MESOSTIGMATIC ACARINA ASSOCIATED WITH SOME SOUTH AFRICAN COLEOPTERA.

BY

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I. INTRODUCTION

Acari, or mites, are to be found in almost every habitat; in the soil, in streams, lakes and ponds, on the shore and sea bottoms, to mention only a few en-vironments.

Plants and most animals, Vertebrates as well as Invertebrates, have mites on them. It is often difficult to decide whether a mite lives as a parasite on its host or whether it only uses the host as a means of transport.

This paper describes the mites that are associated with some South African Coleoptera. The material investigated was collected from several places in the Western Transvaal.

There ~~are~~ is very little literature dealing with the mites on beetles and other insects. The most important publications are:-

Selnick M. (1939) "Milben als Parasiten von Insekten."

Turk F.A. (1948) "Insecti-colous Acari from Trinidad."

Tragardh I.(1943)"Acariderna och deras ekologiska relationer till insekterna." In South Africa this subject was apparently never investigated before. This paper describes 20 species. The available literature was inadequate to permit the indentification further than the genus name. It is possible that some of these species have never been described before but at the moment it is impossible to tell.

II. COLLECTING AND TECHNIQUE.

Beetles were collected and preserved in 75% alcohol. The larger mites could be seen with the unaided eye during collection but microscopic examination of the...

the.....

wings, elytra and other parts were necessary, to find the smaller species.

The following technique was employed for the mounting of the mites.

1. Clear for an hour or more in Lactophenol (lactic acid : phenol = 1:1).
2. Stain with van Giesson's stain (10 cc aqueous solution of acid fuchsin and 90 cc saturated aqueous solution of picric acid) for half an hour in the case of small and coloured mites and for more than an hour in the case of colourless mites.
3. Transfer to 95% alcohol for 5 minutes.
4. Transfer to Vitzthum's fluid (Carbolic acid- 9 parts, distilled water - 1 part and Chloral hydrate- 10 parts) for 15 minutes or more.
5. Mount in Berlese fluid (30-60 gm Gum Arabic, 50 gm distilled water, 20 cc Glycerine and 200 gm Chloral hydrate).
6. Leave in incubator for about two days to harden mounting material.

III? ACKNOWLEDGEMENTS.

I wish to express my hearty thanks to Prof. G.T.S. Eiselen and Dr. P.AJ.Ryke under whose supervision this investigation was carried out. Moreover I am indebted to Prof. J.W.Geyer of the Entomology department of the University of Pretoria for the identification of the beetles.

My thanks are also due to the Council for Scientific and Industrial Research for the financial assistance which made my studies possible; to .....

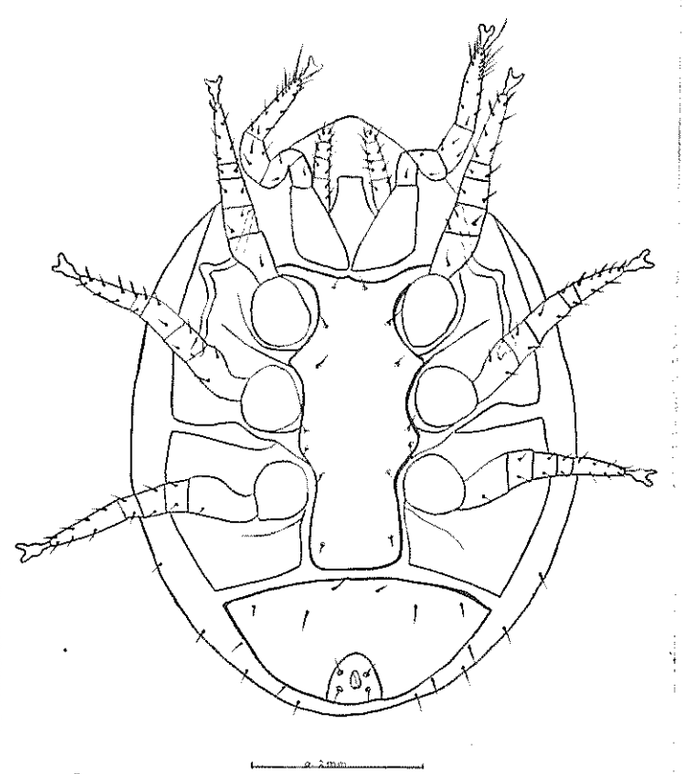

Fig. 1. Uropoda sp. Ventral view of nympha.

to.....

Dr. F. Zumpt for placing the literature of the South African Institute for Medical Research at my disposal and to Mr.A.A. Bisschoff of the Department of Geology and Mr.B.F.Liebenberg for the photographic reproduction of my original drawings.

My sincere thanks ~~is~~ are due to my sister, Miss J.E.Meyer for preparing the typescript.

IV.MESOSTIGMATIC ACARINA.

A.Cohors Uropodina Kramer 1887.

1. Family Uropodidae Berlese 1885.

(i) Uropoda sp.

(a) Nympha Fig.1:

The body is oval in shape and about 0.69 mm long and 0.52 mm broad.

The dorsal surface is completely covered by a single shield which is sparsely covered by short simple setae. A thin transparent marginal plate joins with the dorsal shield.

The ventral surface shows the sternal plate which extends from the anterior edge of coxa II beyond coxa IV. Inserted on it are seven pairs of setae. The ventral plate is more or less triangular with a rounded posterior corner and lies close to the sternal plate; it bears three pairs of setae. On the posterior side of the ventral plate lies the anal plate. Inserted on it are two pairs of setae.

In the parapodal and metapodal regions are the foveolae pedales for the reception of the legs. The stigmal pores are situated on a level with the anterior side of coxae III. The peritreme follows a winding course forwards...

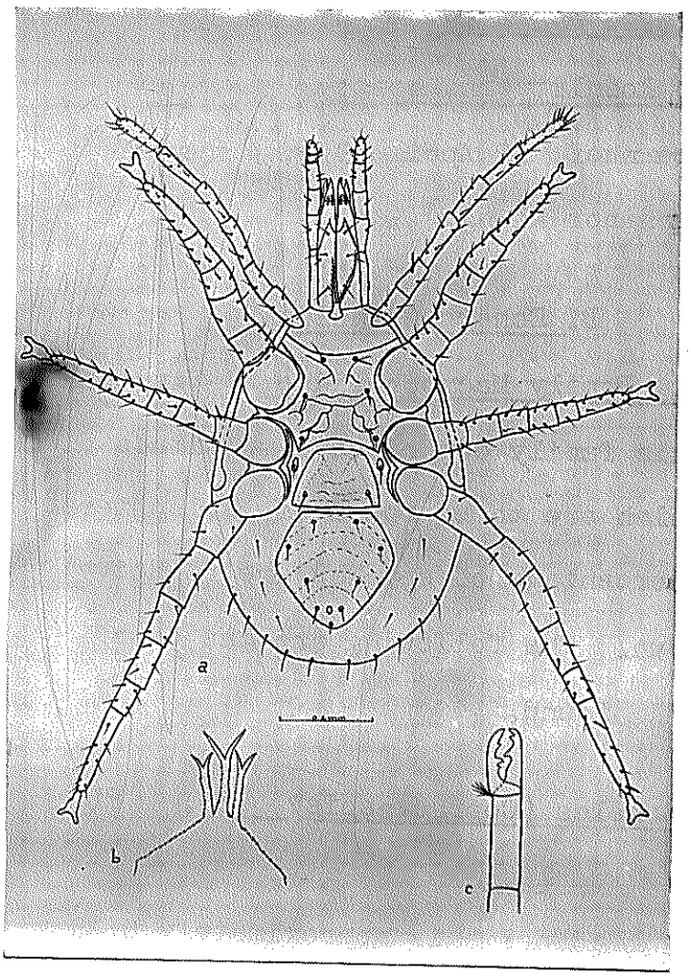

Fig. 2. Macrocheles (Coprholaspis?) sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female.

forwards.....

across the bottom of the foveola pedales to the edge of the body.

The legs are of the same colour as the body. The coxa of Leg I is broad with a straight internal edge. The tarsus of Leg I in the distal third with numerous tactile setae of which one terminal is twice as long as the peduncle. All the joints of the legs are provided with setae.

Female and Male . Not found.

(b) Locality and host:-

Bloemhof, 22 April 1953, 4 nymphae taken from Copris elphanor Kling.

B. Cohors Gamasides Leach , 1814.

(1) Family Macrochelidae Vitzthum 1930.

This family comprises a multitude of species many of which are to be found on Coleoptera. By far the greater percentage of species are relatively obscure and little known. The following are the descriptions of the species. I found.

(i) Macrocheles (Coprholaspis?) Sp. Fig 2.

(a) Female.

The idiosoma is approximately 0.79 mm long and 0.57 broad.

The body is oval, well-chitinised narrowing slightly between the first and second pair of legs, and with a rounded posterior edge.

The dorsal surface is not completely covered by a single shield of approximately the same shape as the body. The surface of the shield is ornamented with a reticulate pattern and is sparsely covered with simple setae.....

setae.....

On the ventral surface the tritosternum is well separated from coxae I and the jugular plates are absent. The sternal plate stretches from the anterior edge of coxa II to the middle of coxa III. It encircles the base of coxa II and articulates with the parapodal plates. The normal three pair of setae are present. The metasternalia are minute and rounded, each bearing a single seta. The genital plate has a rounded anterior and straight posterior edge; it has a single pair of setae near coxae IV. The ventro-anal plate is large, pentagonal and lies close to the genital plate; it bears three pair of setae in addition to the normal three anal ones. The surface of the posterior plates are covered with fine striations and concentric arcs of minute tubercles; on the sternal plate these projections are close enough together to form continuous ridges.

The peritreme runs up the side of the body from leg I to leg III. No metapodal plates are present.

A number of setae surrounds the ventro-anal plate.

Leg I is more slender than the other legs and terminates in several fine tactile setae. Leg II, III and IV are provided with caruncles and claws. Leg IV is more or less 1½ times longer than Leg III.

The gnathosoma is slender; the epistomal margin very finely denticulate. The epistome has a median bipronged element which is flanked by two lateral ones.

The pedipalp has five free joints, the terminal one being very short with a cluster of fine setae and a tri-pronged spine on its base.

The hypostome is well chitinised on its free edge are placed two slender corniculi maxillares. A pair.....

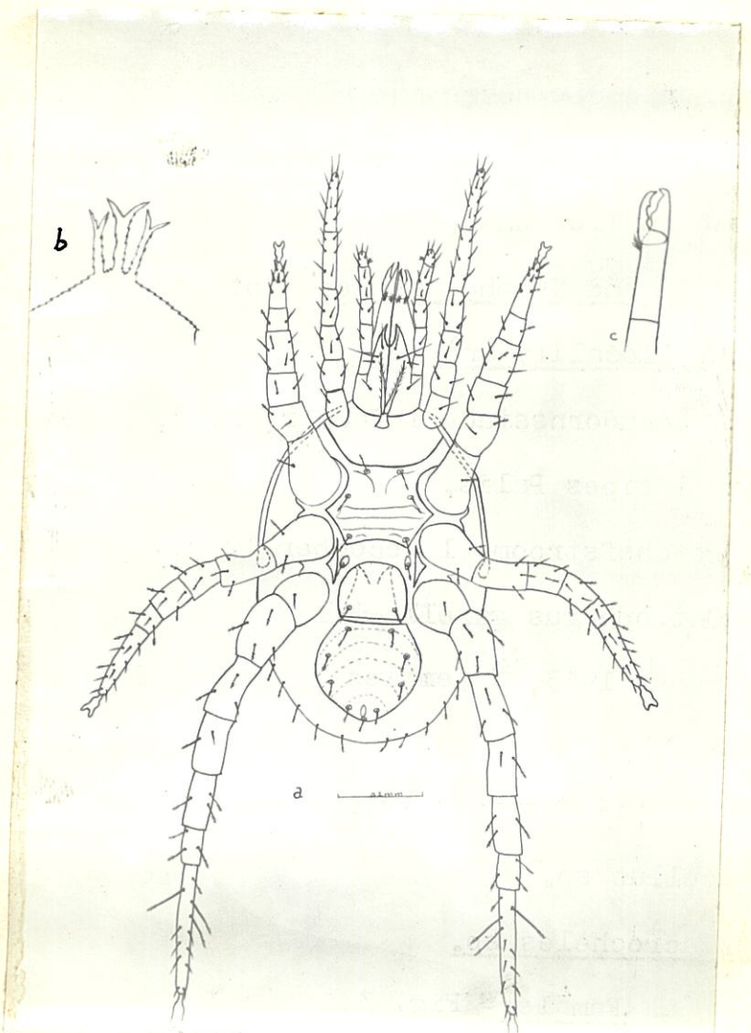

Fig.3. Macrocheles sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female .

A pair.....
of setae lies at the base of the malae and two other pairs are medial to the base of the pedipalps. The internal malae are thin and transparent lobes.

The chelicerae are fairly well chitinised and terminates in two joints at the base of which, on the ventral side, is placed a pair of pectinate setae. The fixed digit bears one big basally - directed - and one small tooth. The movable bears one big tooth and two smaller ones.

Male and Nymphal stages not found.

(b) Locality and host:-

Leeuwdoornsstad 11 January 1953, 2 females from Hister latipes Palis.

Potchefstroom 1 December 1952,3 females taken from Onthophagus gazella Fahr.
5 February 1953, 3 females taken from Onitis sphinx Fahr.
Fochville 14 February 1953,5 females taken from Oniticellus sp.

(ii) Macrocheles sp.

(a) Female:- Fig. 3.

The idiosoma is about 0.79 mm long and 0.51 mm broad. The body is oval in shape and the colour is light-brown.

The dorsal shield does not completely cover the dorsal surface, a narrow exposed border is visible posteriorly. The shield is covered with thick, curved setae, smooth at the base but pectinate at their free ends.

Ventrally, the sternal plate stretches from the anterior edge of coxa II to the middle of coxa III.....

coxa III.....

It carries the normal three pairs of pectinate setae; anterior and posterior margins are slightly concave. The metasternal plates are small and rounded each bearing a single pectinate seta. The genital plate has a rounded anterior and straight posterior edge; it has a single pair of pectinate setae near coxa IV.
The ventro-anal plate is broad and carries three pair of pectinate setae in addition to the three anal setae. The reticulation of the sternal and ventro-anal plate is distinct.

The peritreme runs up the side of the body, to the mid-dorsal line. Uncovered area beset with pectinate setae.

Leg I is thin and slender; it terminates in several fine tactile setae. Of the second, third and fourth legs, the fourth are the longest. The tarsi of this pair of legs carry long spiny setae, longer than those found on any of the other legs. The setae are also smooth at the base, but pectinate at their free ends. The tarsus of Leg II carries at its apex several spines. Leg II is stouter than the other legs.

The epistome consists of a median bi-pronged element which is flanked by two smaller lateral ones; the edge of the epistome is serrate.

The pedipalp has five free joints. The forked seta on the palpal tarsus has three tines.

The hypostome bears the normal four pairs of setae; on its free edges are placed the slender corniculi.

