Fleschner (1960) have shown that certain phytoseiids may live and reproduce with a diet of pollen or aphid honeydew, which may be important in maintaining populations when mite hosts are not available.

Of the few phytoseiid species described by earlier workers, practically none was accurately identified prior to the work of Garman (1948). Since that time about 250 species have been named or are being described. Never-

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theless, the phytoseiid fauna of vast areas of the world is unknown or nearly so. Only 7 species were known from the Ethiopian Region prior to our study, and the 31 species here described can represent only a sample of those actually occurring in this part of Africa.

In connection with our study it has been necessary to review the generic concepts of this group on a world-wide basis, and a substantial, but conservative revision is presented. The trivial names used for the species here described are in large part based on names of African tribes inhabiting the areas in which the mites were collected. These names are used, for the sake of brevity and euphony, as nominatives in apposition, rather than appending Latin suffixes denoting a plural genitive or a geographical locale.

"Ethiopian" is used as a term denoting the Ethiopian Region as distinct from North Africa, the mite fauna of which pertains more directly to the Palaearctic Region.

The present paper is based principally on collections made in Central Africa by the junior author, who traveled to that region with the Smithsonian-Bredin Expedition to the Belgian Congo in 1955.

FAMILY PHYTOSEIIDAE BERLESE

Phytoseiini Berlese, 1913, Acaroth. Ital., p. 11; Berlese, 1917, Redia 12:33.

Phytoseiinae Vitzthum, 1941, Klass. Ord. Tierr. 5 (Abt. 4, Buch 5): 767; Garman, 1948, Bul. Conn. Agric. Exp. Sta. 520: 6, 10; Radford, 1950, Internatl. Union Biol. Sci. (sér. C, Ent.): 27; Nesbitt, 1951, Zool. Verh. 12: 1; Womersley, 1954, Austral. Jour. Zool. 2: 169.

Phytoseiidae Baker and Wharton, 1952, Introd. Acar., p. 87; Cunliffe and Baker, 1953, Pinellas Biol. Lab. Publ. 1: 1; Evans, 1957, Linn. Soc. Jour. Zool. 43: 223; Athias-Henriot, 1957, Bul. Soc. Hist. Nat. Afr. Nord 48: 320; Chant, 1960, Canad. Ent. 91 (suppl. 12): 45.

Macroseiinae Chant, Denmark, and Baker, 1959, Canad. Ent. 91: 808. *New synonymy.*

Among the phytoseiid mites only a few characters might be regarded as worth consideration for delineating genera. The degree and type of development of the setae on the dorsal shield and their serration have been considered by most students of the group to be of primary significance (*e.g.*, Chant, 1959); but these characters, although indicating close relationship among some species, are not in themselves generic criteria. Similarly, some workers have considered the degree and type of development of the ventri-anal plate of the female and the number of pre-anal setae on this plate to be of primary significance, but these characters may vary widely among otherwise very similar species.

The phytoseiids are derived from a blattisociid-like[3] ancestor and are distinguished from the blattisociids principally by a reduction in the number of setae on the dorsum of the idiosoma. The type, number, and placement of these setae are here considered to be of paramount importance for recognition of genera and subgenera.

Hirschmann (1957) demonstrated that there is a natural division of the mesostigmate idiosoma into an anterior and a posterior portion. In the Phytoseiidae this is also demonstrated in the genus *Macroseius,* which has the

[3] The suprageneric name Blattisociinae, proposed by Garman (1948), has priority over Aceosejidae Baker and Wharton (1952).

dorsal shield actually divided. These divisions (fig. 1) of the dorsal plate are here referred to as the proscutum and postscutum. The *proscutum* is that cephalic portion of the dorsal shield that includes the third pair of dorsocentral setae as here defined and is usually, in slide preparations, anterior to the posterior pair of sublateral setae. The *postscutum* is the caudal

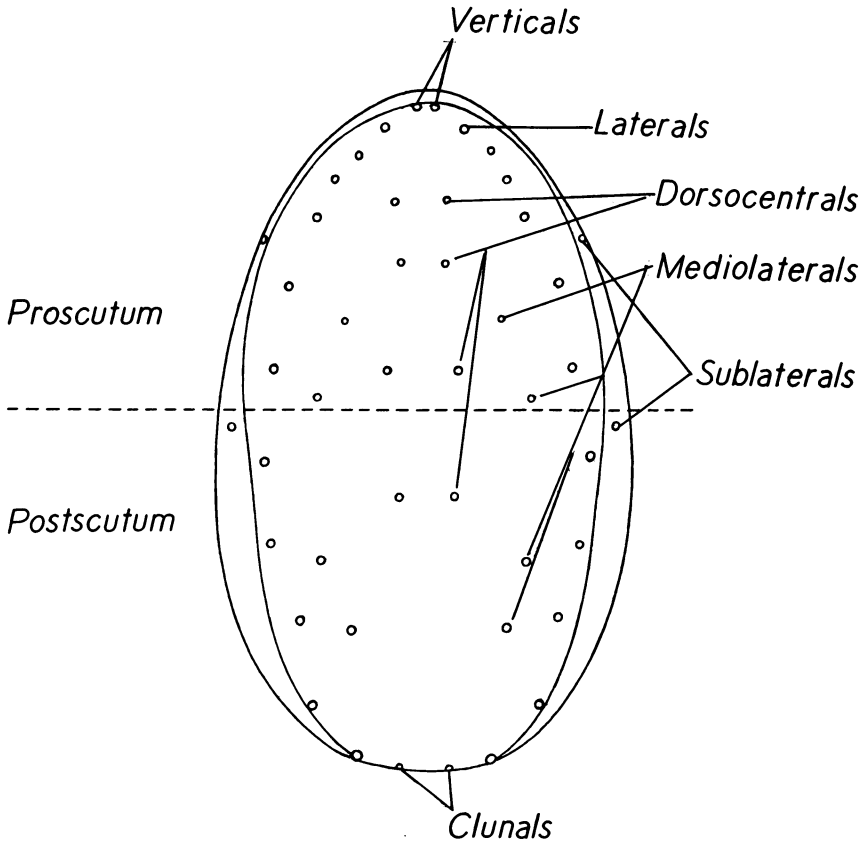


Fig. 1. Diagrammatic representation of the dorsum of the idiosoma of a phytoseiid indicating the maximum number of setae known to occur in the family and their terminology.

portion that includes the fourth pair of dorsocentral setae when they are present and the posterior pair of sublateral setae when they are on the dorsal plate. The use of such a division facilitates designation of individual setae and obviates the use of inexplicit total numbers of setae on the dorsal shield.

Several letter-number systems have been devised to indicate the various setae on the dorsum of the phytoseiid idiosoma. Garman (1948) proposed such a system and numbered consecutive setae present in the longitudinal rows D (dorsal), M (median), L (lateral), and S (scapular). His system has been followed by subsequent American workers as well as Womersley (1954) in Australia, Evans (1952, 1954, 1957, 1958, 1959) in England, and Ehara (1958, 1959) in Japan, except that Chant (1960) modified it in *Amblyseius,*

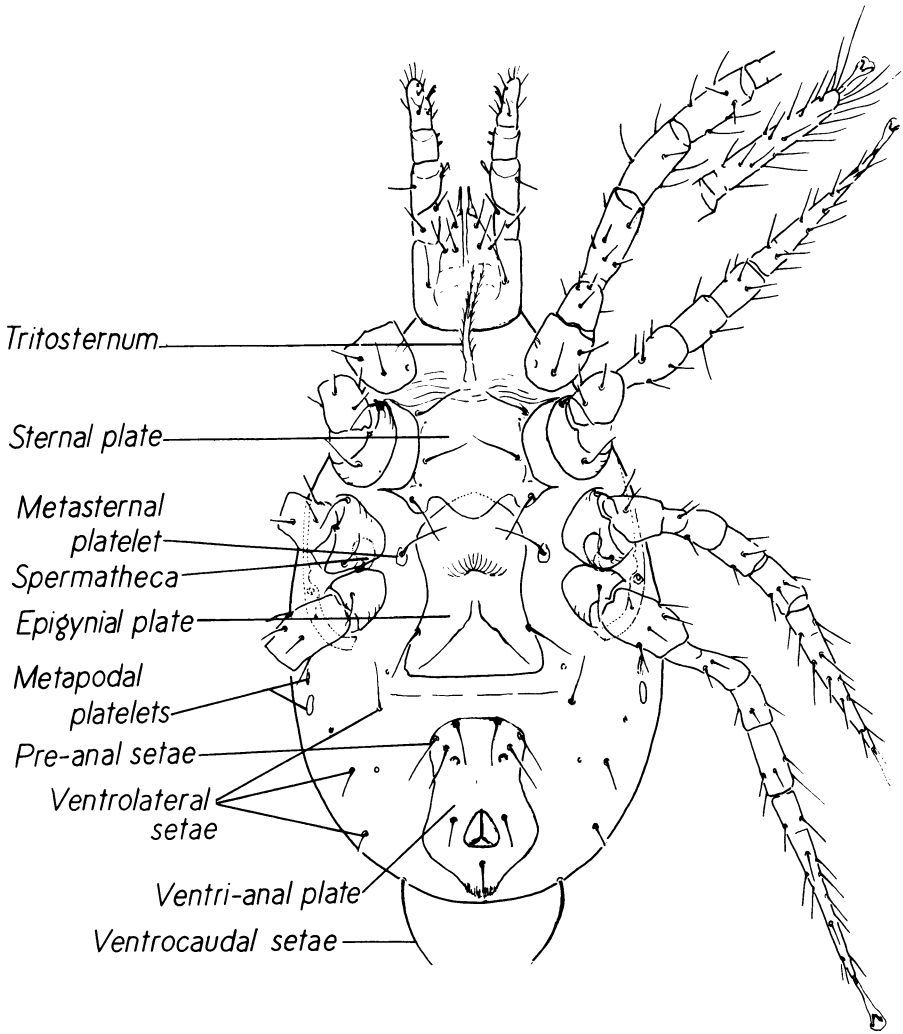


Fig. 2. Venter of a phytoseiid with terminology of plates and setae indicated.

where the lateral setae of the dorsal shield were numbered according to homologies with the numbers of 1 to 9 in this group.

Mrs. Athias-Henriot (1957–1958) modified the Garman system by attempting to number the setae to show homologies with the more numerous setae in the basic pattern of the blattisociids. She considered the "M" series to begin with the anterolateral seta that Garman considered to be the first of the "L" series. Later (1959*b*) Mrs. Athias-Henriot adapted Hirschmann's (1957) letter-number system that was promulgated for parasitiform mites in general.

Wainstein (1958, 1959) devised a substantially different number-letter system for the dorsal setae on the idiosoma, but his interpretations are not easy to follow.

Garman's system of nomenclature for the setae on the dorsum of the idiosoma is here employed with certain modifications so that homologies may be shown with the basic setal pattern as now understood for the phytoseiids, yet flexibility is allowed if additional setae are found to exist in the family or if exact homologies are not apparent. Names (fig. 1) similar to those of Garman are used for the four pairs of longitudinal rows of setae so that the first letter of each corresponds to the letter used in that system.

The anterior pair of setae on the dorsal shield is distinct from the others, and it is referred to as the *verticals* as in many other groups of the Acarina. The caudal pair of setae, known as *clunals,* is always present and very short.

The median row of paired setae, aside from the verticals and clunals, is called the *dorsocentral* setae. The first three pairs are on the proscutum; rarely the anterior pair may be absent. A fourth pair of dorsocentrals is usually present on the postscutum; rarely a fifth pair is present.

The proscutum always bears a pair of *mediolateral* setae, usually placed at a level midway between the second and third dorsocentrals, and a second pair of mediolateral setae may be present caudolaterad from these. The postscutum always bears a pair of mediolateral setae, and rarely an additional pair of mediolaterals may be present anterolaterad from these.

The maximum number of setae in each row of *lateral* setae known to occur in the Phytoseiidae is eleven, of which six are on the proscutum and five on the postscutum. There may be as few as four pairs of laterals on the proscutum and a single pair of caudolateral setae on the postscutum.

Two pairs of *sublateral* (scapular) setae occur, usually on the membrane alongside the dorsal shield; one or both of these setae may be captured by the dorsal shield in the female or else the posterior pair of sublaterals may be absent. In the male the sublateral setae are always on the dorsal shield.

On the venter of the opisthosoma and caudolaterad from the anal plate a pair of usually well developed setae is nearly always present. These setae are here referred to as the *ventrocaudals* (fig. 2). In the female as many as four setae may be found on each side of and anterolaterad from the ventri-anal plate when the plate bears a complement of four pairs of pre-anal setae; but usually three pairs of such setae are present on the membrane when the ventri-anal plate bears either three or four pairs of pre-anal setae. These are called the *ventrolaterals.*

A pair of *spermathecae* is always well developed in the Phytoseiidae in contrast to the Blattisociidae, where the organs are sometimes not apparent. Oudemans (in illustrations published by Nesbitt, 1951), Hughes (1948), and Womersley (1954) called attention to these organs as characters of considerable value for species recognition. But it was not until 1958 that Dosse showed that they actually function for reception of spermatophores. Each spermatheca has its external orifice on the venter between coxae III and IV, and a lateral view must be obtained in order to see the structure of the spermatheca in detail.

Our terminology of the components of the spermatheca (fig. 3) follows that proposed by Schuster and Smith (1960). The spermatophores are collected in a *vesicle* that is usually membranous but with a sclerotized portion, the *cervix,* that leads to a chamber, the *atrium.* A *minor duct* arises from the

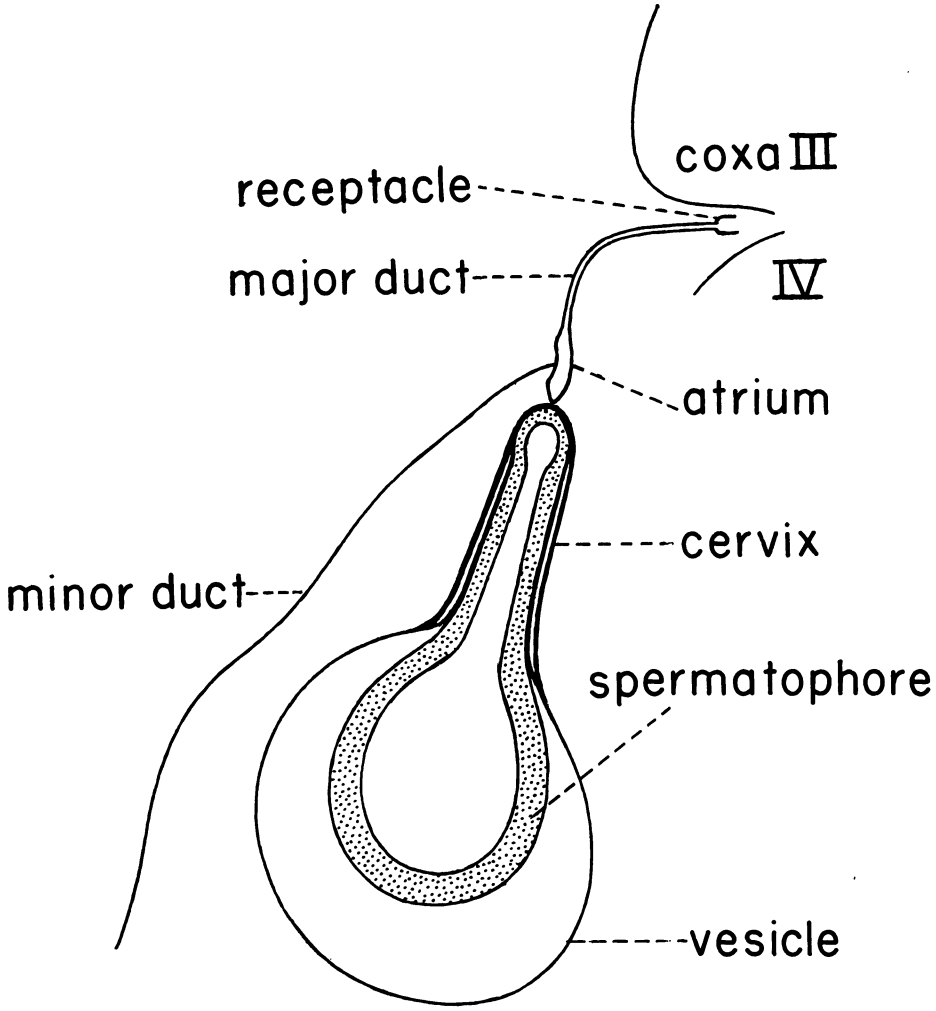


Fig. 3. Spermatheca with terminology of parts indicated.

atrium for passage of the spermatozoa to the ova and a *major duct* through which the spermatophores are received. The external opening may be modified to form a *receptacle.*

Correlative with the development of the spermathecae, the structure of the spermatodactyl of the male chelicera is often very specific. Very few males are available for the present study, and it has not been possible to utilize the spermatodactyl and other characters for specific identification of males.

The supraspecific classification of the Phytoseiidae as presented here is conservative and emphasizes the relationships of genera and subgenera. There are undoubtedly many undiscovered species that will contribute

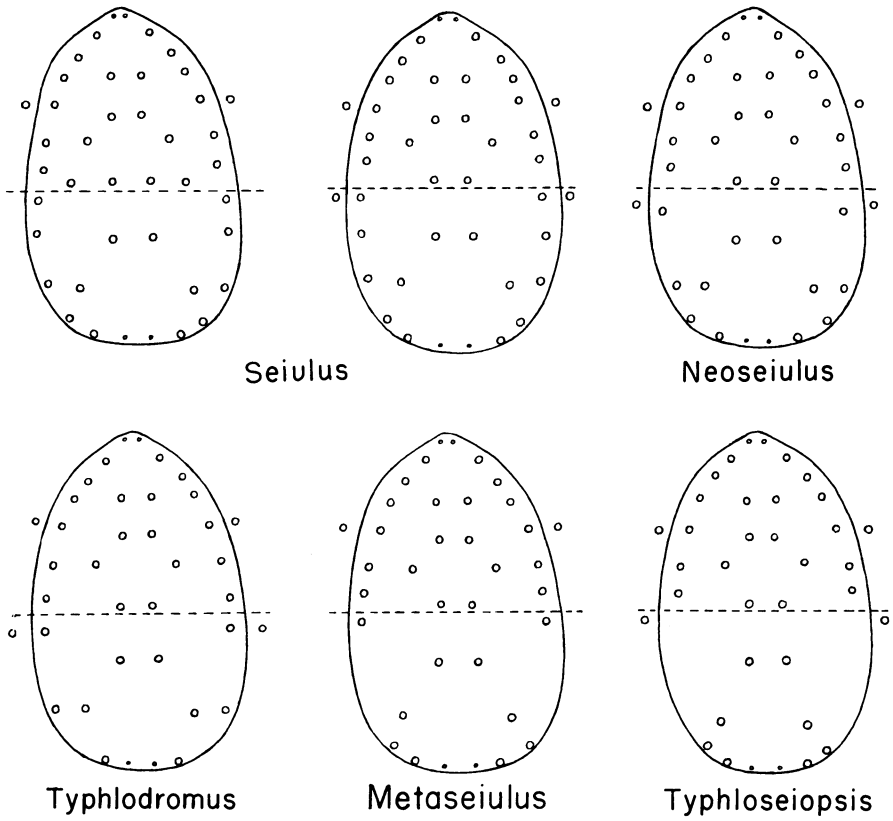


Fig. 4. Diagrammatic representation of the chaetotaxy of the subgenera of *Typhlodromus*.

substantially to our future understanding of generic categories and the relationship of these genera. At the present there appear to be only six genera in the world, and these may also be designated as tribes: Typhlodromini (*Typhlodromus sens. lat.*), Phytoseiini (*Phytoseius sens. lat.*), Chantiini (*Chantia*), Amblyseiini (*Amblyseius sens. lat.*), Macroseiini (*Macroseius*), and Iphiseiini (*Iphiseius sens. lat.*). Because so little is known of the phytoseiids in the region with which this paper is concerned, all of the recognized genera and subgenera are discussed, and complete bibliographical references are cited for each.

Key to Genera of the World: Females

1. Anterior sublateral seta on membrane 2
   Anterior sublateral seta on a sclerotized plate 3
2. Proscutum with six pairs of lateral setae or else posterior sublateral seta absent
   Typhlodromus (p. 212)
   Proscutum with four pairs of lateral setae..... *Amblyseius* (p. 235)
3. Anterior sublateral seta on the dorsal plate 4
   Anterior and posterior sublateral setae on the sclerotized lateral membrane
   Iphiseius (p. 298)

4. Posterior sublateral setae on the dorsal plate; dorsal shield with setae strongly spatulate and smooth ..... *Chantia* (p. 230)
   Posterior sublateral setae on the membrane or absent; dorsal shield with setae serrate when widened 5
5. Dorsal shield transversely divided ..... *Macroseius* (p. 298)
   Dorsal shield entire ..... *Phytoseius* (p. 223)

GENUS TYPHLODROMUS SCHEUTEN

The genus *Typhlodromus* is characterized by having the first sublateral setae located on the membrane in the female, and six pairs of lateral setae present anterior to the posterior sublateral setae (which may be absent). Often a distinct gap occurs between the fifth and sixth lateral setae on the proscutum, so Chant (1957*c*) considered the number of pairs of anterolateral setae to be either five or six.

Differences in the patterns of dorsal setae on the postscutum (fig. 4) are convenient for showing relationships within the genus, and these divisions are expressed through the use of subgenera.

Key to Subgenera of the World: Females

1. Postscutum with five pairs of lateral setae ..... *Seiulus* (p. 212)
   Postscutum with less than five pairs of lateral setae 2
2. Postscutum with four pairs of lateral setae, one pair of the anterolateral setae being absent ..... *Neoseiulus* (p. 218)
   Postscutum with less than four pairs of lateral setae 3
3. Postscutum with only two pairs of lateral setae, the anterolateral and the first pair of caudolateral setae absent ..... *Typhloseiopsis* (p. 222)
   Postscutum with three pairs of lateral setae, one pair of anterolateral setae being present 4
4. Postscutum with the fourth pair of lateral setae absent, the third lateral setae being mated transversely with the mediolateral setae ..... *Typhlodromus* (p. 218)
   Postscutum with the fourth pair of lateral setae present, the third lateral setae being absent ..... *Metaseiulus* (p. 222)

SUBGENUS SEIULUS BERLESE

Seius (*Seiulus*) Berlese, 1887, Acari Myr. Scorp., fasc. 41, no. 3. Type: *S.* (*S.*) *hirsutigenus* Berlese, monobasic.

Seiulus Oudemans, 1902, Tijd. Ent. 45: 17, Oudemans, 1929, Ent. Ber. 8: 14; Garman, 1948, Bul. Conn. Agric. Exp. Sta. 520: 6; Nesbitt, 1951, Zool. Verh. 12: 9; Athias-Henriot, 1958, Bul. Soc. Hist. Nat. Afr. Nord 49: 36; Chant, 1960, Canad. Ent. 91 (suppl. 12) : 112.

Echinoseius Ribaga, 1904, Riv. Patol. Veg. 10: 177. Type: *Seius* (*Seiulus*) *hirsutigenus* Berlese, monobasic. *New synonomy.*

The subgenus *Seiulus* is characterized by having six pairs of lateral setae on the proscutum and five pairs of lateral setae on the postscutum.

Berlese's drawing of *Seiulus hirsutigenus* clearly shows that it is a female and not a nymph as stated by some authors. The lateral setae, the posterior two pairs of dorsocentral setae, and the postscutal mediolateral setae are long, stout, and strongly serrate. The anal plate is simple in the female.

Seiulus simplex Chant is similar to *S. hirsutigenus,* but the setae on the dorsal plate are smooth, and there is a pair of pre-anal setae on the ventri-anal plate of the female.

The three species in Chant's Tiliarum Group of *Typhlodromus (tiliarum*

Oudemans, *aceri* Collyer, and *nesbitti* Womersley) have a pattern of chaetotaxy similar to that of *S. hirsutigenus* on the dorsal shield, except that the mediolateral setae on the postscutum are more widely spaced. The dorsal setae are also slenderer. Three pairs of pre-anal setae occur on the ventri-anal plate of the female. This group of species should be included in *Seiulus*.

Typhlodromus australicus Womersley, which Chant placed in a separate species group, has the chaetotaxy of the dorsal shield similar to that of the Tiliarum Group, except that there are two pairs of mediolateral setae on the proscutum. The new species here described from Africa agrees with *T. australicus* in having this extra pair of mediolateral setae. It is not clear whether these setae are present in *T. hirsutigenus*. *T. australicus* should also be included in *Seiulus*.

Nor is it clear whether the posterior pair of sublateral setae is present or absent in *Typhlodromus hirsutigenus*, but the setae are present in the other species. The African species agrees with *T. hirsutigenus* in that the lateral setae on the dorsal shield are stout and strongly serrate. The posterior sublateral setae are absent in the African species.

If Berlese's species lacks the posterior pair of sublateral setae, then *Seiulus* might be restricted to *Typhlodromus hirsutigenus* and *T. sentus*. This character is regarded here as being more significant than having two pairs of anterior mediolateral setae, because a duplication of the posterior mediolateral setae does not appear to be of more than specific importance when it has been noted.

Seiulus isotrichus Athias-Henriot is discussed under *Amblyseius (Amblyseiella)*.

Typhlodromus (Seiulus) sentus n. sp.

(Figs. 5, 6)

Typhlodromus sentus differs from *T. hirsutigenus* in that the lateral setae on the dorsal shield are shorter, the penultimate pair of caudolateral setae is as long as the preceding pair, and the third and fourth pairs of dorsocentral setae are shorter, with the third pair lacking serrations. There are four pairs of pre-anal setae on the ventri-anal plate of the female.

Female.—Dorsal shield slender, strongly reticulate. Dorsal shield with vertical and lateral setae all stout, strongly serrate, all moderately long, with the second, third, and fourth laterals somewhat shorter, the postscutal laterals somewhat longer, the caudolateral pair still longer; first and second dorsocentrals and two pairs of proscutal mediolaterals short, stout, and serrate, the third dorsocentrals somewhat longer, stouter, and smooth, the fourth dorsocentrals somewhat longer still and serrate; postscutal mediolaterals stout and serrate, similar to accompanying lateral setae; clunals short but serrated. Anterior pair of sublaterals similar to adjacent laterals, the posterior sublaterals absent. Peritremes reaching verticals. Ventri-anal plate longer than broad, the pre-anal portion with irregularly concave lateral margins, bearing four pairs of setae and a pair of pores inside and posterior to caudomedian pair of setae. Three pairs of ventrolaterals. Two pairs of slender metapodal platelets, the anterior pair short. Sternal plate broader than long and bearing two pairs of setae, the caudal two pairs of sternal setae on separate platelets. Spermatheca with cervix longer than broad at base, triangular, narrowing to a short atrium. Genu IV with seven short setae; tibia IV with six short setae; basitarsus IV with four short setae. Length of idiosoma 306μ; greatest width of body 204μ.

Holotype.—Female, Kysenyi, Belgian Congo, May 12, 1955 (E. W. Baker), on *Acacia* sp.; type no. 2697 in the U. S. National Museum.

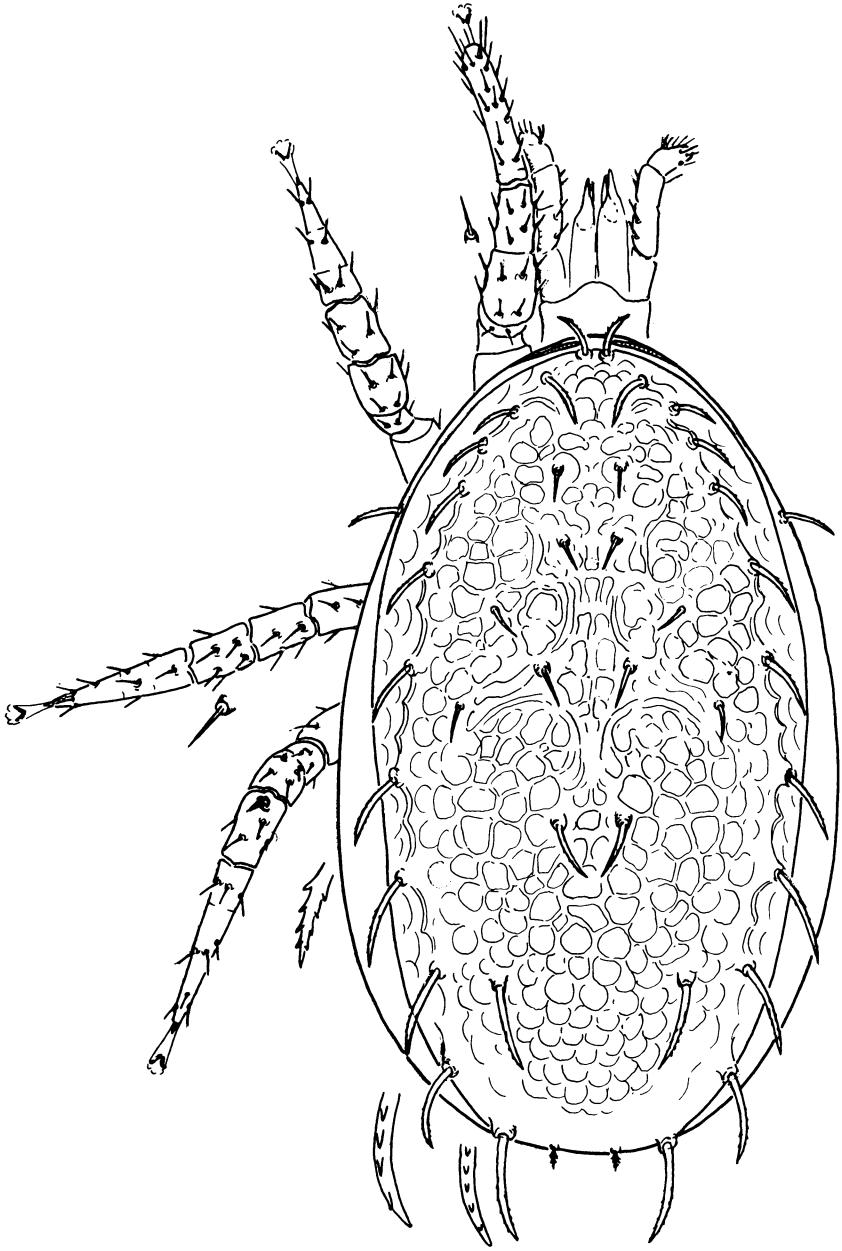


Fig. 5. *Typhlodromus sentus:* dorsal aspect of female.

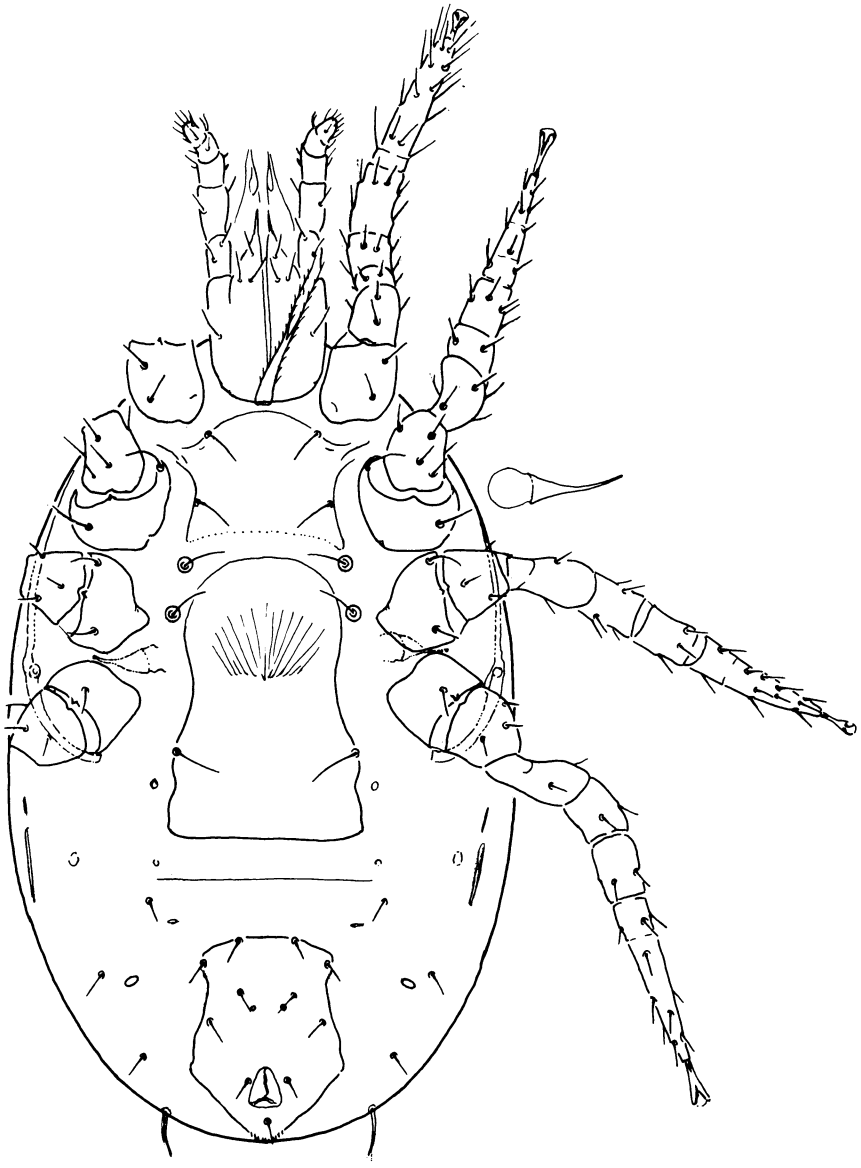


Fig. 6. *Typhlodromus sentus:* ventral aspect of female.

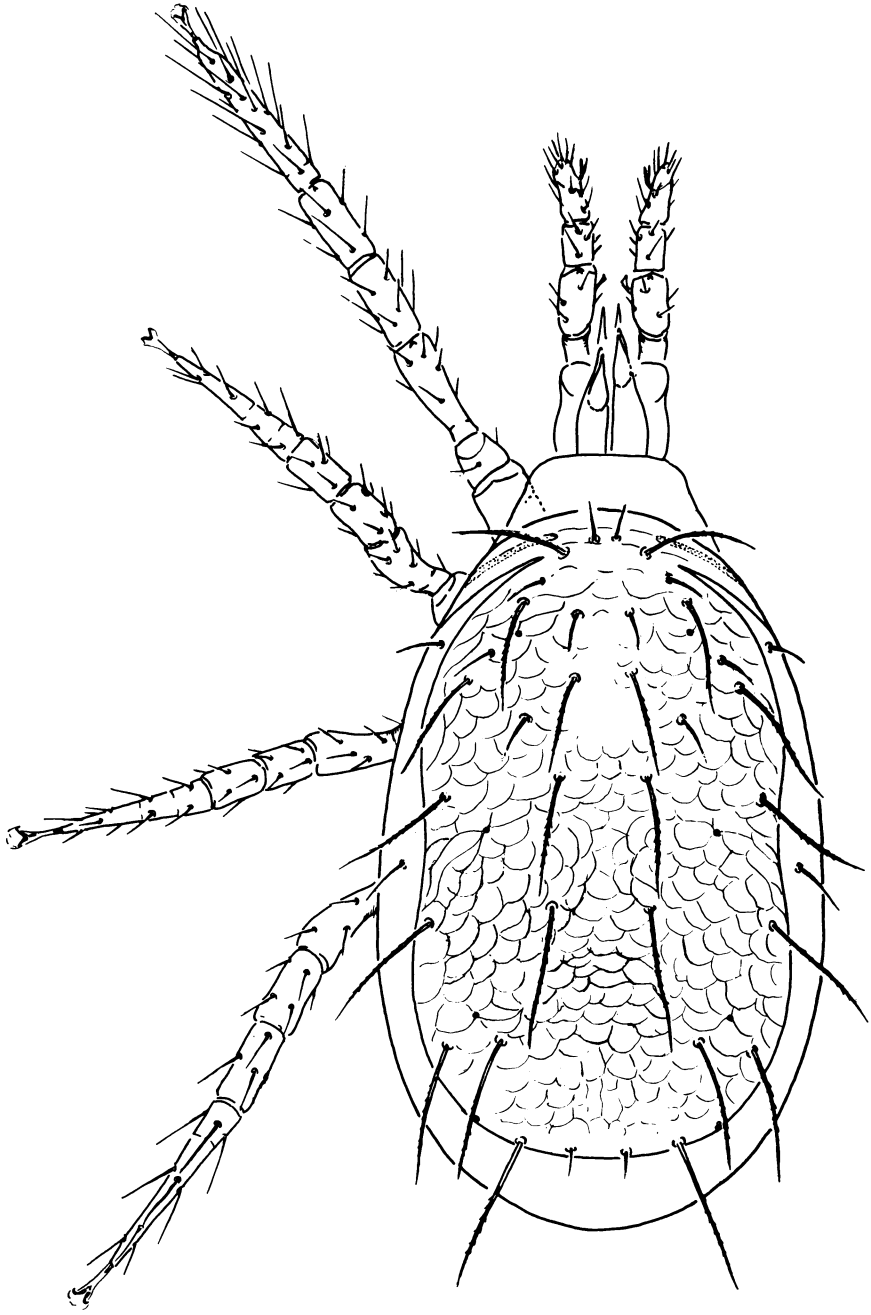


Fig. 7. *Typhlodromus magdalanae:* dorsal aspect of female.

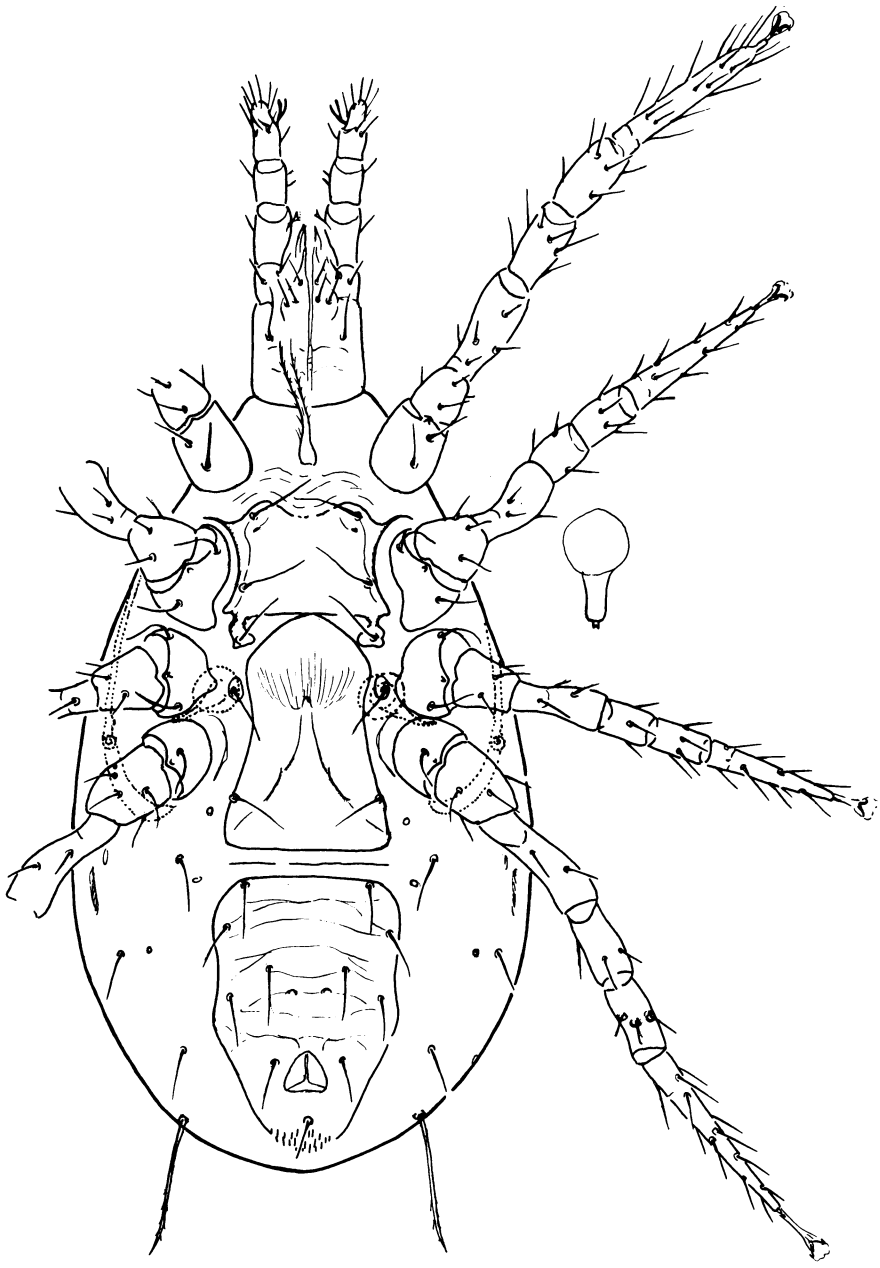


Fig. 8. *Typhlodromus magdalanae:* ventral aspect of female.

SUBGENUS TYPHLODROMUS SCHEUTEN

Typhlodromus Scheuten, 1857, Arch. Naturg. 23: 111; Oudemans, 1929, Ent. Ber. 8: 14; Garman, 1948, Bul. Conn. Agric. Exp. Sta. 520: 7; Nesbitt, 1951, Zool. Verh. 12: 4; Cunliffe and Baker, 1953, Pinellas Biol. Lab. Publ. 1: 1; Womersley, 1954, Austral. Jour. Zool. 2: 172; Muma, 1955, Ann. Ent. Soc. Amer. 48: 268; Athias-Henriot, 1957, Bul. Soc. Hist. Afr. Nord 48: 336; Wainstein, 1958, Soobsh. Akad. Nauk Gruz. 21: 201; Ehara, 1959, Acarol. 1: 285. Type: *T. pyri* Scheuten, by subsequent designation of Oudemans (1929).

Typhlodromus (*Typhlodromus*), Chant, 1957, Canad. Ent. 89: 289; Chant, 1957, Canad. Ent. 89: 530; Chant, 1960, Canad. Ent. 91 (suppl. 12): 48.

Typhlodromus sens. str. is characterized by having three pairs of lateral setae on the postscutum: an anterolateral pair, a pair transversely mated with the mediolateral setae, and the caudolateral pair. Both pairs of sublateral setae are present.

A single species, which is closely related to *Typhlodromus pyri* Scheuten, is here described.

Typhlodromus (Typhlodromus) magdalenae n. sp.

(Figs. 7, 8)

Typhlodromus magdalenae is closely allied to *T. pyri* Scheuten, from Europe and North America, but the fourth lateral setae on the dorsal shield are short like the second lateral setae, and the second, third, and fourth pairs of dorsocentral setae are very long like most of the lateral setae.

Female.—Dorsal shield slender, with irregular reticulations and four pairs of pores. Vertical setae, first pair of dorsocentrals, proscutal mediolaterals, second and fourth laterals, and both pairs of sublaterals short and similar; all other setae on dorsal shield (except clunals) long, stout but finely tapering, and finely serrate. Peritremes nearly reaching verticals. Ventri-anal plate with pre-anal area slender, slightly wider anteriorly, concave on lateral margins; four pairs of pre-anal setae and a pair of pores between and caudad from median pair of setae. Three pairs of ventrolaterals. Two pairs of slender metapodal platelets, the anterior pair very short. Sternal plate broader than long; the third pair of sternal setae on platelets narrowly united with the sternal plate; metasternal platelets separate. Spermatheca with cervix long but broad, abruptly truncate before tiny atrium. Genu IV with seven short setae; tibia IV with six short setae; basitarsus IV with a fairly long seta and three short setae. Length of idiosoma 350μ; greatest width of body 223μ.

Holotype.—Female, Lwiro, IRSAC, Belgian Congo, May 18, 1955 (E. W. Baker), on tree legume; type no. 2698 in the U. S. National Museum.

Paratypes.—One female, Mulunga, INEAC, Belgian Congo, May 18, 1955 (E. W. Baker), on grape leaf; 1 female, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on cherimoya; 1 female, Astrida, Ruanda Urundi, May 22, 1955 (E. W. Baker), on *Haronga paniculata;* 1 male, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on banana; 1 female, Astrida, Ruanda-Urundi, May 25, 1955 (E. W. Baker), on *Acacia cyanophylla;* 1 female, Lwiro, Belgian Congo, May 17, 1955 (E. W. Baker), on frangipani; and 2 females, Kysenyi, Belgian Congo, May 11, 1955 (E. W. Baker), on *Astrum* sp.

This species is named in honor of Miss Magdalena Meyer.

SUBGENUS NEOSEIULUS HUGHES

Neoseiulus Hughes, 1948, Mites Assoc. Stored Food Prod., p. 141. Type: *N. barkeri* Hughes, by original designation and monobasic.

Typhlodromus (*Neoseiulus*), Nesbitt, 1951, Zool. Verh. 12: 34; Womersley, 1954, Austral. Jour. Zool. 2: 183.

Anthoseius De Leon, 1959, Ent. News 70: 258. Type: *A. hebetis* De Leon, by original designation and monobasic. *New synonymy.*

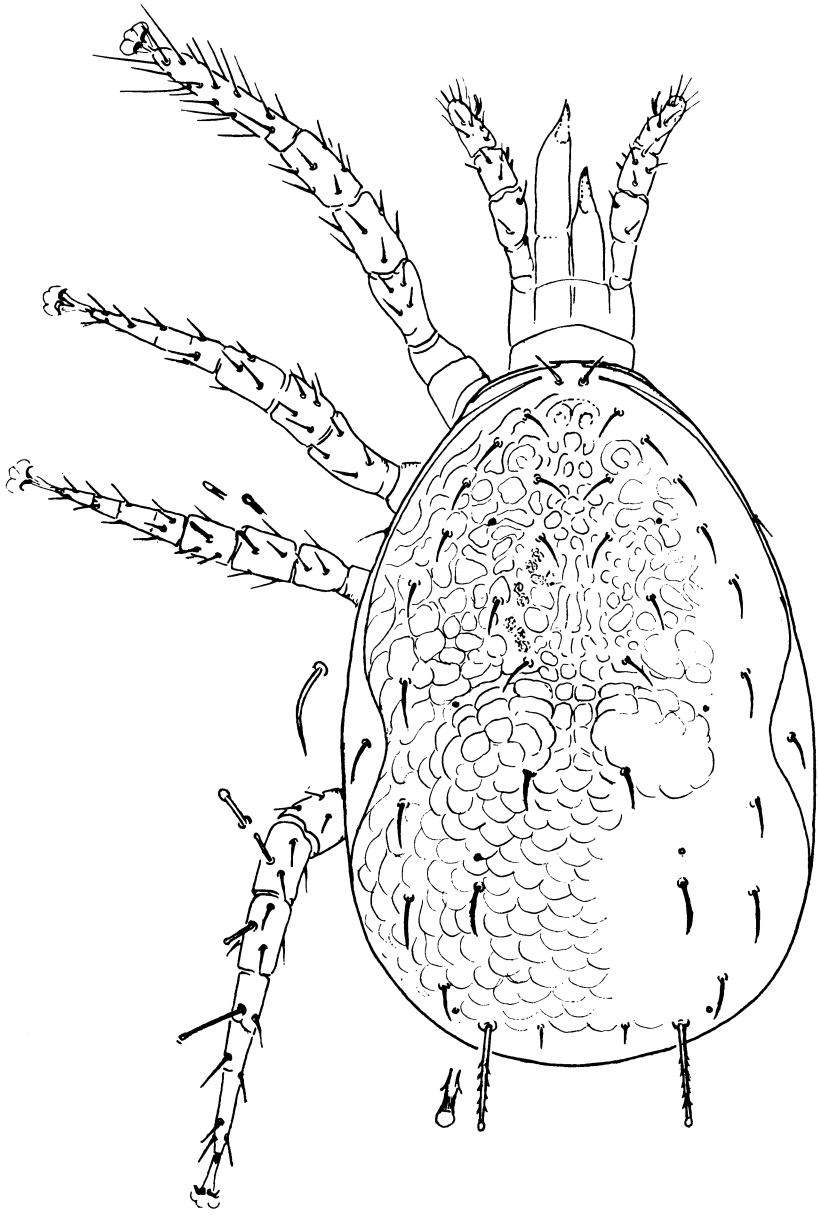


Fig. 9. *Typhlodromus ndibu:* dorsal aspect of female.

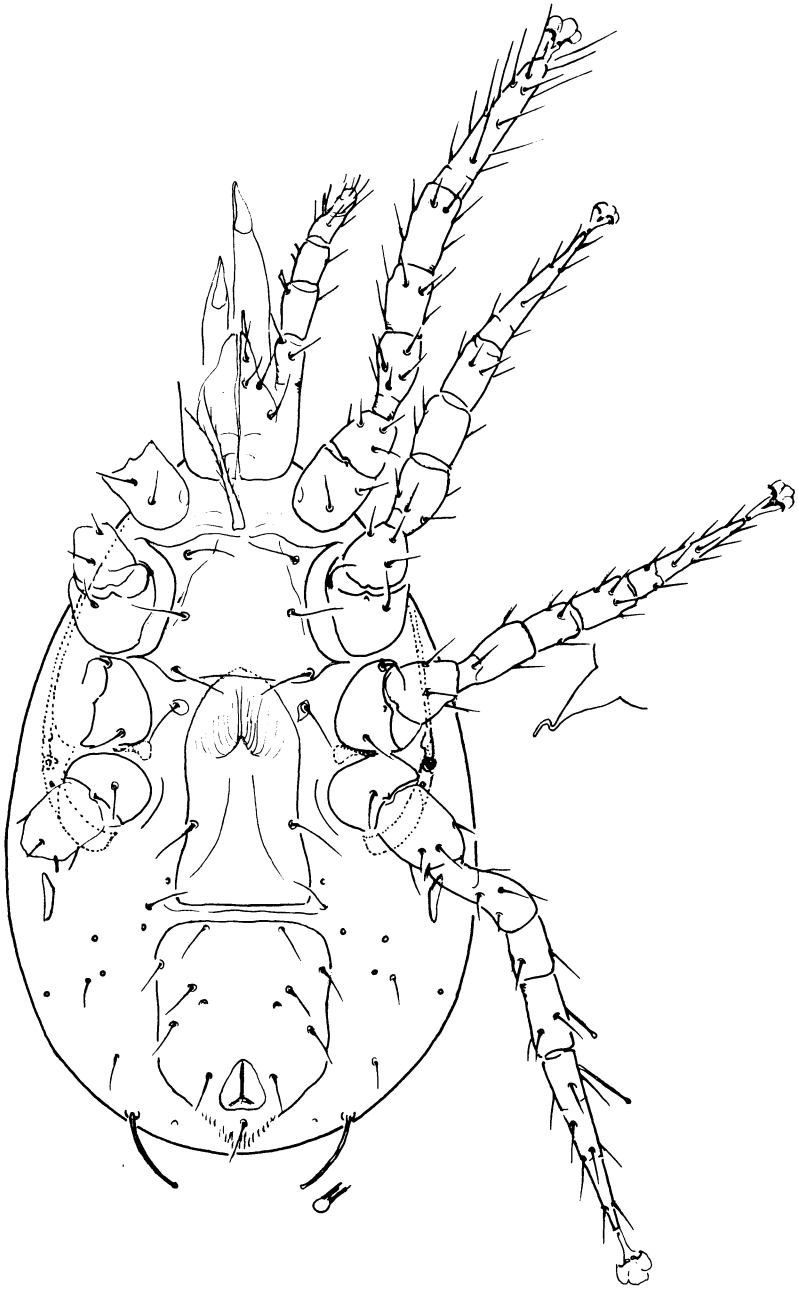


Fig. 10. *Typhlodromus ndibu:* ventral aspect of female.

The subgenus *Neoseiulus* is here defined as comprising those species of *Typhlodromus* having four pairs of lateral setae on the postscutum, one of the anterolateral pairs being absent. Both pairs of sublateral setae are present.

There are three distinct species groups in *Neoseiulus*. The Soleiger Group has two pairs of mediolateral setae on the proscutum, the others only one; the Rhenanus Group bears the usual four pairs of pre-anal setae on the ventro-anal plate, and the Barkeri Group only three.

Key to Ethiopian Species: Females

1. Ventri-anal plate with four pairs of setae.....(1) *ndibu*
   Ventri-anal plate with three pairs of setae..... 2
2. Leg IV without macrosetae .....(2) *transvaalensis*
   Leg IV with three macrosetae .....(3) *hartlandrowei*

1. Typhlodromus (Neoseiulus) ndibu n. sp.

(Figs. 9, 10)

Typhlodromus ndibu differs from all other members of the subgenus *Neoseiulus* in that the caudolateral setae on the dorsal shield and the ventrocaudal setae are capitate. Four pairs of pre-anal setae occur on the ventri-anal plate of the female. This species belongs to the Rhenanus Group.

Female.—Dorsal shield irregularly reticulate, the pattern longitudinal between dorsocentral setae; with four pairs of pores. Proscutum with dorsals all short, the laterals slightly but progressively increasing in length towards caudum. Postscutum with first pair of laterals similar to sixth proscutal; second laterals slightly stronger (sometimes slightly serrate) and similar or slightly serrate (sometimes strongly serrate) mediolaterals; fourth laterals and dorsocentrals short like third proscutal dorsocentrals; caudolateral setae rather long, strongly serrate, and with a hyaline knob at apex. Peritremes with anterior ends approximate. Ventri-anal plate with pre-anal area about as broad as long, with lateral margins concave (the whole plate broadly ovate in one specimen); four pairs of pre-anal setae, and a pair of pores between and caudad from median pair of setae. Three pairs of ventrolaterals. Two pairs of slender metapodal platelets, the anterior pair short. Ventral plate about as long as broad; metasternal platelets separate. Spermatheca with cervix elongate-triangulate, the atrium very slender. Genu IV with a rather short, capitate macroseta and six short setae; tibia IV with a rather short, capitate macroseta and five short setae; basitarsus IV with a long, slender, capitate macroseta and three short setae. Length of idiosoma 351μ; greatest width of body 236μ.

Male.—Spermatodactyl with slender shaft, sharply bent ventrad, and with end bent caudad and expanded distally. Dorsal shield with setae as in female; and leg IV as in female. Ventri-anal plate with four pairs of setae; one pair anteromedian, one pair median, and two pairs lateral; pores between and caudad from median pair of setae. Length of idiosoma 340μ; greatest width of body 236μ.

Holotype.—Female, Mulunga, INEAC, Belgian Congo, May 18, 1955 (E. W. Baker), on Australian pine; type no. 2699 in the U. S. National Museum.

Paratypes.—Nine females, Kysenyi, Belgian Congo, May 12, 1955 (E. W. Baker), on *Acacia* sp.; 5 females, Stanleyville, Belgian Congo, April 15, 1955 (E. W. Baker), on *Bridelia* sp.; 1 female, Kysenyi, Belgian Congo, May 11, 1955 (E. W. Baker), on cactus; 1 male, Mulunga, Belgian Congo, May 18, 1955 (E. W. Baker), on Australian pine; 1 female, Leopoldville, Belgian Congo, April 10, 1955 (E. W. Baker), on raffia palm; 2 females, Leopoldville, Belgian Congo, April 11, 1955 (E. W. Baker), on *Combretum* sp.; 1 female, Leopoldville, Belgian Congo, April 10, 1955 (E. W. Baker), on tree; 1 female, Nioka, Belgian Congo, May 2, 1955 (E. W. Baker), on *Vernonia* sp.; and 1 male, 9 females, Astrida, Ruanda-Urundi, May 25, 1955 (E. W. Baker), on *Acacia cyanophylla.*

2. Typhlodromus (Neoseiulus) transvaalensis (Nesbitt)

Kampimodromus transvaalensis Nesbitt, 1951, Zool. Verh. 12: 55.
Typhlodromus transvaalensis, Chant, 1955, Canad. Ent. 87: 498.
Typhlodromus (Typhlodromus) transvaalensis, Chant, 1960, Canad. Ent. 91 (suppl. 12): 60.

Typhlodromus transvaalensis may be differentiated from other members of the Barkeri Group in that the first postscutal lateral setae reach beyond the bases of the second lateral setae, there are three pairs of ventrolateral setae, and leg IV is without macrosetae.

This species is known only from Nylstroom, Transvaal, South Africa, on "ground peanuts."

3. Typhlodromus (Neoseiulus) hartlandrowei Evans

Typhlodromus (Typhlodromus) hartlandrowei Evans, 1959, Ann. Mag. Nat. Hist. (ser. 13) 1: 580; Chant, 1960, Canad. Ent. 91 (suppl. 12): 60.

Typhlodromus hartlandrowei differs from other species in the Barkeri Group in that the first postscutal lateral setae reach beyond the bases of the second lateral setae, there are three pairs of ventrolateral setae, and leg IV bears three macrosetae.

This species is known only from Uganda, where it was taken in a nest of social spiders.

SUBGENUS TYPHLOSEIOPSIS DE LEON

Typhloseiopsis De Leon, 1959, Ent. News 70: 150; Chant, 1960, Canad. Ent. 91 (suppl. 12): 113. Type: *T. theoloditicus* De Leon, by original designation and monobasic. *New synonymy.*

The subgenus *Typhloseiopsis* is distinctive in having two pairs of approximate caudolateral setae on the postscutum, with the other postscutal lateral setae absent. Two pairs of sublateral setae occur on the membrane in the female.

Most of the species belong in the Conspicuus Group of Chant (1960), with four pairs of pre-anal setae on the ventri-anal plate of the female, but there are two divergent species. *Typhlodromus smithi* Chant has a single pair of pre-anal setae on the reduced ventri-anal plate of the female, and *T. theoloditicus* (De Leon) has an anal plate, the pre-anal setae being absent. To date, all of the species considered to belong to the subgenus *Typhloseiopsis* are known from the New World.

Typhlodromus contiguus Chant, from Hong Kong, is a widely divergent species that could possibly be included in *Typhloseiopsis.* If the sixth pair of lateral setae on the dorsal shield of this species is considered as pertaining to the proscutum, then the proscutum bears six pairs of laterals and the postscutum bears a pair of approximate caudolateral setae as in *Typhloseiopsis.* However, the great disparity in the lengths of the setae on the dorsal shield is a characteristic not known elsewhere in *Typhlodromus.*

SUBGENUS METASEIULUS MUMA[4]

Type of subgenus: *Typhlodromus validus* Chant, by original designation.

The subgenus *Metaseiulus* is characterized by having the postscutum with

[4] Muma, Martin H. 1961, Subfamilies, genera, and species of Phytoseiidae (Acarina:

one pair of lateral setae anterolaterally and two pairs of approximate setae caudolaterally. The second sublateral setae are always absent.

There are three species groups in the subgenus. In the Pomi Group, with four pairs of pre-anal setae on the ventri-anal plate of the female, and the Validus Group, with three pairs of pre-anal setae on the ventri-anal plate of the female, the mediolateral setae on the postscutum are widely spaced, being located anterior to the penultimate caudolateral setae. In the Occidentalis Group, the mediolateral setae on the postscutum are closer to each other, being located well inward from the penultimate caudolateral setae.

Metaseiulus is known only from the New World and has not yet been found in Africa.

GENUS PHYTOSEIUS RIBAGA

Phytoseius sens. lat. is characterized by having the anterior pair of sublateral setae borne on the undivided dorsal plate and the posterior sublateral setae either located on the membrane or absent. The proscutum bears six (or five) pairs of lateral setae, and the postscutum bears a pair of mediolateral and a pair of caudolateral setae.

Two subgenera of *Phytoseius* are recognized, and both of these occur in Africa. *P. platypilis* Chant, from Florida, does not belong in either category inasmuch as the proscutum is described as lacking the third pair of lateral setae.

The identifications of *Phytoseius plumifer* (Canestrini and Fanzago), the type of the genus, by Wainstein (1959) and Chant (1960) must be in error. Ribaga (1904) clearly indicated that in his specimens of *P. plumifer,* received from Berlese, there is a single pair of pre-anal setae and that the rather stout fifth proscutal lateral setae are longer than the sixth proscutal lateral setae. Therefore *P. plumifer* must be similar to *P. bakeri* Chant and the species identified by Mrs. Athias-Henriot (1957) as *P. plumifer.*

Phytoseius finitimus Ribaga was described as having the dorsal setae slender, with the fifth proscutal lateral setae shorter than the sixth, and the ventri-anal plate of the female with three pairs of pre-anal setae. The species figured by Chant (1960) as *P. plumifer* must be *P. finitimus.*

Accordingly, *Phytoseius sens. str.* must contain those species lacking the posterior sublateral setae, and *Dubinellus* Wainstein is a synonym. A new subgeneric name is here proposed for those species with the posterior sublateral setae present.

Key to Subgenera of the World

1. Posterior submarginal setae present on the membrane . . . . *Pennaseius* (p. 223)
   Posterior submarginal setae absent . . . . . *Phytoseius* (p. 227)

PENNASEIUS, NEW SUBGENUS

Type: *Phytoseius* (*Pennaseius*) *amba* n. sp.

Phytoseius (*Phytoseius*), Wainstein, 1959, Akad. Nauk SSSR Zool. Zhurn. 38: 1365; Chant, 1960, Canad. Ent. 91 (suppl. 12): 105. *Misidentification.*

Mesostigmata), Florida State Mus. Biol. Sci. Bul. 5 (7): 267–302, presents a generic revision that appeared after this manuscript was submitted for publication. Muma's article is given no further consideration.

The subgenus *Pennaseius* is characterized by having the dorsal shield smooth, nearly flat, not covering the idiosoma, and bearing a pair of dorsocentral setae on the postscutum and a pair of posterior sublateral setae on the membrane.

Phytoseius (*Pennaseius*) *finitimus* Ribaga (= *P. plumifer* Wainstein, and *P. plumifer* Chant, *nec* Canestrini and Fanzago; = *Kampimodromus dubininni* Belgarov; *new synonymy*) occurs in southern Europe and the Middle East. This species has no pores caudad from the proscutal mediolateral setae.

Phytoseius (Pennaseius) amba n. sp.

(Figs. 11, 12)

Phytoseius amba is similar to *P. nahuatlensis* De Leon from Mexico, in that the proscutum bears a strong pore just caudad and inside of each mediolateral seta. But the third lateral setae on the proscutum are much shorter (rather than longer) than the very long first lateral setae, and the fifth lateral setae on the proscutum are as long as (rather than much shorter than) the sixth lateral setae. The mediolateral and caudolateral setae on the postscutum are also much longer than in *P. nahuatlensis.*

Female.—Chelicerae with chelae moderately developed, the fixed digit unidentate and the movable digit smooth. Dorsal shield smooth, the lateral margins irregularly concave alongside each anterior mediolateral; with a pair of large pores just inside of and caudad from each proscutal mediolateral seta and three pairs of pores mediolaterally on the postscutum. Proscutum with verticals and third laterals moderately developed, serrate, the sublaterals somewhat longer and serrate; first laterals rather stout, long, and serrate; the fifth and sixth laterals rather stout, very long, and serrate; all other proscutal setae minute. Postscutum with dorsocentral pair of setae minute; mediolateral and caudolateral setae long, rather stout, and serrate. Posterior sublateral setae short and smooth. Peritremes reaching nearly to verticals. Ventri-anal plate very slender with lateral margins concave; three pairs of setae anterolaterally and a pair of pores laterally just anterior to level of anus. Two pairs of ventrolaterals. A single pair of slender metapodal platelets. Sternal plate somewhat broader than long. Spermatheca with shallowly convex portion of vesicle sclerotized, the cervix forming a slender tube; atrium bulbous and major duct swollen near junction with atrium. Genu IV, tibia IV, and basitarsus IV each with a long, stout, capitate macroseta; distitarsus IV with slightly shorter capitate macroseta. Length of idiosoma 338μ; greatest width of body 19μ.

Male.—Spermatodactyl with shaft rather stout and curving ventrad, with a strong dorsal projection directed caudad over bent distal portion. Idiosoma with dorsal setae as in female. Ventri-anal plate with three pairs of pre-anal setae, the anterior pair mediolateral, the middle pair lateral, and the posterior pair mediolateral; a weak pore caudad from each posterior pre-anal. Leg IV with three capitate macrosetae, that on the basitarsus long, on the tibia shorter, and on the genu still shorter. Length of idiosoma 338μ; greatest width of body 191μ.

Holotype.—Female, Beni, Belgian Congo, May 7, 1955 (E. W. Baker), on *Tithonia speciosa;* type no. 2722 in the U. S. National Museum.

Paratypes.—Three females, Kysenyi, Belgian Congo, May 11, 1955 (E. W. Baker), on *Pycnostachus* sp.; 1 female, Kysenyi, Belgian Congo, May 11, 1955 (E. W. Baker), on phlox; 1 female, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on cherimoya; 1 female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *?Bixa* leaf; 1 male, 1 female, Ruwinzori, Belgian Congo, May 6, 1955 (E. W. Baker), on *Hoslundia opposita;* and 7 females, Lake Edward, Belgian Congo, May 6, 1955 (E. W. Baker), on *Hoslundia opposita.*

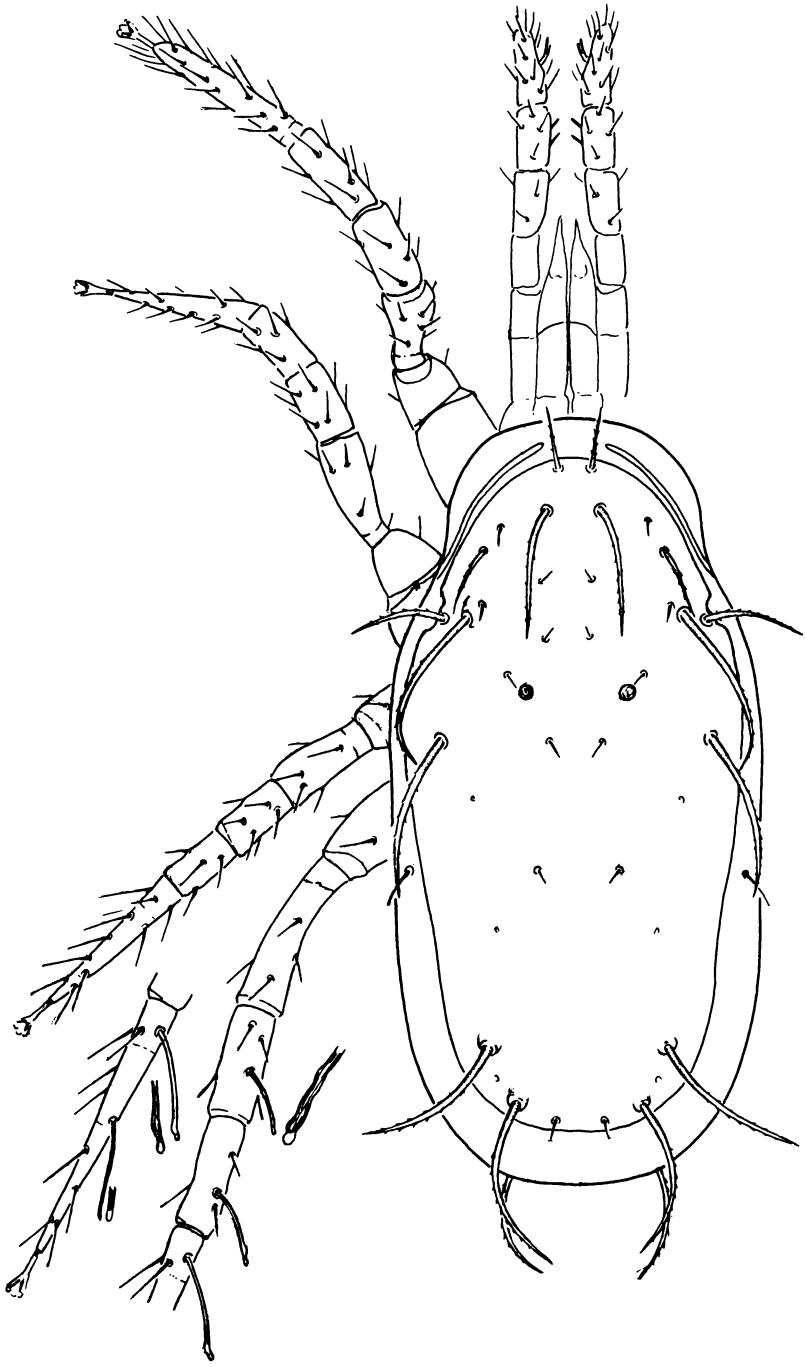


Fig. 11. *Phytoseius amba:* dorsal aspect of female.

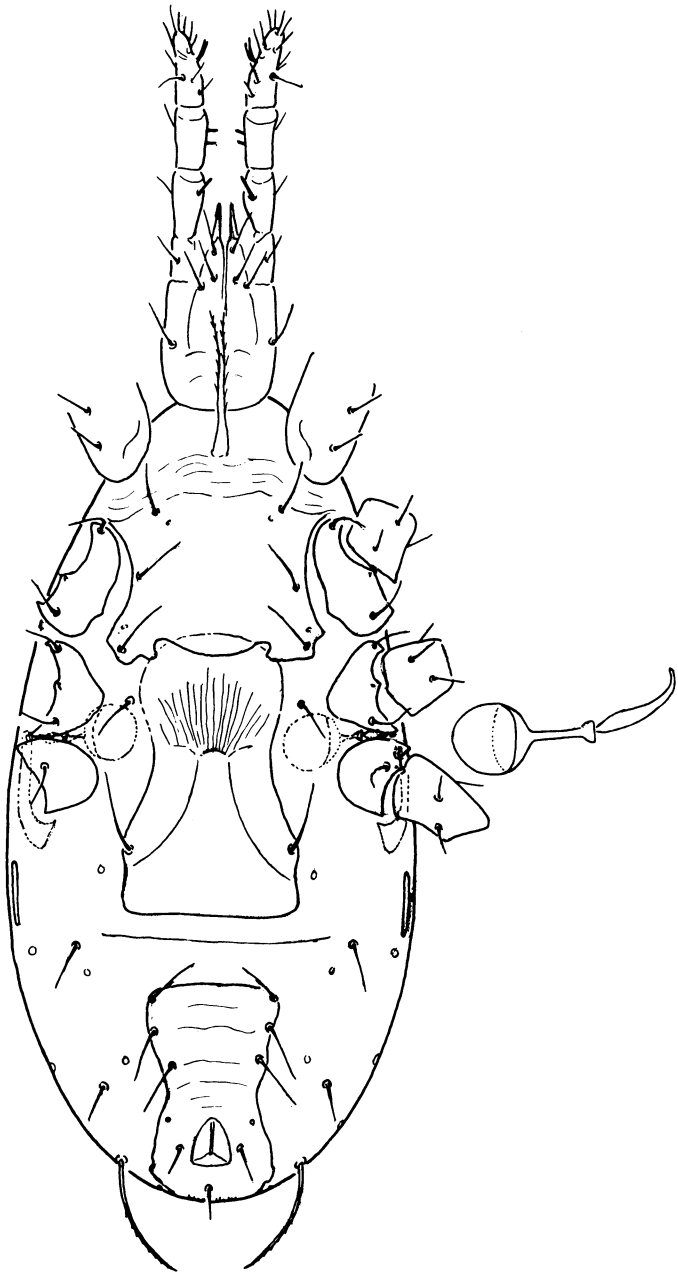


Fig. 12. *Phytoseius amba:* ventral aspect of female.

SUBGENUS PHYTOSEIUS RIBAGA

Phytoseius Ribaga, 1904, Riv. Patol. Veg. 10: 177; Womersley, 1954, Austral. Jour. Zool. 2: 187; Nesbitt, 1951, Zool. Verh. 12: 56; Athias-Henriot, 1957, Bul. Soc. Hist. Nat. Afr. Nord 48: 341; Chant, 1957, Canad. Ent. 89: 362.
Type: *Gamasus plumifer* Canestrini and Fanzago, by subsequent designation of Vitzthum, 1941.

Phytoseius (*Dubinellus*) Wainstein, 1959, Akad. Nauk SSSR Zool. Zhurn. 38: 1362; Chant, 1960, Canad. Ent. 91 (suppl. 12): 106. Type: *P.* (*D.*) *corniger* Wainstein, by original designation. *New synonymy.*

Phytoseius sens. str. is characterized by having the dorsal shield rugose, convex, broadly covering the idiosoma, and the dorsocentral pair of setae on the postscutum and the posterior pair of sublateral setae both absent. Members of this subgenus are very closely allied, and they have been found in scattered localities over the world.

Key to Ethiopian Species: Females

1. Proscutum with both the second and fourth lateral setae serrate; leg IV with all setae short and spiniform ..... (1) *yira*
   Proscutum with both the second and fourth lateral setae small and nude; leg IV with broadened and spatulate macrosetae ..... (2) *ferox*

1. Phytoseius (Phytoseius) yira n. sp.
(Figs. 13, 14)

Phytoseius yira is distinctive because there are no macrosetae on leg IV. Moreover, the first and second lateral setae are similar, rather short and serrate; and the fifth and sixth lateral setae are similar, long and serrate.

Female.—Chelicerae with chelae moderately developed, the fixed digit unidentate, the movable digit smooth. Dorsal shield rugose. Proscutum with vertical setae of moderate length, broad, and strongly serrate; first and second laterals similar to verticals but narrower; third laterals and the sublaterals of similar length, longer than the verticals, but the sublaterals broader than the third laterals; fourth laterals short, slightly serrate; fifth and sixth laterals similar and long; other dorsal setae minute. Postscutum with mediolaterals similar to sixth laterals on proscutum; caudolateral setae a little shorter, broader, and more strongly serrate; clunals spiniform. Peritremes extending to verticals. Ventrianal plate very slender, broadest across level of anus and with a pre-anal constriction; three pairs (only two pre-anal setae on one side in some cases) of anterolateral setae and a pair of lateral pores just anterior to anus. Two pairs of ventrolateral setae. One pair of slender metapodal plates. Sternal plate a little broader than long, the caudal margin concave; metasternal setae separate. Spermatheca with cervix a little longer than broad and rounded distally; atrium a short, slender chamber. Genu IV with seven short, spiniform setae; tibia IV with six short, spiniform setae; basitarsus IV with four short, spiniform setae. Length of idiosoma 315μ; greatest width of body 178μ.

Holotype.—Female, Ruindi, Belgian Congo, May 11, 1955 (E.W. Baker), on *Grewia* sp.; type no. 2723 in the U. S. National Museum.

Paratypes.—Four females, Lake Edward, Belgian Congo, May 6, 1955 (E. W. Baker), on *Hoslundia opposita;* and 3 females, Leopoldville, Belgian Congo, April 11, 1955 (E. W. Baker), on large tree.

Also a nymph was collected at Nioka, Belgian Congo, May 2, 1955 (E. W. Baker), on *Vernonia* sp.

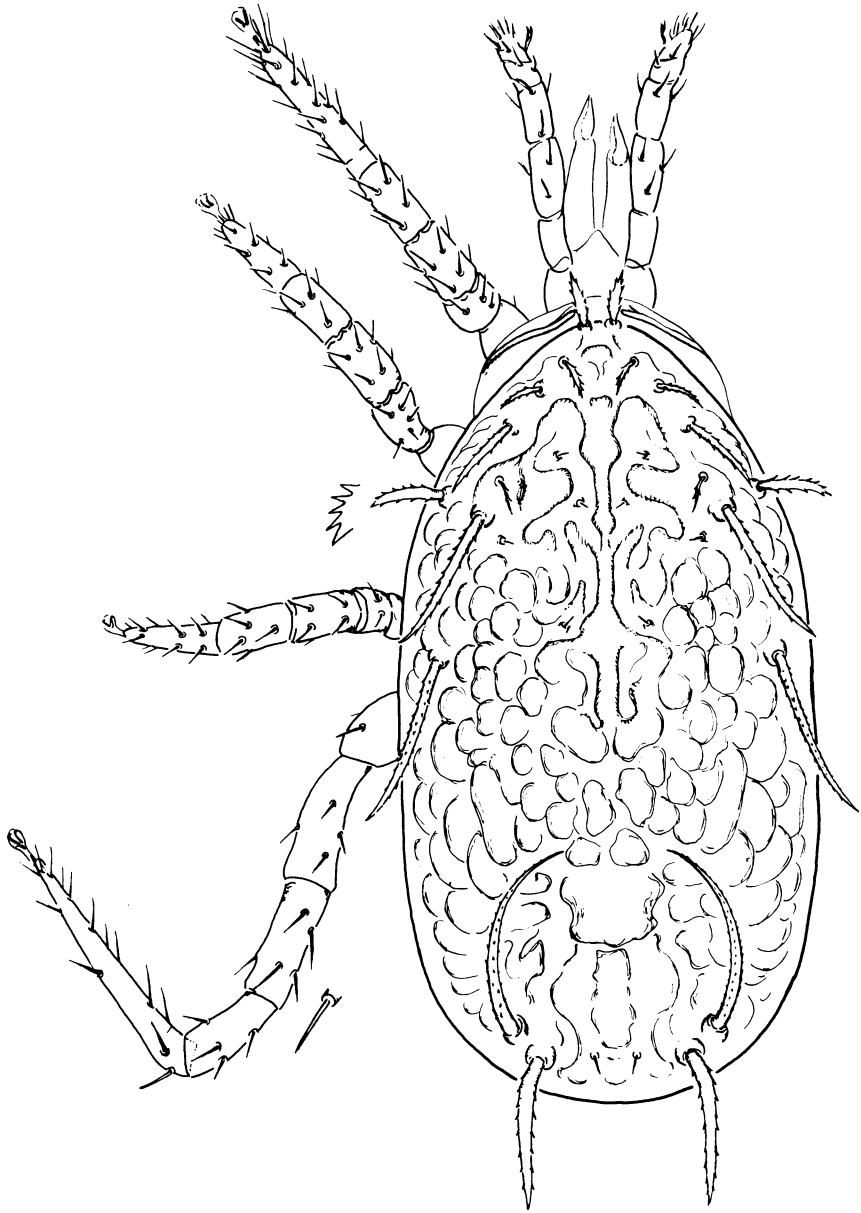


Fig. 13. *Phytoscius yira:* dorsal aspect of female.

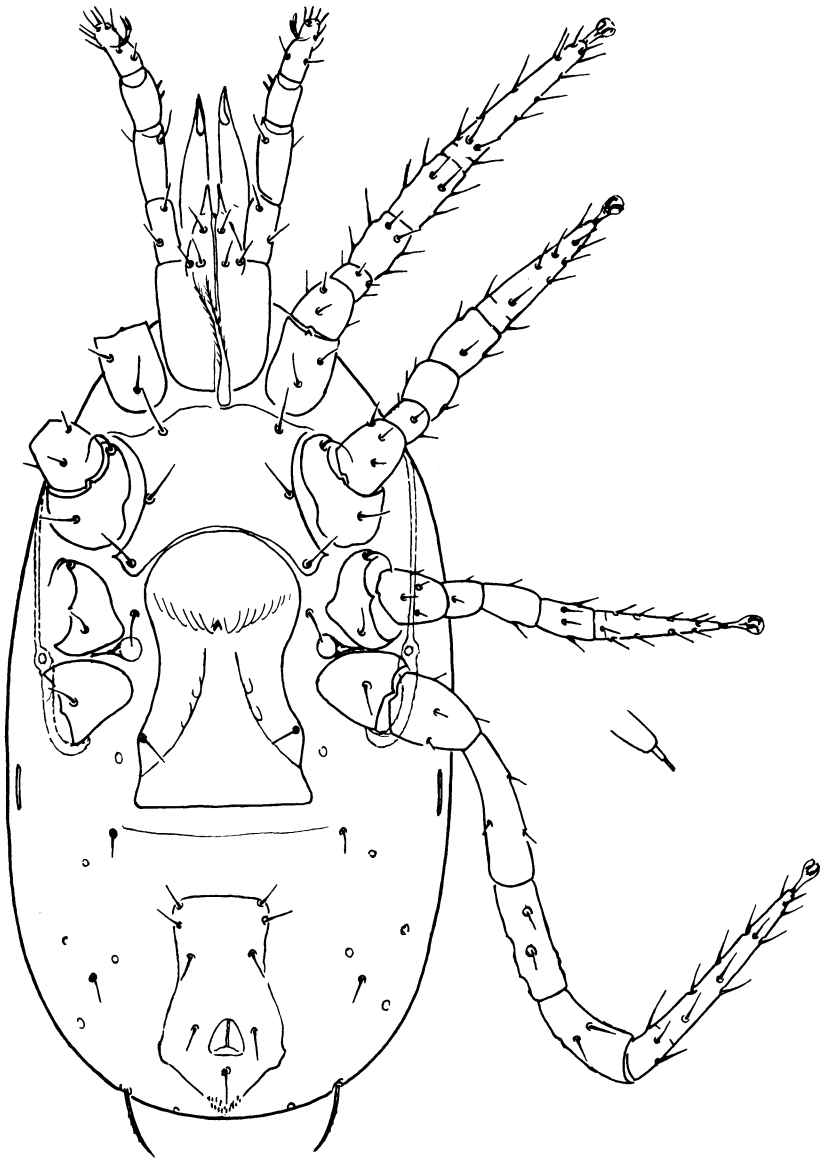


Fig. 14. *Phytoscius yira:* ventral aspect of female.