The chelicera terminates in two well-chitinised ...

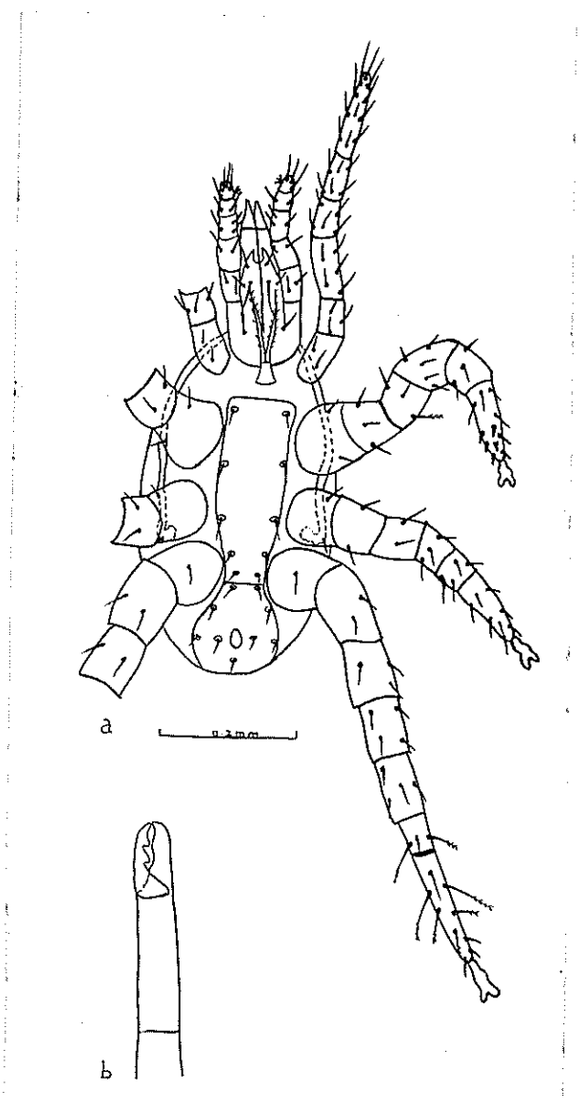

Fig 4. Macrocheles sp.

a. Ventral view of nympha.

b. Chelicera of nympha.

well-chitinised.....
joints at the base of which, on the ventral side, is placed a pair of pectinate setae. The fixed digit has an irregular internal edge and bears one tooth, the movable with two small teeth.

(b) Nympha:- Fig.4.

It is probably the nymphal stage of the previous described female.

The body is feebly chitinised and is about 0.4 mm long and 0.23 mm broad.

As in the female the dorsal shield bears setae which are smooth at the base but pectinate at their free ends. In one specimen the dorsal shield is still incompletely divided in two.

The sternal plate stretches from the anterior edge of coxa II to the posterior edge of coxa IV. Inserted on it are five pairs of setae. The ventro-anal plate lies close to the sternal plate and bears three pairs of setae in addition to the normal three anals.

Leg I terminates in several fine tactile setae. As in the female Leg IV is longer than the other legs and its tarsus is provided with long spiny setae which are smooth at the base but pectinate at their free ends.

The gnathosoma is slender but only the median bi-pronged element of the epistome is visible.

On the free edges of the hypostome is placed the slender cornniculi. The hypostome bears the normal four pairs of setae.

The chelicera terminates in the fixed + and movable digit; the fixed has an irregular internal edge and the movable has two small teeth.

Male:- not found. .....

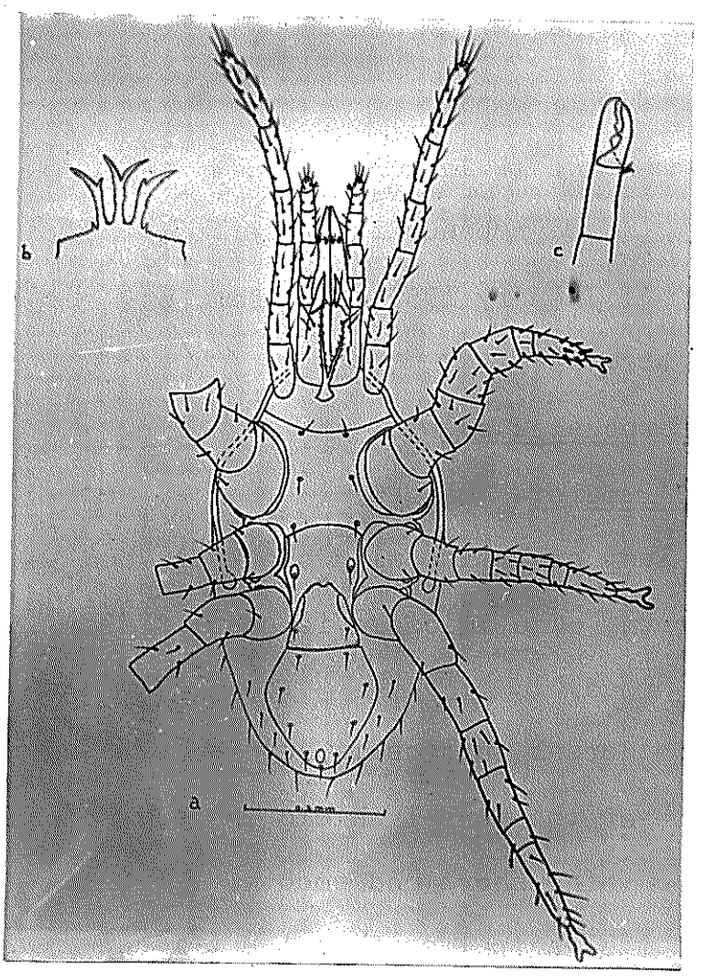

Fig 5. Macrocheles sp.

a. Ventral view of female.

B. Epistome of female.

c. Chelicera of female.

not found.....

(b) Locality and hosts:-

Potchefstroom, 16 February 1953, 13

1 nympha taken from Heliocopris gigas Linn.

19 March 1953 1 nympha from Heliocopris hamadryas Fab.

10 November 1952, 2 females from Copris elphanor Kling.

Leeuwdoornsstad 16 January 1953, 4 females. from Scarabaeus funebris Boh.

Bloemhof 11 January 1953, 2 females from Oryctes boas F.

(iii) Macrocheles sp.

(a) Female:- Fig 5.

A long oval mite with shoulders and the colour light-brown. The idiosoma is about 0.58 mm long and 0.35 mm broad.

The dorsal surface is covered by a single shield. The whole of the dorsal shield is very sparsely setate, the setae being short and smooth.

On the ventral surface the tritosternum is well separated from coxae I and the jugular plates are absent. The sternal plate is large, extending from the anterior edge of coxa II to the middle of coxa III. In front it encircles coxa II; behind it is produced between coxae II and III. Both anterior and posterior edges are concave. No distinct reticulation. The metasternal plates are situated between coxae III and IV and are flanked laterally by the endopodal plates. The genital plate is truncated posteriorly, it bears a single pair of setae. The ventro-anal plate is large and bears three pairsof setae in addition to the normal....

normal.....

three anals. It is contiguous to the genital plate. No distinct reticulation.

Stigmal pore between coxa III and IV; peritreme reaching forwards beyond coxa I.

A narrow parapodal plate extends from the anterior edge of coxa II to encircle coxa IV and articulate with the endopodal plates. No metapodal plates present.

A number of setae arises from the skin surrounding the ventro-anal plate.

Leg I thin, reduced and without pretarsus caruncles or claws. The second pair of legs is enlarged and the tarsus is armed with strong spines.

The epistome is large and transparent consists of a median bi-pronged element; its edge is very faintly serrate. It is flanked by smaller lateral elements.

The hypostome is well-chitinised inserted on it are four pairs of setae. The corniculi maxillares are placed on the free edge of the hypostome and ~~is~~ are slender. The internal malae are thin and transparent. The hypostome has an external five-jointed palp whose penultimate joint bears a tri-pronged spine.

The chelicera terminates in two joints at the base of which, on the ventral side is placed a pair of pectinate setae. The movable digit bears a single tooth, the fixed has two small teeth.

Male and Nymphal stages:- not found

(b) Locality and hosts.

Bloemhof, 11 January 1953, 2 females from Oryctes boas F.

Fochville, 20 February 1953, 2 females taken Pachnoda rufa (Des.) .....

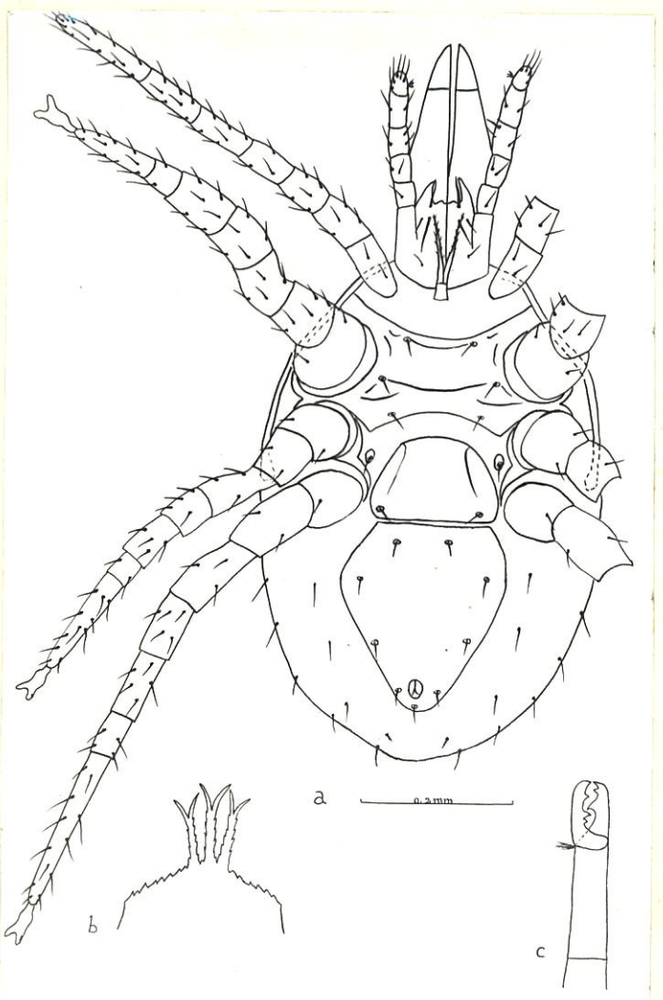

Fig 6. Macrocheles sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female.

(Des).....

Potchefstroom, 16 February 1953, 4 females from Heliocopris gigas Linn. 24 March 1953, 2 females taken from Heliocopris hamadryas Fab.

(iv) Macrocheles sp.

(a) Female:- Fig 6

The idiosoma is approximately 0.71 mm long and 0.51 mm broad. The body is oval in shape . Colour brown.

The dorsal shield does not completely cover the dorsum, an exposed border is visible posteriorly. The surface of the shield is ornamented with a reticulate pattern and is covered with smooth setae.

The tritosternum is situated slightly behind the bases of coxae I; it terminates in two slender laciniae. No jugular plates are present.

The sternal plate is nearly twice as broad as long, extending from the anterior edge of coxa II to about the middle of coxa III; its anterior and posterior margins are deeply concave. It bears the normal three pairs of setae. Reticulation distinct. The metasternal plate is small and with a single seta. The genital plate has a rounded anterior and a straight posterior edge. The ventro-anal plate is broad and somewhat pentagonal and carries three pairs of setae in addition to the three anals.

Stigmal pore is placed near coxa III. Peritreme reaching coxa I.

Parapodal plates are present extending from coxa II to IV and articulate with the endopodal plates which support the internal surfaces of coxa III and IV. No metapodal plates.

The first pair of legs are long and slim; ~~it~~ they terminate in several fine tactile setae.....

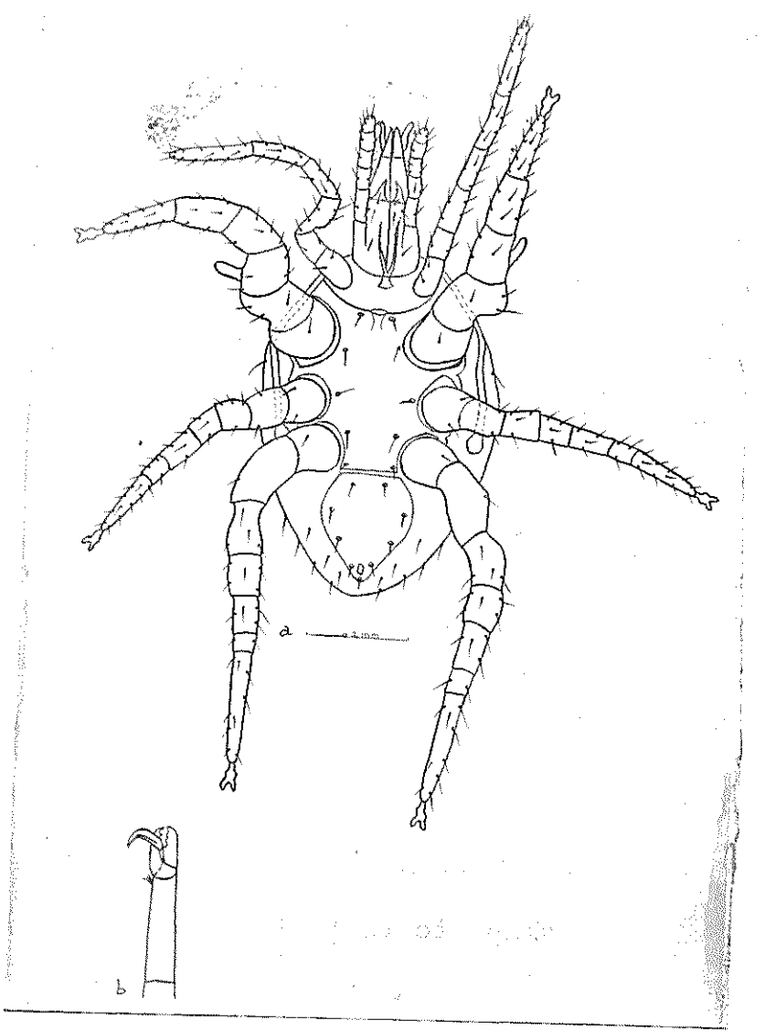

Fig 7. Macrocheles sp.

a. Ventral view of male

b. Chelicera of male.

setae.....

The second pair of legs is somewhat thicker than the other. Of the third and fourth the fourth is the longer.

The pedipalps have five free joints; the tri-pronged spine being inserted on the base of the terminal joint.

On the hypostome ~~is~~ are placed the corniculi; the internal malae are thin and transparent. The hypostome bears the normal four pairs of setae.

The epistome has a distinct median bi-furcate element and two lateral elements. The edge of the epistome is serrate.

At the base of the joints of the chelicerae, on the ventral side, are placed a pair of pectinate setae. The fixed digit has one very small tooth and one big basally directed tooth; the movable has two small teeth and one big tooth.