2. Phytoseius (Phytoseius) ferox n. sp.
(Figs. 15, 16)

Phytoseius ferox belongs to the *horridus* (Canestrini and Fanzago) complex of species; but the macrosetae on leg IV are broadly flattened and spatulate with the broad distal portion surrounded by hyaline material, rather than being slender and with a terminal knob and hyaline cap.

Female.—Chelicerae with chelae moderately developed, the fixed digit unidentate and the movable digit smooth. Dorsal shield rugose. Proscutum with vertical setae moderate in length, stout, and very strongly serrate; first laterals reaching bases of fourth laterals and very strongly serrate; second and fourth laterals very short, spiniform and smooth; third laterals about half as long as first laterals; sublaterals about as long as first laterals, slightly spatulate and strongly serrate; fifth laterals very long, tapering, serrate; sixth laterals about half as long as fifth laterals; all other proscutal setae minute. Postscutum with mediolaterals slightly longer than caudolaterals but both long and serrate; clunals spiniform. Peritremes reaching verticals. Ventri-anal plate very slender, strongly concave on each lateral margin, with three pairs of anterolateral setae and a pair of lateral pores just anterior to level of anus. Two pairs of ventrolaterals. A single pair of slender metapodal platelets. Sternal plate about as broad as long, the caudal margin concave; metasternal platelets separate. Spermatheca with cervix broad but very long, rounded distally; atrium a tiny chamber about as wide as the well-defined major duct. Genu IV with a short, broadly spatulate macroseta; tibia IV with macroseta long and stout, the distal portion broadened by a hyaline envelope; basitarsus IV with macroseta short and similar to that on tibia IV; distitarsus with macroseta short but slenderer than that on the basitarsus. Length of idiosoma 306μ; greatest width of body 185μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *?Bixa* leaf; type no. 2724 in the U. S. National Museum.

CHANTIA, NEW GENUS

Type: *Chantia paradoxa* n. sp.

Chantia is the only genus of phytoseiids in which the dorsal plate of the female bears both pairs of sublateral setae. The dorsal shield is moderately convex, covering the body; the proscutum bears six pairs of lateral setae; and the postscutum bears a pair of mediolateral and a pair of caudolateral setae. The setae on the dorsal shield (except the clunal setae) are distinctive in that they are strongly spatulate and smooth. Another distinctive feature is the development of a second pair of short, fimbriate peritremes caudoventrad from the usual spiracular openings; and this feature lends credence to the suggestion that the usual pair of pores on the spiracular plate and caudad from the spiracles in mestostigmate mites represents the remnants of ancestral spiracles.

This genus is named in honor of Dr. D. A. Chant.

Chantia paradoxa n. sp.
(Figs. 17, 18)

In *Chantia paradoxa* all the setae on the dorsal shield are strongly spatulate, and all are rather short except for the distinctly longer sixth pair of lateral setae on the proscutum and the mediolateral and caudolateral setae on the postscutum. Most of the setae on the legs are also short-spatulate.

Female.—Chelicerae with chelae moderately developed, the fixed digit bidentate and the movable digit unidentate. Dorsal shield rugose, with four pairs of bisected pore plate-

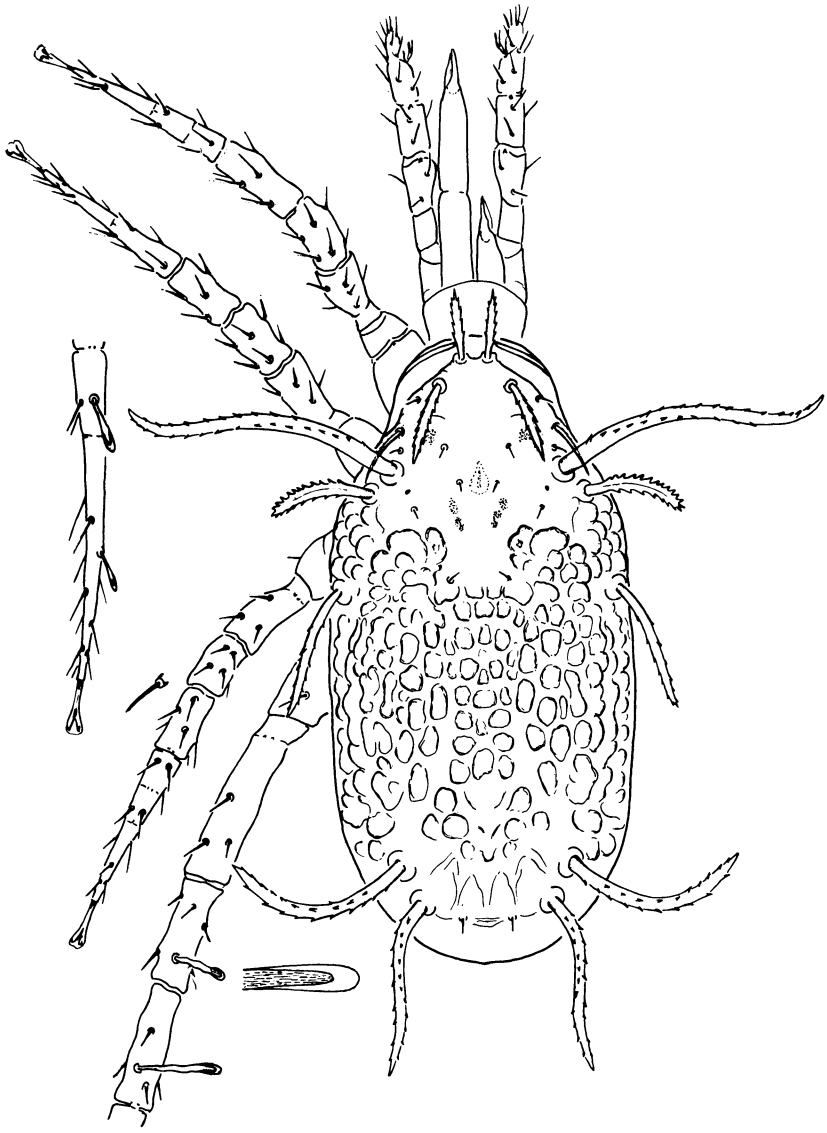


Fig. 15. *Phytoseius ferox:* dorsal aspect of female.

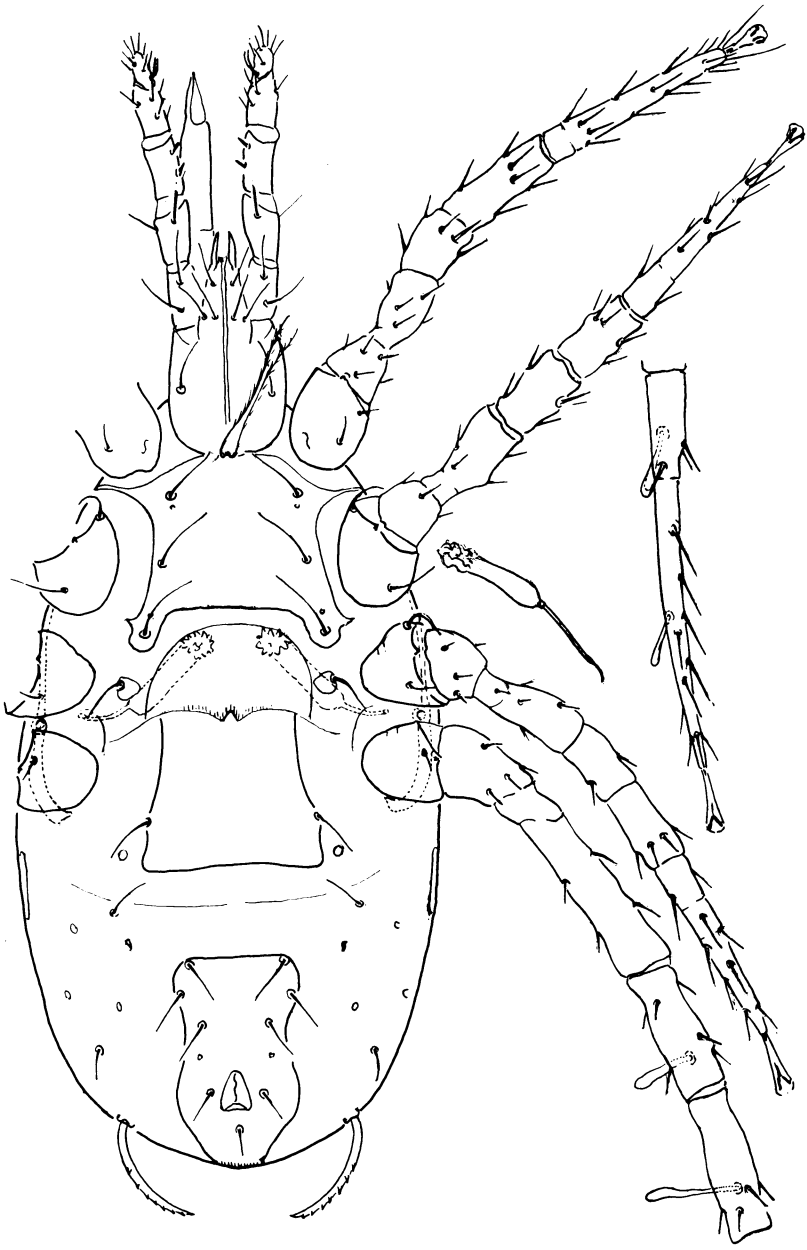


Fig. 16. *Phytoscius ferox:* ventral aspect of female.

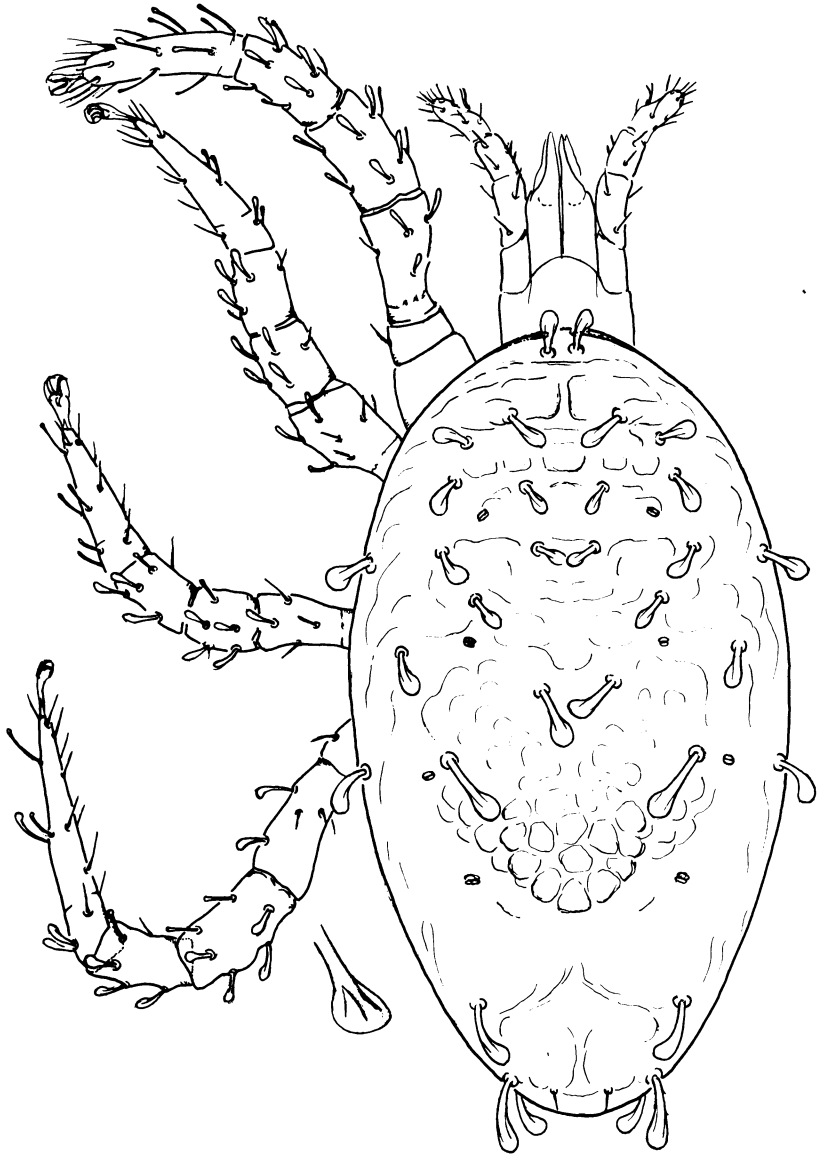


Fig. 17. *Chantia paradoxa:* dorsal aspect of female.

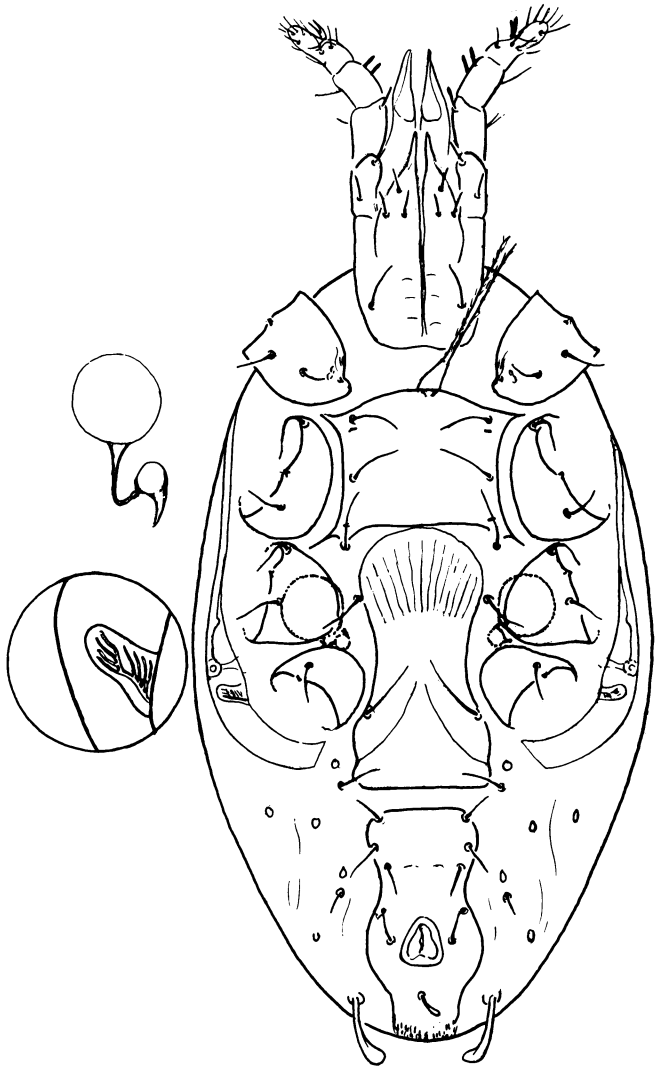


Fig. 18. *Chantia paradoxa:* ventral aspect of female.

lets. Dorsal shield with dorsal setae strongly spatulate, smooth, rather short, the first two pairs of dorsocentral and proscutal mediolateral setae somewhat shorter, the third pair of dorsocentrals, the sixth proscutal laterals, the postscutal caudolaterals, and the postscutal mediolaterals longer; clunals small and serrate. Anterior peritremes extending to vertical setae. Ventri-anal plate very slender and strongly concave mediolaterally; three pair of anterolateral setae and a pair of lateral pores just anterior to level of anus. Two pairs of ventrolaterals. A small, rounded pair of metapodal platelets. Sternal plate somewhat broader than long, the caudal margin nearly truncate; metasternal setae separate. Spermatheca with cervix a long, narrow tube, broadened at vesicle, the atrium a slightly wider, short chamber, the major duct strongly bulbous before junction with atrium. Genu IV with four short, broad and spatulate setae, two short, slender and spatulate setae, and an acuminate seta; tibia IV with three short and broad spatulate setae, two short and slender, spatulate setae, and a short acuminate seta; basitarsus IV with two short and broad spatulate setae and two short acuminate setae. Length of idiosoma 351μ; greatest width of body 197μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Baphia* sp.; type no. 2725 in the U. S. National Museum.

GENUS AMBLYSEIUS BERLESE

In the genus *Amblyseius sens. lat.* the anterior pair of sublateral setae are on the membrane in the female, and only four pairs of lateral setae are present on the dorsal shield anterior to the posterior sublateral setae.

Although Chant (1957–1960) considers *Amblyseius* to be a subgenus of *Typhlodromus,* Athias-Henriot (1959) and Ehara (1959) continue to accord the group full generic status.

Kampimodromus Nesbitt, *Phytoseiulus* Evans, *Asperoseius* Chant, and *Proprioseius* Chant were all based on species having the setae on the dorsal shield more strongly developed and more strongly serrate, a character that is not in itself worthy of generic consideration. However, the patterns of these dorsal setae are distinctive, each indicating well-defined species groups (fig. 19). It is convenient, therefore, to utilize these and two additional names. It is conservative to recognize them as subgenera, but future workers may find it more expedient to accord them full generic status.

The genus *Iphidulus* Ribaga, 1904 (type: *I. communis* Ribaga, by subsequent designation of Vitzthum, 1941) is a *nomen dubium.* It is possible that *Iphidulus* has precedence over *Amblyseius,* the description of the genus being somewhat indicative of *A. finlandicus.*

Key to Subgenera of the World

1. Dorsal plate with three pairs of caudolateral setae, two of which may be very small ..... *Amblyseius sens. str.* (p. 237)
   Dorsal plate with one or two pairs of caudolateral setae 2
2. Dorsal plate with two pairs of caudolateral setae 3
   Dorsal plate with one pair of caudolateral setae, the third and fourth pairs of postscutal lateral setae being absent 6
3. Postscutum with two pairs of anterolateral setae 4
   Postscutum with one pair of anterolateral setae 5
4. Postscutum with third pair of lateral setae present, transversely mated with the mediolateral setae (the caudal mediolateral setae when two pairs of these setae are present), the fourth pair of lateral setae being absent ..... *Amblyseiella* (p. 291)
   Postscutum with fourth pair of lateral setae present, situated caudolaterad from mediolateral setae, the third pair of lateral setae being absent ... *Kampimodromus* (p. 294)
5. Dorsal shield with third pair of dorsocentral setae much shorter than some lateral setae;

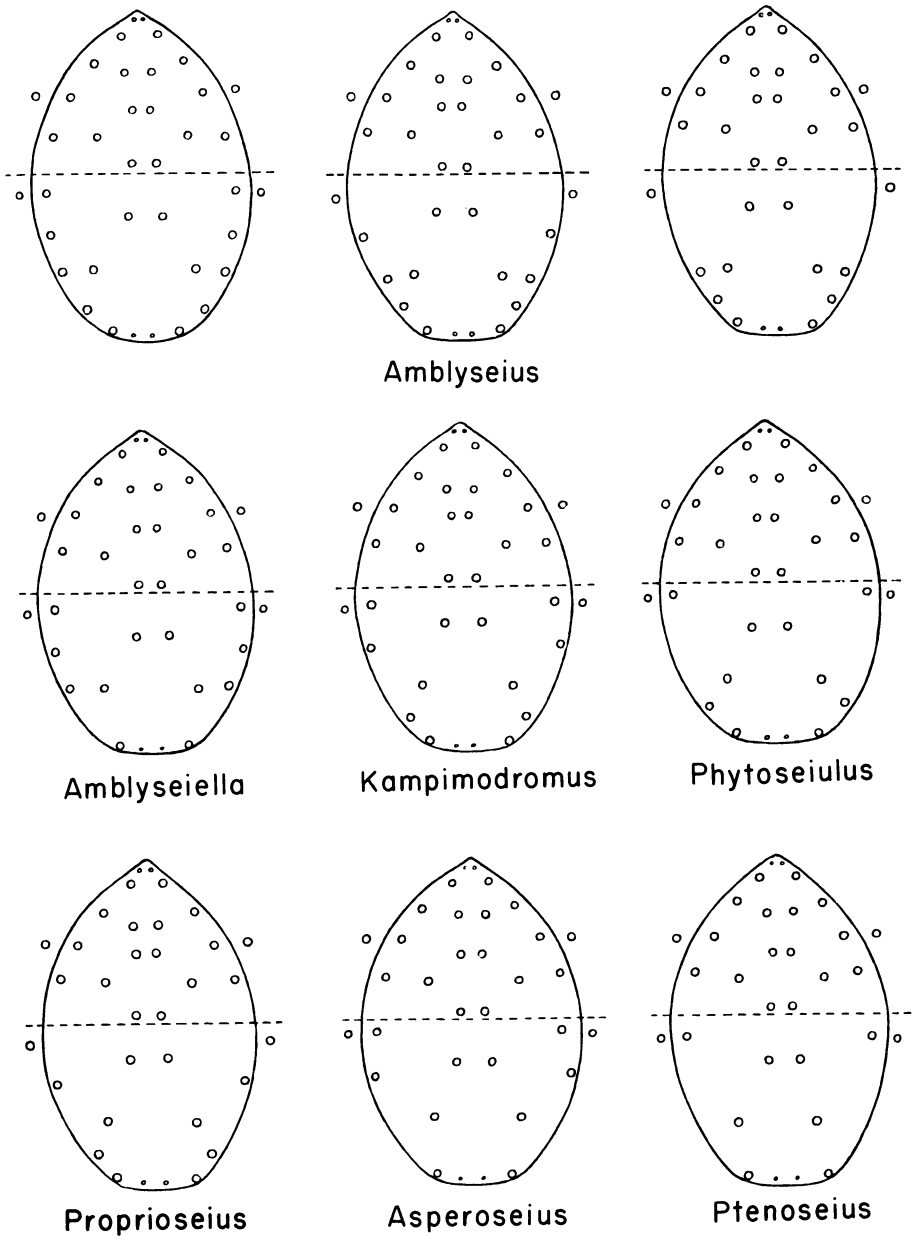


Fig. 19. Diagrammatic representation of the chaetotaxy of the subgenera of *Amblyseius*.

postscutum with first pair of anterolateral setae absent, the second anterolateral setae present ..... *Proprioseius* (p. 294)

Dorsal shield with third pair of dorsocentral setae much longer than lateral setae; postscutum with first pair of anterolateral setae present, the second pair of anterolateral setae absent ..... *Phytoseiulus* (p. 294)

6. Postscutum with both pairs of anterolateral setae present..... *Asperoseius* (p. 295)

Postscutum with a single pair of anterolateral setae, the second pair being absent *Ptenoseius* (p. 295)

SUBGENUS AMBLYSEIUS BERLESE

Amblyseius Berlese, 1915, Redia 10: 143; Evans, 1952, Bul. Ent. Res. 43: 397; Garman, 1948, Bul. Conn. Agric. Exp. Sta. 520: 6, 16; Womersley, 1954, Austral. Jour. Zool. 2: 188; Muma, 1955, Ann. Ent. Soc. Amer. 48: 263; Athias-Henriot, 1957, Bul. Soc. Hist. Nat. Afr. Nord 48: 336; Garman, 1958, Ann. Ent. Soc. Amer. 51: 70; Athias-Henriot, 1959, Bul. Acad. Roy. Belg. (Classe Sci., sér. 5) 45: 132; Ehara, 1959, Acarol. 1: 285. Type: *Zercon obtusus* Koch, by original designation.

Typhlodromus (*Amblyseius*), Chant, 1957, Canad. Ent. 89: 299; Chant, 1957, Canad. Ent. 89: 528; Chant, 1960, Canad. Ent. 91 (suppl. 12): 66.

Amblyseius (*Seiopsis*) Berlese, 1924, Redia 15: 255. Type: *A.* (*S.*) *brevipilus* Berlese, by original designation and monobasic. *New synonymy.*

Amblyseius (*Amblyseiopsis*) Garman, 1948, Bul. Conn. Agric. Exp. Sta. 520: 17. Type: *A.* (*A.*) *americanus* Garman, monobasic.

Amblyseiopsis, Muma, 1955, Ann. Ent. Soc. Amer. 48: 264; Garman, 1958, Ann. Ent. Soc. Amer. 51: 69.

Phyllodromus De Leon, 1959, Ent. News 70: 260. Type: *P. leiodis* De Leon, by original designation and monobasic. *New synonymy.*

Typhlodromus (*Typhlodromopsis*) De Leon, 1959, Fla. Ent. 42: 113. Type: *T. cucumeris* Oudemans, by original designation. *New synonymy.*

As noted by Mrs. Athias-Henriot (1957), there are three large species groups in *Amblyseius sens. str.* These are the Finlandicus Group (De Leon's *Phyllodromus*), having the ventri-anal plate of the female slender and with a pre-anal constriction and the dorsal shield rather flat and not completely covering the dorsum; the Cucumeris Group (De Leon's *Typhlodromopsis*), having the body rather slender with the dorsal shield moderately arched and bearing setae that are more or less similar in length; and the Obtusus Group (*Amblyseius sens. str.*), having the dorsal shield very strongly convex, often heavily sclerotized, and bearing setae with great disparity in their lengths. No sharp line of demarcation exists between these groups, but nearly all of the known species may be readily placed in such an arrangement. *A. sextus* (Garman) is distinct from these three groups because it bears two pairs of mediolateral setae on the postscutum.

Chant (1960) attempted to differentiate a Newsami Group from the Finlandicus Group on a basis of whether the pre-anal setae of the female ventro-anal plate are more or less transversely approximate or widely separated longitudinally. The African species are not readily differentiated into these two categories, and consequently the Newsami Group is not recognized here.

Chant's Sandersi Group, including two species, is based on the absence of the first pair of lateral setae on the postscutum. This lack is also characteristic of *Amblyseius sundi,* a new species from Africa, but it is questionable whether this character leads to a monophyletic assemblage any more than the frequent absence of the dorsocentral setae on the postscutum. All three

of these species otherwise resemble members of the Obtusus Group, with which they should be placed. *Iphiseius grovesae* Chant, in which the first two pairs of lateral setae on the postscutum are described as absent, similarly appears to belong to the Obtusus Group and should be transferred to *Amblyseius*.

Of the species here reported from the Ethiopian Region, *Amblyseius teke* and *A. lula* belong to the Cucumeris Group; and *A. sundi, A. genya,* and *A. rykei* belong to the Obtusus Group. All of the other species belong to the Finlandicus Group. These species, distributed inadequately among the groups, undoubtedly do not represent the entire fauna, inasmuch as collections were made mostly from the foliage of trees and shrubs. Members of the Obtusus and Cucumeris groups are found most commonly near the ground.

Key to Ethiopian Species: Females

1. Dorsal shield with dorsocentral setae shorter than intervals between their bases.... 2
   Dorsal shield with all dorsocentral setae as long as or longer than intervals between their bases ..... (1) *teke*
2. Dorsal shield very slender, over twice as long as broad; ventri-anal plate with parallel lateral margins on slender pre-anal portion ..... (2) *lula*
   Dorsal shield less than twice as long as broad; ventri-anal plate with concave lateral margins on pre-anal portion 3
3. Postscutum with mediolateral setae longer and stronger than third and fourth pairs of lateral setae 4
   Postscutum with mediolateral setae similar to or shorter than third and fourth pairs of lateral setae 8
4. Proscutum with first and fourth lateral setae greatly longer than second and third lateral setae 5
   Proscutum with first and fourth lateral setae slightly longer than third lateral setae.. 7
5. Dorsal shield with caudolateral pair of setae flagellate, about as long as body. (3) *sundi*
   Dorsal shield with caudolateral pair of setae much shorter than length of body..... 6
6. Basitarsus IV with macroseta about half as long as macroseta on genu IV...(4) *genya*
   Basitarsus IV with macroseta about as long as macroseta on genu IV.....(5) *rykei*
7. Postscutum with first four lateral setae all similar in length.....(6) *shi*
   Postscutum with second and third lateral setae larger than first and fourth lateral setae .....(7) *olombo*
8. Postscutum with mediolateral setae subequal in length to third and fourth lateral setae 9
   Postscutum with mediolateral setae much shorter than third pair of lateral setae....20
9. Vertical setae similar in length to second pair of lateral setae on proscutum.....10
   Vertical setae much longer than second pair of proscutal lateral setae.....13
10. Ventri-anal plate with caudal pair of pre-anal setae distantly placed from anterior pair 11
    Ventri-anal plate with middle pair of pre-anal setae only slightly caudad from anterior pair of setae 12
11. Tibia IV with three macrosetae .....(8) *havu*
    Tibia IV without macrosetae .....(9) *hima*
12. Macrosetae on leg IV capitate .....(10) *hutu*
    Macrosetae on leg IV acuminate .....(11) *tutsi*
13. Proscutum with first and fourth lateral setae greatly longer than second lateral setae 14
    Proscutum with first and fourth lateral setae only a little longer than second lateral setae 16
14. Proscutum with third lateral setae distinctly longer than second lateral setae .....(12) *aferulus*
    Proscutum with second and third lateral setae both short and similar in length.....15

15. Leg IV with macrosetae acuminate ..... (13) *swaga*
    Leg IV with macrosetae capitate ..... (14) *hum*
16. Leg IV with macrosetae clubbed ..... (19) *fustis*
    Leg IV with macrosetae blunt or pointed 17
17. Spermatheca with vesicle subspherical 18
    Spermatheca with vesicle elongate 19
18. Proscutum with fourth lateral setae much shorter than vertical setae; cervix a substantial tube ..... (15) *lokele*
    Proscutum with fourth lateral setae similar in length to vertical setae; cervix filamentous ..... (16) *talinga*
19. Leg IV with macrosetae blunt and hyaline at tip ..... (17) *bwende*
    Leg IV with macrosetae acuminate ..... (18) *mba*
20. Ventri-anal plate with pre-anal setae widely spaced longitudinally..... (20) *africanus*
    Ventri-anal plate with pre-anal setae placed in a nearly transverse line..... 21
21. Leg IV with macrosetae acuminate ..... (21) *ntandu*
    Leg IV with macrosetae capitate ..... (22) *dossei*

1. Amblyseius (Amblyseius) teke n. sp.
(Figs. 20, 21)

The female of *Amblyseius teke* differs from all other species known from Africa in that the dorsal setae (except the vertical and clunal setae) on the body are all quite long. *A. teke* closely resembles *A. longisetosus* (Evans), from Indonesia, except that the ventri-anal plate of the female is very broad instead of being subtriangular, and the fourth pair of caudolateral setae on the postscutum is much longer.

Female.—Chelicera with several teeth on fixed digit and a single tooth on movable digit. Dorsal shield with large, irregular, rather faint reticulations. Proscutal lateral setae of similar length, much longer than intervals between their bases; postscutum with five pairs of laterals, the first, second and fifth pairs as long as the proscutal laterals, the third pair somewhat shorter, and the fourth pair still shorter; verticals short; first, second, and third pairs of anterior dorsocentrals long and successively increasing in length, the third and fourth pairs as long as the proscutal laterals; both anterior and posterior mediolaterals and both sublaterals as long as proscutal laterals. Peritremes extending nearly to vertical setae. Ventri-anal plate with pre-anal area broadly subquadrate, with three pairs of widely spread setae and a pair of elliptical pores between and slightly caudad of the posterior pair. Three pairs of ventrolaterals. Two pairs of metapodal platelets, both slender, the caudal pair the longer. Sternal plate broader than long, the metasternal platelets separate. Spermatheca with a long, slender cervix. Genu IV with seven short setae; tibia IV with six short setae; basitarsus IV with three short setae and a long tapering seta. Length of idiosoma 344μ; greatest width of body 244μ.

Holotype.—Female, Leopoldville, Belgian Congo, April 12, 1955 (E. W. Baker), on grass; type no. 2700 in the U. S. National Museum.

2. Amblyseius (Amblyseius) lula n. sp.
(Figs. 22, 23)

The female of *Amblyseius lula* is distinctive in that the pre-anal area of the ventri-anal plate is very long, but as broad as the caudal margin of the epigynial plate and with its lateral margins parallel. The dorsal shield is very slender with all of its setae short except the caudolateral pair.

Female.—Chelicera with fixed digit multidentate, and movable digit with a single tooth. Dorsal shield very slender, over twice as long as broad, constricted near cephalic end, weakly reticulate. Proscutum with setae all short, all similar in length except for slightly longer vertical setae, and first pair of laterals. Postscutum with setae all short except the long, serrate caudolaterals; five pairs of laterals, the mediolaterals similar to third and fourth pairs of laterals. Peritremes extending to vertical setae. Ventri-anal plate with pre-

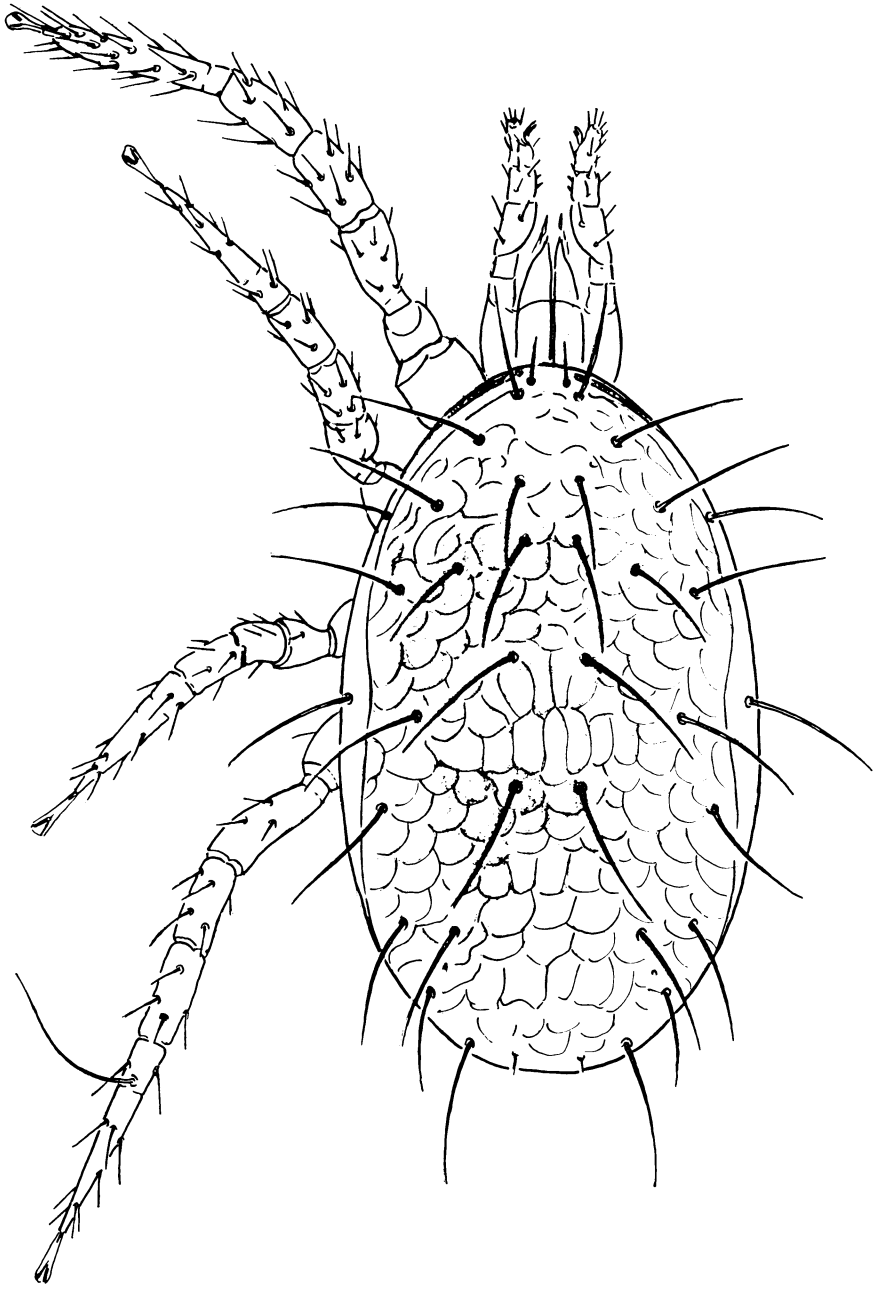


Fig. 20. *Amblyseius teke:* dorsal aspect of female.

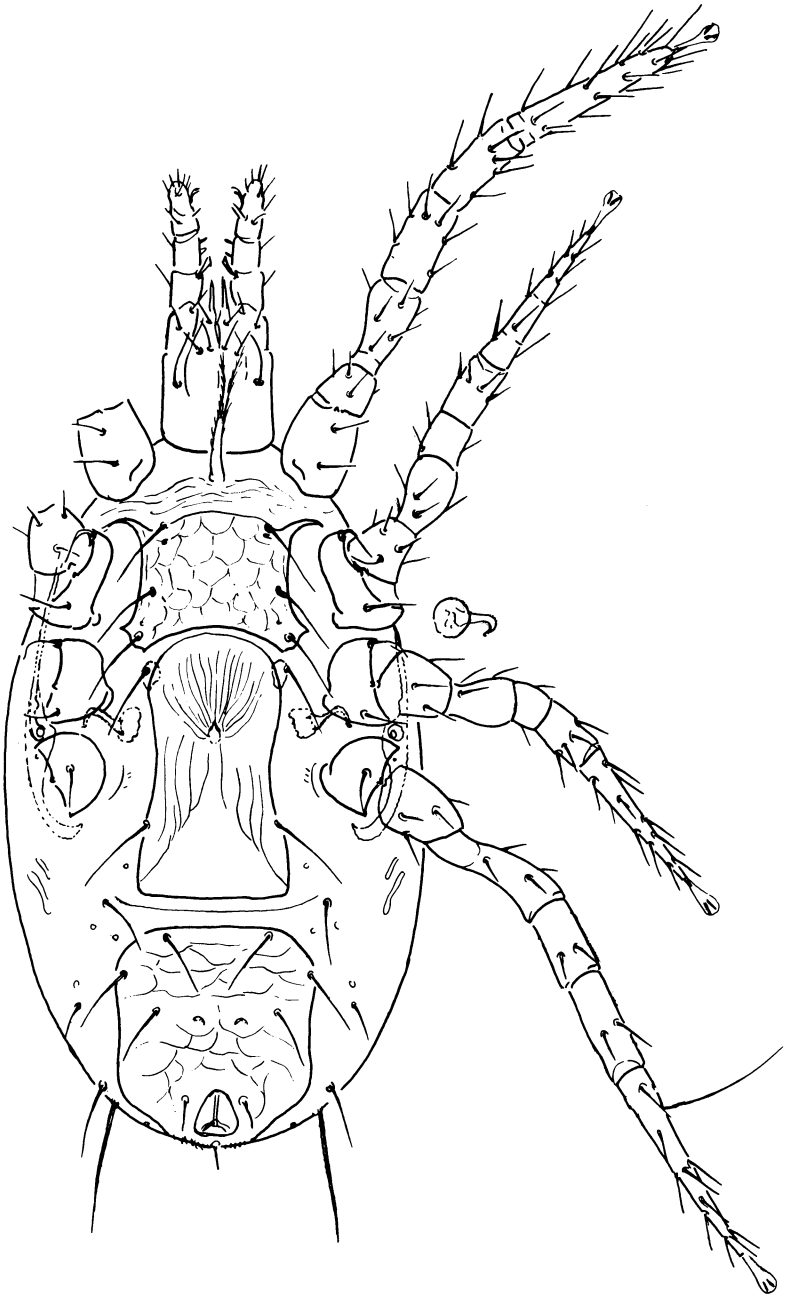


Fig. 21. *Amblyseius teke:* ventral aspect of female.

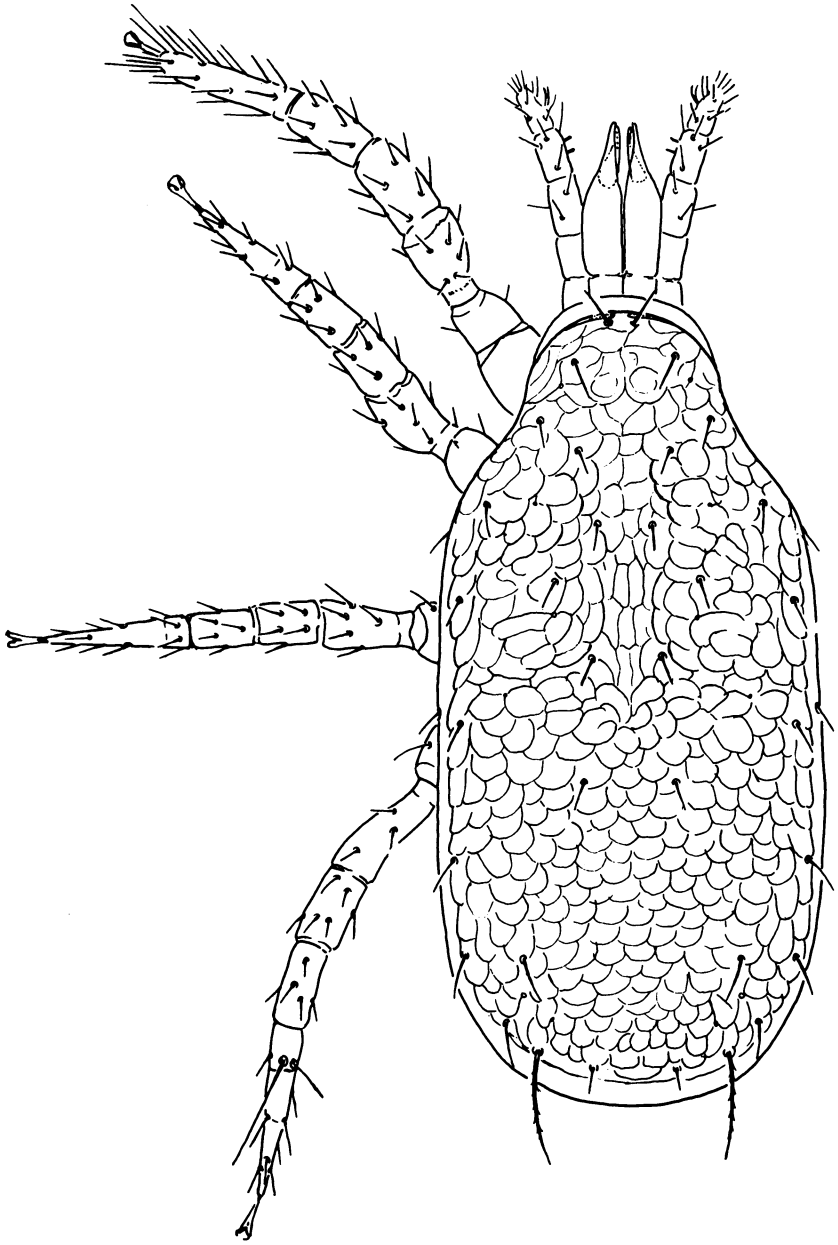


Fig. 22. *Amblyscius lula:* dorsal aspect of female.

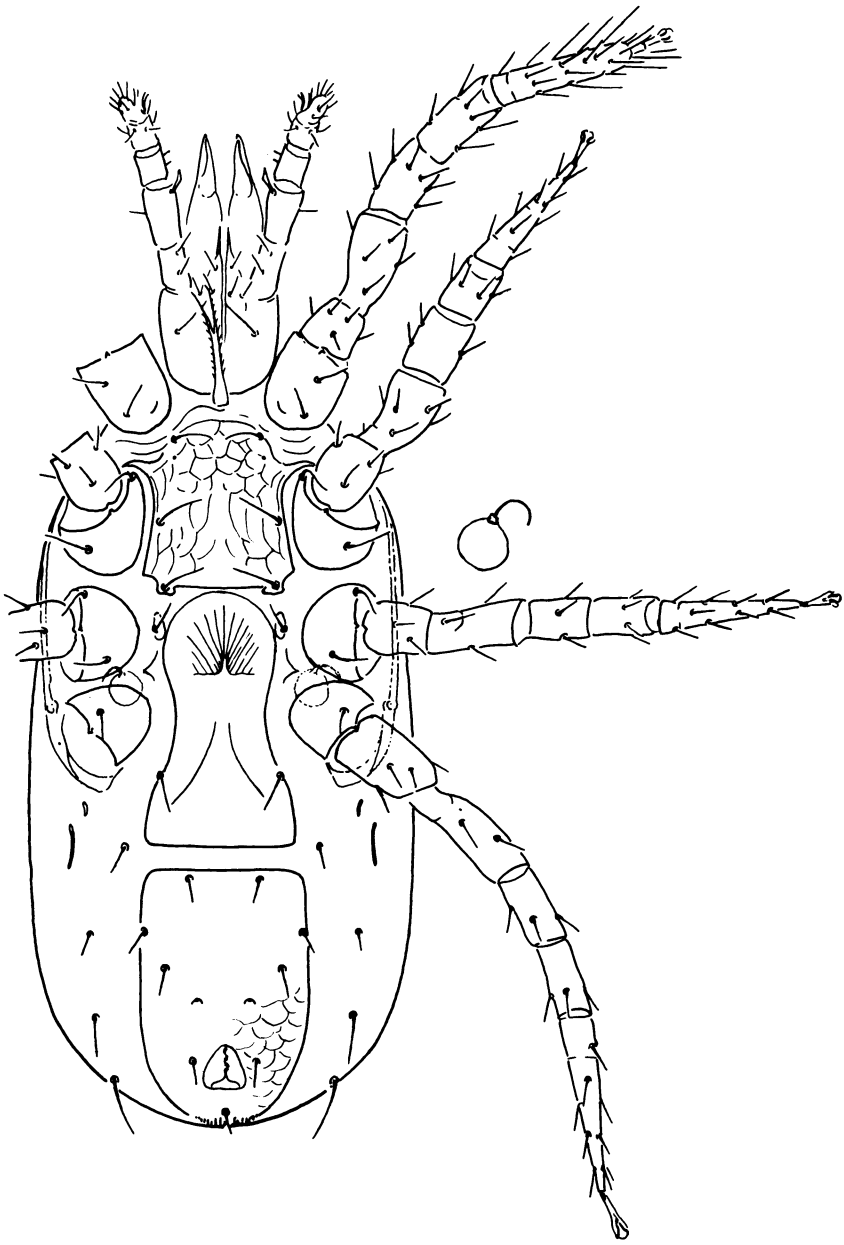


Fig. 23. *Amblyseius lula:* ventral aspect of female.

anal area much longer than broad, parallel-sided, as wide as the caudal margin of the epigynial plate, bearing three pairs of widely spaced setae, and with a pair of elliptical pores between and caudad from the posterior pair of setae. Three pairs of ventrolaterals. Two pairs of metapodal platelets, both slender, the anterior pair short and the posterior pair long. Sternal plate slender, the metasternal platelets separate. Spermatheca round with small, semicircular cervix, a tiny, bulbous atrium, and a slender major duct. Genu IV with seven short setae; tibia IV with six short setae; basitarsus IV with three short setae and a long, tapering seta. Length of idiosoma 408μ; greatest width of body 204μ.

Holotype.—Female, Leopoldville, Belgian Congo, April 15, 1955 (E. W. Baker), on legume leaf; type no. 2701 in the U. S. National Museum.

3. Amblyseius (Amblyseius) sundi n. sp.

(Figs. 24, 25)

Amblyseius sundi is distinctive among African species in that the first pair of postscutal lateral setae is represented only by pores. The caudolateral setae on the very convex dorsal shield are about as long as the body. *A. sundi* differs from *A. terrestris* (Chant), from the eastern United States, mainly in that the ventri-anal plate of the female is slender.

Female.—Chelicera with both digits multidentate. Dorsal shield strongly convex, nearly smooth. Proscutum with setae minute except for vertical setae, slightly longer first pair of laterals, and long and strong fourth pair of laterals. Sublateral setae short. Postscutum with only four pairs of lateral setae, the first pair represented by pores, the setae minute except for long and strong pair of mediolaterals and very long, whiplike caudolateral pair; fourth pair of dorsocentrals present, minute. Peritremes extending to vertical setae. Ventri-anal plate with pre-anal area slender, broadly and slightly constricted medially, bearing three pairs of widely spaced setae and a pair of transverse pores just inside and slightly caudad from the posterior pair. Three pairs of ventrolaterals, the first pair the longer. Two slender metapodal platelets, one long and one short. Sternal plate slightly broader than long, the caudolateral angles produced; metasternal platelets separate. Spermatheca with a very long, slender cervix and a short, tapering atrium. Genu IV with a long, tapering seta and five short setae; tibia IV with a very long, tapering seta and six short setae; basitarsus IV with a moderately long, tapering seta and three short setae. Length of idiosoma 382μ; greatest width of body 255μ.

Holotype.—Female, Leopoldville, Belgian Congo, April 10, 1955 (E. W. Baker), on *Ficus polita;* type no. 2702, U. S. National Museum.

Paratypes.—Two females, Leopoldville, Belgian Congo, April 10, 1955 (E. W. Baker), on *Ficus polita;* two females, Leopoldville, Belgian Congo, April 14, 1955 (E. W. Baker), on legume leaf; two females, Mulunga, INEAC, Belgian Congo, May 18, 1955 (E. W. Baker), on Australian pine; 10 females, Mulunga, INEAC, Belgian Congo, May 18, 1955 (E. W. Baker), on quinine; 1 male, 2 females, Leopoldville, Belgian Congo, April 13, 1955 (E. W. Baker), on ornamental; 2 females, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Baphia* sp.; 1 female, Beni, Belgian Congo, May 8, 1955 (E. W. Baker), on *Piper umbellatum;* 7 females, Mt. Hoyo, Belgian Congo, May 4, 1955 (E. W. Baker), on *Datura* sp.; 2 females, Mt. Hoyo, May 5, 1955 (E. W. Baker), on *Hibiscus;* 2 females, Mt. Hoyo, May 4, 1955 (E. W. Baker), on peach; and 1 male and 1 female, Mt. Hoyo, May 4, 1955 (E. W. Baker), on citrus.

4. Amblyseius (Amblyseius) genya n. sp.

(Figs. 26, 27)

Amblyseius genya is the only known species among rotund members of the genus in which the first and fourth proscutal lateral setae are long and nearly equal in length and the second and third lateral setae very short. The ventri-anal plate of the female is quite broad, and four slender platelets are present immediately anterior to it.

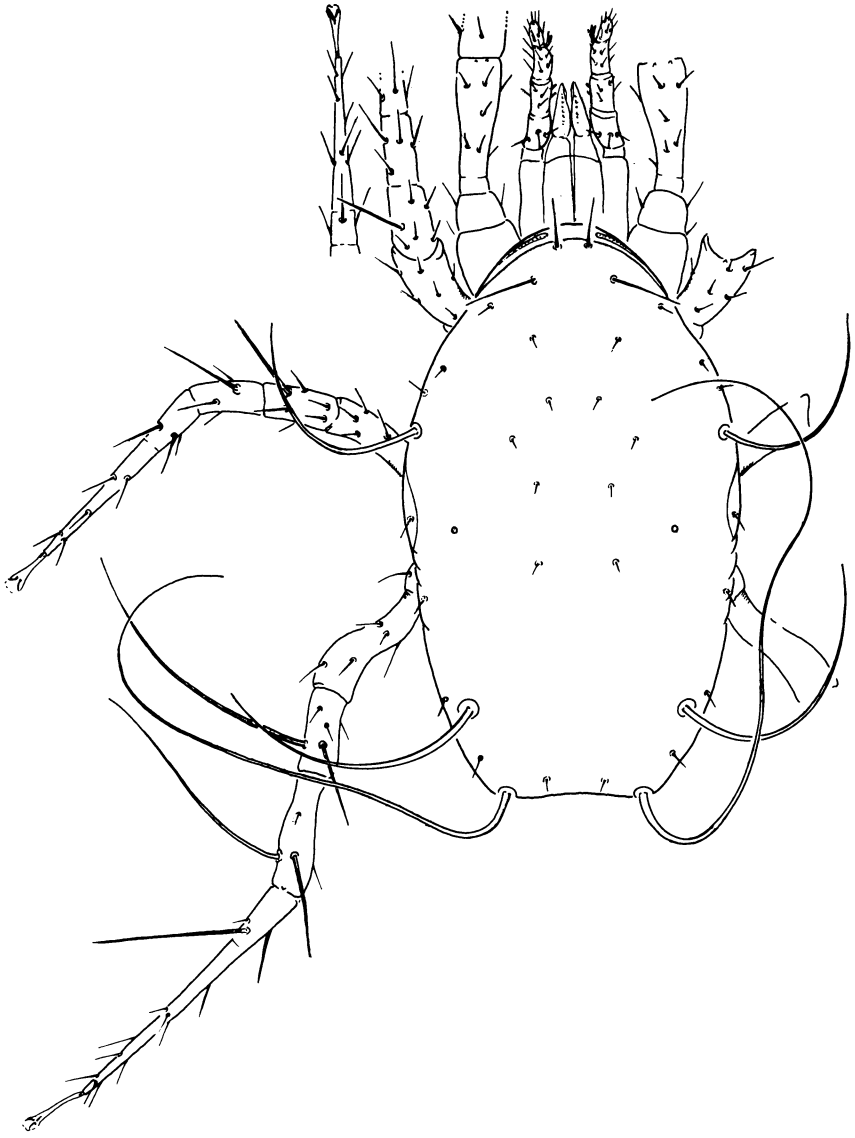


Fig. 24. *Amblyseius sundi:* dorsal aspect of female.

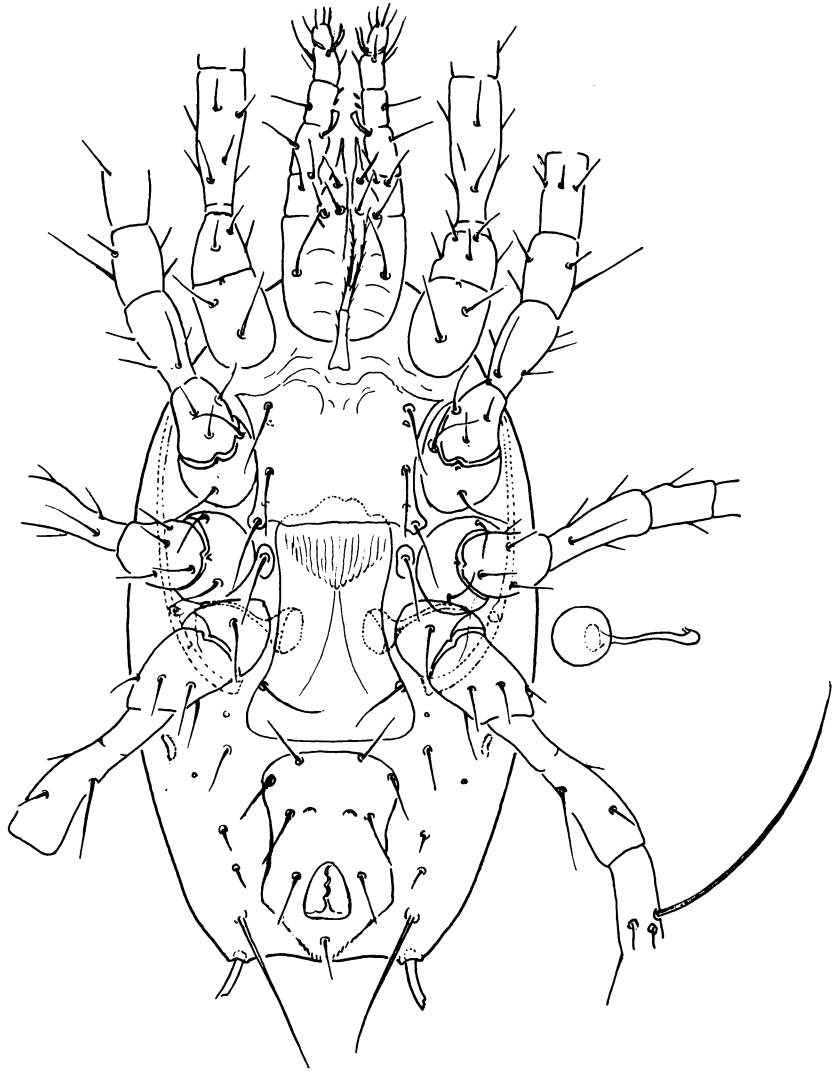


Fig. 25. *Amblyseius sundi:* ventral aspect of female.

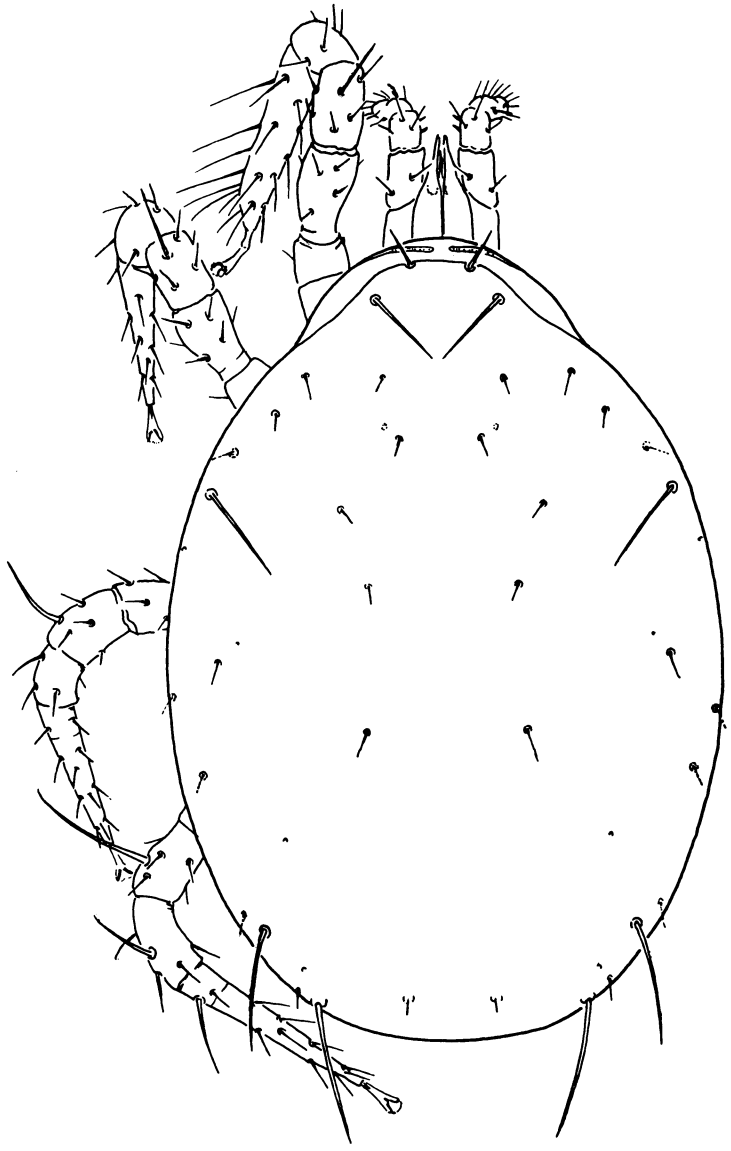


Fig. 26. *Amblyseius genya:* dorsal aspect of female.

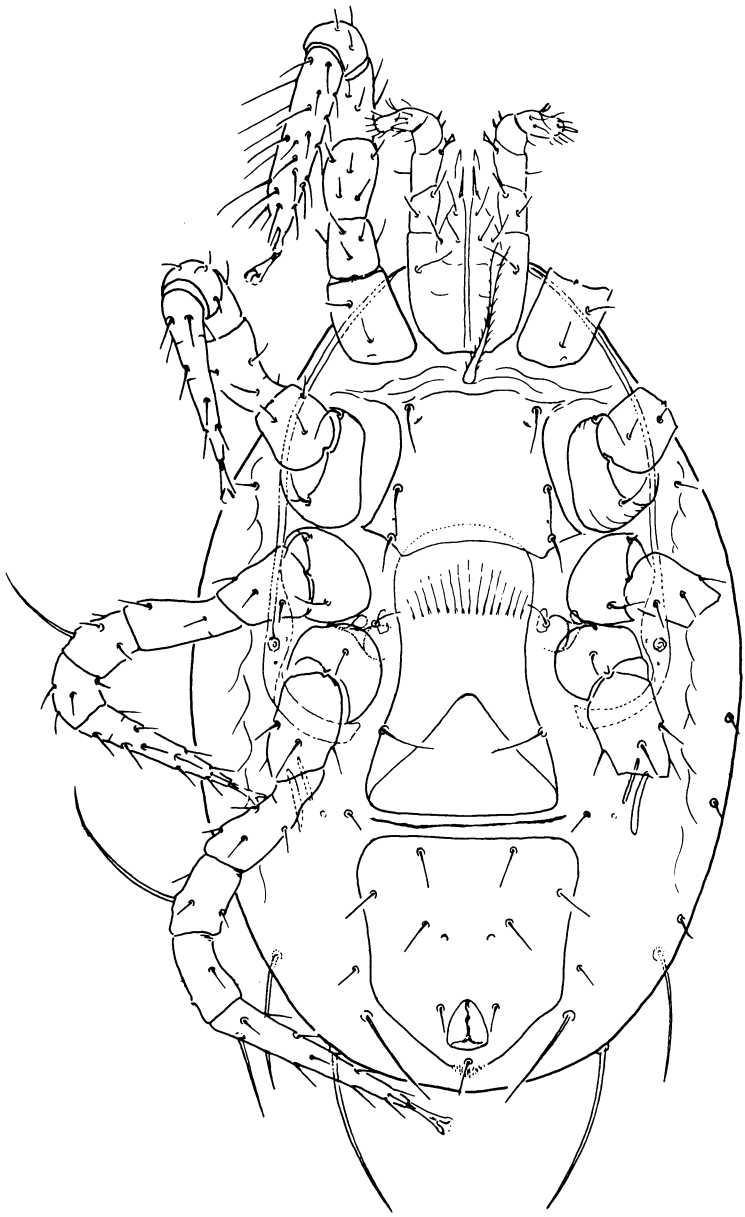


Fig. 27. *Amblyseius genya:* ventral aspect of female.

Female.—Chelicera with chelae moderately developed and each multidentate. Dorsal shield strongly convex, smooth. Proscutum with vertical setae moderately developed; first and fourth laterals rather long, stout, the first only slightly shorter than the fourth; second and third laterals quite short, the second slightly longer than the third; dorsocentrals quite short, and anterior mediolaterals similar in length. Sublaterals quite short. Postscutum with five pairs of laterals, the first three quite short; the first laterals located dorsally, the second, because the dorsal shield curves under, appearing to be ventral, and the third appearing not to be on the shield but on the membrane; caudal laterals and posterior mediolaterals long and strong like first and fourth proscutal laterals; one pair of short dorsocentrals. Peritremes extending beyond verticals. Ventri-anal plate with pre-anal area broad, similar in width to caudal margin of epigynial plate, with lateral margins shallowly concave, bearing three pairs of widely spaced setae and a pair of pores between and caudad from posterior pair of setae. Two pairs of ventrolaterals, the middle pair apparently absent. Two pairs of elongate metapodal platelets, the caudal pair being broader. Sternal plate about as long as broad on posterior portion; metasternal platelets separate. Spermatheca with cervix apparently cup-shaped and with a small atrium. Genu IV with a long, stout, tapering seta and six short setae; tibia IV with a moderately long, tapering seta and five short setae; basitarsus IV with a fairly long, tapering seta and three short setae. Length of idiosoma 312μ; greatest width of body 210μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 19, 1955 (E. W. Baker), on citrus; type no. 2703 in the U. S. National Museum.

5. Amblyseius (Amblyseius) rykei n. sp.

(Figs. 28, 29)

Amblyseius rykei is very closely allied to *A. genya,* but the macroseta on basitarsus IV is nearly as long as that on genu IV, the macrosetae on the dorsal shield are longer, the second and third lateral setae on the dorsal shield are short and of the same length, the pores on the dorsal shield are well defined, and no platelets are present immediately anterior to the ventri-anal plate of the female. The setae on the dorsal shield and the venter of the female resemble *A. floridanus* (Muma), from Florida, but the chelicerae are not strongly developed as in that species.

Female.—Chelicerae with digits moderately developed, both multidentate. Dorsal shield strongly convex, smooth. Proscutum with vertical setae moderately developed; first laterals long and fourth laterals somewhat longer; second and third laterals short, similar in length; dorsocentrals and mediolaterals very short. Postscutum with one pair of dorsocentrals and first, second, third, and fourth laterals very short; mediolaterals long, similar to fourth proscutal laterals; fifth laterals longest, slightly serrate. Peritremes extending to just beyond verticals. Ventri-anal plate with pre-anal area about as broad as long, the lateral margins concave; three pairs of widely spaced pre-anal setae and a pair of elliptical pores between and slightly caudad from posterior pair of pre-anals. Three pairs of ventrolaterals. Sternal plate about as long as broad; metasternal platelets separate. Spermatheca with cervix apparently cup-shaped with a slender atrium. Genu IV with a long, tapering macroseta and six short setae; tibia IV with a moderately long, tapering seta and five short setae; basitarsus IV with macroseta similar to that on tibia IV and with three short setae. Length of idiosoma 351μ; greatest width of body 119μ.

Holotype.—Female, Lake Edward, Belgian Congo, May 6, 1955 (E. W. Baker), on *Hoslundia opposita;* type no. 2704 in the U. S. National Museum.

Paratype.—One female, Leopoldville, Belgian Congo, April 15, 1955 (E. W. Baker), on legume leaf.

This species is named in honor of Dr. P. J. Ryke.

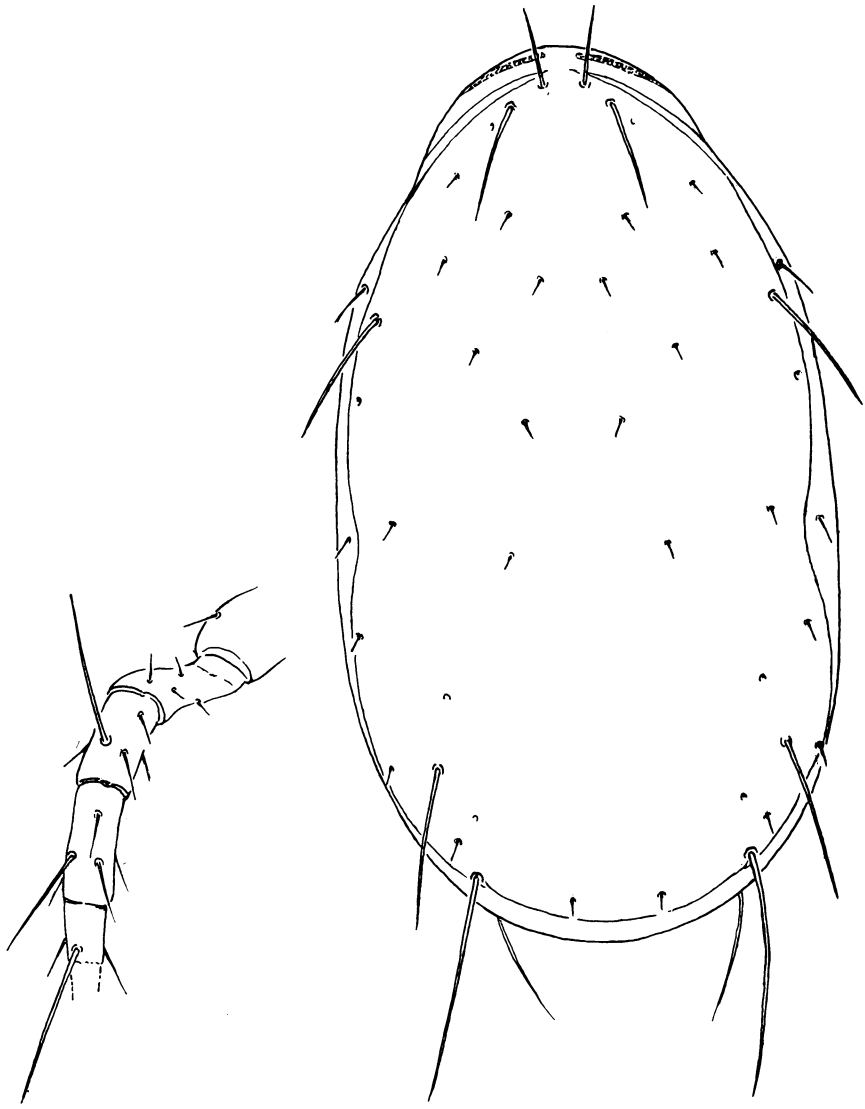


Fig. 28. *Amblyseius rykei:* dorsal aspect of female, and detail of leg IV.

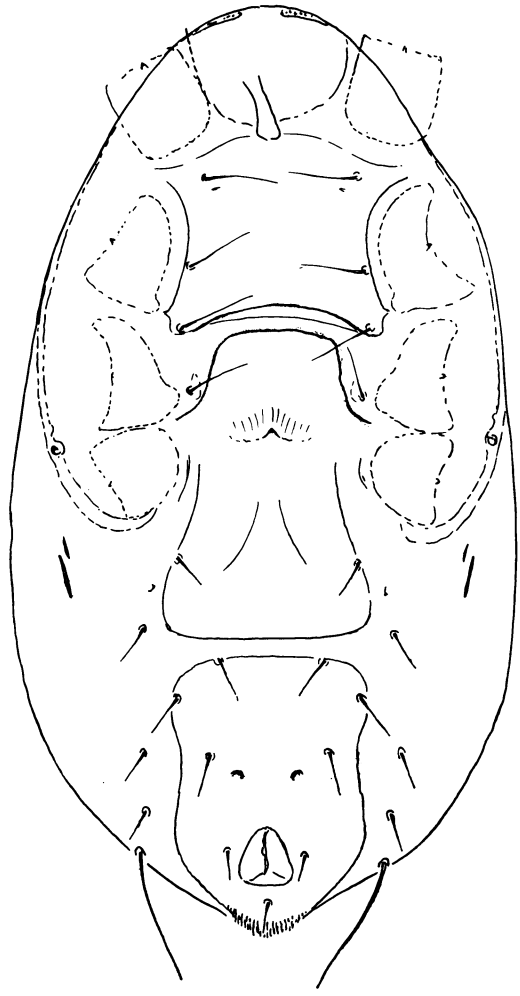


Fig. 29. *Amblyseius rykei:* ventral aspect of female.

6. Amblyseius (Amblyseius) shi n. sp.
(Figs. 30, 31)

Among the African species of *Amblyseius, shi* may be recognized by the combination of having the proscutum with the first and fourth lateral setae slightly longer than the second and third lateral setae and the postscutum with the first four lateral setae all similarly short with the mediolateral setae longer and stouter. *A. shi* is closely alled to *A. peregrinus* (Muma) from Florida, but the second lateral postscutal setae are as small as the first. The ventri-anal plate of the female is also wider, but it varies in the degree of concavity of the sides.

Female.—Chelicera with both digits rather small and multidentate. Dorsal shield with large, rather faint reticulations. Proscutum with vertical setae and first and fourth laterals moderately long, the dorsocentrals and mediolaterals shorter. Sublaterals very short. Postscutum with the one pair of dorsocentrals and the first four laterals short; mediolaterals about twice the length of the dorsocentrals, stout and serrate distally; caudolaterals strong, about twice the length of the mediolaterals, stout and serrate. Peritremes reaching beyond verticals. Ventri-anal plate nearly as broad as caudal margin of epigynial plate, the pre-anal area with sides moderately to deeply concave and bearing three pairs of widely spaced setae and a pair of elliptical pores caudad from and between the posterior pair of setae. Three pairs of short ventrolaterals. Two pairs of metapodal platelets, the anterior one small and slender, the posterior one larger and subelliptical. Sternal plate about as broad as long, the metasternal platelets separate. Spermatheca with a long and very narrow cervix. Genu IV with a long, stout seta ending in a tiny ball, and six short setae; tibia IV with a rather long, stout, similar seta and five short setae; basitarsus IV with a long, stout, similar seta and three short setae. Genua I and II each with a similar seta. Length of idiosoma 351μ; greatest width of body 223μ.

Male.—Chelicera with spermatodactyl long and strong. Dorsal chaetotaxy similar to that of female except vertical setae and first and fourth proscutals slightly longer. Ventri-anal plate with three pairs of pre-anal setae and a pair of pores just caudad from and inside posterior pair of setae.

Holotype.—Female, Stanleyville, Belgian Congo, April 20, 1955 (E. W. Baker), on *Aframomum* sp.; type no. 2705 in the U. S. National Museum.

Paratypes.—One male, 2 females, Mulunga, INEAC, Belgian Congo, May 18, 1955 (E. W. Baker), on tung tree; 1 male, 1 female, Butembo, Belgian Congo, May 9, 1955 (E. W. Baker), on *Iresine* sp.

7. Amblyseius (Amblyseius) olombo n. sp.
(Figs. 32, 33)

Amblyseius olombo is allied to *A. shi,* from which it differs in having the first lateral setae on the postscutum distinctly larger than the fourth. The spermatheca is very distinctive in that the cervix is strongly constricted medially.

Female.—Chelicera with digits moderately developed and both multidentate. Dorsal shield faintly reticulate. Proscutum with vertical setae rather long and strong, the first and fourth laterals long and strong, the third laterals shorter and the second laterals still shorter; proscutal dorsocentrals and mediolaterals moderately short and thin. Sublateral setae rather short. Postscutum with first laterals moderately short like the one pair of dorsocentrals, the second pair of laterals and the mediolaterals moderately long and stout, the third pair of laterals rather short and thin, the fourth pair shorter, and the fifth pair long and stout. Peritremes extending just beyond verticals. Ventri-anal plate narrower than caudal margin of epigynial plate, the pre-anal area with lateral margins concave, bearing three pairs of widely spaced setae and a pair of elliptical pores between the posterior pair. Three pairs of ventrolaterals, the middle pair being the smallest. Two pairs of metapodal

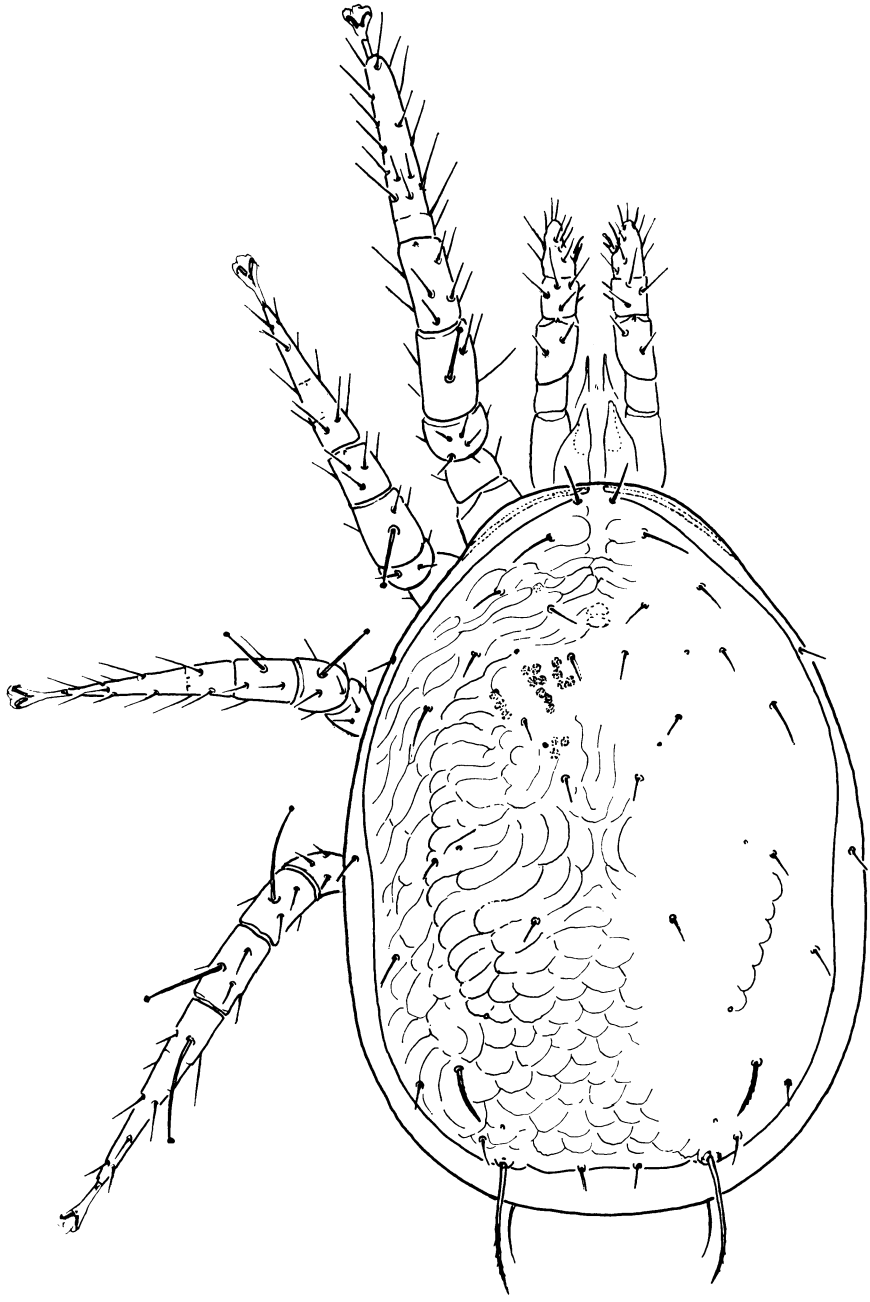


Fig. 30. *Amblyseius shi:* dorsal aspect of female.

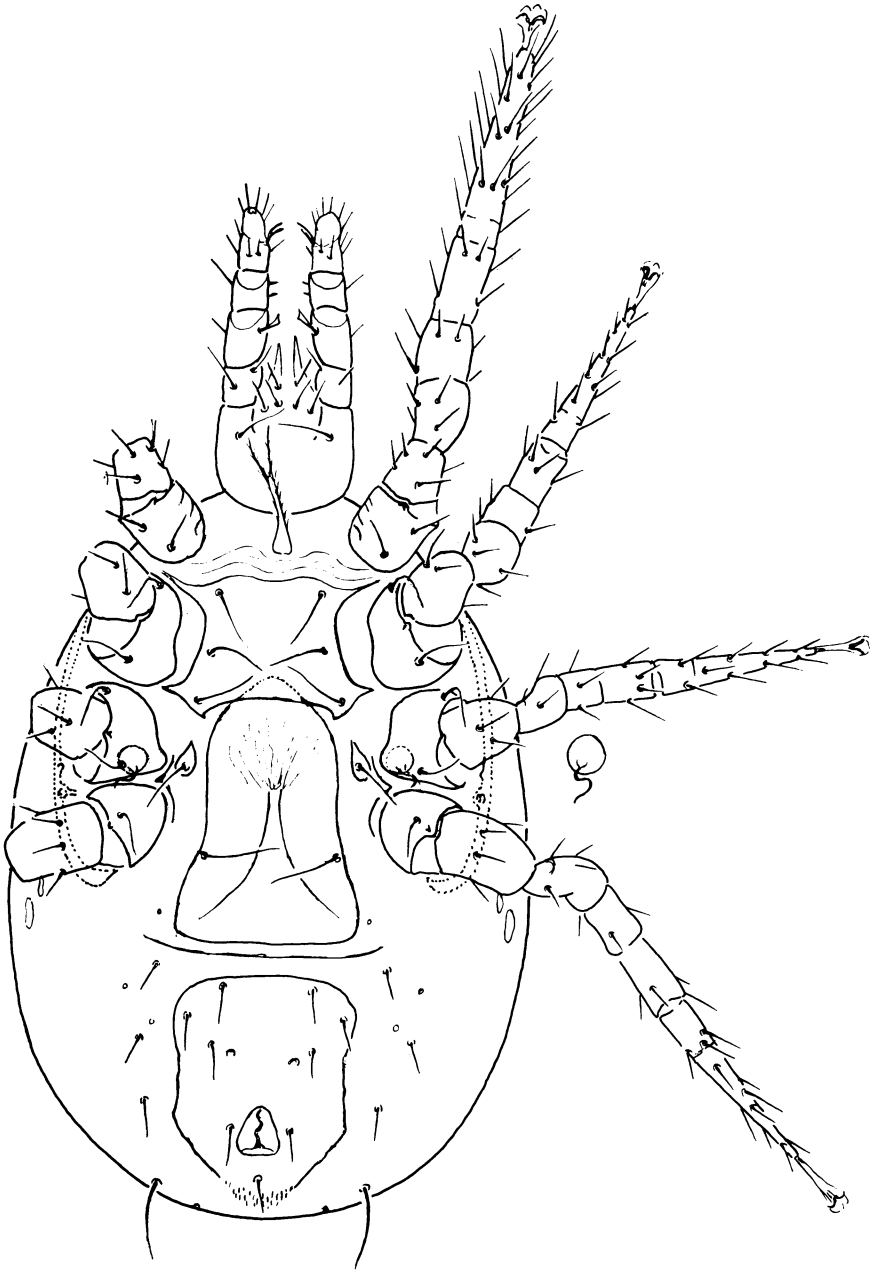


Fig. 31. *Amblyscius shi:* ventral aspect of female.