(b) Male: -Fig 7.

The male is slightly smaller than the female; it is about 0.6 mm long and 0.42 mm broad. The body is similar in shape to that of the female. The dorsal surface is also covered by a single shield.

The ventral surface shows two plates, an anterior sterno-genital plate and a posterior ventro-anal plate. The sternal plate bears five pairs of setae; the ventro-anal plate has three pairs in addition to the three anals.

The parapodal plates encircle the external edges of coxa II to IV, whilst the endopodal plates are fused with the sternal shield.

All the joints of the legs are provided with setae....

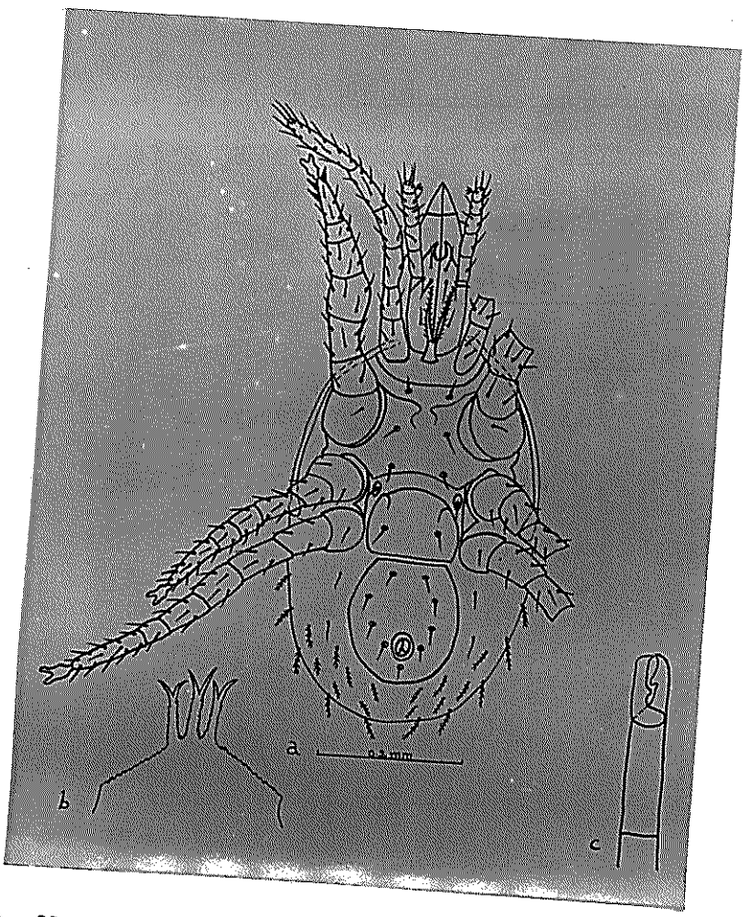

Fig 8. Macrocheles? sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female.

setae.....

Leg I terminates in few long tactile setae only. Leg II is thickened particularly in the region of the basal joints; the femur bears a large spur .

The chelicerae are fairly well chitinised, the fixed limb with three small teeth, the movable with a single tooth, beneath which is inserted a spermatophoral process.

Nymphal stages:- not found.

(c) Locality and hosts:-

Fochville, 14 February 1953, 3 females, 1 male taken from Onitis sp.

(v) Macrocheles? sp.

(a) Female:- Fig 8.

The idiosoma is approximately 0.51 mm long and 0.35 broad. The body is more or less oval in shape. Colour white.

A single shield entirely covers the dorsal surface and bears a number of pectinate setae.

Ventrally, the sternal plate extends from the anterior edge of coxa II to the middle of coxa III. Inserted on it are three pairs of setae. The metasternal plates are minute and more or less oval in shape, each with a single seta. The genital plate is truncated posteriorly and bears a single pair of setae. The ventro-anal plate is large and bears three pair of setae in addition to the three anals.

The uncovered area of the venter bears a number of pilose setae. Stigmal pore between coxa III and IV, peritreme reaching forwards beyond coxa I.

Leg I is more slender than the other legs and terminates in several tactile setae. The tarsus of Leg II bears three heavy spines.....

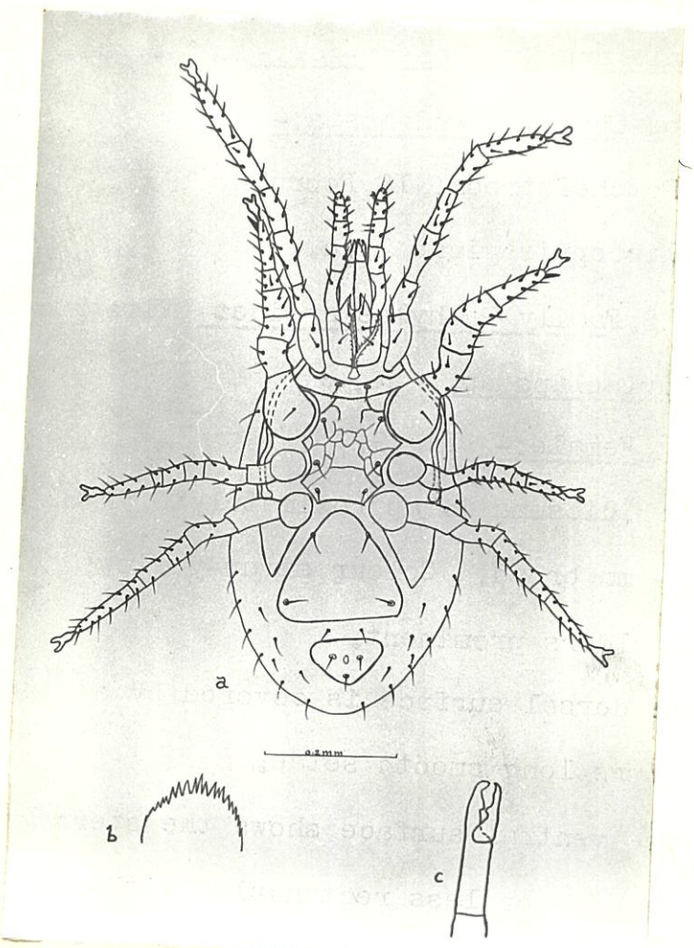

Fig 9. Pachylaelaps sp.

a. Ventral view of female.

b. Epstome of female.

c. Chelicera of female.

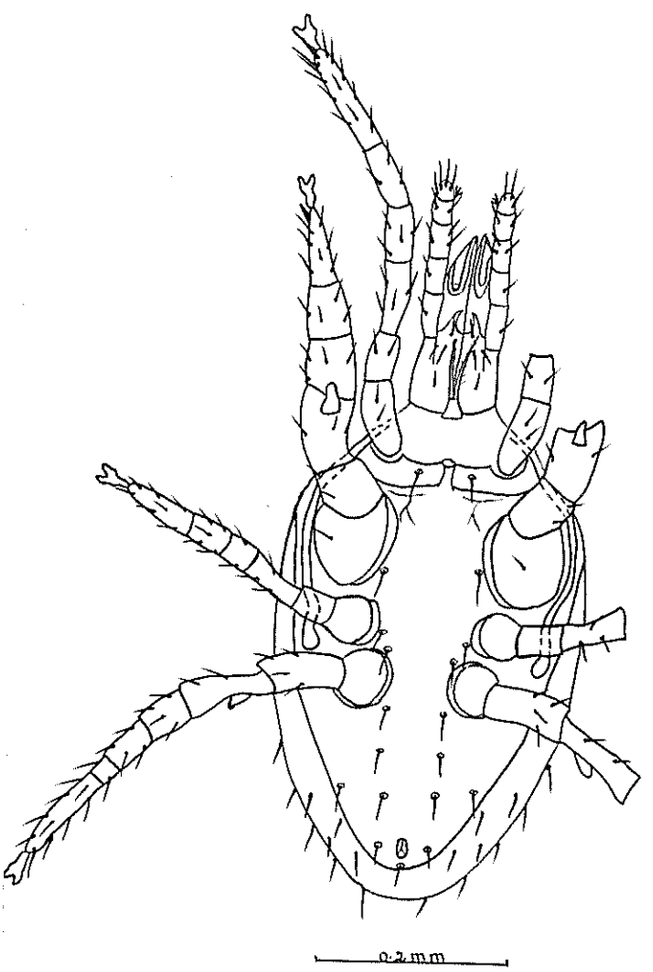

Fig 10. Pachylaelaps sp. ventral view of male.

spines.....

All the joints of the legs are provided with setae.

The episteme is finely denticulate along its front margin; it consists of a median bi-furcate element and two lateral ones.

The fixed as well as the movable digit of the chelicera has a single tooth.

Male and Nymphal stages:- not found.

(b) Locality and hosts:-

Potchefstroom, 18 February 1953, 2 females taken from Heliocopris gigas Linn.

2. Family Pachylaelaptidae Vitzthum 1931.

(i) Pachylaelaps sp.

(a) Female:- Fig 9.

The idiosoma is approximately 0.53 mm long and 0.34 mm broad. Colour straw-yellow; body oval, shoulders prominent.

The dorsal surface is covered by a single shield which bears long smooth setae.

The ventral surface shows the sternal plate which is more or less rectangular with concave anterior and posterior margins; it carries four pairs of setae. The first pair is inserted on a definitely demarcated presternal area, but although this is bounded by a stronger chitinous ridge than that on any other part of the shield, it is, nevertheless, a part of the sternal shield itself. The reticulation of the shield is distinct. The genito- ventral shield is roughly triangular with a nearly straight posterior margin and a rounded anterior margin. It bears two pairs of setae; the pair of genital setae are placed on the edge of.....

of.....

the plate near coxa IV. The anal plate is triangular with the normal three setae. The peritreme is well-developed; stigmal pore between coxa III and IV. The parapodal, peritremal and metapodal plates are fused into one and extend posterior to coxa IV.

Legs I and IV are longer than legs II and III; leg II the stoutest, leg III the shortest. All the tarsi are provided with caruncles and claws; setae are present on all segments of legs and palpi. The distal end of tarsus II has one strong well-developed spine. The forked seta on the palpal tarsus has three tines.

The epistome is nea-rly rounded with a serrate front; the teeth at the middle region are noticeable larger than those at the corners.

On the free edge of the hypostome ~~is~~ are the corniculi maxillares; inserted on the hypostome are four pairs of setae.

The fixed and movable limb of the chelicera has one tooth.

(b) Male:- Fig 10.

The male is slightly smaller than the female, it is about 0.5 mm long and 0.31 mm broad. The body is similar in shape to that of the female. The dorsal surface is covered by a single plate which bears long smooth setae.

On the ventral surface the [illegible] sternal, the genito-ventral, the anal, the parapodal, the peritremal and the metapodal plates are fused into one and nearly cover the whole ventral surface. Inserted on it are four pairs of setae between coxa I to IV and behind coxa IV four pairs in addition to the three anals.

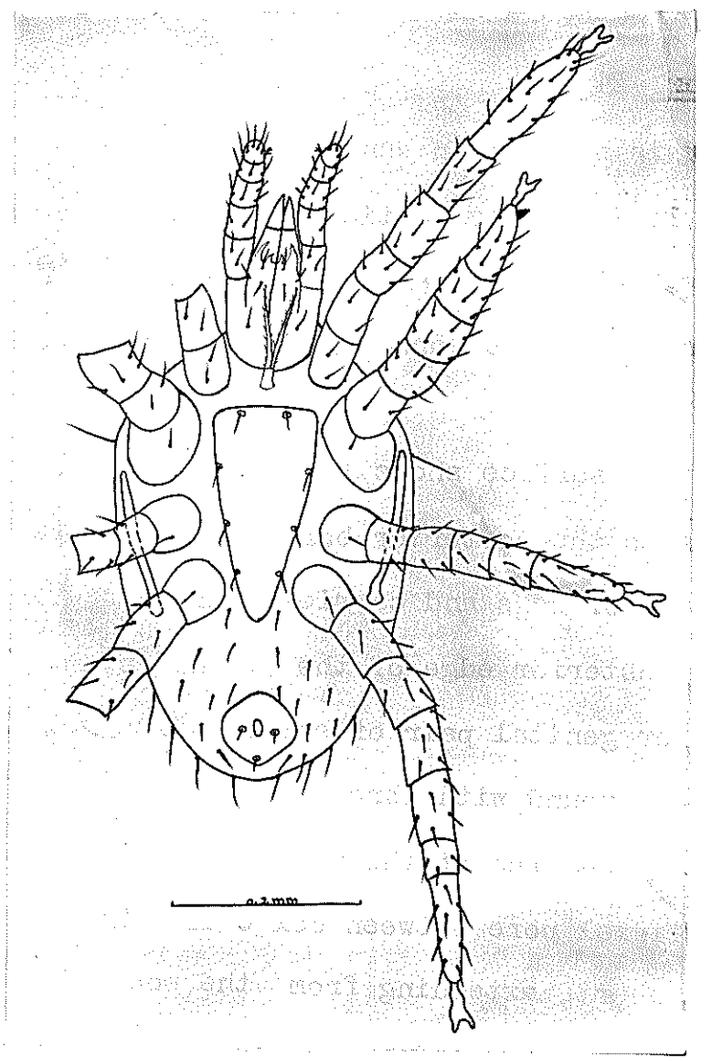

Fig 11. Pachylaelaps sp. ventral view of nympha.

anals.....

Legs I, III and IV as in the female. Leg II is stout; the femur bears a large spur-like process; the distal end of tarsus II with a single strong spine. The femur of Leg IV also with a spur-like process.

The chelicera terminates in a fixed and movable digit. The movable digit possesses a sperm-carrying process.

(c) Nympha:-Fig.11

The body is similar in shape to that of the male and female. It is feebly chitinised. The idiosoma is approximately 0,49 mm long and 0,32 mm broad. The dorsal shield covers the entire dorsal surface and bears long smooth setae.

The ventral surface shows the sternal plate which reaches to the posterior border of the coxae of the fourth pair of legs and carries four pairs of setae. Flanking the posterior edge of the sternal plate there is the fifth or genital pair of setae. The anal plate is more or less round with three setae.

The uncovered area of the venter bears several pairs of setae. Stigmal pore between coxae III and IV. The peritreme is short, extending from the posterior edge of coxa II to the anterior edge of coxa IV.

Leg I and IV are longer than legs II and III; leg II is the stoutest. The tarsus of Leg II bears on the outer side one strong well-developed spine. The forked seta on the palpal tarsus with three tines.

The hypostome bears the malae and the normal four pairs of setae.

(d) Locality and hosts:-

Potchefstroom, 7 March 1953, 7 females, 3 males, 1 May 1953. 1 nympha taken from Heliocopris gigas Linn.