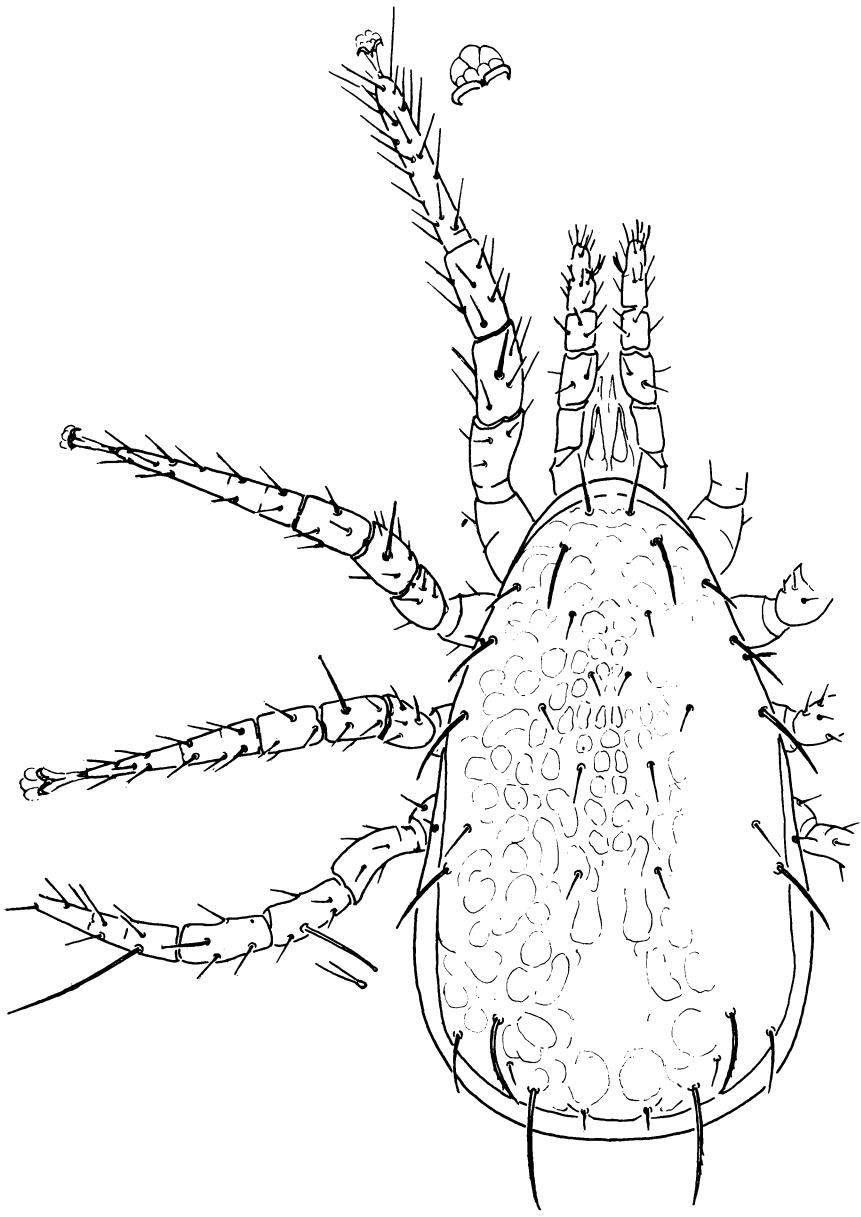


Fig. 32. *Amblyseius olombo:* dorsal aspect of female.

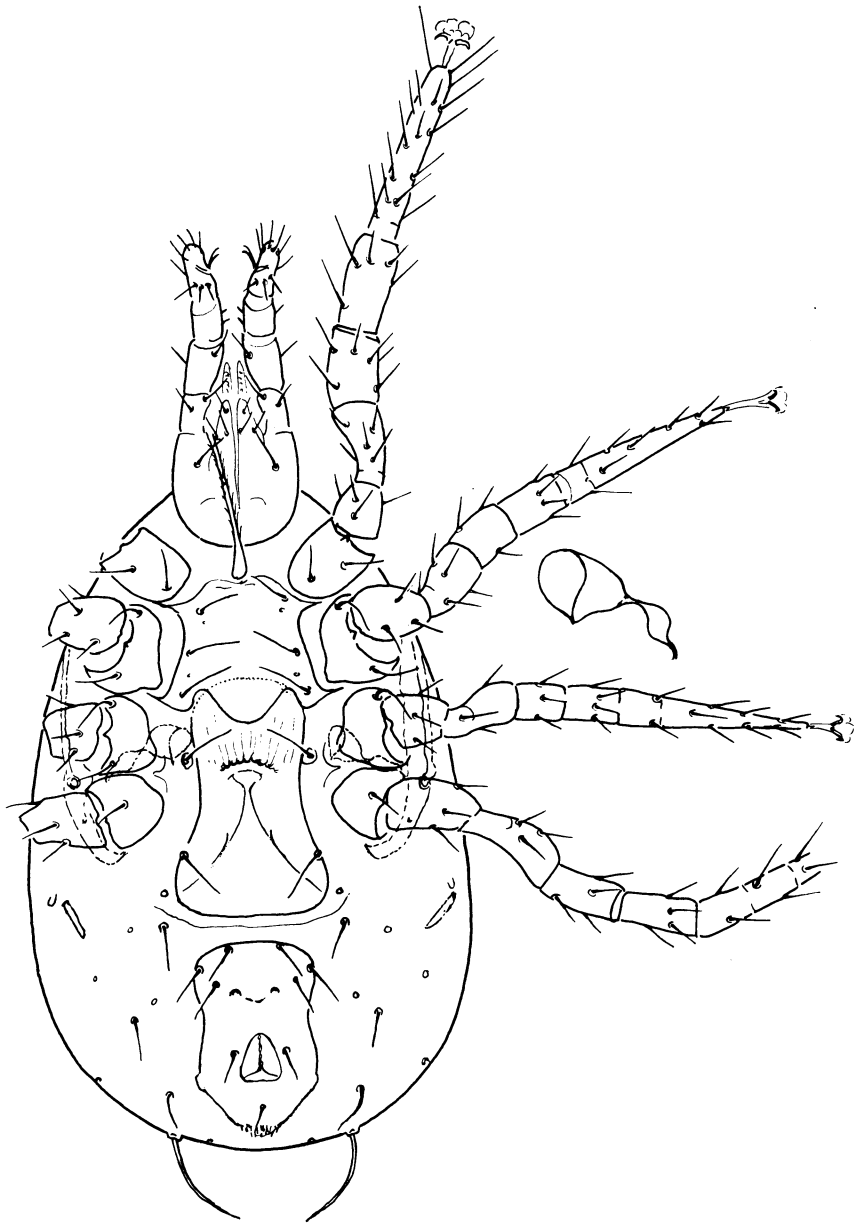


Fig. 33. *Amblyseius olombo:* ventral aspect of female.

platelets, the anterior one small and slender and the posterior one longer and broader. Sternal plate about as broad as long; its caudal margin with sublateral incisions; metapodal platelets separate. Spermatheca with proximal portion of cervix very broad, abruptly constricted to a narrow neck medially, the distal portion narrower and longer than the proximal portion; atrium apparently rather small and narrow. Genu IV with a long, stout, blunt seta and six short setae; tibia IV with macroseta but slightly longer than the other five setae; basitarsus IV with a long, stout, pointed seta and three short setae. Length of idiosoma 370μ; greatest width of body 223μ.

Holotype.—Female, Mt. Hoyo, Belgian Congo, May 5, 1955 (E. W. Baker), on *Hibiscus*, 4,000 ft.; type no. 2706 in the U. S. National Museum.

Paratypes.—Two females, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Vitex congolensis.*

8. Amblyseius (Amblyseius) havu n. sp.
(Figs. 34, 35)

Amblyseius havu belongs to a group of species characterized by having all the setae on the dorsal shield moderately long and the ventri-anal plate of the female vase-shaped. Among this group *A. havu* is distinctive in having three macrosetae on tibia IV. The long, extremely thin neck of the cervix is unique.

Female.—Chelicera with digits moderately developed, each weakly multidentate. Dorsal shield smooth, with a pair of small pores anterolaterad from postscutal mediolateral setae and a pair of large pores caudad from these setae. Proscutum with vertical setae rather long, the first and fourth laterals slightly longer, the second laterals slightly shorter, the third about the same length as the verticals; first dorsocentrals slightly shorter than second laterals, the second and third pairs of dorsocentrals and the mediolaterals still shorter; sublaterals similar in length to dorsocentrals. Postscutum with first and second laterals similar in length to second proscutal laterals, the dorsocentrals, mediolaterals, and third and fourth laterals all slightly shorter and similar in length; fifth laterals a little longer than all other dorsal setae and smooth. Peritreme extending to level of first proscutal laterals. Ventri-anal plate broadest anteriorly but narrower than caudal margin of epigynial plate, the sides strongly concave; three pairs of pre-anal setae spaced moderately apart; pre-anal pores strong, ellipsoidal, placed just interior to and caudad from posterior pre-anal setae. Two pairs of ventrolateral setae. A pair of single, slender metapodal plates. Sternal plate about as long as broad, the metasternal platelets separate. Spermatheca with cervix long, exceedingly thin, the atrium broader, and the major duct an elongate neck before the narrower receptacle. Genu IV with six short setae and a very long, subcapitate seta; tibia IV with three short setae, two long, blunt setae, and a rather long, acuminate seta; basitarsus IV with three short setae and a very long, subcapitate seta. Length of idiosoma 408μ; greatest width of body 255μ.

Holotype.—Female, Lwiro, Belgian Congo, May 16, 1955 (E. W. Baker), on *Maesa rufescens;* type no. 2707 in the U. S. National Museum.

Paratype.—Female, Lwiro, Belgian Congo, May 16, 1955 (E. W. Baker), on *Maesa rufescens.*

9. Amblyseius (Amblyseius) hima n. sp.
(Figs. 36, 37)

Amblyseius hima is closely allied to *A. havu,* but the fourth pair of legs bears no capitate macrosetae, the peritremes are shorter, the cheliceral digits are shorter, and the neck of the cervix is short.

Female.—Chelicerae with digits very short. Dorsal shield slightly reticulate, with a pair of pores anterolaterad from the postscutal mediolateral setae and another pair of pores caudad from these setae. Dorsal shield with vertical, postscutal mediolateral, and all lateral setae moderately long and more or less similar in length except for the considerably longer, stouter, and slightly serrate caudolateral pair; proscutal mediolaterals, the dorsocentrals,

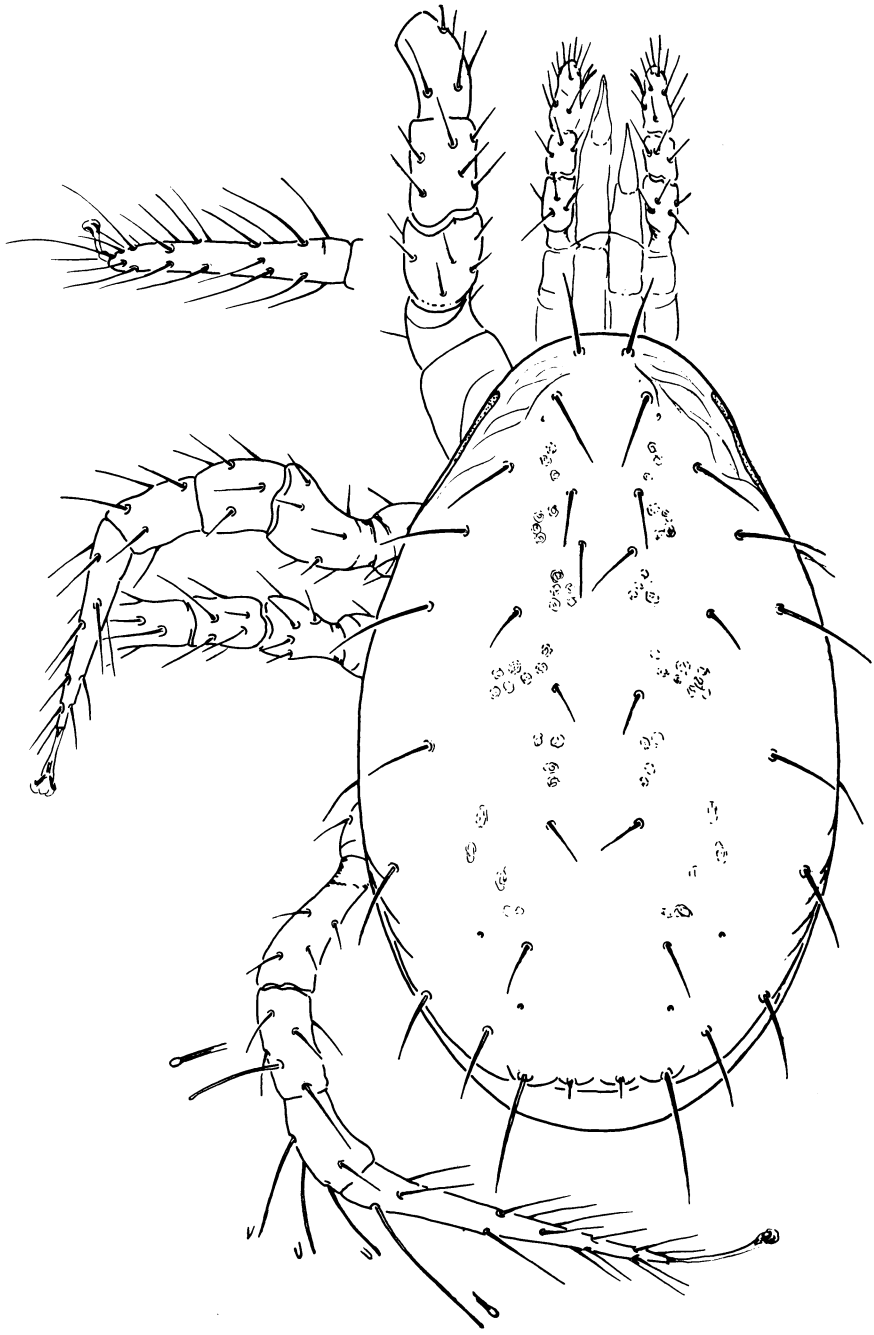


Fig. 34. *Amblyseius havu:* dorsal aspect of female.

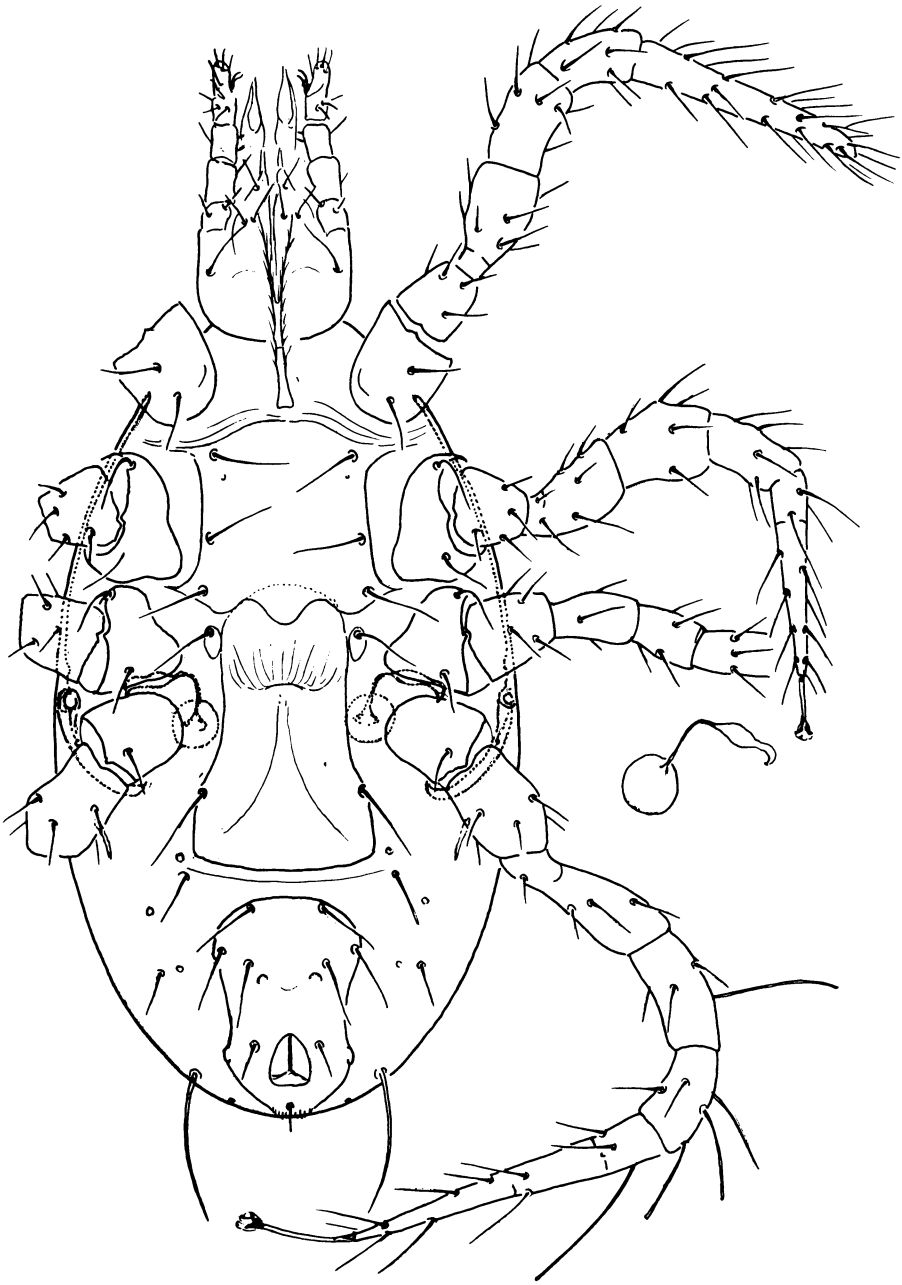


Fig. 35. *Amblyscius havu:* ventral aspect of female.

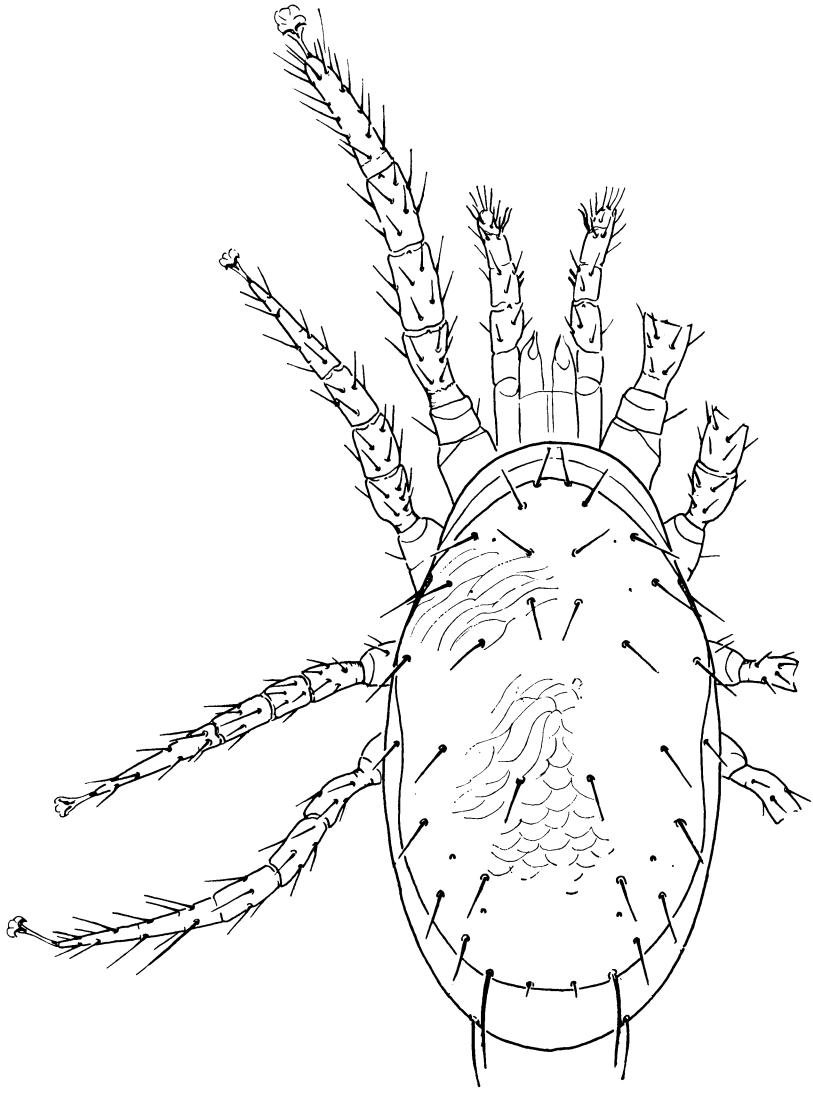


Fig. 36. *Amblyseius hima:* dorsal aspect of female.

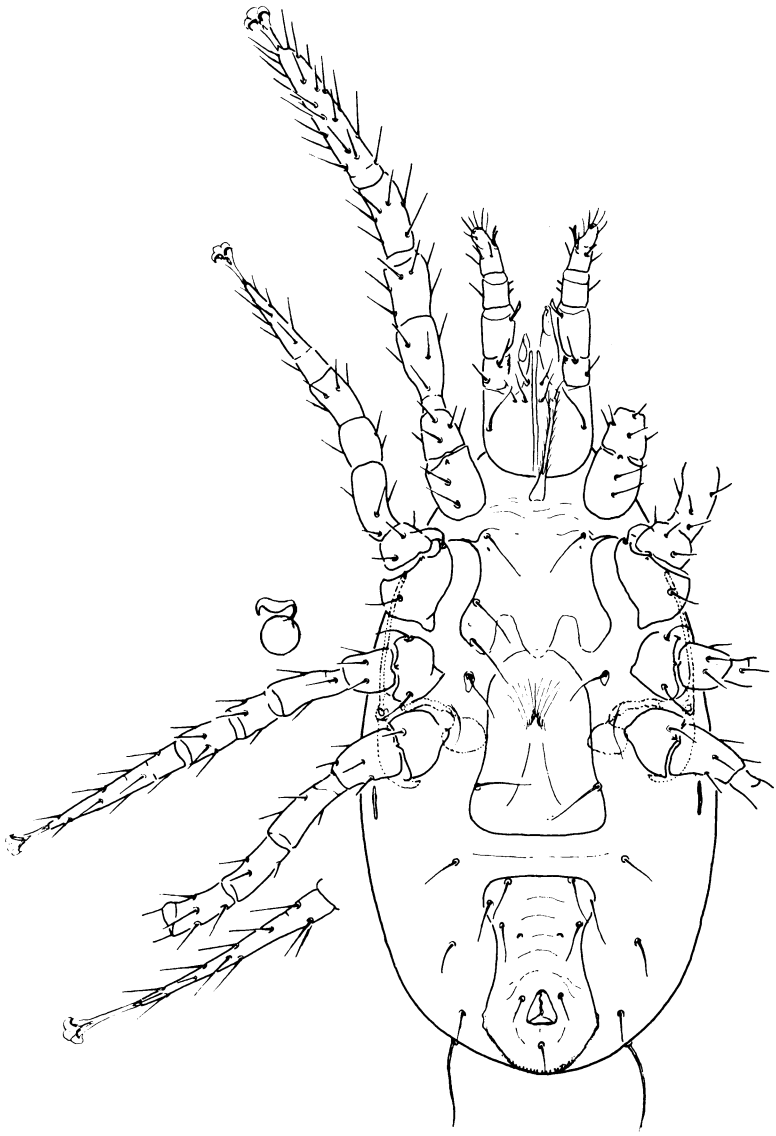


Fig. 37. *Amblyseius hima:* ventral aspect of female.

and the sublaterals slightly shorter. Peritreme reaching level of third pair of proscutal laterals. Ventri-anal plate very slender, the sides strongly concave; three pairs of pre-anal setae, with a pair of pores inside of and caudad from posterior pair of setae. Three pairs of ventrolateral setae. One pair of slender metapodal platelets. Sternal plate about as broad as long, the metasternal platelets separate. Spermatheca with a short, very narrow neck, the distal portion a long enlargement before the narrower receptacle. Genu IV with seven short setae; tibia IV with six short setae; basitarsus IV with a moderately long, acuminate seta and three short setae. Length of idiosoma 350μ; greatest width of body 191μ.

Male.—Spermatodactyl with proximal portion long and slender, roundly produced distally; distal hook bearing a short spine proximally and bifurcate distally. Dorsal shield with setae longer and stouter than in female, especially the fourth pair of proscutal laterals. Ventri-anal plate abnormal in specimen studied. Length of idiosoma 274μ; greatest width of body 175μ.

Holotype.—Female, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on cherimoya; type no. 2708 in the U. S. National Museum.

Paratype.—Male, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on cherimoya.

10. Amblyseius (Amblyseius) hutu n. sp.
(Figs. 38, 39, 40)

The vertical and lateral setae of *Amblyseius hutu* are all long and stout; the postscutal mediolateral setae are similar to the third and fourth postscutal lateral setae, and the ventri-anal plate of the female is vase-shaped with the pre-anal setae nearly in a transverse line. The cervix of the spermatheca is long and stout.

Female.—Chelicera with chelae very short, the fixed digit with a single tooth, the movable digit without teeth. Dorsal shield smooth, with six pairs of pores. Proscutum with vertical setae long; first and second laterals similar to verticals, the third laterals slightly longer, and the fourth laterals still longer; first dorsocentrals not reaching the similar second dorsocentrals, the third dorsocentrals longer and stouter; mediolaterals similar to first and second dorsocentrals. Sublaterals similar to anterior dorsocentrals. Postscutum with first laterals similar to verticals, the second, third, and fourth laterals longer and stronger, the fifth laterals much longer, stouter, and slightly serrate; dorsocentral pair of setae the same length as first laterals; mediolaterals slightly shorter than third laterals. Peritreme reaching vertical setae. Ventri-anal plate slender, the lateral margins concave; three pairs of pre-anal setae set nearly in a transverse line; two pores just inside and caudad from posterior (median) pair of pre-anals. Three pairs of ventrolateral setae, the first longer than the other two. Two pairs of metapodal platelets, the first tiny, the second long and medially broadened. Sternal plate about as broad as long, the metasternal setae separate; platelets lacking. Spermatheca with a short, broad neck, the atrium slightly wider proximally and longer and narrowing; the receptacle longer and narrower. Genu IV with seven short setae and a long, capitate seta; tibia IV with five short setae and a long, capitate seta; basitarsus IV with three short setae and a very long, capitate seta. Length of idiosoma 357μ; greatest width of body 287μ.

Male.—Dorsal shield with setae longer and stronger than in female, especially the fourth pair of proscutal lateral setae. Ventri-anal plate with three pairs of pre-anal setae set in two oblique lines; a pair of pores caudad from inner pre-anals. Length of idiosoma 351μ; greatest width of body 223μ.

Holotype.—Female, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on *Haronga paniculata;* type no. 2709 in the U. S. National Museum.

Paratypes.—Twenty-nine females, 8 males, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on *Haronga paniculata;* 1 male, Lwiro, IRSAC, Belgian Congo, May 17, 1955 (E. W. Baker), on frangipani; 2 males, 4 females, Lwiro, IRSAC, Belgian Congo, May 18, 1955 (E. W. Baker), on quinine; 3 females, Mulunga, INEAC, Belgian Congo, May 18, 1955 (E. W. Baker), on hickory; 2 males and 6 females, Mulunga, INEAC, Belgian Congo, May 18, 1955 (E. W. Baker), on *Acacia cyanophylla;* 8 females, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on frangipani; 1 male, 1 female, IRSAC, Lwiro, Belgian Congo, May 18, 1955 (E. W. Baker), on tree legume.

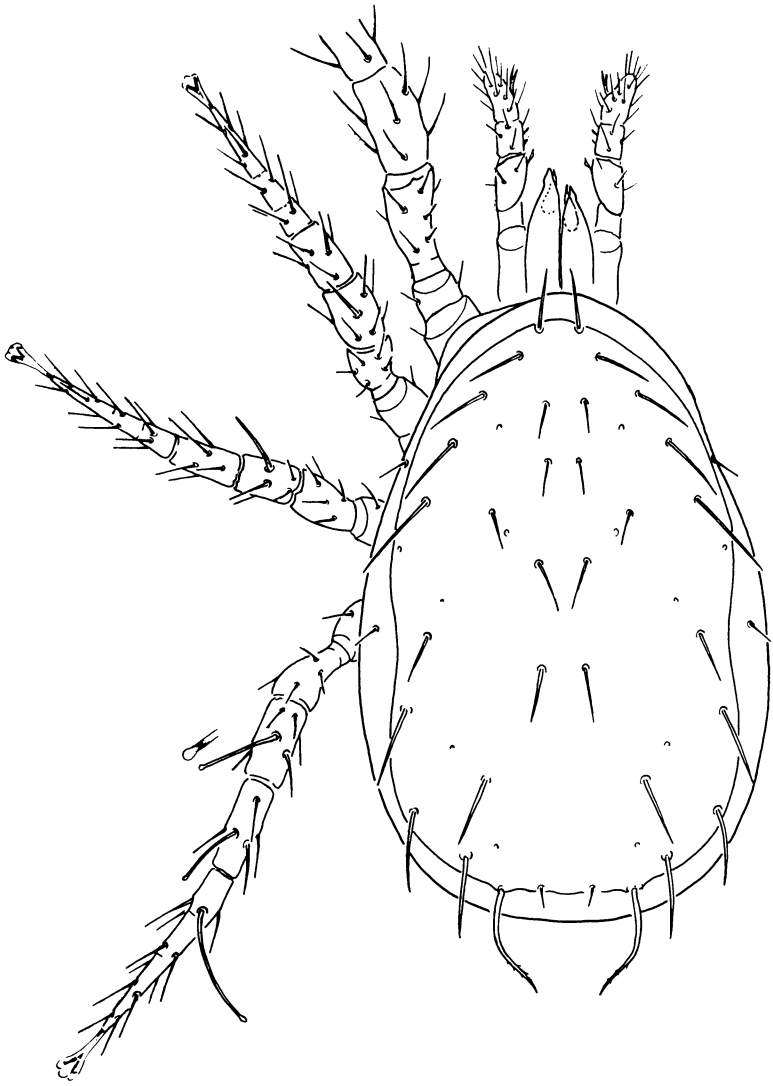


Fig. 38. *Amblyseius hutu:* dorsal aspect of female.

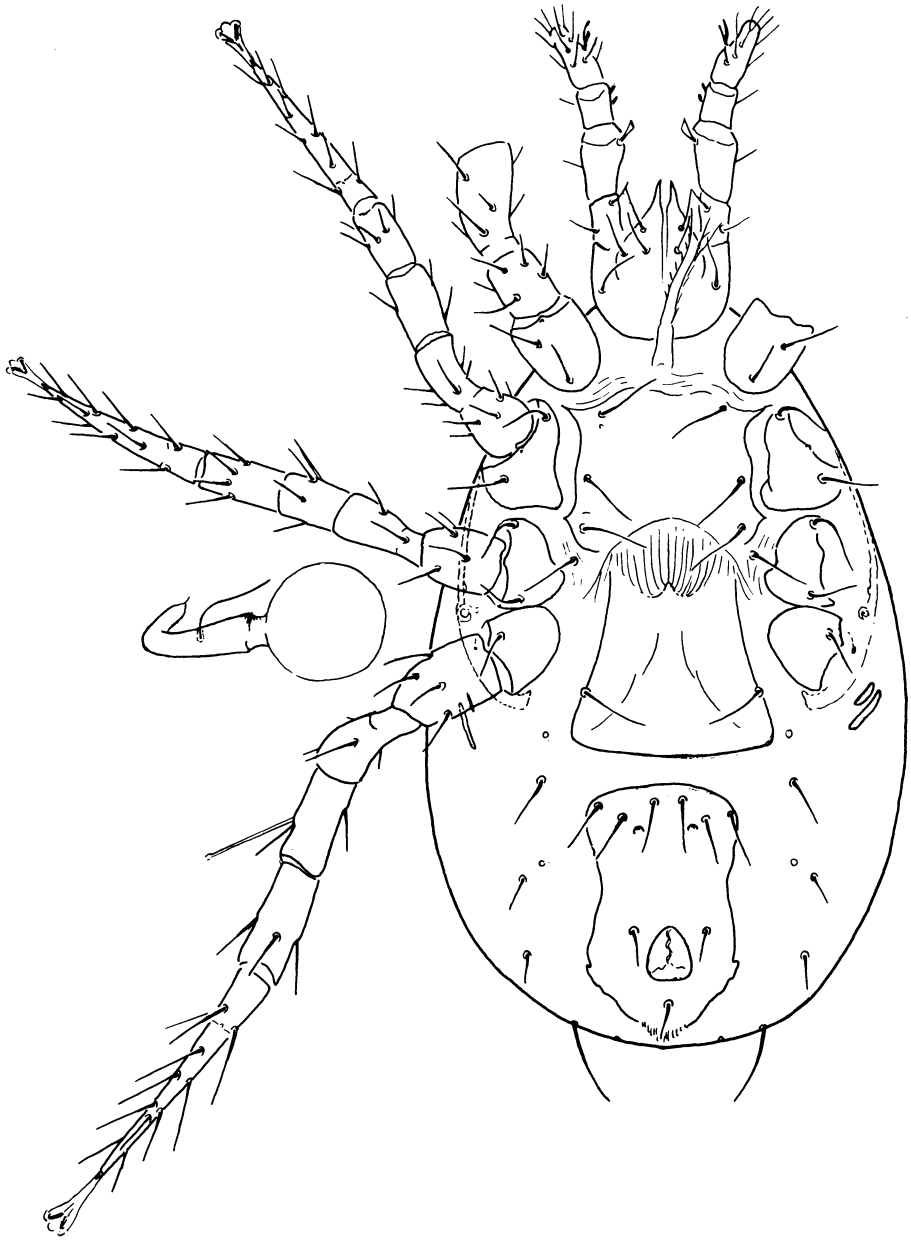


Fig. 39. *Amblyseius hutu:* ventral aspect of female.

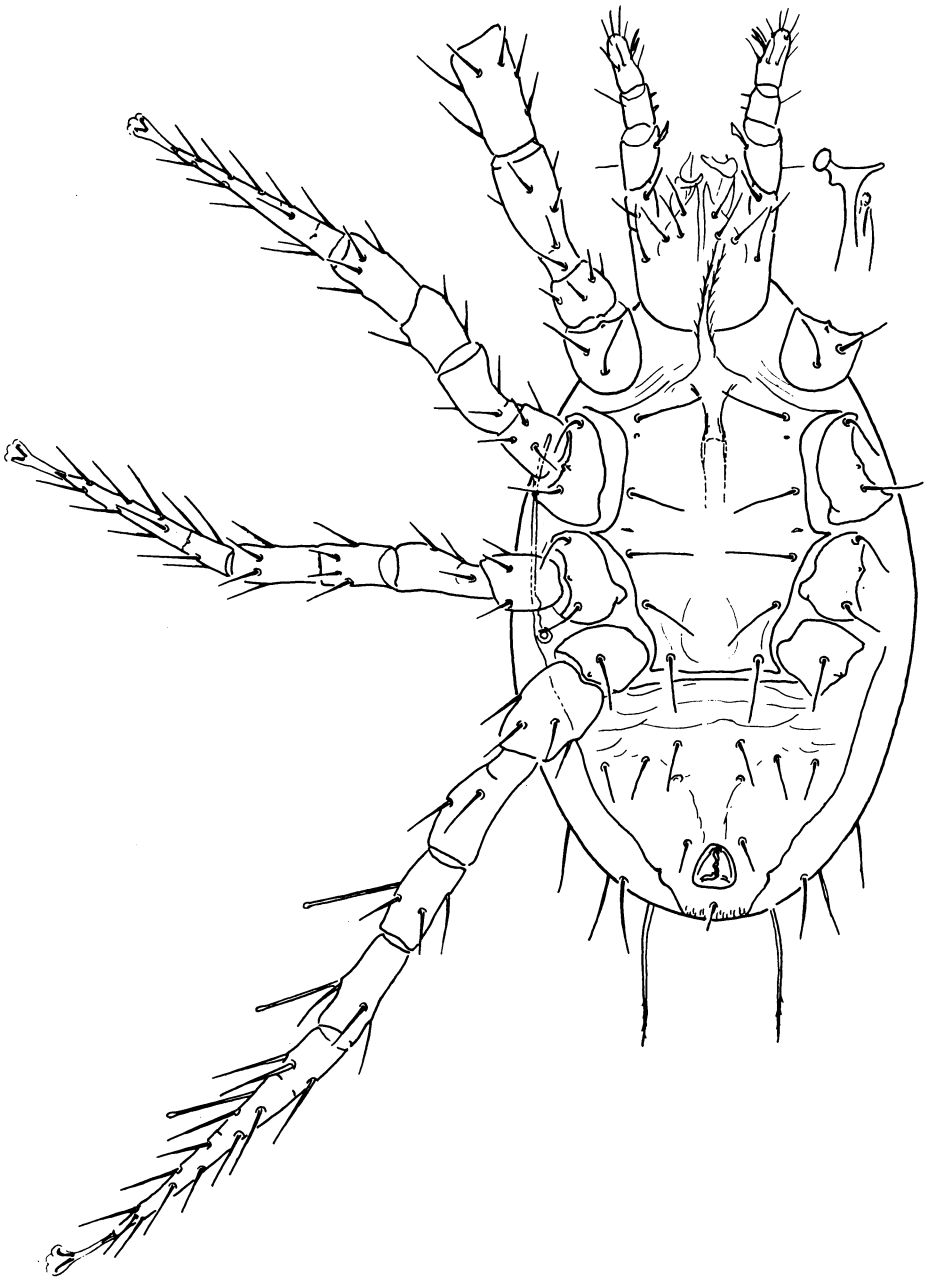


Fig. 40. *Amblyseius hutu:* ventral aspect of male.

11. Amblyseius (Amblyseius) tutsi n. sp.
(Figs. 41, 42)

The female of *Amblyseius* (*Amblyseius*) *tutsi* is very similar to that of *A. hutu,* from which it differs in having the macrosetae on leg IV acuminate and the peritreme considerably shorter. The cervix of the spermatheca is very slender, enlarged proximally and slightly swollen distally.

Female.—Chelicera with chelae short, the fixed digit unidentate. Dorsal shield practically smooth, with six pairs of pores. Proscutum with vertical setae long; first lateral setae longer than verticals; second laterals similar in length to verticals and the third and fourth laterals progressively longer; first dorsocentrals slightly shorter than verticals and reaching base of second pair, the second and third dorsocentrals progressively longer; mediolaterals similar to first dorsocentrals. Sublateral setae similar to first dorsocentrals. Postscutum with first laterals reaching beyond base of second laterals, the first four laterals, the pair of dorsocentrals, and the mediolaterals all similar in length; fifth laterals about as long as fourth proscutal laterals, stout and slightly serrate. Peritreme reaching level of first proscutal laterals. Ventri-anal plate slender, the lateral margins concave; three pairs of pre-anal setae set nearly in a line; a pair of pores just inside and caudad from posterior (median) pair of pre-anals. Three pairs of ventrolaterals, the first the longest. Two metapodal platelets, the posterior one long and slender, the anterior one slender but tiny. Sternal plate about as broad as long, the metasternal setae separate; platelets lacking. Spermatheca with cervix long and slender, considerably widening proximally and slightly widening distally. Genu IV with six short setae and a tapering macroseta; tibia IV with five short setae and a tapering macroseta; basitarsus IV with three short setae and a very long, tapering seta. Length of idiosoma 478μ; greatest width of body 287μ.

Holotype.—Female, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on elderberry; type no. 2710 in the U. S. National Museum.

Paratype.—Female, Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on ivy.

12. Amblyseius (Amblyseius) aferulus (Chant)

Typhlodromus (*Amblyseius*) *aferulus* Chant, 1960, Canad. Ent. 91 (suppl. 12): 69.

Among the African species of *Amblyseius* having the ventri-anal shield of the female vase-shaped, *aferulus* is distinctive in having the proscutum with the third lateral setae longer than the second lateral setae and the postscutum with the mediolateral setae similar in length to the third and fourth lateral setae.

This species is known only from the types from Nelspruit, East Transvaal, on citrus.

13. Amblyseius (Amblyseius) swaga n. sp.
(Figs. 43, 44)

In *Amblyseius swaga* all of the setae on the postscutum are very small except for the fifth lateral setae, and the macrosetae on leg IV taper to a point. This species closely resembles *A. limonicus* Garman and McGregor, from California, except that the body is much smaller and the cervix of the spermatheca is pear-shaped rather than being long and slender.

Female.—Chelicera with chelae moderately developed, the movable digit multidentate, the fixed digit with several teeth. Dorsal shield smooth, with six pairs of pores. Dorsal shield with all setae very short except for moderately long vertical setae, somewhat longer first proscutal laterals, still longer fourth proscutal laterals, and strong, very slightly serrate fifth postscutal laterals. Peritremes extending beyond verticals. Ventri-anal plate slender, the lateral margins strongly concave; three pairs of pre-anal setae set close to-

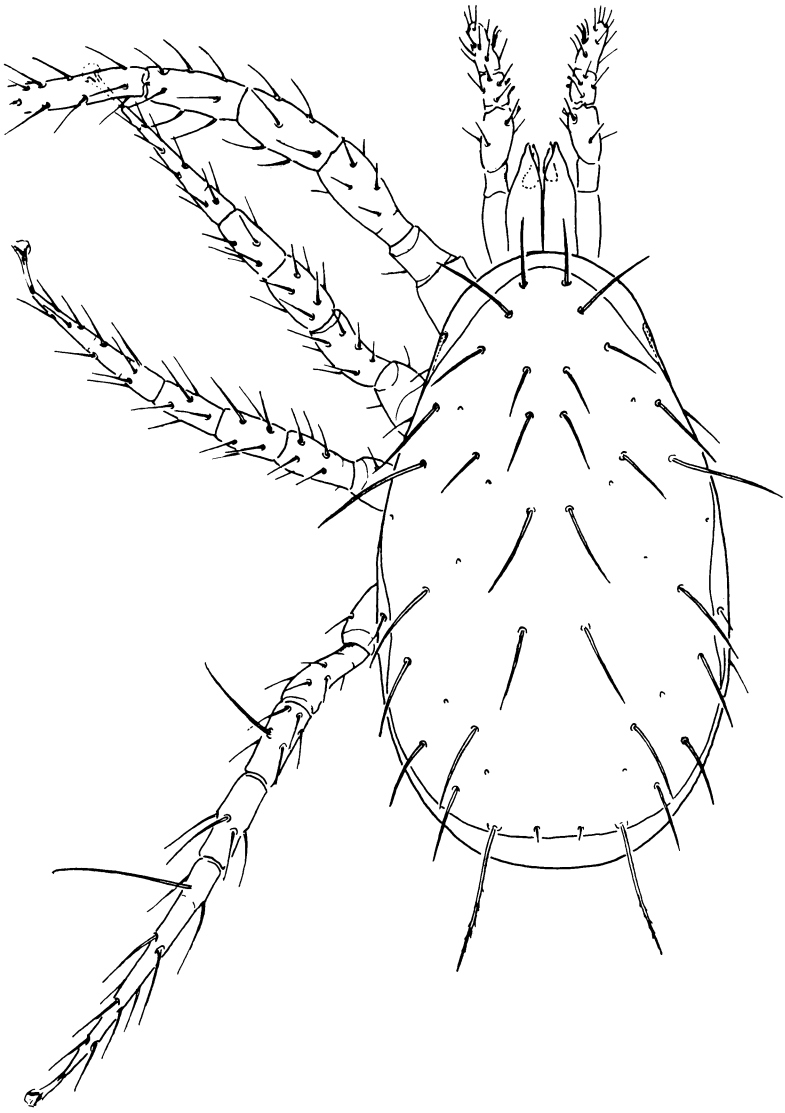


Fig. 41. *Amblyscius tutsi:* dorsal aspect of female.

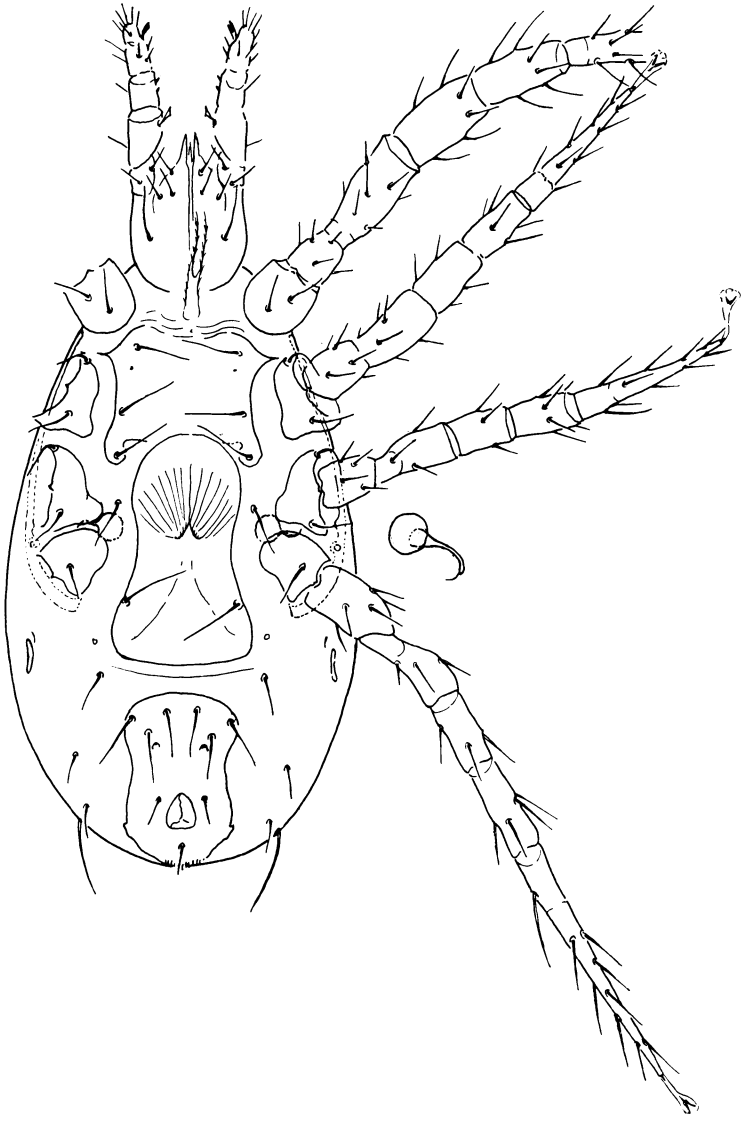


Fig. 42. *Amblyseius tutsi:* ventral aspect of female.

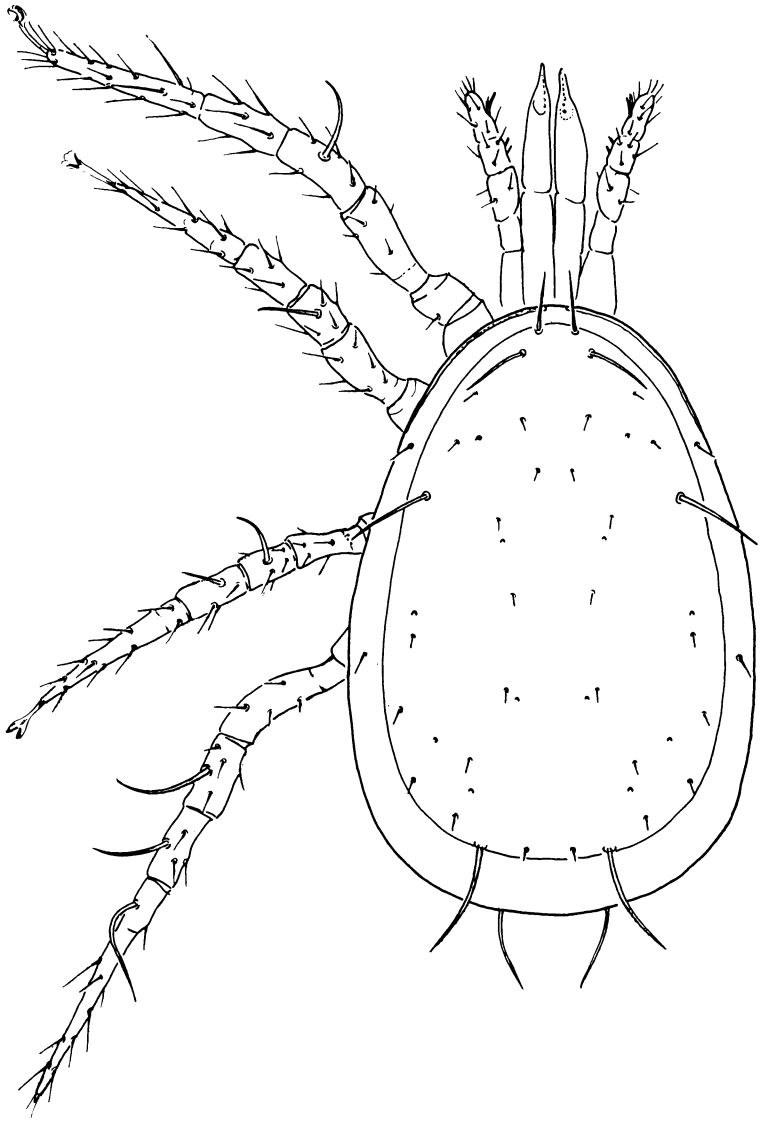


Fig. 43. *Amblyseius swaga:* dorsal aspect of female.

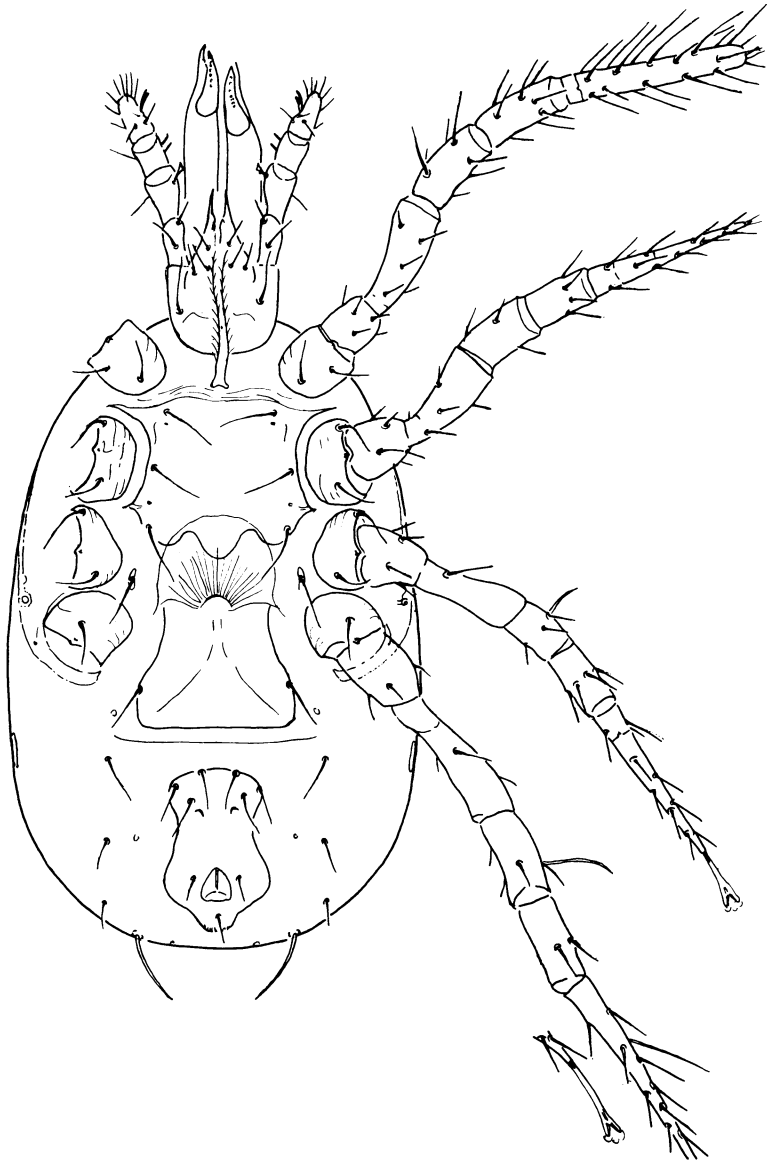


Fig. 44. *Amblyseius swaga:* ventral aspect of female.

gether, a pair of pores just inside of and caudad from middle pair of pre-anals. Three pairs of ventrolateral setae. Metapodal platelet long and slender. Sternal plate about as broad as long, its caudal margin trilobed; metasternal platelets separate. Spermatheca with cervix apparently pear-shaped. Genu IV with six short setae and a long, strong, acuminate seta; tibia IV with five short setae and a long, strong, acuminate seta; basitarsus IV with three short setae and a very long, strong, acuminate seta. Length of idiosoma 446μ; greatest width of body 274μ.

Male.—Spermatodactyl long and slender, obtusely bent, and terminating in a chelate enlargement. Dorsal shield with setae as in female. Ventri-anal plate with three pairs of pre-anal setae, the anterior pair located well cephalad from the other two pairs; a pair of pores located inside of and caudad from middle pair of pre-anals. Length of idiosoma 287μ; greatest width of body 165μ.

Holotype.—Female, Lubero, Belgian Congo, May 9, 1955 (E. W. Baker), on *Podocarpus usambarensis;* type no. 2711 in the U. S. National Museum.

Paratypes.—Four females, Nya Nya, Belgian Congo, April 28, 1955 (E. W. Baker), on *Bridelia micrantha.*

14. Amblyseius (Amblyseius) hum n. sp.
(Figs. 45, 46)

Amblyseius hum closely resembles *A. swaga,* from which it differs in that each of the macrosetae on leg IV has a nearly transparent, capitate (sometimes appearing mucronate) apex, and the cervix of the spermatheca is short and slender.

Female.—Chelicera with chelae moderately developed, the fixed digit with several teeth, the movable digit multidentate. Dorsal shield smooth, with five pairs of pores. Dorsum with all setae very short except for moderately long vertical setae, the first and fourth laterals progressively increasing in length, and the still longer and very slightly serrate ultimate laterals. Peritremes nearly reaching verticals. Ventri-anal plate vase-shaped, broadest at area of anus; three pairs of pre-anal setae, the anterior pair distant from the adjacent second and third pairs; a pore caudad from each member of the second pair. Three pairs of ventrolaterals. A single, linear metapodal platelet. Ventri-anal plate about as broad as long; the caudal margin with medio-lateral incisions; metasternal platelets separate. Spermatheca with a short and slender cervix. Genu IV with six short setae and a capitate macroseta; tibia IV with five short setae and a capitate macroseta; basitarsus IV with three short setae and a capitate macroseta. Length of idiosoma 382μ; greatest width of body 275μ.

Holotype.—Female, Leopoldville, Belgian Congo, April 16, 1955 (E. W. Baker), on tree; type no. 2712 in the U. S. National Museum.

Paratypes.—Two females, Leopoldville, Belgian Congo, April 16, 1955 (E. W. Baker), on tree; and 1 female, Stanleyville, Belgian Congo, April 20, 1955 (E. W. Baker), on *Ficus* sp.

15. Amblyseius (Amblyseius) lokele n. sp.
(Figs. 47, 48)

Amblyseius lokele has all the setae on the dorsal shield very short except for the vertical and caudolateral setae, and the cervix is a fairly broad, moderately long tube. This species is closely allied to *A. ovalis* (Evans), from Malaya, but the tritosternum bears long, moderately ciliate branches.

Female.—Chelicera with chelae rather short, the fixed digit unidentate, the movable digit with a tiny tooth. Tritosternum with long, tapering, moderately ciliate branches. Dorsal shield smooth, with six pairs of pores. Dorsal shield with vertical setae well developed and the caudolaterals long, slender, slightly serrate; all other dorsals very short, the first and fourth proscutal laterals being slightly longer. Peritremes extending to vertical setae. Ventri-anal plate slender, both the lateral margins and the caudolateral margins

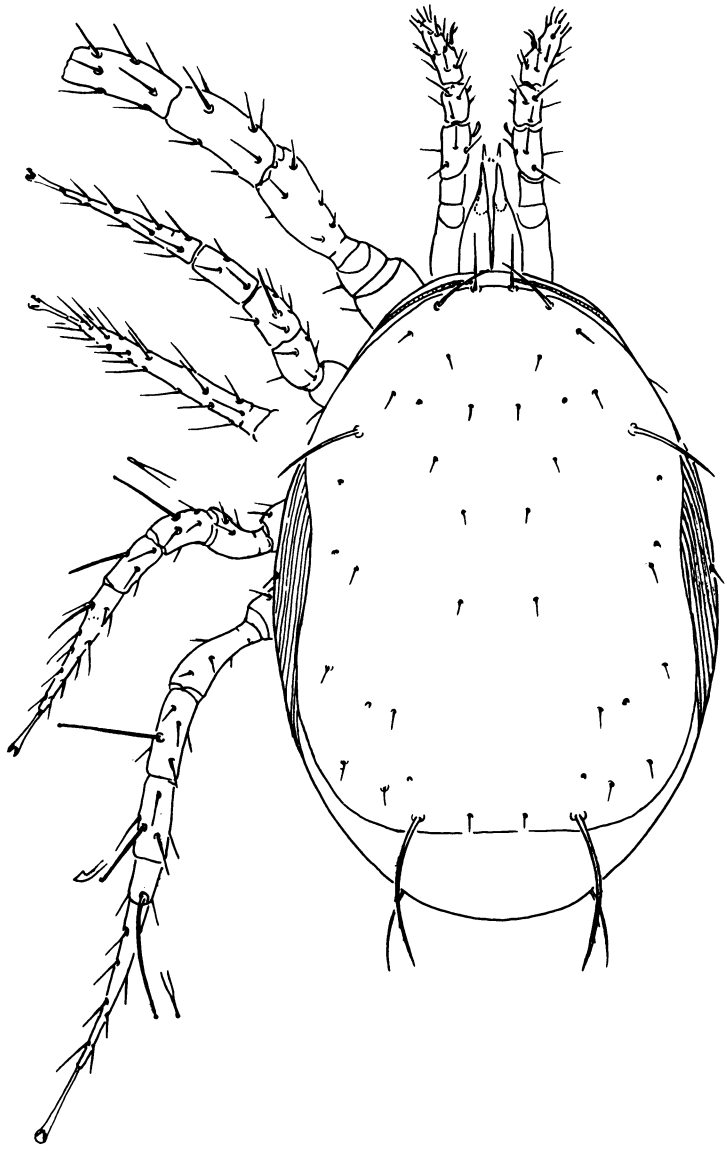


Fig. 45. *Amblyseius hum:* dorsal aspect of female.

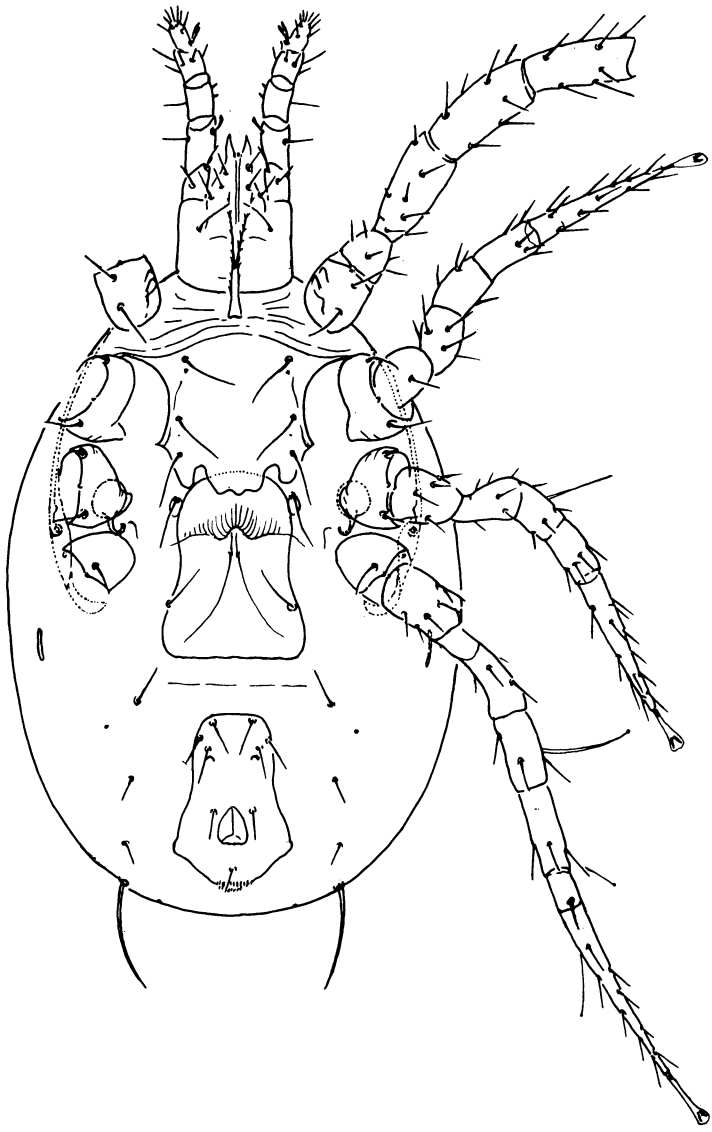


Fig. 46. *Amblyseius hum:* ventral aspect of female.

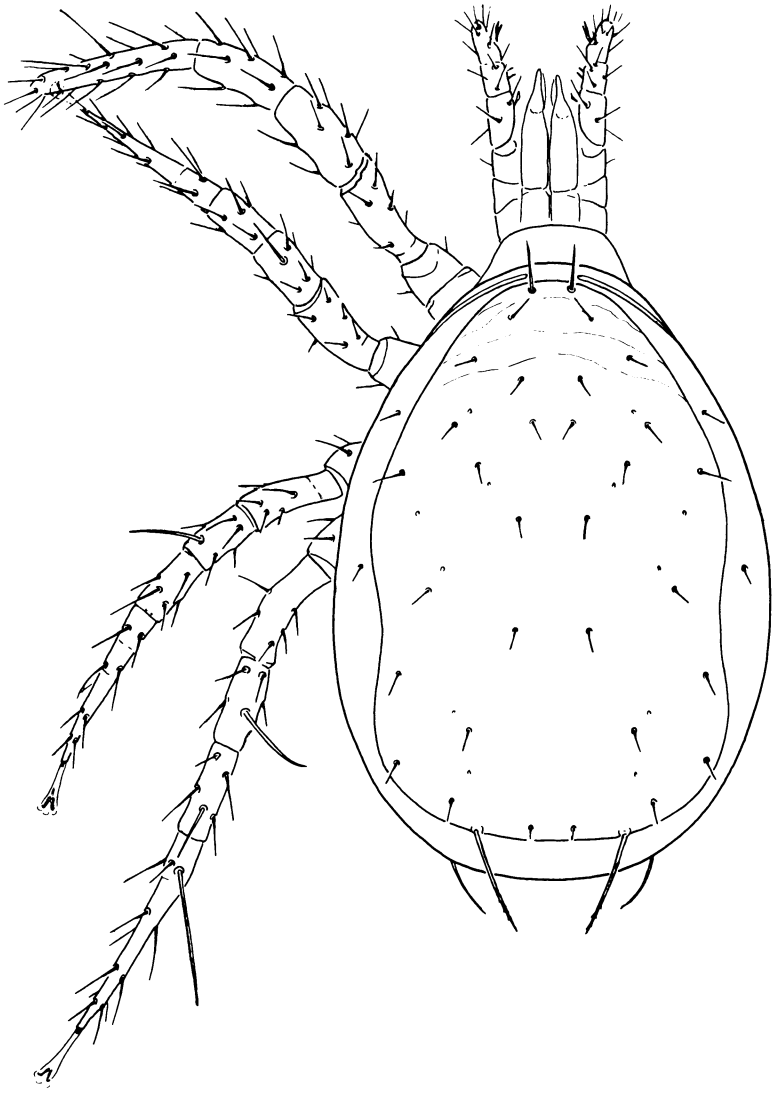


Fig. 47. *Amblyseius lokele:* dorsal aspect of female.

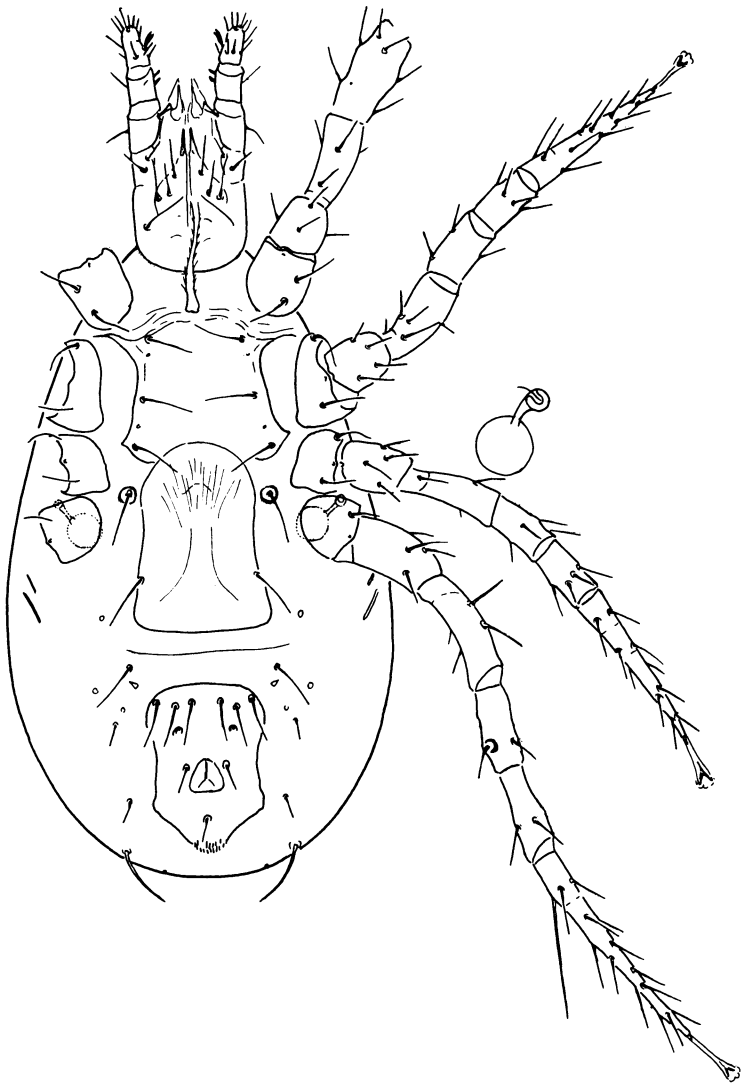


Fig. 48. *Amblyseius lokele:* ventral aspect of female.

concave; three pairs of pre-anal setae, the median seta on each side very slightly caudad from others; pores behind median setae on each side. Three pairs of ventrolaterals, the first pair the longest. Two slender metapodal platelets, the anterior one small. Sternal plate broader than long, the caudal margin concave; metasternal platelets small, separate. Spermatheca with cervix a fairly broad and rather long tube, the atrium short and bifid. Genu IV with six short setae and a long, tapering seta; tibia IV with five short setae and a moderately long, tapering seta; basitarsus IV with three short setae and a very long, tapering seta. Length of body 357μ; greatest width of body 230μ.

Male.—Spermatodactyl long, gently curved, bearing a dorsal tooth near tip and bifid distally. Dorsal shield with setae as in female. Ventri-anal plate with deep, irregular incisions laterad from pre-anal pores; three pairs of pre-anal setae, the median pair slightly cephalad from others; pores inside and caudad from middle pre-anal seta on either side. Length of idiosoma 236μ; greatest width of body 153μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 19, 1955 (E. W. Baker), on manioc; type no. 2713 in the U. S. National Museum.

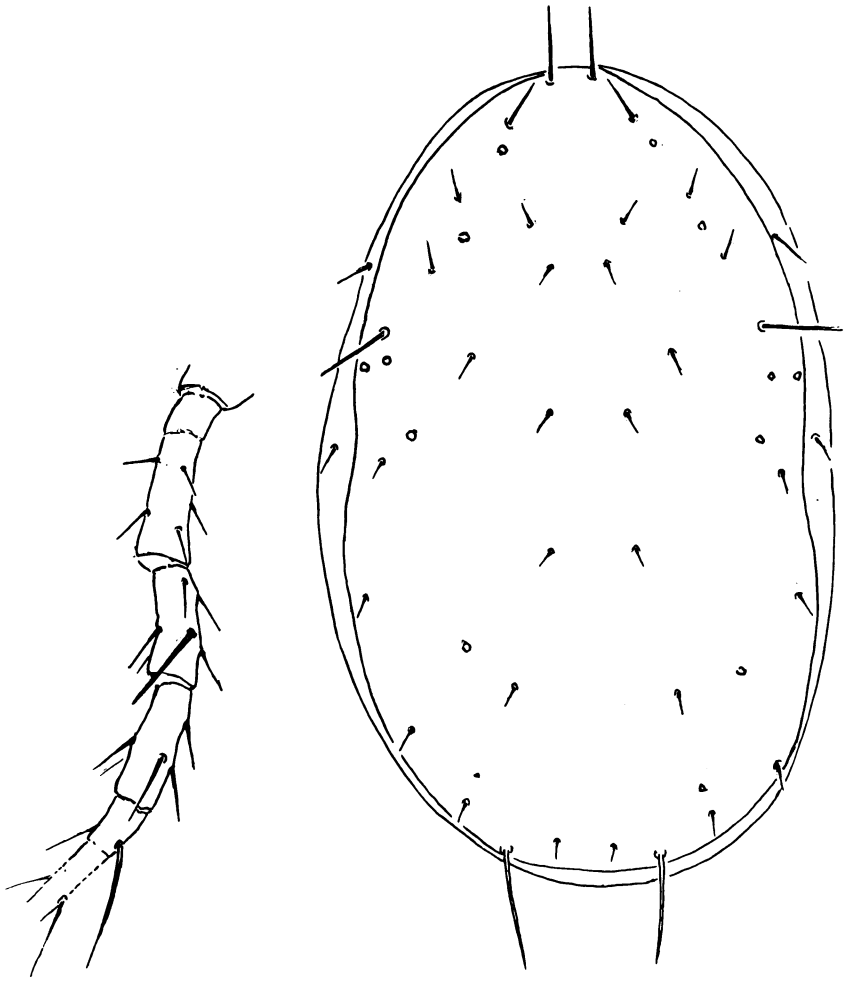


Fig. 49. *Amblyseius talinga:* dorsal aspect of female, and detail of leg IV.

Paratypes.—Two females, 2 males, Stanleyville, Belgian Congo, April 20, 1955 (E. W. Baker), on tree; 1 female, Lwiro, Belgian Congo, May 17, 1955 (E. W. Baker), on frangipani; 1 female, Lwiro, IRSAC, May 18, 1955 (E. W. Baker), on tree legume; 1 male, Stanleyville, Belgian Congo, April 20, 1955 (E. W. Baker), on *Ficus* sp.; and 2 males, Lubero, Belgian Congo, May 9, 1955 (E. W. Baker), on *Podocarpus usambarensis.*

16. Amblyseius (Amblyseius) talinga n. sp.
(Figs. 49, 50)

Amblyseius (*Amblyseius*) *talinga* is closely allied to *A. lokele* from which it differs in having the fourth pair of proscutal lateral setae more strongly developed, and the spermatheca with the cervix filamentous. The female differs from that of *A. ovalis* in that the median pair of pre-anal setae are cephalad from the other pre-anals.

Female.—Chelicera with digits short, the fixed digit unidentate. Tritosternum with branches short but with long cilia. Dorsal shield smooth, with seven pairs of pores. Dorsal

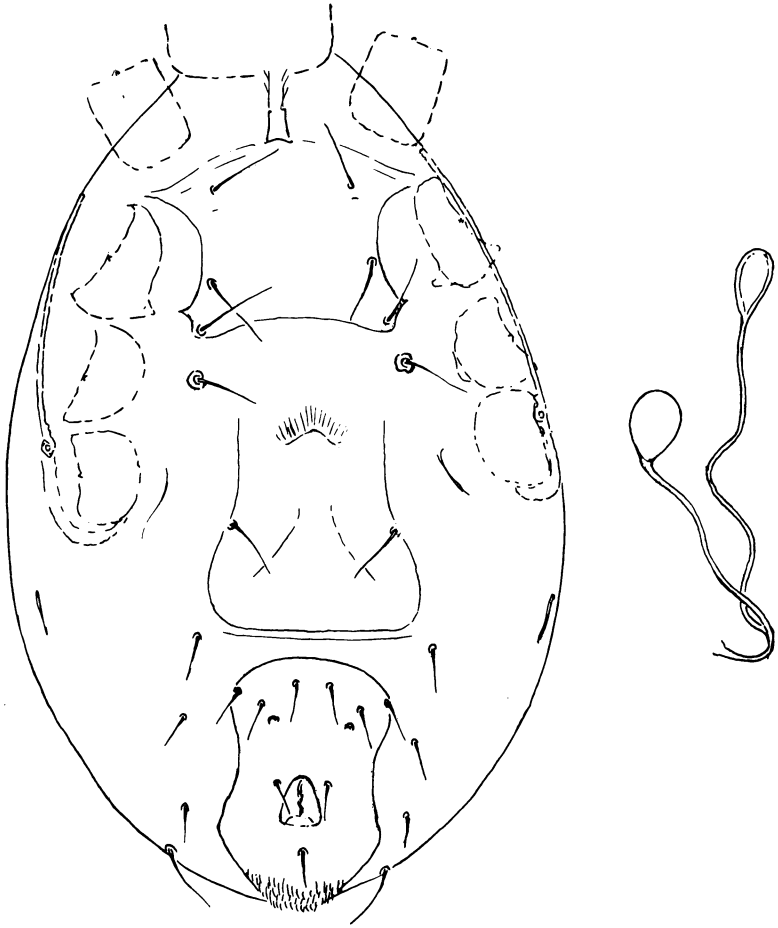


Fig. 50. *Amblyseius talinga:* ventral aspect of female.

shield with vertical setae and fourth proscutal laterals well developed and of similar length, the caudolaterals long, moderately stout and serrate; all other dorsal setae very short, the first proscutal laterals slightly longer. Peritremes extending to level of second proscutal laterals. Ventri-anal plate slender, the lateral margins concave; three pairs of pre-anals with the middle pair on either side slightly caudad from others; pores between and caudad from middle pre-anal setae on either side. Three pairs of ventrocaudals, the first pair the longest. A single pair of slender metapodal platelets. Sternal plate broader than long, the caudal margin concave; metasternal platelets indistinct, separate. Spermatheca with receptacle spherical; cervix filamentous, slightly wider proximally; atrium wider than tip of cervix, elongate and binodose. Genu IV with six short setae and a stout, tapering macroseta; tibia IV with five short setae and a longer, stout, tapering seta; basitarsus IV with three short setae and a stout, tapering macroseta. Length of idiosoma 331μ; greatest width of body 217μ.

Holotype.—Female, Beni, Belgian Congo, May 7, 1955 (E. W. Baker), on *Tithonia speciosa;* type no. 2714 in the U. S. National Museum.

17. Amblyseius (Amblyseius) bwende n. sp.
(Figs. 51, 52)

Amblyseius bwende differs from other species in the *ovalis* subgroup in that the macrosetae on leg IV are blunt and hyaline distally. The spermatheca has an elongate-ovate vesicle with a filamentous cervix.

Female.—Chelicera with chelae short, the fixed digit unidentate. Tritosternum with branches long and bearing long cilia. Dorsal shield smooth, with six pairs of pores. Dorsal shield with vertical setae well developed and the caudolaterals slightly longer but stout and serrate; other dorsal setae very short, but first and fourth proscutal laterals definitely longer. Peritremes reaching level of first proscutal laterals. Ventri-anal plate slender, the lateral margins slightly concave, the post-anal area triangular; three pairs of pre-anal setae, the middle one on either side being slightly caudad from the others; pores caudad from middle pre-anal seta on each side. Three pairs of ventrolaterals, the first pair the longest. One pair of slender metapodal platelets. Sternal plate about as broad as long; the caudal margin concave; metasternal platelets separate. Spermatheca elongate-ovate; cervix filamentous; atrium scarcely differentiated from cervix and major duct. Genu IV with six short setae and a blunt and hyaline-tipped macroseta; tibia IV with five short setae and a blunt macroseta; basitarsus IV with three short setae and a blunt macroseta. Length of idiosoma 363μ; greatest width of body 255μ.

Holotype.—Female, Leopoldville, Belgian Congo, April 10, 1955 (E. W. Baker), on ornamental (Acanthaceae); type no. 2715 in the U. S. National Muesum.

Paratypes.—Two females, Leopoldville, Belgian Congo, April 11, 1955 (E. W. Baker), on *Combretum* sp.; 1 female, Leopoldville, Belgian Congo, April 13, 1955 (E. W. Baker), on *Ficus* sp.; 6 females, Leopoldville, Belgian Congo, April 10, 1955 (E. W. Baker), on acanthaceous ornamental; and 3 males, 1 female, Leopoldville, Belgian Congo, April 12, 1955 (E. W. Baker), on papaya; 1 male, 7 females, Leopoldville, Belgian Congo, April 14, 1955 (E. W. Baker), on *Combretum* sp.

18. Amblyseius (Amblyseius) mba n. sp.
(Figs. 53, 54)

The female of *Amblyseius mba* closely resembles that of *A. bwende*, but the macrosetae on leg IV are acuminate, the caudolateral setae on the dorsal shield are longer and slenderer, and the vesicle of the spermatheca is much narrower.