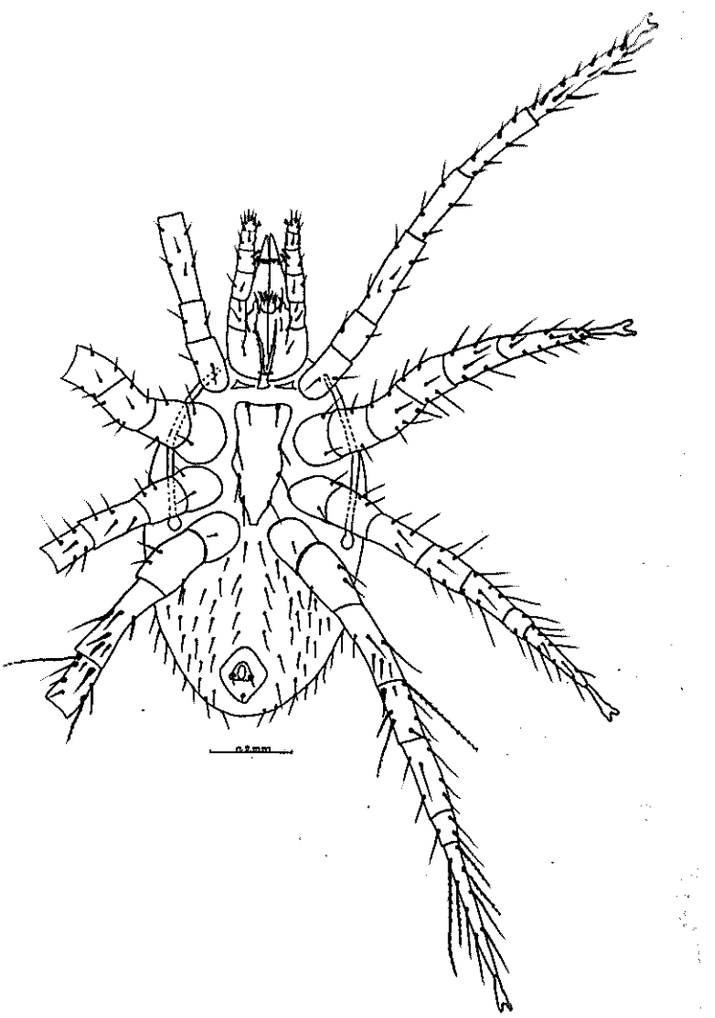

Fig 12. Pergamasus sp.

a. Dorsal view of nympha.

b. Epistome of nympha

c. Chelicera of nympha.

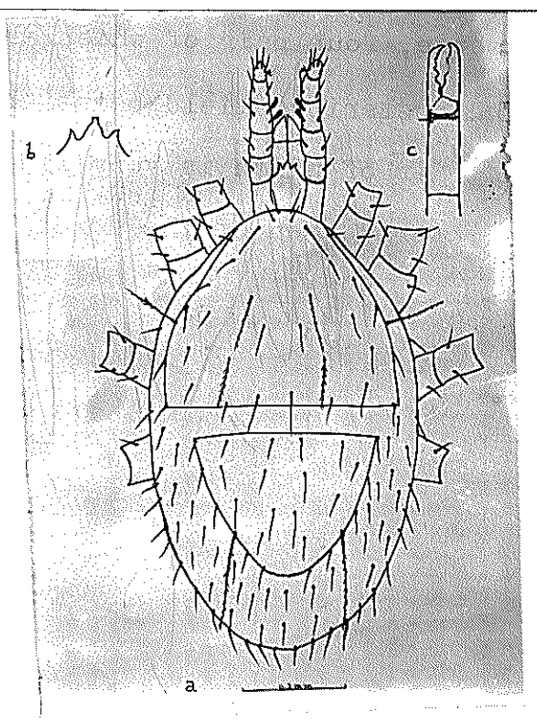

Fig. 13. Pergamasus sp.

ventral view of nympha

Linn...

19 March 1953, 1 female, 1 nympha taken from Heliocopris hamadryas Fab.

1 December 1952, 1 female from Onthophagus gazella Fahr.

3. Family:- Parasitidae Oudemans 1901.

Parasited mites are found typically in accumulations of organic material or debris, but their nymphae use insects as a means of transport. The following are the descriptions of the two nymphae, of this family, I found in my collection.

(i) Pergamasus sp.

(a) Nympha:- Fig 12,13.

The body is oval in shape and approximately 0.84 mm long and 0.56 mm broad. The dorsal surface is covered by two shields. The anterior shield is shaped like a truncated pyramid with rounded corners; the posterior is more or less triangular with a straight anterior edge. The anterior shield bears about eighteen pairs of setae, four pair of which are long and pectinate. The posterior shield bears about thirteen pair of setae, one pair of which is very long and pectinate. The uncovered area of the dorsum is densely haired.

Ventrally, the prae-endopodal plates are minute and triangular. The sterno-metasternal plate is rather long with wavy edges and stretches from the anterior edge of coxa II to about the middle of coxa IV. The four pairs of setae are placed on the edge of the shield. The anal plate is small and more or less diamond-shaped with three setae.

The uncovered area of the venter bears twenty-two ...

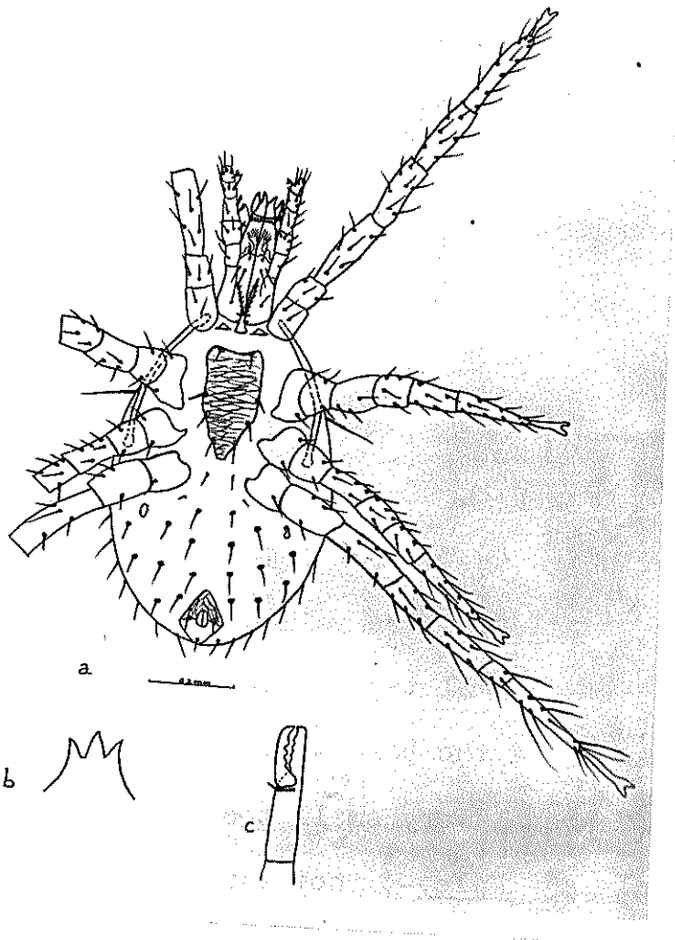

Fig 14. Parasitus sp.

a. Ventral view of nympha.

b. Epistome of nympha.

c. Chelicera of nympha.

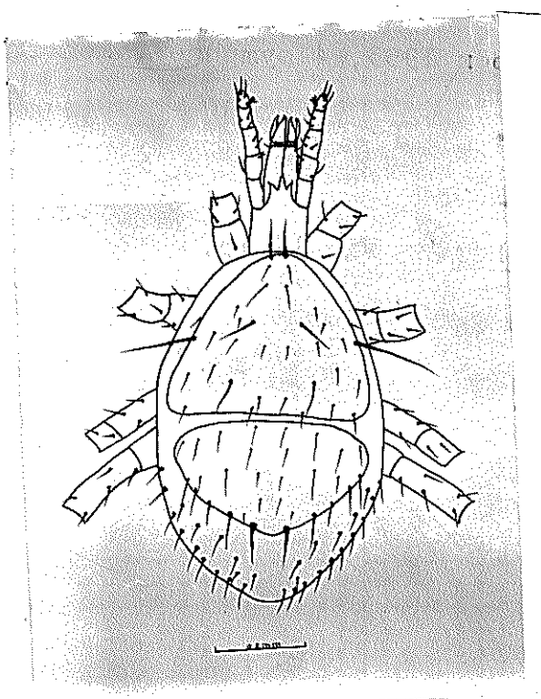

Fig 15. Parasitus sp. dorsal view of nympha.

twenty-two.....

pairs of setae. Stigmal pore between coxa III and IV peritreme reaching forwards beyond coxa I.

All the legs are provided with caruncles and claws.

The epistome is tridentate, the central spine being blunt and longer than the two lateral ones.

The palpal tarsus bears a tri-pronged spine; the genu has two knife-like setae. The corniculi or external malae are short; the internal malae are fan-shaped. The hypostome bears the normal four pairs of setae.

The chelicerae are well-chitinised; the fixed limb with four small teeth and the movable with three small teeth. At the base of the movable limb is a seta and several very small tooth-like markings.

Female and Male:- not found.

(b) Locality and hosts:-

Bloemhof, 11 January 1953, 2 nymphae from Oryctes boas F.

Potchefstroom, 9 March 1953, 6 nymphae taken from Heliocopris gigas Linn.

10 November 1953, 4 nymphae taken from Copris elphanor Kling.

(ii) Parasitus sp.

(a) Nympha:- Fig 14,15.

The idiosoma is about 0.53 mm long and 0.35 mm broad. The body is oval in shape and the colour is gold-brown.

The dorsal surface is covered by two shields; the anterior shield is also shaped like a truncated pyramid with rounded corners; the posterior more or less triangular and is broader than long. The anterior shield bears eighteen pairs of setae four of which are thicker than the other and very faintly ....

faintly.....

pectinate. There are two long thick shoulder setae at the lateral edge of the plate. The posterior shield bears fifteen pairs of setae. The setae on the posterior edge are thicker and longer than the others. The uncovered area of the dorsum bears several pairs of setae.

On the ventral surface, the tritosternum has a rather long main trunk and long laciniae. Halfway the main trunk is provided with lateral triangular transparent pieces. Distally the same ~~is~~ are present. The prae-endopodal plates are small and triangular. The sternal plate stretches from the anterior edge of coxa II to about the middle of coxa IV. Inserted on the edge of the shield are four pairs of setae. The reticulation of the plate is distinct. The anal plate is more or less diamond-shaped with the normal three setae.

The uncovered area of the venter carries eleven pairs of setae. Stigmal pore near coxa III, peritreme reaching forwards to coxa I. There are two small metapodal plates present.

Leg I and IV longer than leg II and III.; leg II and III about equal in length. All the legs are provided with caruncles and claws.

The epistome is tridentate.

On the free edge of the hypostome are placed the short corniculi. Inserted on the hypostome are the normal four pairs of setae. The internal malae consist of an inner long transparent slip and an outer fringed transparent fan.

Attached to the sides of the hypostome are the pedipalps composed of the normal five free joints,.....

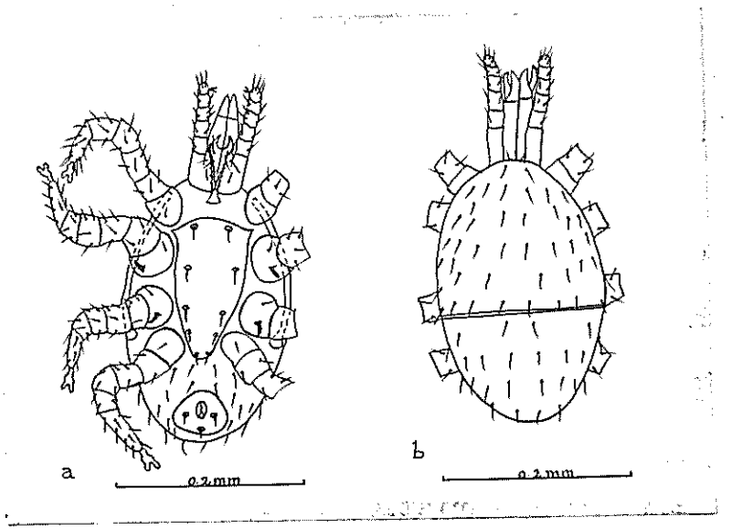

Fig 16. Gamasellus sp.

a. Ventral view of nympha.

b. Dorsal view of nympha.

joints,.....

the terminal one being short and richly covered with smooth setae. The penultimate or fourth joint bears a tri-pronged spine; the genu with two knife-like setae and the femur with a bi-pronged seta on its internal edge.

The chelicerae are well-chitinised. At the base of the movable digit ~~is~~ are several very small tooth-like markings and a small seta. The fixed digit has about four small teeth and the movable about three small teeth.

Male and Female:- not found.

(b) Locality and host:-

Potchefstroom, 20 February 1953, 6 nymphae taken from Onthophagus gazella Fahr.

4. Family:- Ascaidae Oudemans 1905.

It is rather a heterogeneous family; the members of which are characteristically found in litter, other accumulations and debris. One nympha of this family was taken form a beetle; it is probably that their nymphae only use the beetles as a means of transport.

(i) Gamasellus? sp.

Nympha:- Fig 16.

Small, with a very light-brown colour. Length is about 0.25 mm, breadth about 0.15 mm.

The dorsal surface is covered by two shields; the anterior one is slightly longer than the posterior one. The two shields are sparsely covered with small smooth setae.

The sternal shield reaches to the posterior border of the coxae of the fourth pair of legs and carries five pairs of setae.....

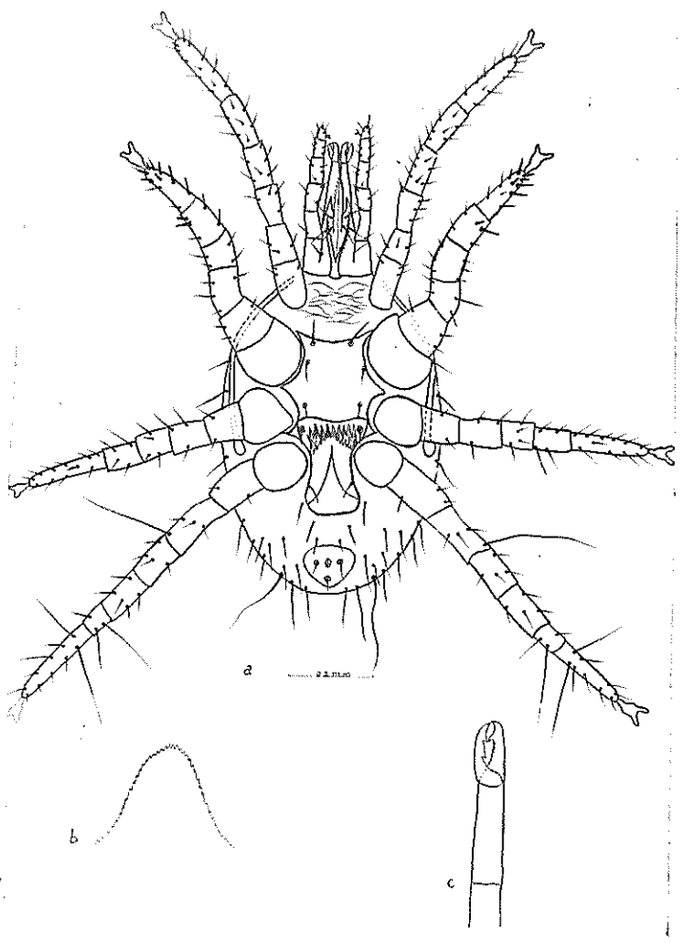

Fig 17. Hypoaspis sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female.

setae.....