Female.—Chelicera with chelae short, the fixed digit unidentate. Tritosternum with long, ciliate branches. Dorsal shield smooth, with at least five pairs of pores. Dorsal shield with vertical setae well developed and the caudolaterals over twice as long and tapering; other dorsal setae very short, the first and fourth proscutal laterals somewhat longer. Peritremes

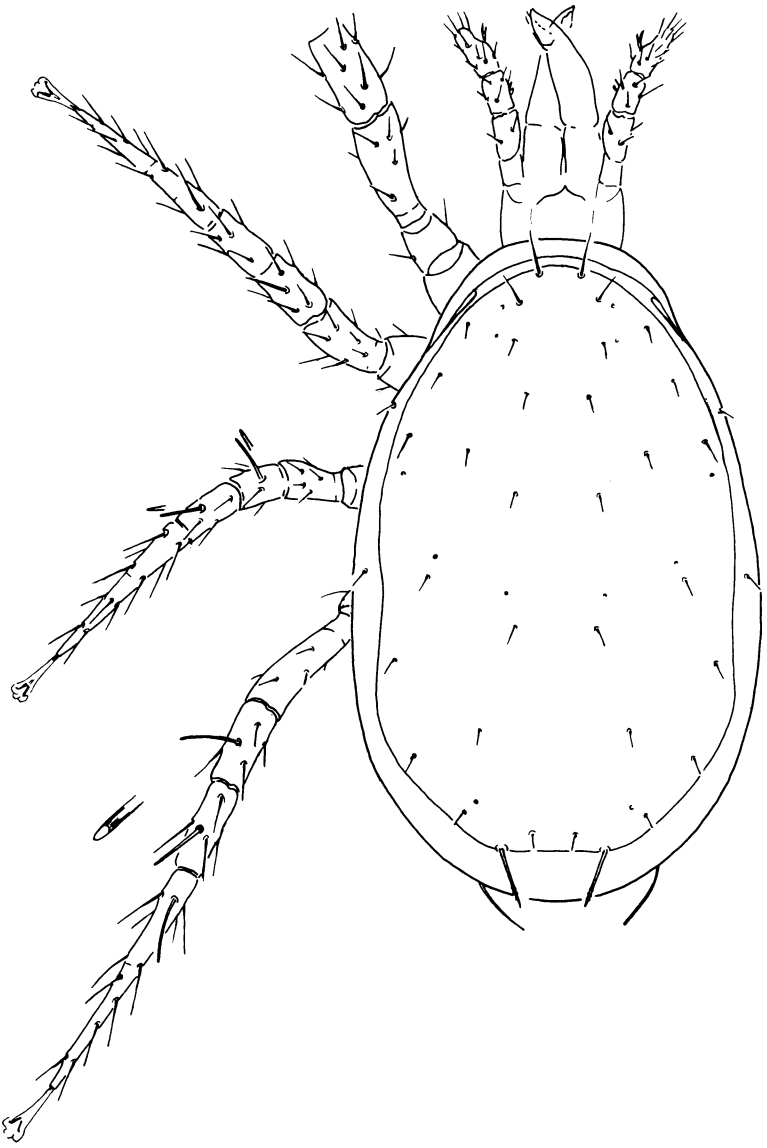


Fig. 51. *Amblyscius bwendc:* dorsal aspect of female.

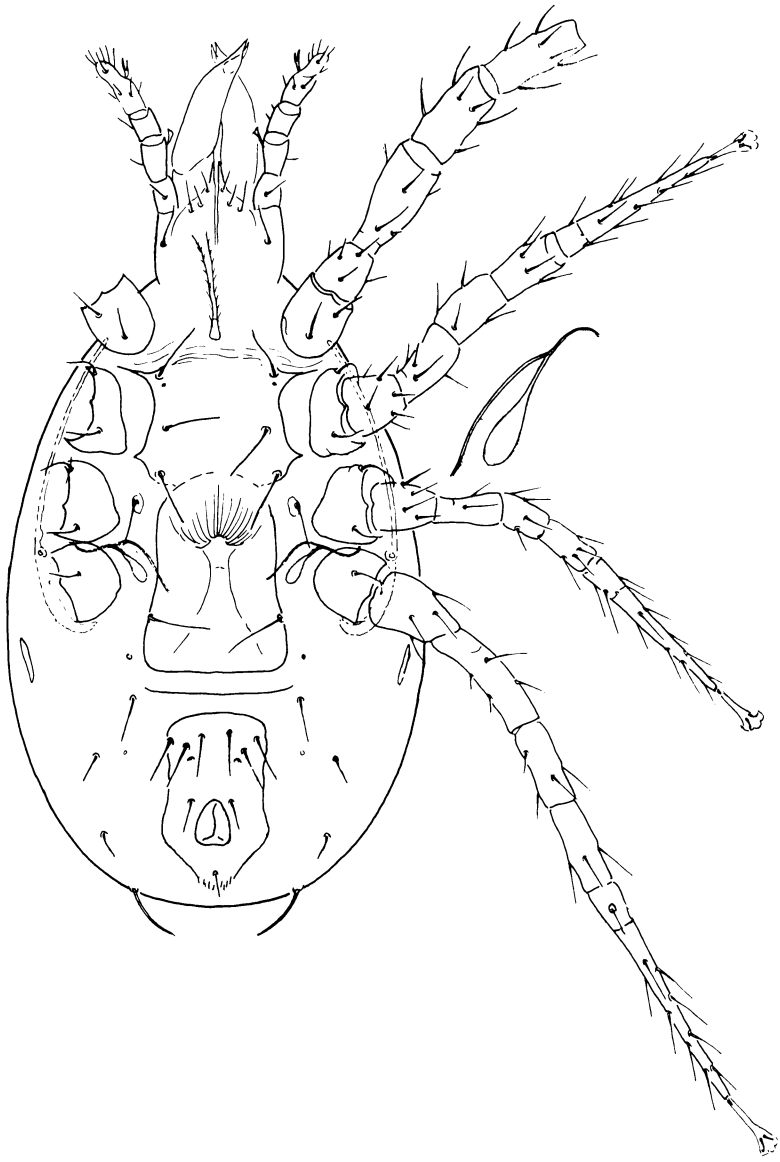


Fig. 52. *Amblyseius bwende:* ventral aspect of female.

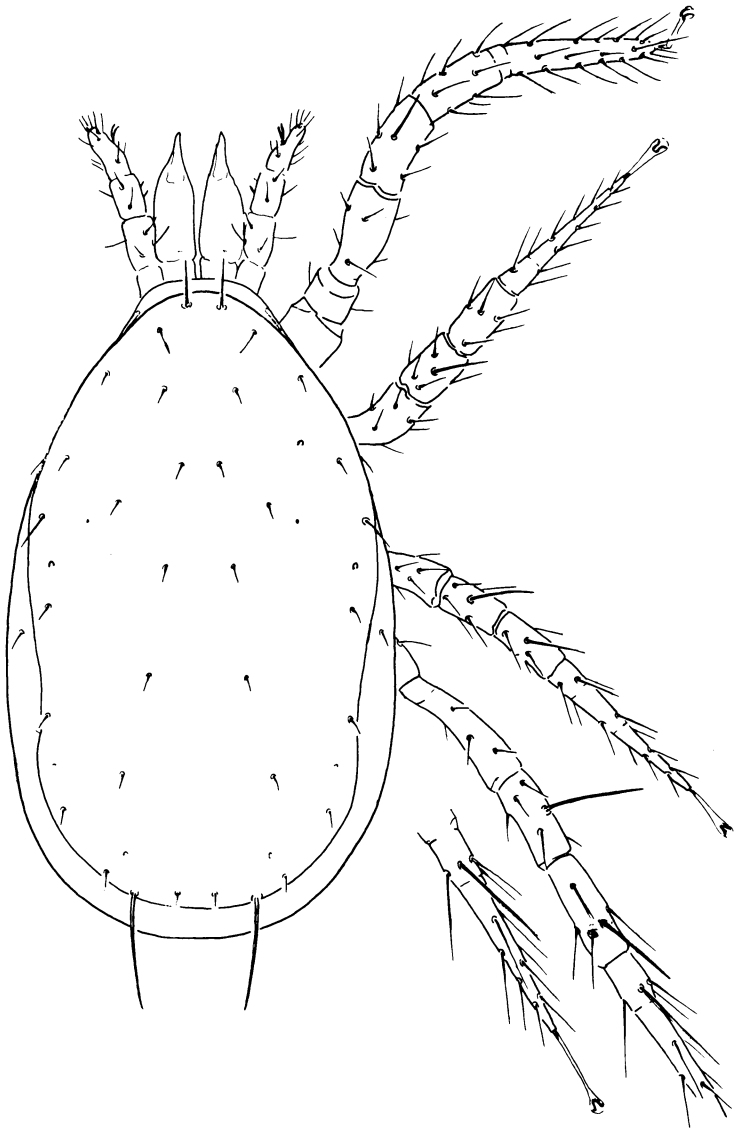


Fig. 53. *Amblyseius mba:* dorsal aspect of female.

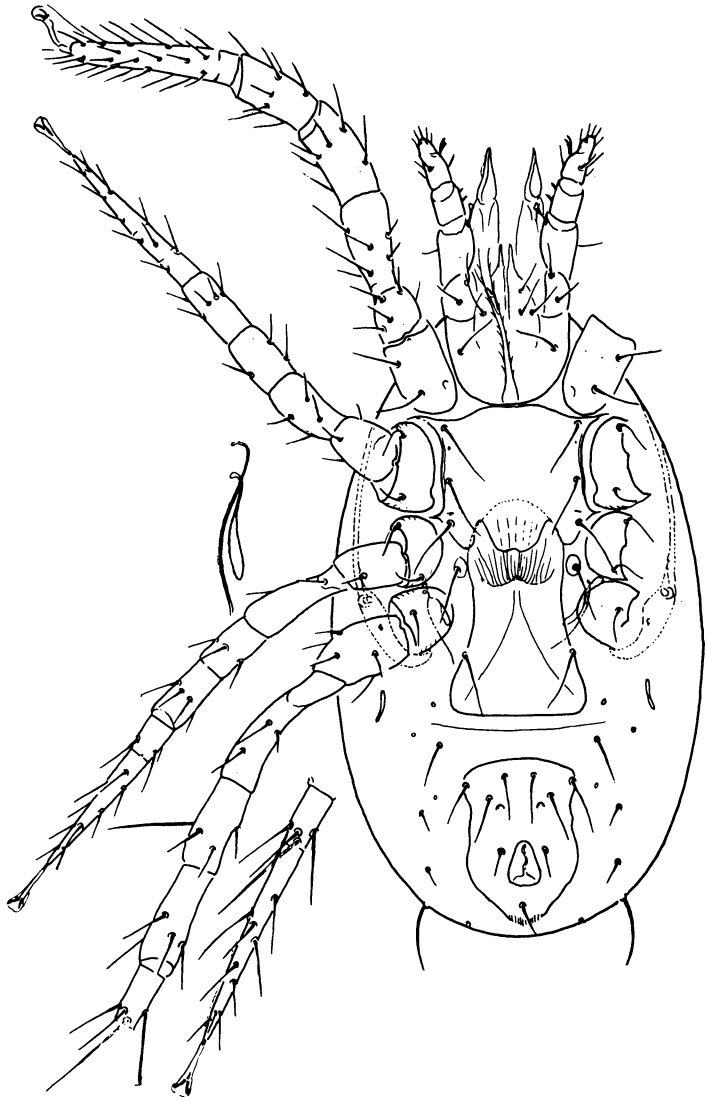


Fig. 54. *Amblyseius mba:* ventral aspect of female.

reaching level anterior to first proscutal laterals. Ventri-anal plate slender, the lateral margins concave; three pairs of pre-anal setae, the middle seta on each side slightly caudad from the others; pores inside and caudad from middle setae on each side. Three pairs of ventrolateral setae, the first pair the longest. A pair of slender metapodal platelets. Sternal plate about as long as broad, the caudolateral margin edentate on either side; metasternal platelets separate. Spermatheca with vesicle very slender; cervix filamentous; atrium short and transverse. Genu IV with six short setae and a pointed macroseta; tibia IV with five short setae and a shorter, pointed macroseta; basitarsus IV with three short setae and a very long, pointed macroseta. Length of idiosoma 338μ; greatest width of body 204μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Baphia* sp.; type no. 2716 in the U. S. National Museum.

Paratypes.—Two females, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Baphia* sp.

19. Amblyseius (Amblyseius) fustis n. sp.
(Figs. 55, 56)

Amblyseius fustis is distinctive in having two clubbed macrosetae on genu IV and three clubbed macrosetae on tibia IV. It is related to those species in the Findlandicus Group that have all the setae on the dorsal shield very short except for the verticals and caudolaterals.

Female.—Chelicera with chelae rather small, the fixed digit unidentate. Tritosternum with slender, fimbriate branches. Dorsal shield rather strongly reticulate, with eight pairs of pores. Dorsal shield with vertical setae well developed and caudolaterals long, stout, and slightly serrate; all other dorsal setae short, the first and fourth proscutal laterals being slightly longer. Peritreme reaching level of second proscutal lateral. Ventri-anal plate slender, both the lateral and the caudolateral margins concave; three pairs of pre-anal setae, the median pair being slightly caudad from the other two pairs; a pair of pores caudad from the median pre-anals. Three pairs of ventrolaterals, the first pair the longest. A single pair of slender metapodal platelets. Sternal plate broader than long, the caudal margin concave; metasternal setae separate, platelets lacking. Spermatheca with cervix a filamentous tube, the atrium small and short. Genu IV with five short setae and two strong, clubbed macrosetae, one being the longer; tibia IV with three tactile setae and three rather short, strong, clubbed setae; basitarsus IV with two tactile setae and two rather short, strong clubbed setae, one being the longer. Length of idiosoma 382μ; greatest width of body 270μ.

Male.—Spermatodactyl very long, gently curved, terminating in an outer nodule and a long inner tooth. Dorsal shield with setae as in female. Ventri-anal plate with three pairs of pre-anal setae, the median pair slightly caudad from others; pores inside and caudad from median pre-anals. Length of idiosoma 270μ; greatest width of body 178μ.

Holotype.—Female, Lwiro, IRSAC, Belgian Congo, May 18, 1955 (E. W. Baker), on tree legume; type no. 2717 in the U. S. National Museum.

Paratypes.—One male, 1 female, Lwiro, IRSAC, Belgian Congo, May 18, 1955 (E. W. Baker), on tree legume.

20. Amblyseius (Amblyseius) africanus (Evans)

Typhlodromus africanus Evans, 1954, Proc. Zool. Soc. Lond. 124:524.
Typhlodromus (*Amblyseius*) *africanus,* Chant, 1960, Canad. Ent. 91 (Suppl. 12): 96.

The ventri-anal plate of the female of *Amblyseius africanus* is vase-shaped, with one pair of pre-anal setae placed well caudad from the others. The setae on the dorsal shield are small except for well developed verticals, first and fourth laterals, the long caudolaterals, and the third postscutal laterals, which are about as long as the verticals.

This species is known only from Lyamungu, Tanganyika, on coffee leaves.

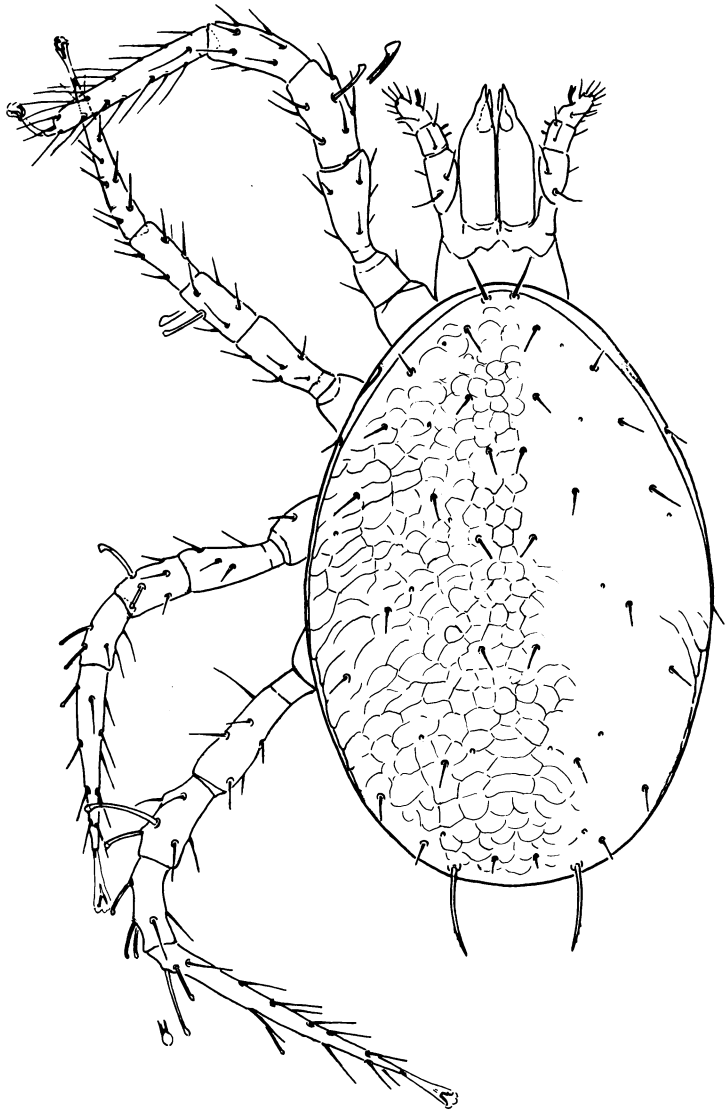


Fig. 55. *Amblyseius fustis:* dorsal aspect of female.

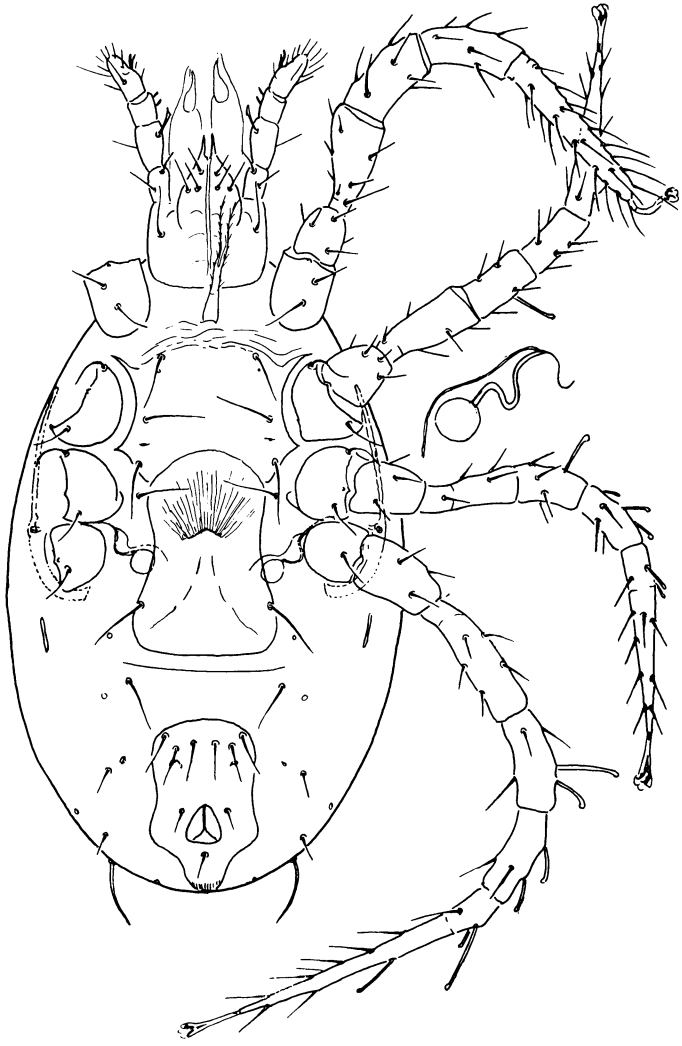


Fig. 56. *Amblyseius fustis:* ventral aspect of female.

21. Amblyseius (Amblyseius) ntandu n. sp.
(Figs. 57, 58)

Amblyseius ntandu differs from *A. africanus* principally in that the three pairs of pre-anal setae on the female ventri-anal plate are closely set in a nearly transverse line.

Female.—Chelicera with chelae rather small, the movable digit multidentate. Dorsal shield with a few furrows; with seven pairs of pores. Proscutum with vertical setae moderately developed, the first laterals similar to the verticals in length and the fourth laterals somewhat longer; other setae short, the second and third laterals slightly longer. Postscutum with second laterals similar in length to verticals, the third laterals much longer and stronger, and the fifth laterals very long and strong; other setae short. Peritremes extending to vertical setae. Ventri-anal plate vase-shaped, broadest at level of anus; three pairs of pre-anal setae, the median pair slightly anterior to the others; pores behind the middle pre-anal setae on each side. Three pairs of ventrolateral setae. A single elongate-elliptic metapodal platelet. Sternal plate about as broad as long, the caudal margin deeply incised on either side; metapodal platelets separate. Spermatheca with cervix bulbous, the atrium a small, narrow tube. Genu IV with six short setae and a stout, tapering macroseta; tibia IV with five short setae and a slightly longer, stout, tapering seta; basitarsus IV with three short setae and a tapering macroseta. Length of idiosoma 330μ; greatest width of body 242μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *?Bixa* leaf; type no. 2718 in the U. S. National Museum.

Paratype.—One female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker). on *?Bixa* leaf.

22. Amblyseius (Amblyseius) dossei n. sp.
(Figs. 59, 60)

All of the lateral setae on the dorsal shield, except the first pair on the proscutum, are well developed on *Amblyseius dossei*, and the vase-shaped ventri-anal plate of the female has the pre-anal setae placed in a nearly transverse line. *A. hibisci* (Chant), from the western United States and Central America, possesses similar characters; but in *A. dossei* the macrosetae on leg IV are capitate rather than pointed and the cervix of the spermatheca is very broad rather than a narrow tube.

Female.—Chelicera with chelae short, the movable digit unidentate. Dorsal shield nearly smooth; with six pairs of pores. Proscutum with vertical setae similar in length to first and third laterals, the second laterals shorter, the fourth laterals longer; dorsocentrals and mediolaterals short. Postscutum with dorsocentral pair, mediolaterals, and first laterals short; second, third, and fourth laterals much longer and stout; the fifth laterals very long and stout. Peritremes extending to level between verticals and first dorsolaterals. Ventri-anal plate vase-shaped and broadest at level of anus; three pairs of pre-anal setae, with the outer pair placed slightly anterior to the other setae; pore inside and caudad from middle pre-anal seta on either side. Three pairs of ventrolaterals. A single slender metapodal platelet. Sternal plate about as long as broad, the caudolateral margin incised on either side; metasternal platelets separate. Spermatheca with cervix broad, about twice as long as wide and slightly narrowing; atrium very small. Genu IV with six short setae and a long, capitate seta; tibia IV with five short setae and a shorter, knobbed macroseta; basitarsus IV with three short setae and a very long, capitate macroseta. Length of idiosoma 350μ; greatest width of body 255μ.

Male—Spermatodactyl rather stout, curved, apparently bifid near tip. Dorsal shield with setae as in female. Ventri-anal plate with three pairs of pre-anal setae arranged almost in a transverse line; a pore in area caudad from inner and middle setae on each side. Length of idiosoma 268μ; greatest width of body 178μ.

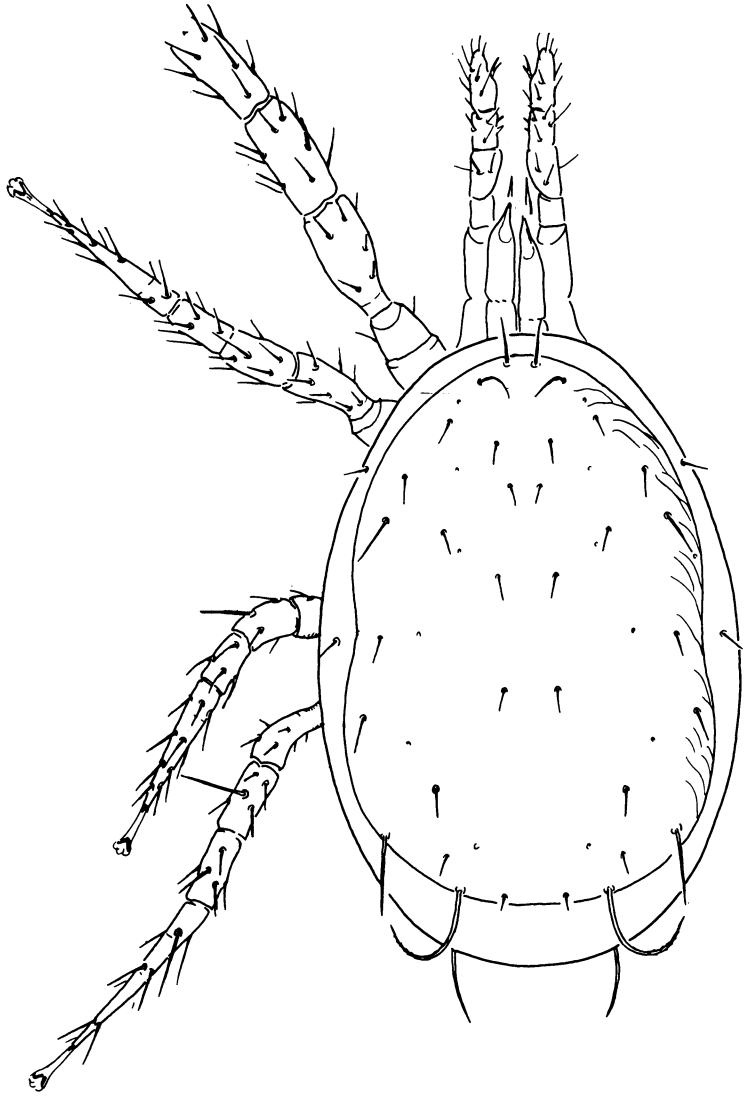


Fig. 57. *Amblyseius ntandu:* dorsal aspect of female.

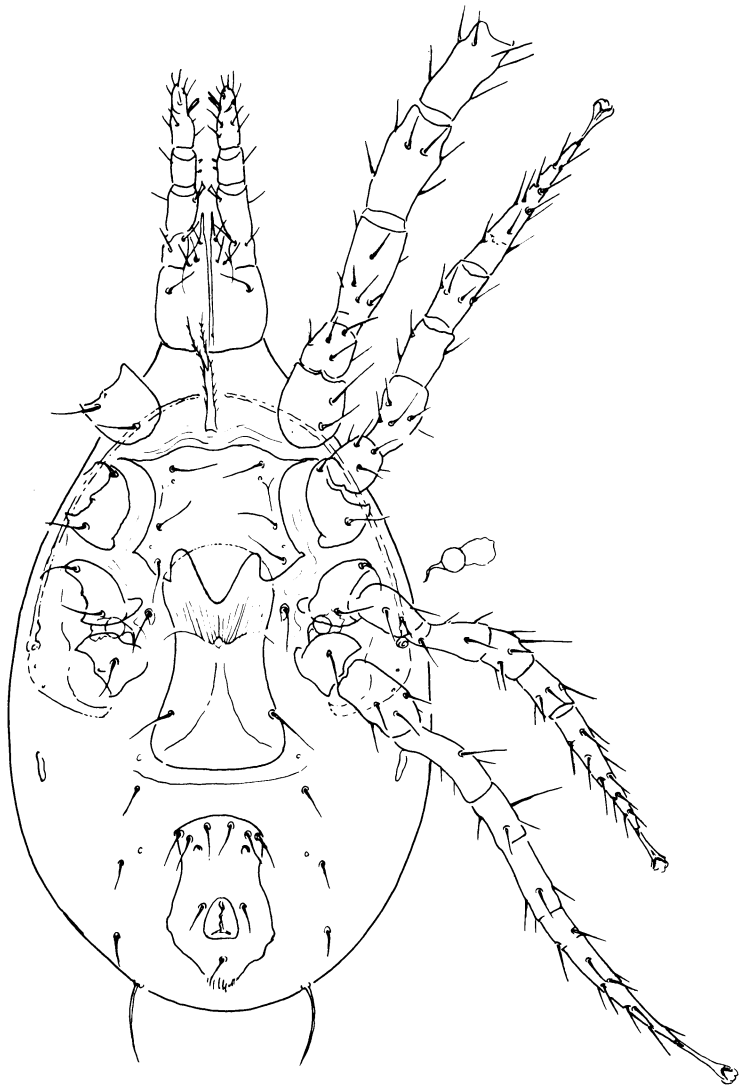


Fig. 58. *Amblyscius ntandu:* ventral aspect of female.

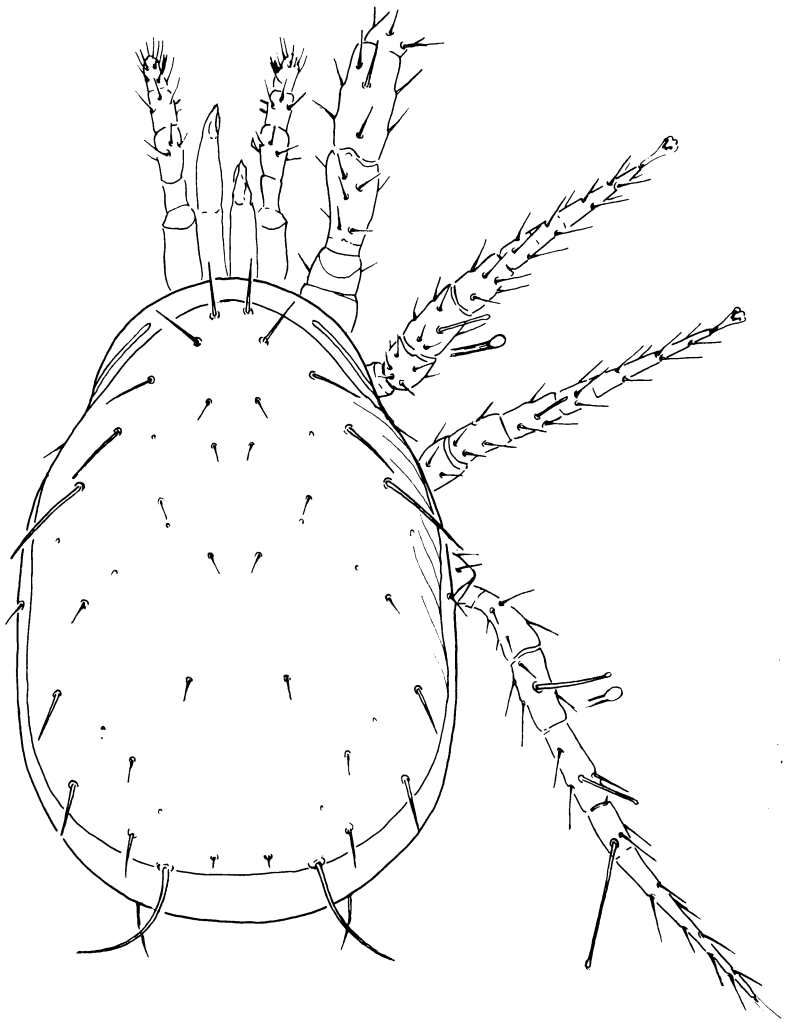


Fig. 59. *Amblyseius dossei:* dorsal aspect of female.

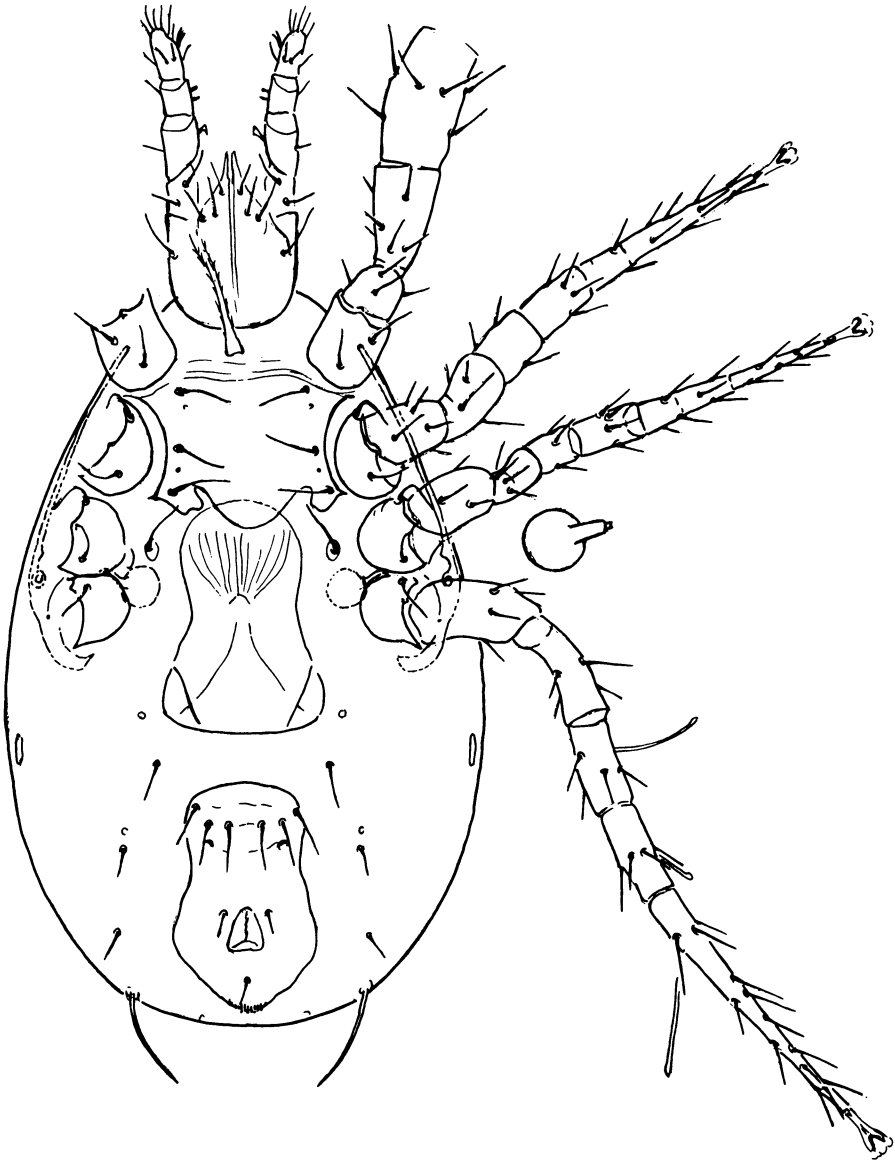


Fig. 60. *Amblyseius dossei:* ventral aspect of female.

Holotype.—Female, Leopoldville, Belgian Congo, April 11, 1955 (E. W. Baker), on large tree; type no. 2719 in the U. S. National Museum.

Paratypes.—Two males, six females, Leopoldville, Belgian Congo, April 14, 1955 (E. W. Baker), on lemon leaf; 2 females, Leopoldville, Belgian Congo, April 11, 1955 (E. W. Baker), on *Combretum* sp.; 9 males, 6 females, Leopoldville, Belgian Congo, April 13, 1955 (E. W. Baker), on ornamental; 3 females, Leopoldville, Belgian Congo, April 13, 1955 (E. W. Baker), on *Ficus* sp.; 1 male, 2 females, Leopoldville, Belgian Congo, April 15, 1955 (E. W. Baker), on orange leaf; and 1 male, 1 female, Leopoldville, Belgian Congo, April 12, 1955 (E. W. Baker), on fern; 1 male, Leopoldville, Belgian Congo, April 10, 1955 (E. W. Baker), on raffia palm; 1 female, Leopoldville, Belgian Congo, April 9, 1955 (E. W. Baker), on euphorbiaceous plant.

This species is named in honor of Dr. Gudo Dosse.

SUBGENUS AMBLYSEIELLA MUMA

Amblyseiella Muma, 1955, Ann. Ent. Soc. Amer. 48: 266. Type: *A. setosa* Muma, by original designation and monobasic.

The subgenus *Amblyseiella* is characterized by having the fourth pair of lateral setae on the postscutum absent, with the third pair present and mated transversely with the mediolateral setae.

As here defined, *Amblyseiella* contains three species previously described: *setosus* (Muma), from Florida; *isotrichus* (Athias-Henriot), from Algeria; and *rusticanus* (Athias-Henriot, 1960), from Algeria; and the following new species.

Amblyseius (Amblyseiella) athiasae n. sp.
(Figs. 61, 62)

Amblyseius (*Amblyseiella*) *athiasae* differs from *A. setosus* in that the ventri-anal plate of the female bears three pairs of pre-anal setae, and from *A. isotrichus* in that a single pair of mediolateral setae is present on the postscutum.

Female.—Chelicera with chelae moderately developed, the fixed digit multidentate, and the movable digit with six strong teeth. Dorsal shield moderately sculptured, with eight pairs of pores, and with all setae stout and strongly serrate. Vertical setae moderately developed; second laterals somewhat shorter; first two dorsocentrals and proscutal mediolaterals still shorter; last two dorsocentrals and first and third laterals similar to verticals; first and fourth proscutal laterals and second postscutal laterals and the single postscutal mediolaterals all distinctly longer than verticals, and caudolaterals still longer. Peritremes reaching verticals. Ventri-anal plate slender, the pre-anal area with lateral margins slightly concave, bearing three pairs of setae and a pair of pores between and just caudad from posterior pair of setae. Three pairs of ventrolaterals, the caudal pair longest and stoutest. A single pair of slender metapodal platelets. Sternal plate longer than broad, the caudal margin strongly convex and deeply incised on either side; metasternal setae separate, platelets lacking. Spermatheca with vesicle sclerotized, forming with the cervix a slender, pear-shaped organ narrowing into the very slender atrium. Genu IV with a long, stout, tapering seta with a tiny knob at the tip, and six short setae; tibia IV with a shorter, stout, tapering macroseta and five short setae; basitarsus IV with a very long, stout, tapering seta with a tiny knob at the tip, and three short setae. Length of idiosoma 338μ; greatest width of body 204μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 20, 1955 (E. W. Baker), on tree; type no. 2720 in the U. S. National Museum.

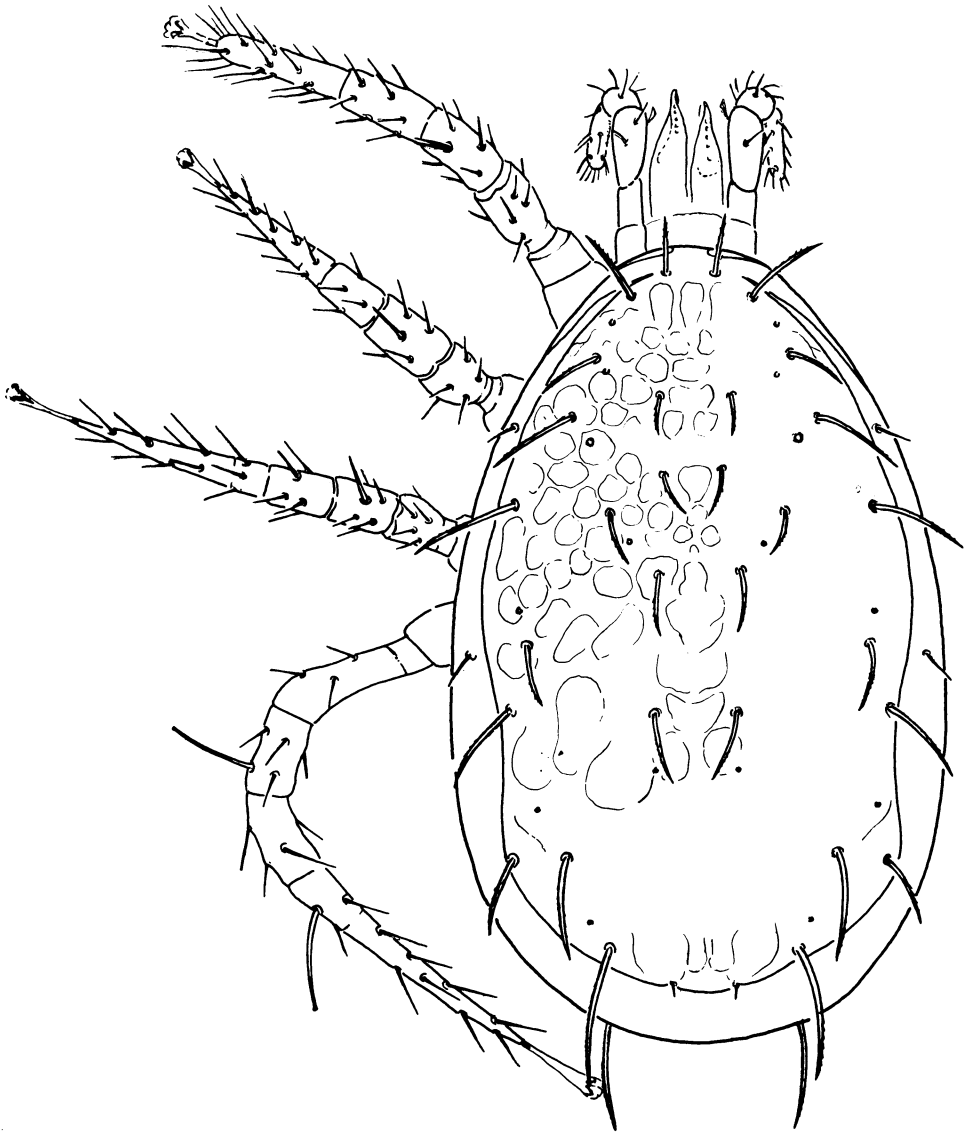


Fig. 61. *Amblyseius athiasae:* dorsal aspect of female.