The anal plate is more or less triangular with the normal three pairs of setae.

Uncovered area of the ventral surface with seven pairs of setae. The peritreme runs up the side of the body from leg I to Leg III.

All the legs are provided with caruncles and claws and all the joints of the legs have setae.

On the free edge of the hypostome are placed the corniculi maxillares. A pair of setae lies at the base of the malae and two other pairs are medial to the base of the pedipalp. The forked seta on the palpal tarsus has two tines.

The chelicera terminates in the movable and fixed digit.

Female and male :- not found.

Locality and host:-

Potchefstroom, 15 March 1953, 1 nympha taken from Onitis sp.

5. Family:-Laelaptidae Berlese 1892.

The family Laelaptidae comprises a large number of very variable genera, many of which have little in common. The majority of them are parasitic on insects and small mammals. About seven species of this great family were found on beetles.

(1) Subfamily:-Hypoaspidinae Vitzthum 1941.

(i) Hypoaspis sp.

(a) Female:- Fig 17.

The measurements of the idiosoma are about 0.76mm and 0.51 mm. The body is oval, well-chitinised and light-brown in colour.

The dorsal surface is covered by a single shield....

shield.....

The setae on the shield are short and smooth . On the posterior edge of the shield is a pair of very long curved setae . The other setae, on the edge of the shield are also longer than the setae on the surface of the shield .

On the venral surface the tritosternum is separated from coxae I . There is a reticulated area in front of the sternal plate but no pre -sternal plates are developed. The sternal plate extends from the anterior edge of coxaII to the middle of coxaIII. It encircles the base of coxaII and III; anterior margin slightly concave, posterior one more or less straight . Sternal setae long ,the foremost pair is placed on the edge of the shield. Metasternal setae level with posterior edge of coxaIII.

The genital plate is expanded posteriorly and is tongue-shaped. The anterior edge is frayed. The pair of genital setae are placed on the edge of the plate near coxa IV. The anal plate is more or less triangular; with three setae.

Uncovered area of the ventral surface bearing eight pairs of setae, three of which flank the genital plate. Stigmal pore between coxa III and IV, peritreme reaching forwards beyond coxa I.

Second pair of legs slightly enlarged and the tarsus is armed with strong spines. All the joints of the legs have setae. The femur of leg IV shows dorsally a very long curved seta; femora II and III with somewhat shorter setae. The tarsus of leg IV is also provided with three very long setae.

The epistome is nearly a rounded edge projecting over the mouth parts. The margin of the epistome is serrate.....

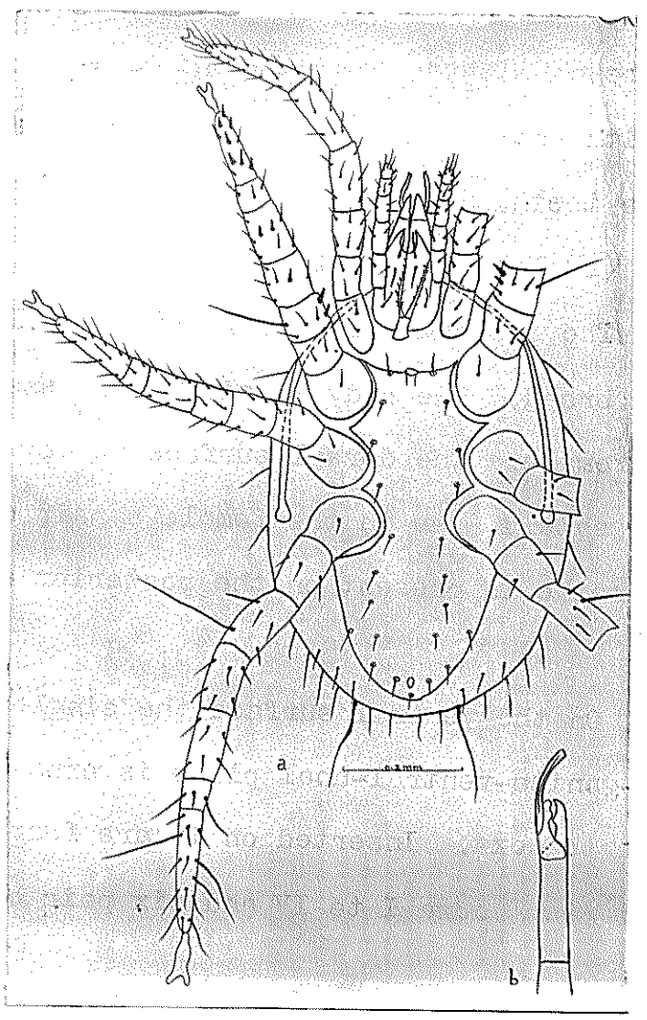

Fig 18. Hypoaspis sp. ventral view of male.

serrate....

The pedipalp has five free joints, the terminal one being short with a cluster of fine setae and a bi-pronged spine on its base.

The hypostome is well-chitinised. A pair of setae lies at the base of the malae and two others are medial to the base of the pedipalp. The internal malae are thin and transparent.

The chelicerae are well-chitinised; the fixed digit with one basally directed tooth, the movable with two teeth.

(b) Male:- Fig 18.

The idiosoma is approximately 0.71 mm long and 0.51 mm broad. The body is similar in shape to that of the female. The dorsal surface is covered by a single shield. As in the female a pair of very long curved setae is present on the posterior edge of the shield.

On the ventral surface the single sterno-genito-ventral-anal plate is expanded behind the fourth coxa. Inserted on it are four pairs of setae between coxa I to IV and six pairs of setae behind coxa IV.

The legs are similar to that of the female except for leg II where the spines on the tarsus are larger. The femur of leg II is also armed with larger spines.

The movable limb of the chelicera has an elongated spermatophoral process, extending well beyond the end of the limb; the fixed has a single tooth.

Nymphal stages:- not found . ....

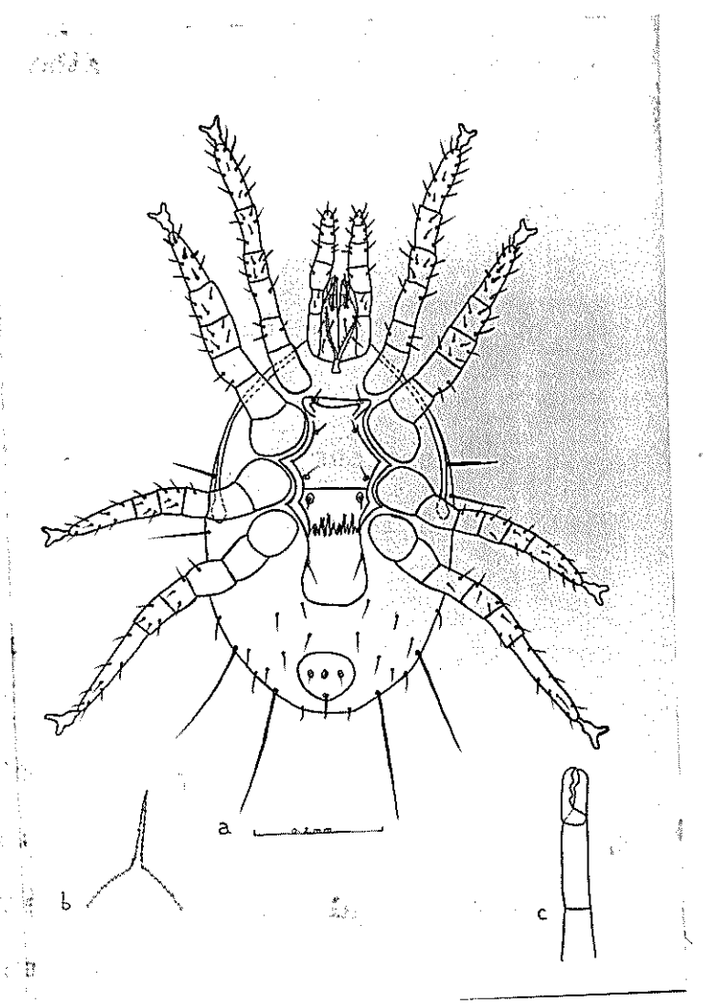

Fig 19. Peletiphis sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female.

found.....

(c) Locality and hosts:-

Potchefstroom, 25 October 1952, 8 females, 2 males from Oryctes boas F. 11 October 1952, 4 females taken from Copris elphanor Kling.
28 Januarie 1953, 3 females, 2 males taken from a Scarabeid larva of undetermined species.

(2) Subfamily:- Hyletastinae Vitzthum 1941.

(i) Peletiphis sp.

(a) Female:- Fig 19.

Length about 0.57 mm, breadth about 0.38 mm. The body is oval in shape and the colour is light-brown.

The dorsal surface is completely covered by a single shield. The shield is covered with thick very long setae.

Ventrally, the sternal plate stretches from the anterior edge of coxa II to the middle of coxa III. The anterior as well as the posterior margin is straight. There are three pairs of sternal setae. The anterior and lateral borders of the shield is well-chitinised. The metasternalia are small and rounded, each with a single seta. It is flanked by two endopodal plates. The genital plate is tongue-shaped. The pair of genital setae is placed on the edge of the plate near coxa IV. The anal plate is more or less triangular and possesses three setae.

The uncovered area bears six pairs of setae. The peritreme runs up the side of the body to the mid-dorsal line.

Second pair of legs only slightly enlarged and the tarsus is armed with small spines.....

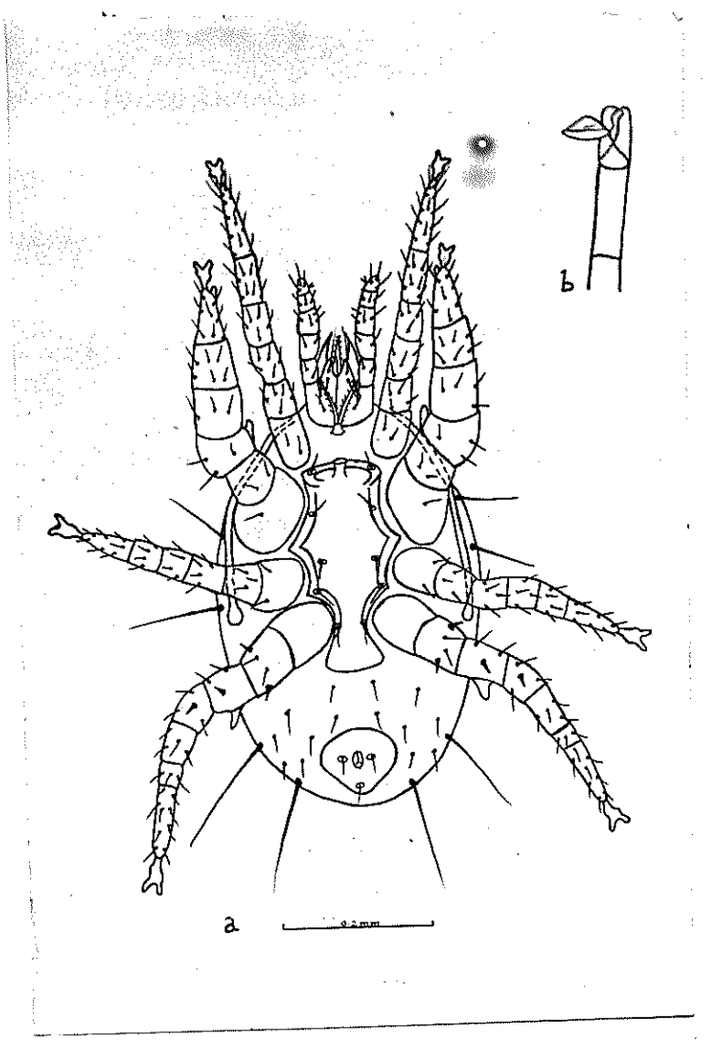

Fig 20. Peletiphis sp.

a. Ventral view of male.

B. Chelicera of male.

spines.....

The epistome is rounded in shape and with a serrate front; in the middle it is prolonged into a slender transparent projection with a fringe-like edge.

The hypostome is well-chitinised; on its free edge are placed the corniculi. A pair of long setae lies at the base of the malae and two pairs are medial to the base of the pedipalps. The penultimate or fourth joint of the pedipalp bears a bi-pronged spine.

The fixed digit of the chelicera with one tooth, movable with two teeth.

(b) Male:- Fig 20.

The body is similar in shape to that of the female and is about 0.53 mm long and 0.35 mm broad. The dorsal surface is completely covered by a single plate, which bears thick long setae.

The sterno-genital plate stretches from the anterior edge of coxa I to the posterior edge of coxa IV. Inserted on it are five pairs of setae. The anal plate is more or less triangular and bears the normal three setae. A number of setae arise on the uncovered area of the venter.

Second pair of legs strikingly enlarged, femur bears on the inner side a spur, the tarsus with a smaller one. The femur of leg IV bears a spur and the trochanter, femur and genu is provided with spines.

The chelicera is well-chitinised, the fixed limb with one tooth, the movable also with a single tooth beneath which is inserted a spermatophoral process.

Nymphal stages:- not found.

(c) Locality and hosts:- ....

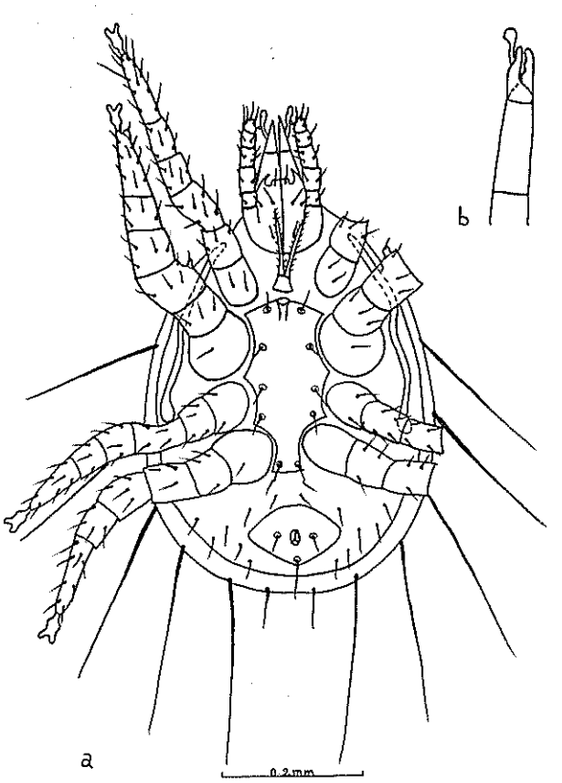

Fig 21. Peletiphis sp.

a. Ventral view of male.

b. Chelicera of male.

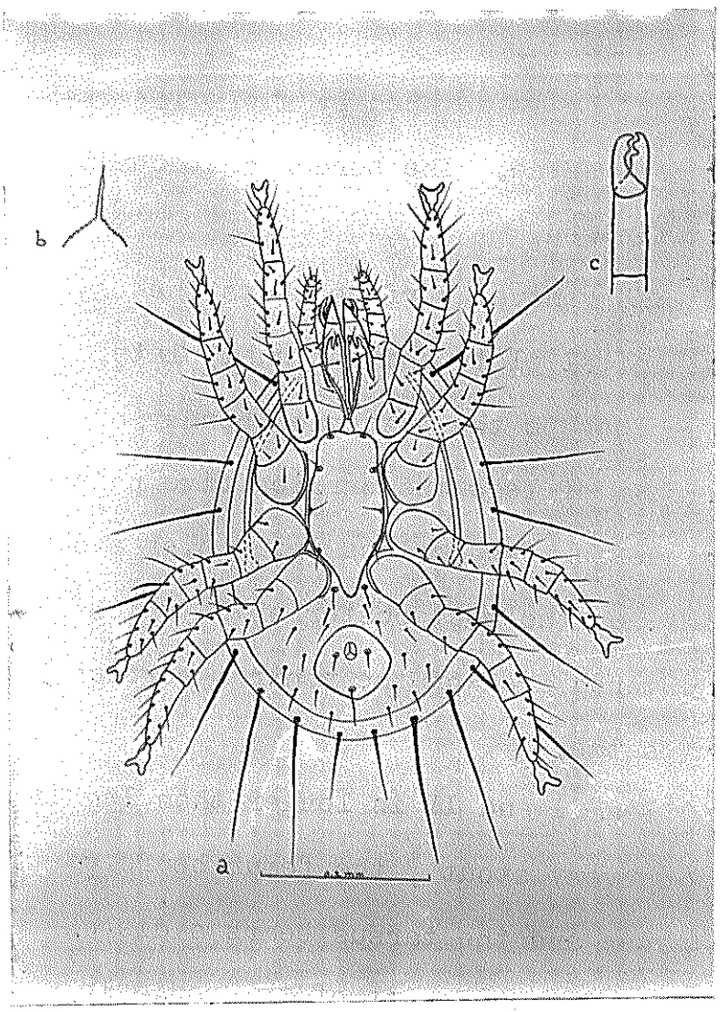

Fig 22. Peletiphis sp.

a. Ventral view of nympha.

b. Epistome of nympha.

c. Chelicera of nympha.

(c) Locality and hosts:-

Potchefstroom, 9 March 1953, 1 female from Heliocopris gigas Linn. 18 March 1953, 2 females, 2 males from Heliocopris hamadryas Fab.

(ii) Peletiphis sp.

(a) Male:- Fig 21

The idiosoma is approximately 0.53 mm long and 0.38 mm broad. The body is more or less egg-shaped. The dorsal surface is covered by a single shield which has long smooth setae. The border of the shield is very well-chitinised.

The ventral surface shows the sterno-genital plate and the anal plate. The sternal plate reaches to the posterior border of the coxae of the fourth pair of legs and carries five pairs of setae. The anal plate is more or less triangular and possesses three setae, the most posterior of which is the longest. The uncovered area of the ventral surface bears eight pairs of setae.

Legs I and IV ~~is~~ are longer than leg II and III. Leg II is very stout , the femur bears on the inner side a spur and the tarsus bears a distal spur.

The tarsal joint of the pedipalp with a bi-pronged spine.

The chelicera terminates in the normal two joints namely the fixed and movable digit; the movable digit with an elongated grooved spermatophoral process, the fixed with two teeth.

(b) Nympha:- Fig 22.

The body is similar in shape to that of the male and is about 0.46 mm long and 0.34 mm broad. The dorsal surface is covered by a single shield which bears long smooth setae.....

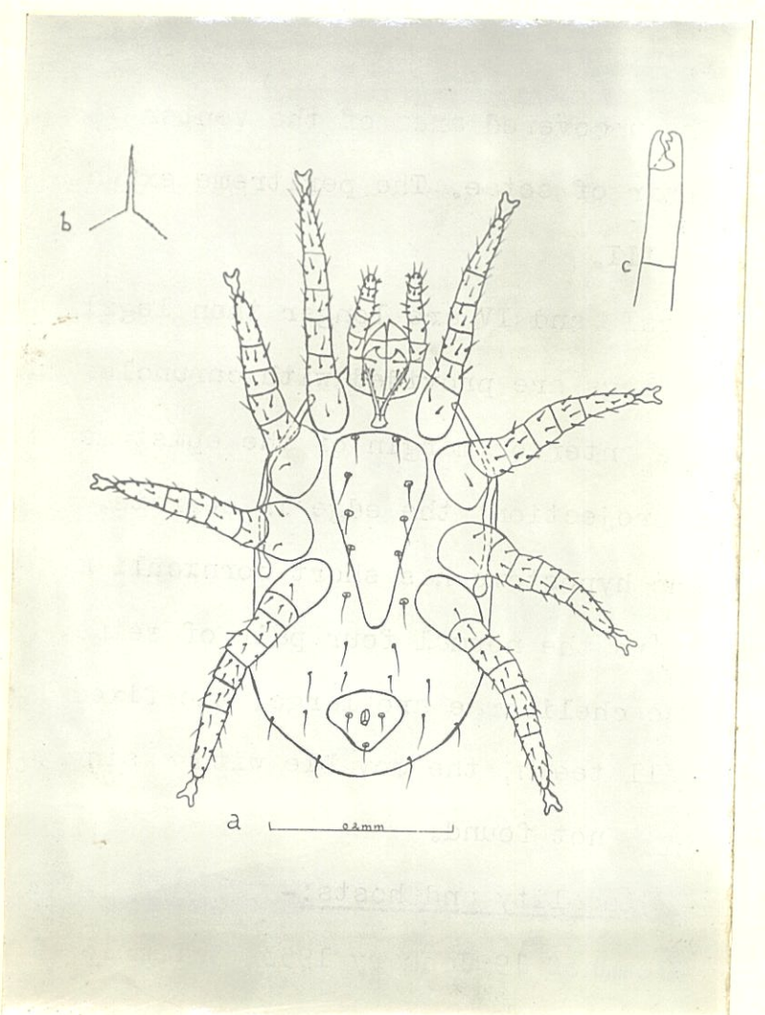

Fig 23. Peletiphis sp.

a. Ventral view of nympha.

b. Epistome of nympha.

c. Chelicera of nympha.

setae.....

On the ventral surface, the sternal plate extends from the posterior edge of coxaI to the posterior edge of coxa IV. It has a rounded posterior edge . Inserted on it are four pairs of setae. The pair of genital setae is placed near the posterior edge of the sternal plate. Endopodal plates support the internal surfaces of coxaII and III, and coxaeIIIx and IX.

The uncovered area of the venter is provided with eight pairs of setae. The peritreme extends from coxaI to coxa III.

LegsI and IV are longer than legsII and III. All the legs are provided with caruncles and claws.

The anterior margin of the epistome with a lance-shaped projection; the edge is serrate.

The hypostome has short corniculi maxillares; its base bears the normal four pairs of setae.

The chelicerae are large, the fixed limb bearing two small teeth, the movable with a single tooth.

Female:- not found.

(c)Locality and hosts:-

Bloemhof 19 January 1953, 5 females,1 male and Potchefsroom 8 November 1952, 1 male taken from Copris elphanor Kling.

(iii) Peletiphis? sp.

(a) Nympha:- Fig 23.

The body is about 0.43mm long and 0.25mm broad. The dorsal surface is completely covered by a single shield which bears long simple setae.

Ventrally the sternal plate stretches from the anterior edge of coxa II to the posterior edge of coxa IV,.....

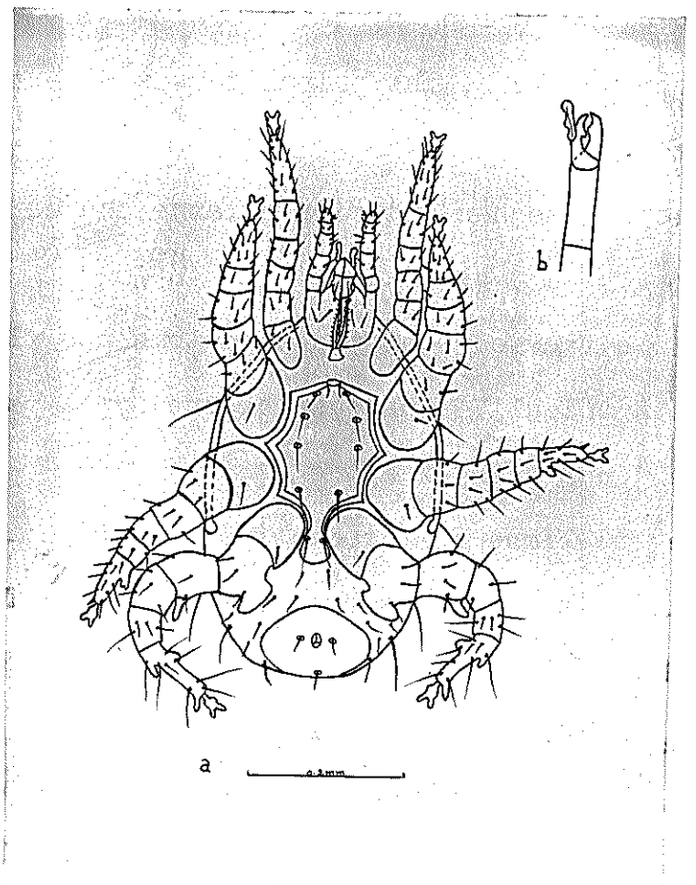

Fig 24. Peletiphis sp.

a. Ventral view of male.

b. Chelicera of male.

coxa IV.....

posteriorly, it has a rounded edge. Inserted on it are four pairs of long setae. The anal plate is more or less triangular with the normal three setae.

A number of setae arises from the uncovered area of the ventral surface. Stigmal pore between coxa III and IV, peritreme reaching the posterior edge of coxa I.

Legs I and IV longer than legs II and III, which are about equal in length; setae present on all segments of the legs. The palpal tarsus with a bi-pronged spine.

The epistome has anteriorly a lance-shaped projection.

On the free edge of the hypostome are placed the short corniculi. The base of the hypostome bears the normal four pairs of setae.

The two limbs of the chelicerae are short; the movable limb is below its curved tip devoid of teeth, the fixed with a single tooth below its curved tip.

Female and male:- not found.

(b) Locality and hosts:-

Potchefstroom, 19 March 1953, 4 nymphae from Heliocopris gigas Linn. 19 March 1953, 1 nympha taken from Heliocopris hamadryas Fab.

(iv) Peletiphis sp.

(a) Male:- Fig 24

The length is about 0.45mm and the breadth 0.24mm. Colour light-brown.

The dorsal surface is almost completely covered by a single shield, bearing a number of long smooth setae. The longest setae are present on the margin of the shield.....

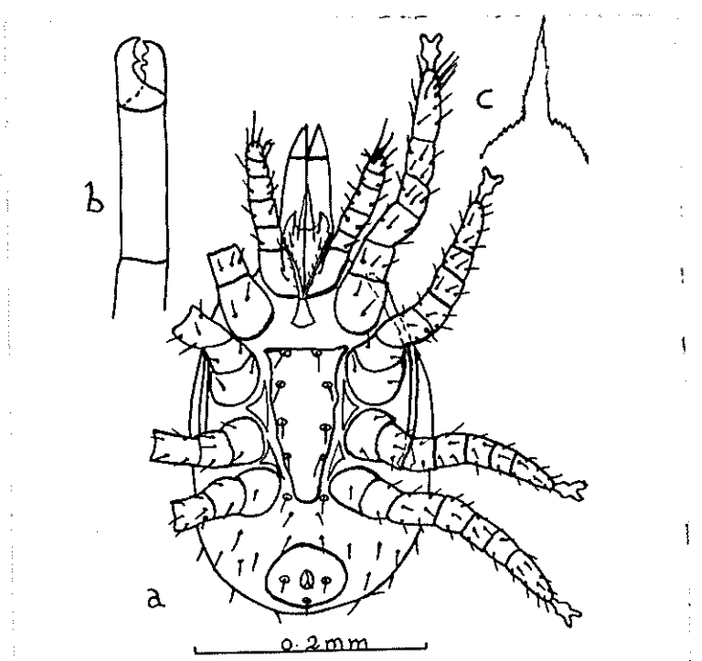

Fig 25. Copriphis ? sp.

a. Ventral view of nympha.

b. Epistome of nympha.

c. Chelicera of nympha.

shield.....

The sterno-genital plate reaches to the posterior border of the coxae of the fourth pair of legs and carries four pairs of setae. The border of the shield is heavily chitinised. The anal plate is rounded with the normal three setae.

On the uncovered area of the venter arises several pairs of setae. The peritreme extends from the base of the gnathosoma to coxa III. Stigmal pore between coxa III and IV.

Legs I and IV are longer than legs II and III. Leg I is more slender than the other legs. The tarsus of leg III is armed on the inner side with a spur. The trochanter of leg IV is armed with a very large spur; there is a smaller spur present on the femur of leg IV and the tarsus bears three spur-like processes. The tarsi of all the legs are provided with caruncles and claws.

The base of the hypostome bears the normal four pairs of setae. The pedipalp has five free joints; its tarsal joint with a bi-pronged spine on its base.

The fixed digit bears a single small tooth; the movable with a single backwardly-directed tooth and a distinct spermatophoral process.

Female and nymphae not found.

(b) Locality and hosts:-

Potchefstroom, 20 March 1953, 2 males taken from Heliocopris hamadryas Fab. 1 May 1953, 3 males taken from Heliocopris gigas Linn.

(v) Copriphis? sp:-

(a) Nympha :- Fig 25.

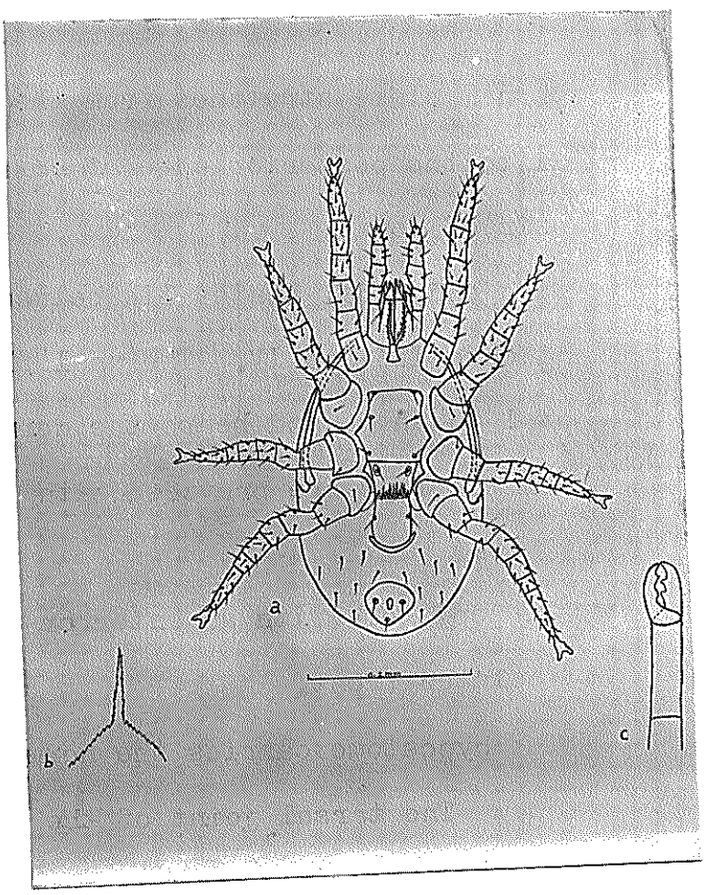

Fig 26. Alliphis? sp.

a. Ventral view of female.

b. Epistome of female

c. Chelicera of female.