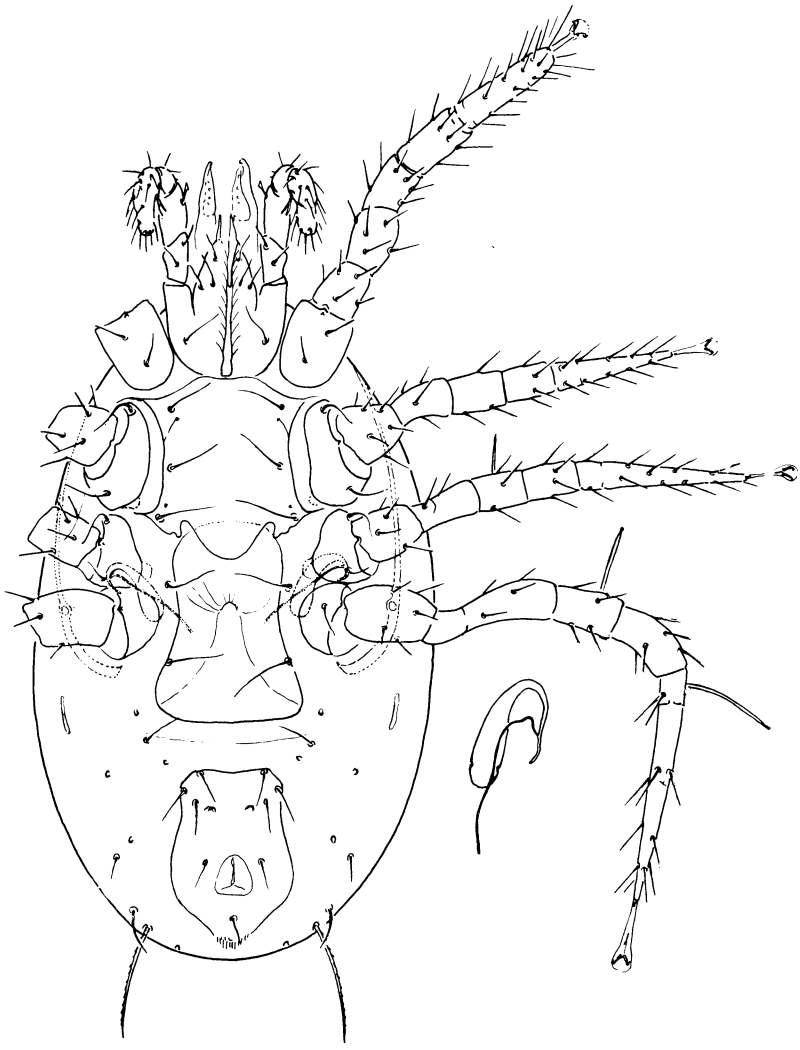


Fig. 62. *Amblyseius athiasae:* ventral aspect of female.

Paratype.—One female, Ruwinzori, Belgian Congo, May 6, 1955 (E. W. Baker), on *Hoslundia opposita.*

This species is named in honor of Mrs. C. Athias-Henriot.

SUBGENUS KAMPIMODROMUS NESBITT

Kampimodromus Nesbitt, 1951, Zool. Verh. 12: 52. Type: (*Typhlodromus elongatus* Oudemans) = *A. (K.) aberrans* (Oudemans), by original designation.

The subgenus *Kampimodromus* is characterized by the absence of the third pair of lateral setae on the postscutum, leaving the two pairs of setae anterolaterally on the postscutum and two adjacent pairs of setae caudolaterally.

As here defined, *Kampimodromus* includes two species: *Amblyseius aberrans* (Oudemans) which is probably a species complex, from Europe and North America, and *A. irregularis* Evans, from Malaya. This subgenus is not yet known in the Ethiopian Region.

Typhlodromus pilosus Chant might be referred to *Amblyseius* (*Kampimodromus*). This species differs from those included in the *aberrans* complex of the subgenus *Kampimodromus* by the absence of the posterior pair of sublateral setae.

SUBGENUS PHYTOSEIULUS EVANS

Phytoseiulus Evans, 1952, Bul. Ent. Res. 43: 397; Athias-Henriot, 1957, Bul. Soc. Hist. Nat. Afr. Nord 48: 345; Chant, 1960, Canad. Ent. 91 (suppl. 12): 108. Type: (*P. spcyeri* Evans) = *A. (P.) macropilis* (Banks), by original designation and monobasic.

The subgenus *Phytoseiulus* is distinctive in that the third pair of dorsocentral setae are longer than any of the other setae on the dorsal shield. The arrangement of the setae on the postscutum is also distinctive in that there is a single pair of anterolateral setae, the second pair of lateral setae being absent, and one or two pairs of adjacent caudolateral setae, the third (or second and third) pair of caudolaterals being absent. The dorsum of the body is strongly convex, and the mediolateral pair of setae on the postscutum are well developed.

A single species is known from the Ethiopian Region.

Amblyseius (Phytoseiulus) longipes (Evans)

Phytoseiulus longipes Evans, 1958, Jour. Ent. Soc. So. Afr. 21: 307.

Amblyseius longipes differs from the other species of the subgenus *Phytoseiulus* in that the penultimate setae on the postscutum are absent, leaving only the ultimate pair caudolaterally. The posterior submarginal setae are long and serrate, and the ventri-anal plate of the female bears three pairs of pre-anal setae.

This species is known only from Salisbury, Southern Rhodesia, on foxglove.

SUBGENUS PROPRIOSEIUS CHANT

Proprioseius Chant, 1957, Canad. Ent. 89: 357; Chant, 1960, Canad. Ent. 91 (suppl. 12): 111. Type: *P. meridionalis* Chant, by original designation. *New synonomy.*

The subgenus *Proprioseius* is characterized by having the postscutum with a single pair of anterolateral setae, the first pair of postscutal lateral setae

being absent, and two pairs of adjacent setae caudolaterally, the third pair of postscutal lateral setae being absent.

As here defined *Proprioseius* includes *Amblyseius meridionalis* Chant, from Florida; *A. clancyi* Chant, from West Virginia; *A. mirandai* De Leon, from Mexico; and *A. oudemansi* (Chant), from eastern North America. This subgenus is not yet known in Africa.

SUBGENUS ASPEROSEIUS CHANT

Asperoseius Chant, 1957, Canad. Ent. 89: 360; Chant, 1960, Canad. Ent. 91 (suppl. 12): 111. Type: *A. africanus Chant,* by original designation and monobasic. *New synonomy.*

The subgenus *Asperoseius* is characterized by having the third and fourth pairs of lateral setae on the postscutum absent, leaving the first and second pairs anterolaterally and the fifth pair caudolaterally.

As here defined *Asperoseius* includes *Amblyseius africanus* Chant, from South Africa, as well as *A. heveae* (Oudemans) and *A. hevearum* (Oudemans), from Sumatra. On the basis of Chant's (1957*a*) redescription of the dorsal chaetotaxy of *Amblyseius grandis* Berlese, this species also belongs to *Asperoseius.*

Amblyseius (Asperoseius) africanus (Chant)

Asperoseius africanus Chant, 1957, Canad. Ent. 89: 360; Chant, 1960, Canad. Ent. 91 (suppl. 12): 111.

This species is distinctive in having the lateral setae and the third pair of dorsocentral setae on the dorsal shield stout, subclavate, and strongly serrate. The specimens described by Chant were intercepted on cut flowers imported from South Africa into the United States.

PTENOSEIUS, NEW SUBGENUS

Type of subgenus: *Amblyseius* (*Ptenoseius*) *horrifer* n. sp.

The subgenus *Ptenoseius* bears four pairs of lateral setae on the proscutum and two pairs of sublateral setae on the membrane as in *Amblyseius.* However, the postscutum is distinctive in the family in that it bears only two pairs of lateral setae, the anterolateral pair and the caudolateral pair. The dorsal plate is also distinctively notched opposite the fourth proscutal lateral.

Amblyseius (Ptenoseius) horrifer n. sp.
(Figs. 63, 64)

Amblyseius horrifer is very distinctive because the first and fourth proscutal lateral setae, and the postscutal mediolateral and caudolateral setae are very long, stout, and with small, sharp serrations, whereas the other dorsocentral and lateral setae are minute.

Female.—Chelicera with chelae moderately developed, the fixed digit tridentate and the movable digit multidentate. Dorsal shield slender, nearly flat and not covering dorsum, smooth; with a pair of well-developed pores between and just caudad from proscutal mediolateral setae and with four pairs of smaller pores. Verticals moderately developed; first proscutal laterals and postscutal laterals long, stout, tapering; candolaterals similar but longer; and fourth proscutal laterals very long, stout, tapering; other setae on dorsal

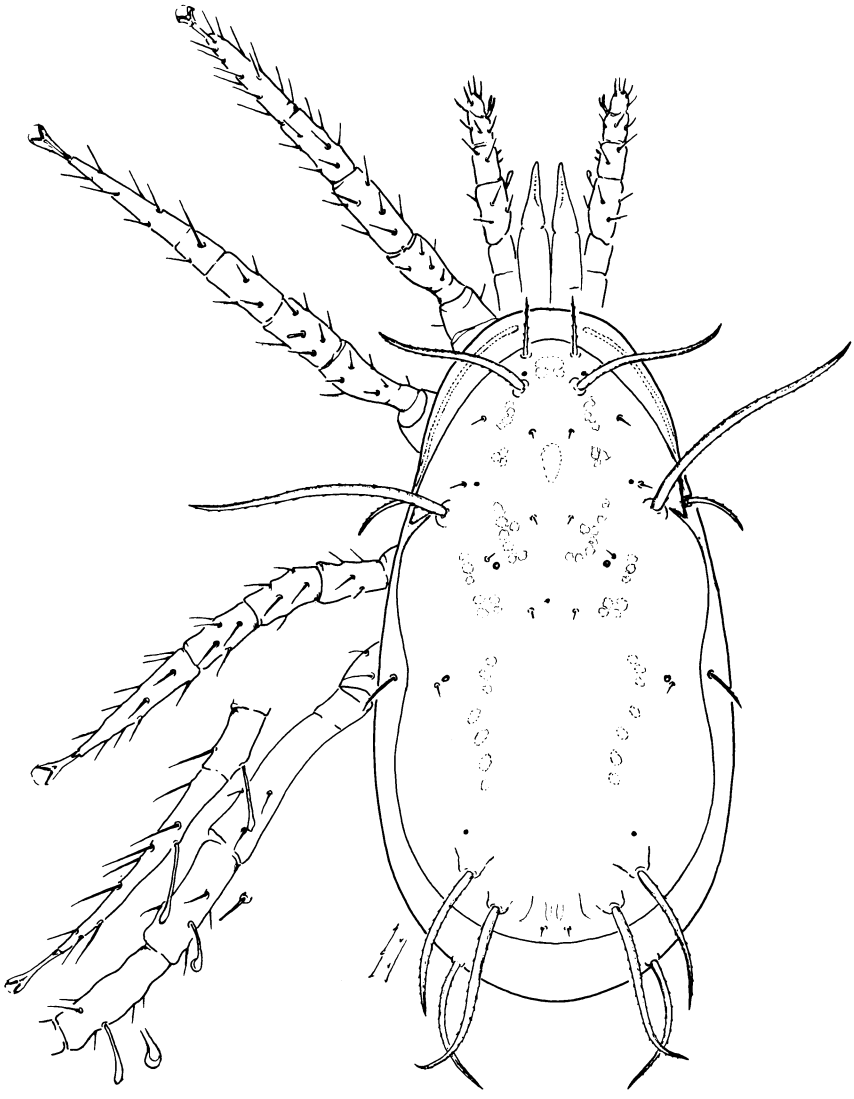


Fig. 63. *Amblyseius horrifer:* dorsal aspect of female.

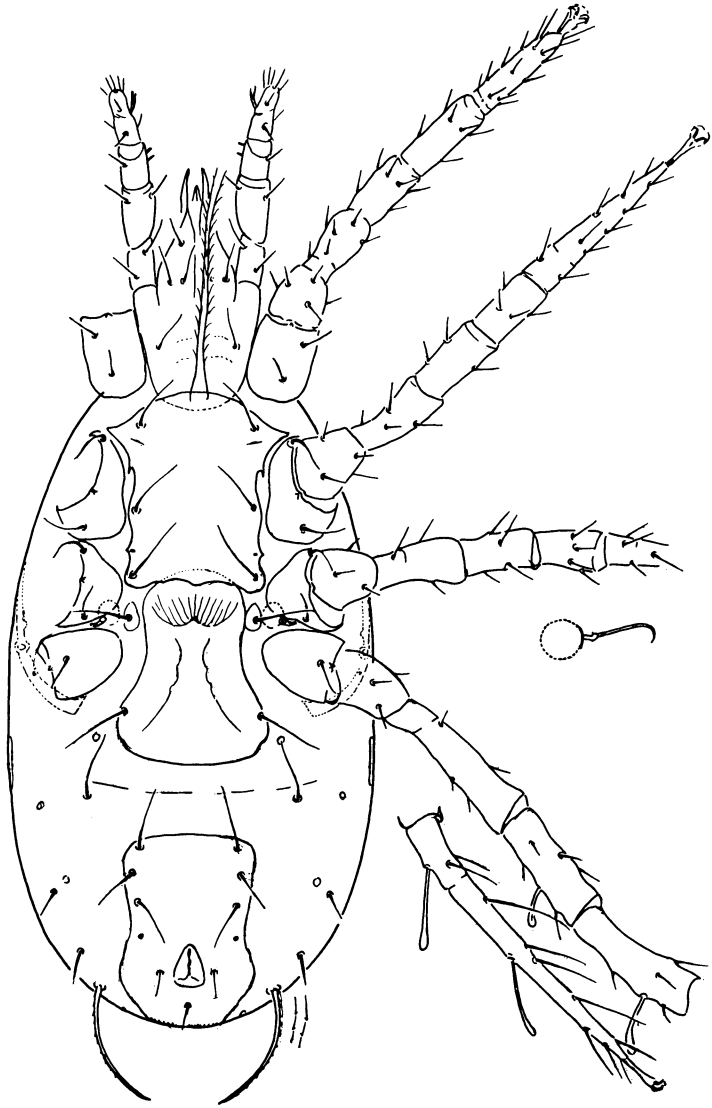


Fig. 64. *Amblyseius horrifer:* ventral aspect of female.

shield minute; anterior sublaterals similar to verticals, the posterior sublaterals smaller. Peritremes extending to verticals. Ventri-anal plate with pre-anal area slender, the lateral margins concave, bearing three pairs of anterolateral setae and a caudolateral pore on either side. Three pairs of ventrolateral setae, the first much longer. One very slender pair of metapodal platelets. Sternal plate much longer than wide, the metasternal platelets separate. Spermatheca with cervix a shallow arc; atrium a short, narrow, sigmoid chamber; major duct distinct. Genu IV with a distally widened seta of medium length and six short setae; tibia IV with a long, spatulate seta and five short setae; basitarsus IV with a long, spatulate seta and three short setae; distitarsus also with a macroseta. Length of idiosoma 351μ; greatest width of body 190μ.

Holotype.—Female, Ruwinzori, Belgian Congo, May 6, 1955 (E. W. Baker), on *Hoslundia opposita;* type no. 2721 in the U. S. National Museum.

Paratypes.—Eight females, Ruwinzori, Belgian Congo, May 6, 1955 (E. W. Baker), on *Hoslundia opposita.*

GENUS MACROSEIUS CHANT, DENMARK, AND BAKER

Macroseius Chant, Denmark, and Baker, 1960, Canad. Ent. 91: 808. Type: *M. biscutatus* Chant, Denmark, and Baker, by original designation and monobasic.

The genus *Macroseius* is distinctive among the phytoseiids in having the dorsal plate transversely divided. The proscutum bears four pairs of lateral setae and the anterior pair of sublateral setae. The postscutum bears five pairs of lateral setae; and the posterior pair of sublateral setae is on the membrane.

This genus contains a single species, *Macroseius biscutatus,* that occurs in Florida.

GENUS IPHISEIUS BERLESE

The genus *Iphiseius* contains strongly sclerotized, globular mites having the lateral membrane in both sexes characteristically sclerotized and united with the dorsal shield. There are four pairs of lateral setae on the dorsal shield, and both pairs of sublateral setae are present on the sclerotized lateral membrane of the female.

Key to Subgenera

1. Dorsal shield with four pairs of dorsocentral setae; postscutum with five pairs of lateral setae ..... *Iphiseius* (p. 298)
   Dorsal shield with two pairs of dorsocentral setae, the first and fourth pairs being absent; postscutum with one pair of anterolateral setae and two pairs of caudolateral setae ..... *Trochoseius* (p. 299)

SUBGENUS IPHISEIUS BERLESE

Iphiseius Berlese, 1917, Redia 12: 33 (*nomen nudum*); Berlese, 1921, Redia 14: 95; Vitzthum, 1941, Klass. Ord. Tier. 5 (Abt. 4 Buch 5): 764; Evans, 1954, Proc. Zool. Soc. Lond. 124: 517; Athias-Henriot, 1957, Bul. Soc. Hist. Nat. Afr. Nord 48: 334; Chant, 1960, Canad. Ent. 91 (suppl. 12): 109. Type: *Seius degenerans* Berlese, monobasic.

In *Iphiseius sens. str.* the proscutum bears the full complement of three pairs of dorsocentral setae and the postscutum bears a pair of dorsocentral setae; the postscutum also bears the full complement of five pairs of lateral setae and a pair of mediolateral setae. A pair of ventrocaudal setae are present on the opisthosomal membrane.

There are two species in the subgenus *Iphiseius*. *I. quadripilis* (Banks), from Florida, the West Indies, and Mexico, is characterized by having the dorsal setae of the idiosoma all minute except for the short vertical and long fourth proscutal lateral and postscutal caudolateral setae; and the ventri-anal plate of the female is entire. The other species, *I. degenerans* (Berlese), is from southern Europe, the Middle East, and Africa. *I. grovesae* Chant is at present placed in the Obtusus Group of *Amblyseius sens. str.*

Iphiseius (Iphiseius) degenerans (Berlese)
(Figs. 65, 66)

Seius degenerans Berlese, 1889, Acari Myr. Scorp., fasc. 54, no. 9.
Iphiseius degenerans, Berlese, 1921, Redia 14: 95; Evans, 1954, Proc. Zool. Soc. Lond. 124: 517; Athias-Henriot, 1957, Bul. Soc. Hist. Nat. Afr. Nord 48: 335; Chant, 1960, Canad. Ent. 91 (suppl. 12): 110.

Iphiseius degenerans is characterized by having all of the dorsal setae minute, except for the short vertical setae. The ventri-anal plate of the female is divided into a transverse plate anterior to the pores and bearing three pairs of setae, and a cordate anal plate.

This species has been known from the Mediterranean region and Tanganyika. Specimens studied by us are from Astrida, Ruanda-Urundi, May 22, 1955 (E. W. Baker), on banana, citrus, elephant grass, and cherimoya; and Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Berlinia* sp.

TROCHOSEIUS, NEW SUBGENUS

Type: *Trochoseius gongylus* n. sp.

The subgenus *Trochoseius* resembles *Iphiseius sens. str.* in that the lateral membrane is sclerotized in both sexes and in the female both pairs of sublateral setae are situated on the lateral plates. However, *Trochoseius* contains the only phytoseiids that have lost the first pair of dorsocentral setae and the ventrocaudal setae. The postscutum bears a single pair of setae anterolaterally and two pairs of setae caudolaterally, and the mediolateral pair of setae are well developed; postscutal dorsocentral setae are absent.

Key to Species: Females

1. Ventri-anal plate subpentagonal, bearing three pairs of pre-anal setae.....(1) *glomus*
   Ventri-anal plate very broad and arcuate laterally and caudally, bearing five pairs of pre-anal setae.....(2) *gongylus*

1. Iphiseius (Trochoseius) glomus n. sp.
(Figs. 67, 68)

In *Iphiseius* (*Trochoseius*) *glomus* the ventri-anal shield of the female is about as broad as long, subpentagonal in shape, and with three pairs of pre-anal setae. The metapodal platelet is long and slender.

Female.—Chelicera with chelae moderately developed, the fixed digit unidentate and the movable digit multidentate. Dorsal shield with slight reticulations mediolaterally and transverse wrinkles caudally. Proscutum with vertical setae moderate in length, and slender and tapering, the first laterals longer, and the fourth laterals very long; second and third laterals short; anterior pair of dorsocentrals and mediolaterals very short; posterior pair of dorsocentrals short. Postscutum with anterolateral setae similar in length to verticals;

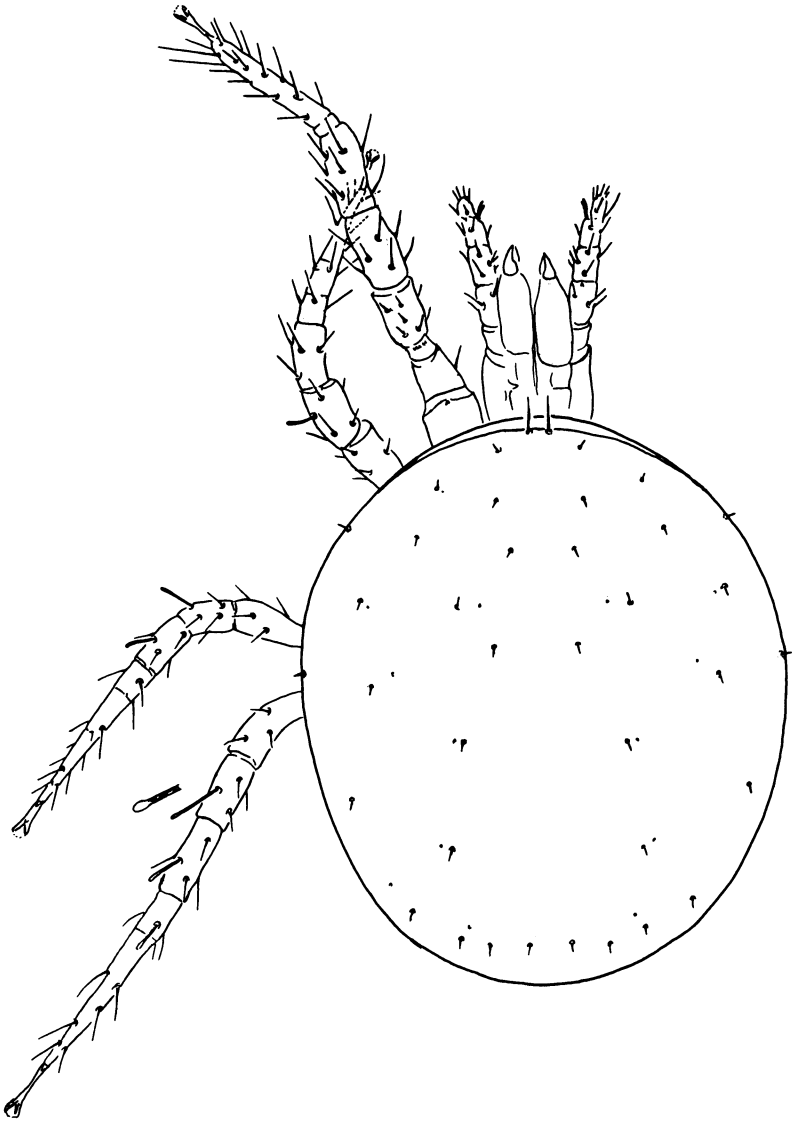


Fig. 65. *Iphiseius degenerans:* dorsal aspect of female.

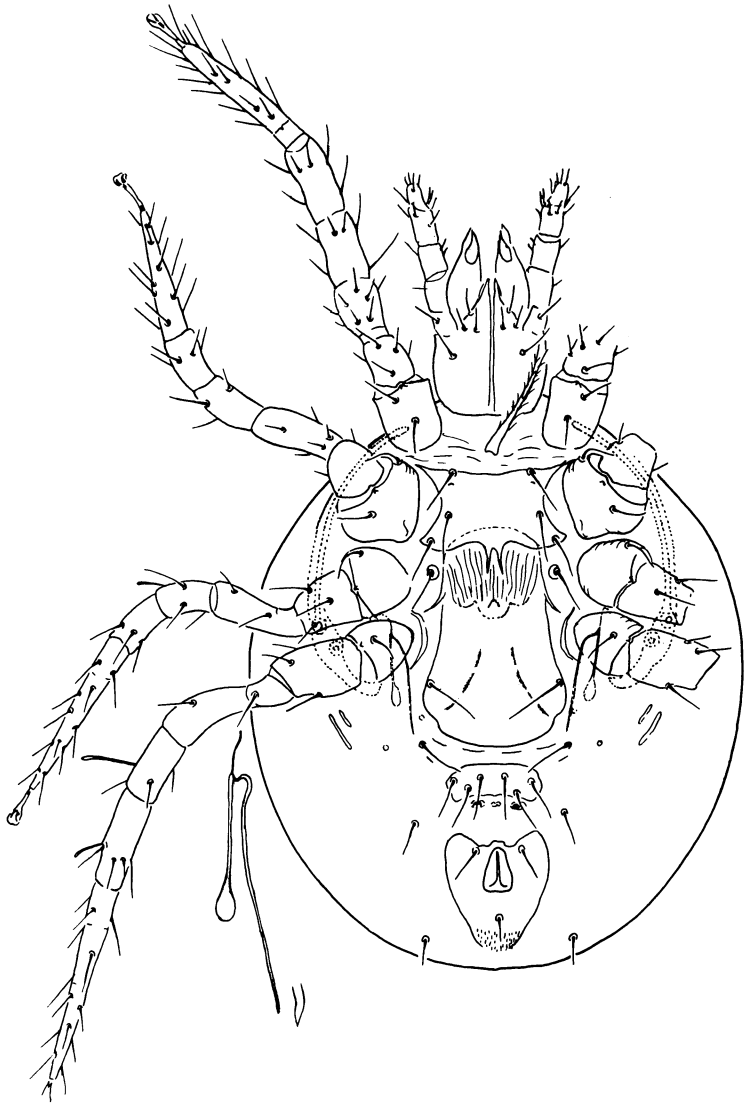


Fig. 66. *Iphiseius degenerans:* ventral aspect of female.

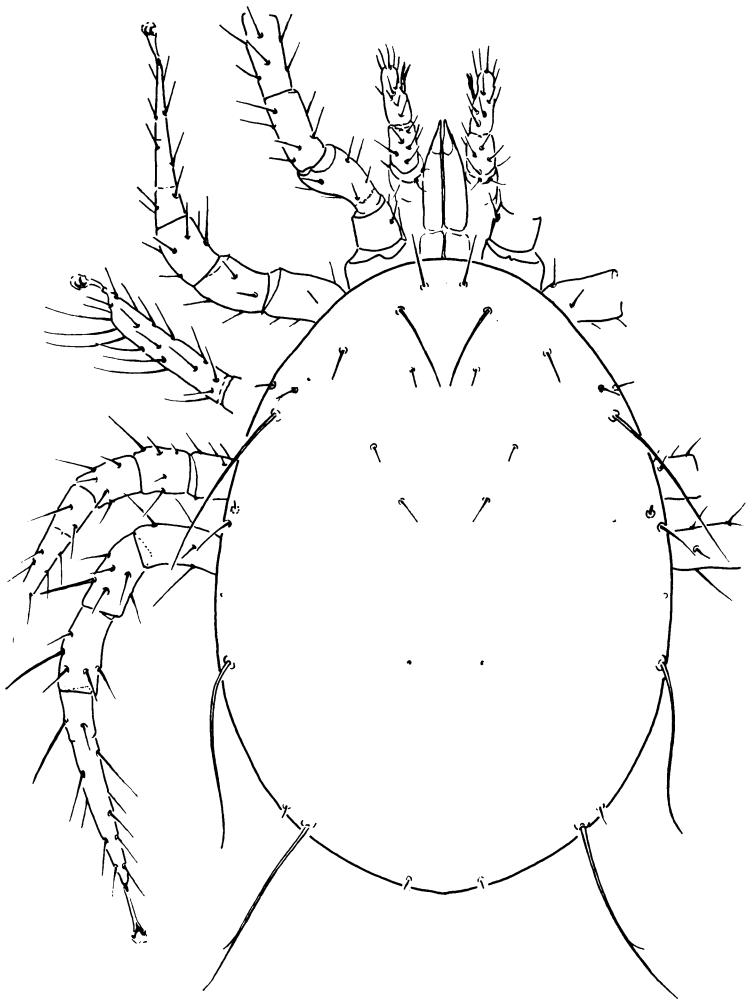


Fig. 67. *Iphiseius glomus:* dorsal aspect of female.

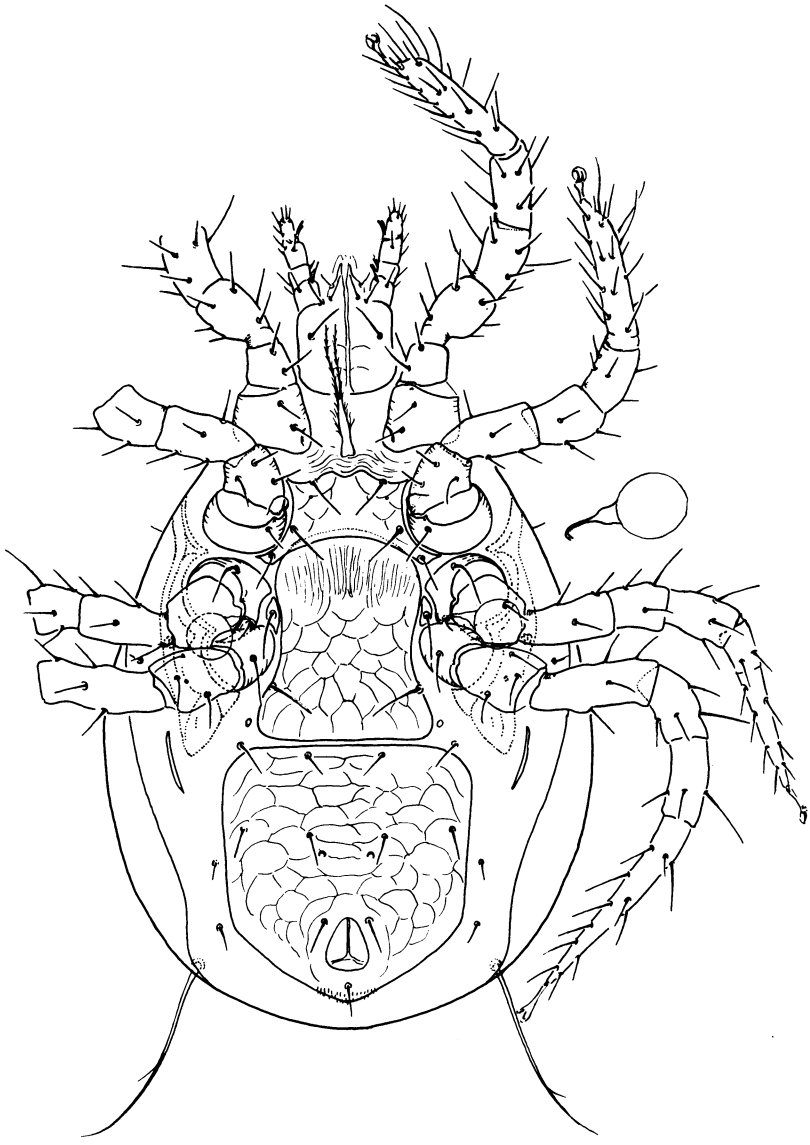


Fig. 68. *Iphiseius glomus:* ventral aspect of female.

penultimate caudolaterals very short; caudolaterals and mediolaterals very long like fourth proscutal laterals, and also slender and tapering. Sublaterals very short. Peritremes reaching just beyond verticals. Ventri-anal plate about as broad as long, the pre-anal area with lateral margins very slightly concave and slightly converging posteriorly, with two pairs of median and one pair of mediolateral setae; two well-developed pores between and just posterior to caudomedian pair of setae. Three pairs of ventrolaterals. One pair of long, slender metapodal platelets. Sternal plate transverse with the caudal margin concave, bearing three pairs of setae; metasternal platelets separate. Spermatheca with cervix slightly longer than broad, abruptly narrowed before small atrium and well-defined major duct. Genu IV with a tapering macroseta and six short setae; tibia IV with a tapering macroseta and five short setae; basitarsus IV with a tapering macroseta and three short setae. Length of idiosoma 375μ; greatest width of body 285μ.

Holotype.—Female, Lwiro, IRSAC, Belgian Congo, May 18, 1955 (E. W. Baker), on ornamental tree; type no. 2726 in the U. S. National Museum.

2. Iphiseius (Trochoseius) gongylus n. sp.
(Figs. 69, 70)

In *Iphiseius* (*Trochoseius*) *gongylus* the ventri-anal plate of the female is evenly curved laterally and caudally and very broad, and the anterior two pairs of para-anal setae are captured so that five pairs of pre-anal setae occur on the plate. The major metapodal platelet is broadly triangular.

Female.—Chelicera with chelae moderately developed, the fixed digit unidentate and the movable digit multidentate. Dorsal shield with mediolateral reticulations. Dorsal shield with vertical setae and first postscutal laterals of moderate length, the first laterals longer, the fourth laterals and postscutal mediolaterals long; and the postscutal caudolaterals very long, and all slender and tapering; proscutal second laterals, anterior dorsocentrals, and mediolaterals very short, the third proscutal laterals and posterior dorsocentrals and the penultimate postscutal laterals slightly longer. Sublaterals very short. Peritremes extending just beyond verticals. Ventri-anal plate much broader than long, the lateral and caudal margins semicircular; five pairs of pre-anal setae; two pairs median, two pairs mediolateral, and one pair caudolateral; two well-developed pores between caudomedian pre-anal setae. One pair of ventrolaterals posteriorly. Two pairs of metapodal platelets, the major platelets triangular with a tiny platelet at inner angle. Sternal plate much broader than long, the caudal margin concave; metasternal platelets separate. Spermatheca apparently as in *glomus*. Genu IV with a very long, tapering macroseta and six short setae; tibia IV with a long, tapering macroseta and five short setae; tibia IV with a long tapering seta and three short setae. Length of idiosoma 306μ; greatest width of body 287μ.

Holotype.—Female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Vitex congolensis;* type no. 2727 in the U. S. National Museum.

Paratypes.—One female, Mulunga, Belgian Congo, May 18, 1955 (E. W. Baker), on peach; 3 females, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on frangipani; 1 male, 1 female, Lwiro, Belgian Congo, May 17, 1955 (E. W. Baker), on frangipani; 1 female, Stanleyville, Belgian Congo, April 20, 1955 (E. W. Baker), on *Jatropha* sp.; and 1 female, Stanleyville, Belgian Congo, April 18, 1955 (E. W. Baker), on *Berlinia* sp.

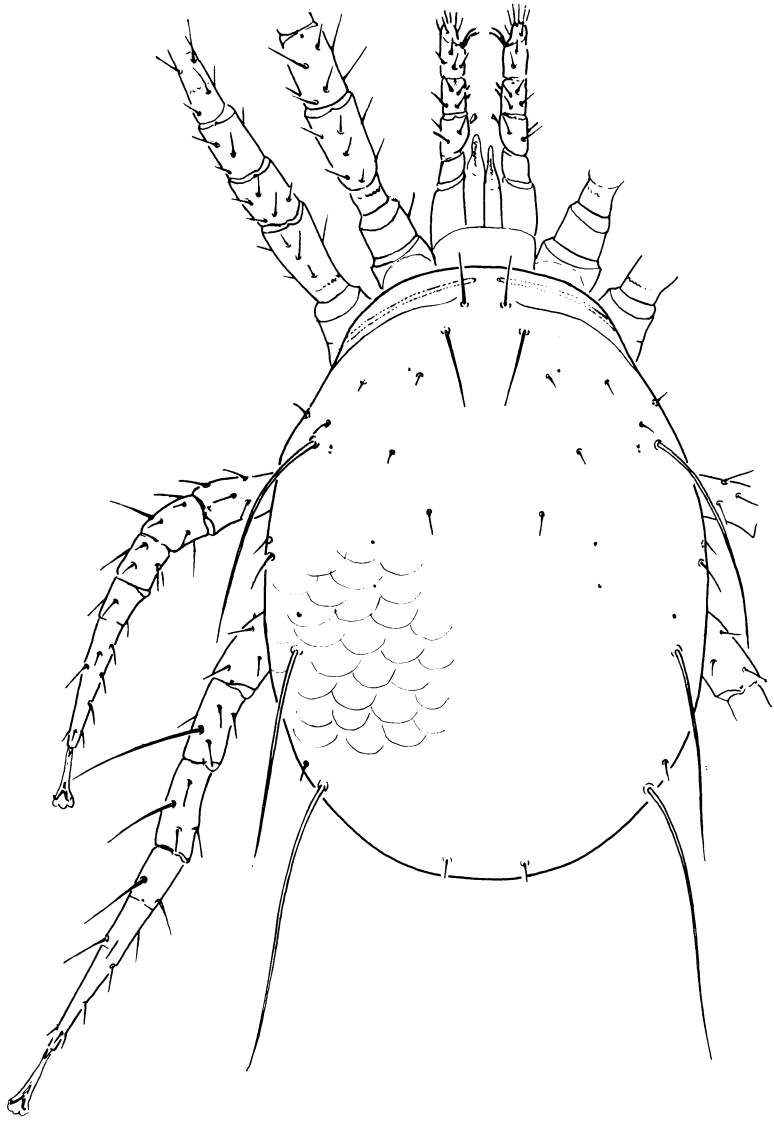


Fig. 69. *Iphiseius gongylus:* dorsal aspect of female.

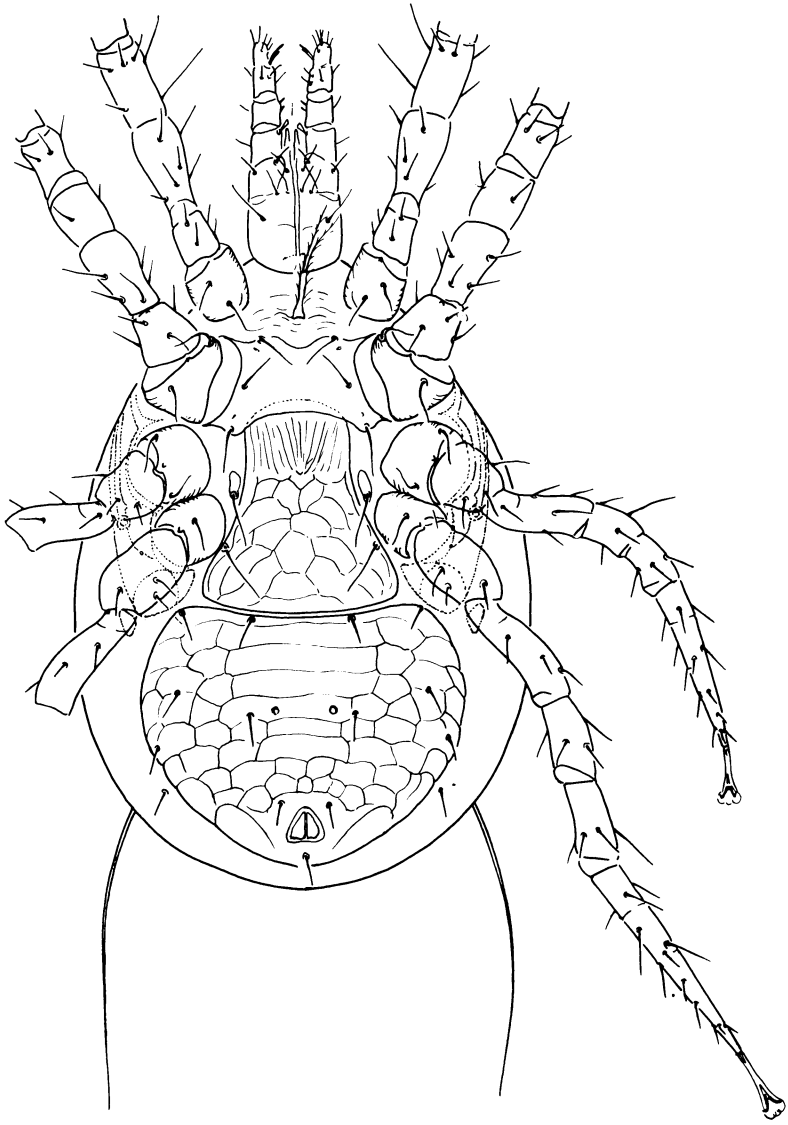


Fig. 70. *Iphiseius gongylus:* ventral aspect of female.

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