Fig 25.....

The idiosoma is about 0.28 mm long and 0.21 mm broad. The body is oval in shape and pale-yellow in colour owing to its feeble chitinisation. The dorsal surface is almost completely covered with a single shield. It is beset with a number of small fine setae.

Ventrally the tritosternum has a broad base which tapers to a point and terminates in two laciniae. The sternal plate stretches from the anterior edge of coxa II to the posterior edge of coxa IV. It carries four pairs of setae.

Two endopodal plates lie between coxa II and III and coxa III and IV. The anal plate is more or less oval in shape and bears the normal three anals.

All the legs are provided with caruncles and claws.

The epistome with an anterior projection and a denticulated front.

The hypostome carries the normal four pairs of setae. The tarsal joint of the pedipalp bears a bifid spine.

The fixed limb of the chelicera has two teeth, the movable has one.

Female and male:- not found or cannot be identified.

(b)Locality and hosts:-

Potchefstroom, 19 March 1953, 1 nympha taken from Heliocopris hamadryas Fab.

(vi) Alliphis? sp.

(a)Female .Fig 26...

Fig. 26.....

Length about 0.35 mm and breadth 0.22 mm. The body is more or less oval in shape. The dorsal shield is entire and sparsely covered with very short simple setae.

On the ventral surface the sternal plate stretches from the anterior edge of coxa I to the middle of coxa III; anterior and posterior margins straight. Inserted on it are the normal three pairs of setae. The metasternal plates are small and rounded, each with a single seta. There are endopodal plates present which support the internal surfaces of coxa III and IV. No metapodal plates are present. The genital plate is tongue-shaped. The anterior margin of the plate is frayed. The pair of genital setae are placed on the edge of the plate. The anal plate is more or less triangular with three setae.

Uncovered area of the venter bears seven pairs of setae. Stigmal pore between coxa III and IV; peritreme reaching coxa I. The peritreme is surrounded by a narrow plate.

Legs I and IV are longer than legs II and III which are about equal in length. All the legs are provided with caruncles and claws. The specialized seta on the palpal tarsus has two tines.

The gnathosoma is well-chitinised; the epistome with a serrate front , it terminates in a lance-shaped projection.

On the free edge of the hypostome ~~is~~ are placed the cornniculi. The basal part of the hypostome .....

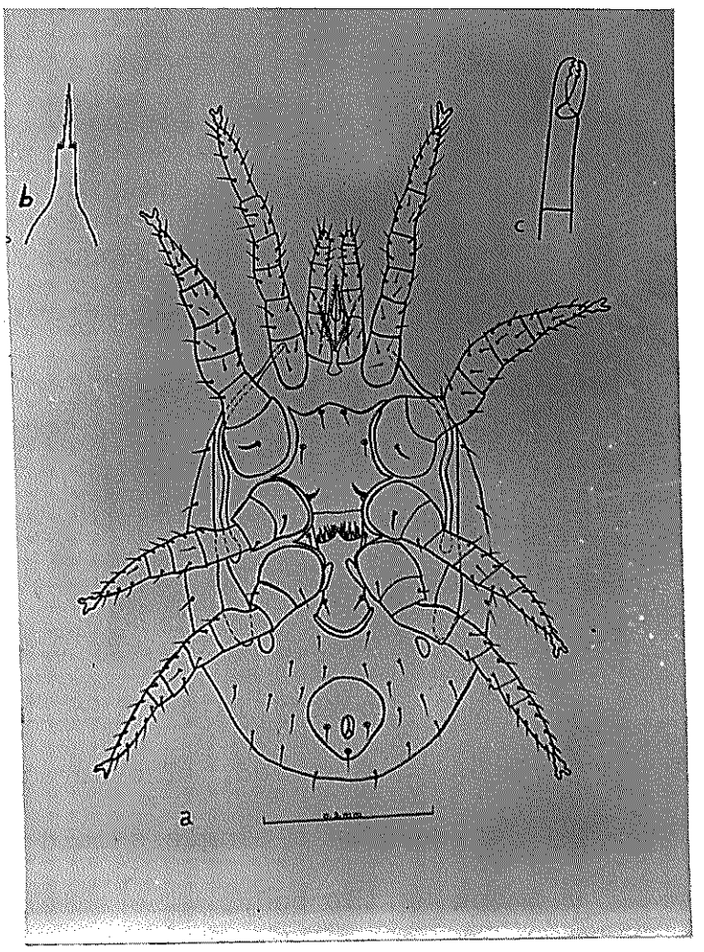

Fig. 27. Uroiphis sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female.

hypostome.....

bears the normal four pairs of setae.

The fixed as well as the movable limb of the chelicera bears two small teeth.

Male and Nymphal stages:- not found.

(b) Locality and hosts:-

Potchefstroom, 9 October 1952, 1 female from Anomala transvaalensis A. 26 March 1953, 1 female from Onitis sp.

Fochville , 15 February 1953, 2 females from Onthophagus gazella Fahr. 14 February 1953, 1 female from Oniticellus sp. 14 February 1953, 1 female from Sisyphus sp., 16 February 1953, 2 females taken from Onthophagus binodis Fahr.

(vii) Uroiphis sp.

(a) Female :- Fig 27.

The idiosoma is approximately 0.49 mm long and 0.36 mm broad. The body is oval in shape ; shoulders are developed. Colour red. The dorsal surface is completely covered by a single shield of approximately the same shape as the body. The shield is sparsely covered with small, simple setae, which are longer on the posterior portion and the margin of the shield.

Ventrally, no jugular plates are present. The tritosternum terminates in two slender laciniae. The sternal plate extends from the anterior edge of coxa II to the middle of coxa III. The plate bears three pairs of setae; the posterior pair is thicker than the other two pair. The metasternal and endopodal plates are fused and lie between coxa III and IV. Arising from them are the metasternal .....

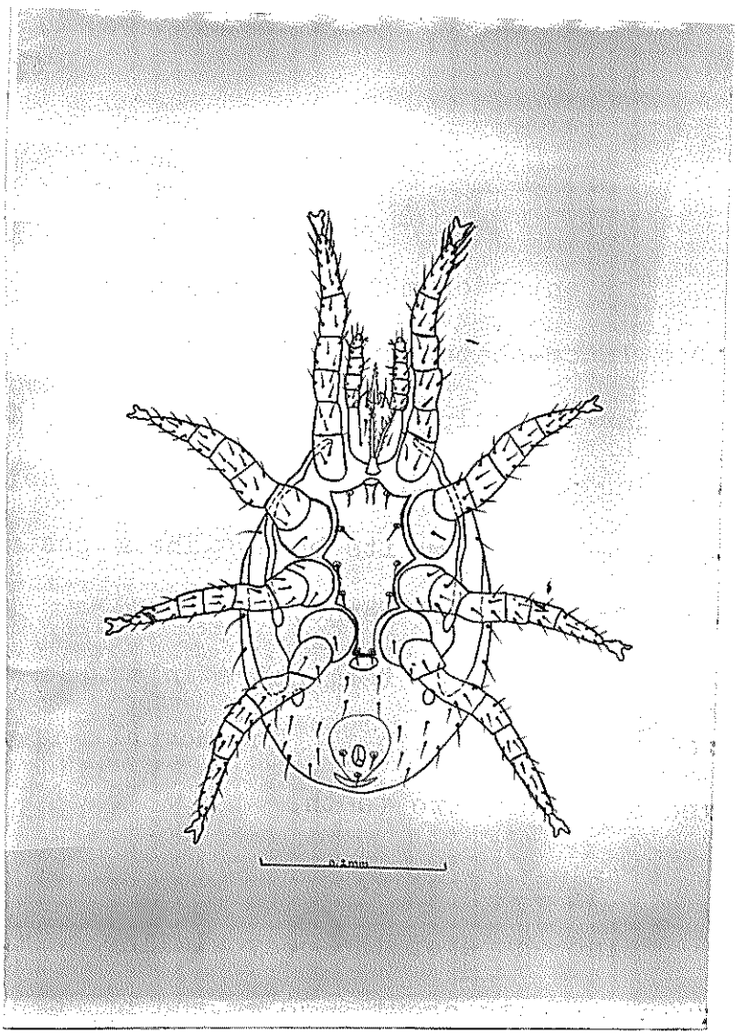

Fig 28. Uroiphis sp. ventral view of male.

metasternal.....

setae. Genito-ventral plate is rounded posteriorly. The anterior margin is frayed. One pair of genital setae is present. The anal plate is more or less triangular and bears three setae.

The uncovered area of venter bears about nine pairs of setae. Stigmal pore lies near coxa III peritreme reading forwards beyond coxa I. Peritremal and metapodal plates are present.

The anterior margin of the epistome prolongs into a lance-shaped projection.

The pedipalp has five free joints, the terminal one being short with a cluster of fine setae and a bi-pronged spine on its base. The hypostome bears the normal four pairs of setae.

The chelicera terminates in a well-chitinised fixed and movable digit. The movable as well as the fixed digit has two teeth.

(b) Male :- Fig. 28.

The shape of the body similar to that of the female. Length about 0.38 mm and breadth 0.27 mm. The dorsal surface is covered by a single shield.

On the ventral surface the sterno-genital plate stretches from the anterior edge of coxa II to the posterior edge of coxa IV. Near the posterior edge of the plate lies a single rounded plate. The sternal plate carries five pairs of setae. The anal, peritremal and metapodal plates ~~is~~ are similar to those of the female.

Legs I and IV are the longest. Leg II is the stoutest. Setae present on all segments of the legs.....

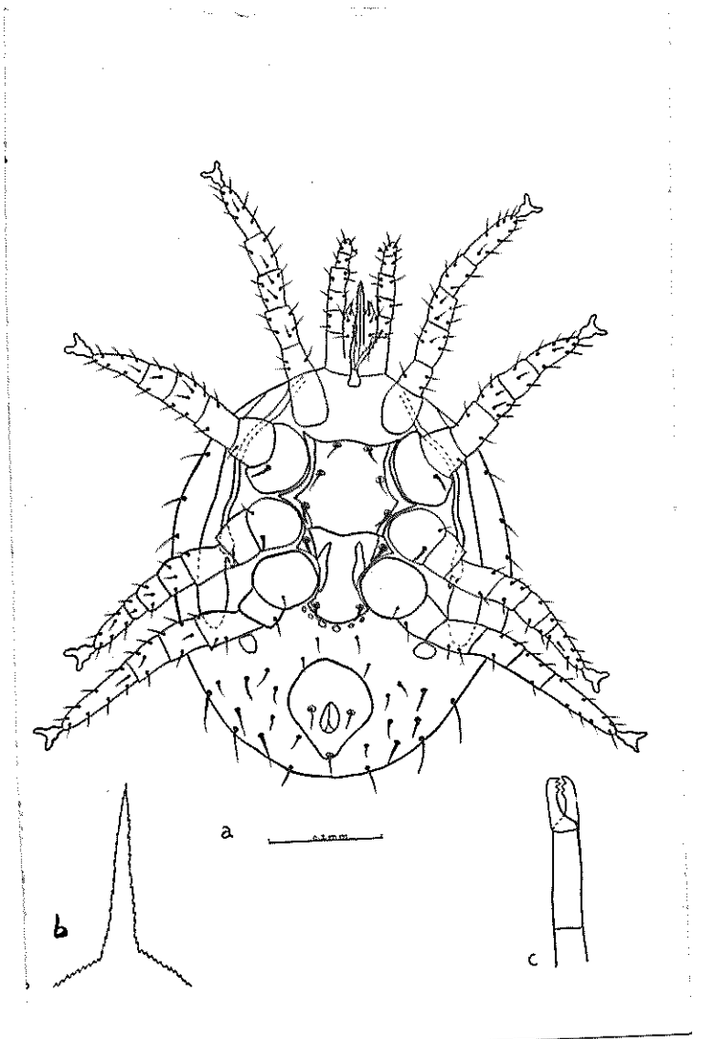

Fig 22. Uroiphis sp.

a. Ventral view of female.

b. Epistome of female.

c. Chelicera of female.

legs.....

The movable limb of the chelicera with a spermatophoral process.

Nymphal stages:- not found.

(c) Locality and hosts:-

Potchefstroom, 19 February 1953, 1 female, 2 males taken from Onitis sp. 19 March 1953, 4 females Heliocopris hamadryas Fab. 1 May 1953, 2 females taken from Heliocopris gigas Linn.

(viii) Uroiphis sp.

(a) Female:- Fig 29.

The idiosoma is more or less 0.68 mm long and 0.57 mm broad. The body is rounded in shape; colour red. The dorsal surface is almost completely covered by a single shield which is sparsely covered with short simple setae. The setae on the edge of the shield are longer and thicker than the others.

Ventrally, the sternal plate stretches from the anterior edge of coxa II to the middle of coxa III. Inserted on it are three pairs of setae. The posterior pair of which is very thick, the other two pair are fine and hair-like. The lateral borders of the plate are well-chitinised. The metasternal setae are also very thick, they are placed on two broad metasternal-endopodal plates near coxa III. The genital plate extends behind coxa IV and has a rounded posterior edge. Near the posterior edge of the genital plate lies three pair of small rounded plates. The pair of genital setae is also thick and is placed on the edge of the plate near coxa IV. The metapodal plates behind coxa IV are distinct and well developed. The anal plate is more or less pear-shaped and carries three setae.....

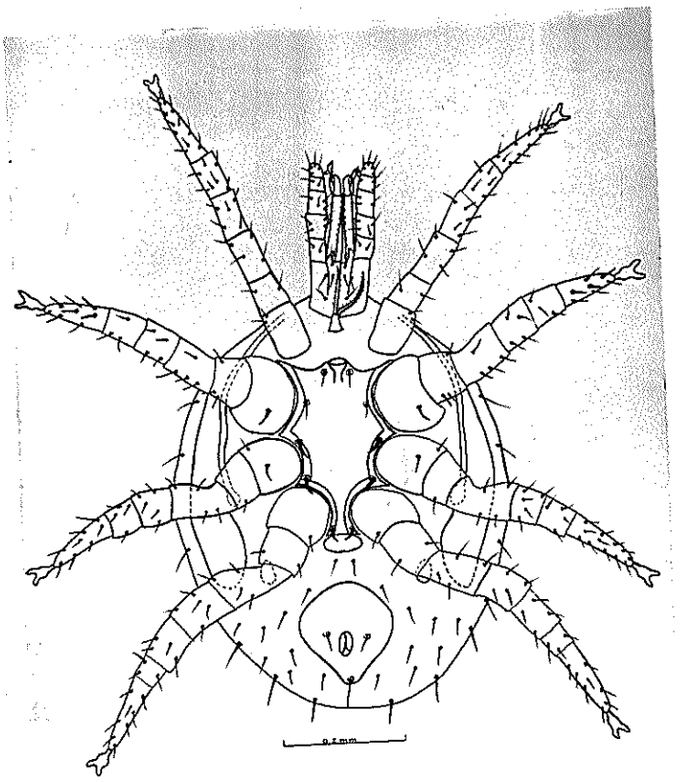

Fig 30. Uroiphis sp. ventral view of male.

setae.....

The uncovered area of the ventral surface bears nine pairs of setae. Stigmal pore near coxa III, peritreme reaching forwards beyond coxa I. The peritreme is surrounded by a broad peritremal plate, its posterior edge is round.

All the legs are provided with caruncles and claws and ~~is~~ are covered with smooth setae.

The epistome prolonged into a lance-shaped projection with denticulated anterior margin.

On the free edge of the hypostome are placed the short corniculi. A pair of long smooth setae lies at the base of the malae and two other pairs are medial to the base of the pedipalp. The forked seta on the palpal tarsus has two tines.

The chelicera with a fixed and movable digit. The fixed as well as the movable digit bears two small teeth.

(b) Male :- Fig 30.

The measurements of the idiosoma are 0.66 mm and 0.55 mm. The body is similar in shape to that of the female.

The ventral side of the body shows two plates. The sterno-genital plate extends from the anterior edge of coxa II to the posterior edge of coxa IV; inserted on it are five pairs of setae. The two anterior pairs of setae, as in the female, are fine and hair-like, the other three pairs are very thick. Near the posterior edge of the sternal plate lies a single rounded plate. The anal, peritremal and metapodal plates similar to those of the female...

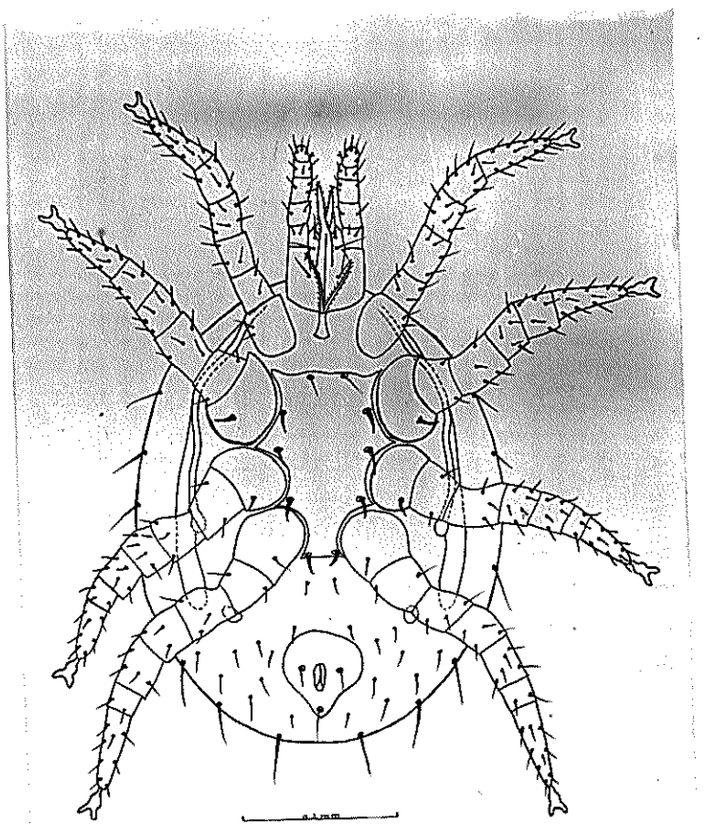

Fig 31. Uroiphis sp. ventral view of nympha.

female.....

The movable digit of the chelicera has a spermatophoral process.

(c) Nympha:- Fig 31.

The idiosoma is approximately 0.57 mm long and 0.46 mm broad. The body is similar in shape to that of the female and male. The dorsal surface is covered by a single shield.

Ventrally, the sterno-genital plate reaches to the posterior edge of the coxae of the fourth pair of legs and carries five pairs of setae; the anterior pair is fine and hair-like while the other four pairs are very thick. The anal plate is more or less pear-shaped with the normal three setae.

The uncovered area of the venter bears nine pairs of setae. The peritreme extends from the base of the gnathosoma to coxa III; stigmal pore between coxa III and IV. The peritreme, as in the female and male, is surrounded by a well-developed peritremal plate. Two metapodal plates lie behind coxa IV.

The corniculi or malae are short. The basal part of the hypostome bears the normal four pairs of setae.

The fixed as well as the movable limb of the chelicera with two very small teeth

(d) Locality and hosts:-

Potchefstroom, 5 February 1953, 15 females, 7 males from Onitis sp., 11 February 1953, 1 female, 16 nymphae taken from Onitis sp. 18 March 1953, 2 females, 3 nymphae, from Onitis sphinx Fahr.

6. Family ~~Phytoseidae~~ Pachylaelaptidae?

One female of this family was found on a.....

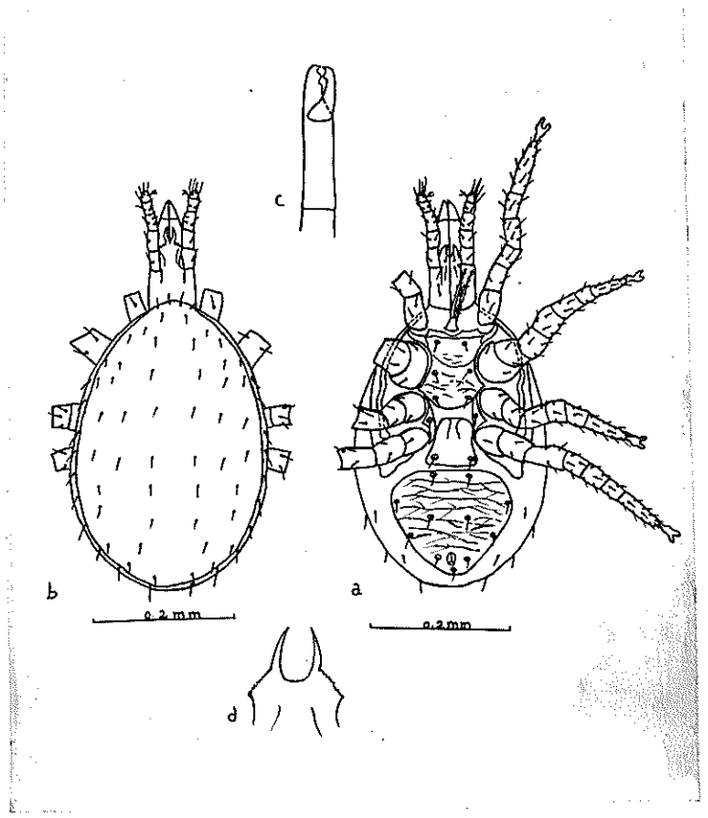

Fig 32.

a. Ventral view of female.

b. Dorsal view of female.

c. Chelicera of female.

d. Epistome of female.

on a.....

Scarabeid beetle. This mite is propably predatory on mites of the family Tetranychidae which also occured on the beetle.

(i) Genus:- ?

(a) Female:- Fig 32

The idiosoma is about 0.38 mm long and 0.26 mm broad. The body is oval in shape. The dorsum is covered by an entire shield which bear about 25 pair of setae. 2 pairs in interscutal membrane

Ventrally, the sternal plate is longer than its maximum breadth, extending from the base of coxa I to the middle of coxa III; its anterior edge is slightly concave and the side is indented in the region between coxa I and II. It is produced laterally to support the coxae of the anterior legs and bears three pairs of setae. The posterior margin of the shield is convex. A few faint reticulated marks are visible on the plate.

The metasternal-endopodal plates are large and carries one pair of setae. The genital plate is truncated posteriorly and bears the normal pair of genital setae. The ventro-anal plate is roughly triangular with rounded corners. It is wider than the genital plate and bears four pairs of setae in addition to the three anals. The reticulation is distinct.

Stigmal pore between coxa III and IV; peritreme reaching forwards beyond coxa I and is surrounded by a peritremal plate which is truncated posteriorly.

All the legs are provided with caruncles and claws; all the joints of the legs have setae.....

setae....

The epistome is more or less convex and is drawn out into two spinous processes.

The pedipalp is long and slender, the bi-pronged spine being inserted on the base of the terminal joint. The hypostome has the normal four pairs of setae. The external malae or corniculi are short.

The fixed limb of the chelicera with two small teeth, the movable with one tooth.

Male and Nymphal stages:- not found.

(b) Locality and hosts:-

Ventersdorp, 30 November 1953, 1 female taken from a Scarabeid beetle of unknown species.

V. SUMMARY.

In this paper descriptions are given of several species of the following genera and subgenera which are associated with some insect hosts in Western Transvaal:-

1 species of Macrocheles(Coprholaspis).
4 species of Macrocheles
1 species of Pachylaelaps
1 species of Hypoaspis
4 species of Copriphis (Peletiphis)
1 species of Copriphis (Alliphis)
1 species of Parasitus
1 species of Pergamasus
2 species of Uroiphis
1 species of Gamasellus
1 species of Uropoda

With the literature at present at my disposal it is however impossible to identify the species. Some of them may be new ones, now described for the first time, but possibly some of them are described somewhere in literature not available to me at the moment.

It is hoped that the work on this subject can be continued, in which case new material and information may lead to the exact identification of species.

VI. LITERATURE.

Baker E.W.& Wharton G.W.(1952). An Introduction to Acarology.

Baker E.W.& Cunliffe F. (1953). A Guide to the predatory Phytoseiid mites of the United states.

Berlese A. (1920). Centuria V, Redia 14:160-172.

Finnegan (1933) Uropoda, notes on genus. (Proc. Zool. Soc. London.)

Fox I.Five new mites from Rats in Puerto Rico.

Garman P. (1948). Mite species from Apple trees in Connecticut.

Homan. H(1933). Die Milben in gesunden Bienen-stöcken. (Z. Parasitenkunde. Berlin. Bd 6, Heft 3.)

Hughes A.M (1948). The Mites associated with stored food products.

Hull. Some species of Macrocheles and taxonomic notes. (Ann. Mag. N. H. (9) 15).

Keegan H.L. (1946). Six new mites of the superfamily Parasitoidea.

Nesbitt H.H.J.(1951). A Taxonomic study of the Phytoseiinae predaceous upon Tetranychidae of economic importance.

importance.....

Oudemans A. C.(1902) Notes on Acari. (Tydschr.Nederland. Dierk. Ver.(2)Vll)

Oudemans A.C(1903).Notes on Acari. (Tydschr.Nederland. Dierk. Ver. (2) Vlll).

Radford C.(1942). Genera and species of Parasitic mites. (Parasitology Vol. 35 NO. 1,2).

Sellnick M.(1938). Milben als Parasiten von Insekten.

Tragärdh I. (1937). Schwedisch-Chinesische wissenschaftliche expedition nach den Nordwestlichen Provinzen Chinas. Acari.

Tragärdh I.Acarina from the Juan Fernandez Islands.

Tragärdh I.(1943). Acariderna och deras ekologiska relationer till Insekterna.

Tragärdh I.(1944). Zur systematik der Uropodiden. (Sartryck ur Entomologisk Tidskrift.Årgång 65).

Tragärdh I.(1946). Outlines of a new classification of the Mesostigmata (Acarina) based on comparative morphological data.

Tragärdh I.(1946). Contributions towards the comparative Morphology of the Mesostigmata(Acarina) Vll. The praesternal hairs and male genital aperture.

Tragärdh I. (1952). Acarina collected by the Mangarevan expedition to. South Eastern Polynesia in 1934 by the P. Bishop Museum, Honolulu, Hawaii. Mesostigmata.

Turk F.A.(1947). Insecticolous Acari from Trinidad.

Turk S.M & F.A(1952). Studies of Acari, 7th series:- Records and descriptions of mites new to the British Fauna together with short notes on the biology of sundry species.

Vitzthum H.Graf (1929). Acari. In:- Brohmer, P.Ehrmann ....

ADDENDUM.

DIAGNOSTIC CHARACTERISTICS OF THE FAMILY, GENUS AND SPECIES

Family: Uropodidae

The tritosternum is covered by coxae I. Grooves for the legs are well developed and the legs are more or less hidden under the body. The marginal plate is fused anteriorly to the dorsal plate. The marginal plate is not scalloped.

Genus:- Uropoda

Venter provided with impressed foveae for the reception of the legs. Body regular in form; dorsum evenly convex; no sculpture except punctuation. Leg I provided with claws.

Uropoda bloemhofi

The length and the breadth, of the nympha is 0.69 mm and 0.52 mm respectively. The stigmal pore is situated on a level with the anterior side of coxa III. The sternal plate extends laterally before coxa II.

Family: Macrochelidae

Leg I reduced without pretarsus, caruncles or claws. Sternal plate bears three pairs of setae. Meta-sternal plates are minute, each with a single seta. Genital plate is truncated anteriorly and posteriorly. Ventral plate is fused with the anal plate. Epistome consists of a median, narrow, branched or toothed element, that may or may not be flanked by smaller lateral elements. Palpal tarsus with three tines.

Genus: Macrocheles.

The sternal plate is ornamented with reticulations or punctuations. Ventro-anal plate with four pairs of setae. Metapodal plates are absent. Reticulation, transverse lines or punctuations are present on the ventro-anal plate or on the genital plate.

Male/.....

Male with leg II enlarged.

Macrocheles leeuwdoringstadi

The length of the female is 0.79mm and the breadth is 0.57mm. The striations on the sternal plate differ from those of the other species. The setae on the legs are short. The sternal plate is longer than broad.

Macrocheles potchefstroomi

The breadth differs from that of the previous described species. It is 0.5mm. The setae also differ; some of them are smooth at the base but pectinate at their free ends. The striations on the sternal plate are characteristic. The nympha's body is about 0.4mm long and 0.33mm broad. The tarsi of the fourth pair oflegs, in the female as well as the nympha carry long spiny setae which are also smooth at the base but pectinate at their free ends.

Macrocheles heliocopris

This mite is smaller than the two previously described; the length of the female 0.55mm and the breadth is 0.35mm. The sternal plate is large and only few punctuations are present. The second pair of legs is strikingly enlarged.

Macrocheles fochvillei

The measurements differ from those of the other species. The length of the female is 0.71mm, and the breadth is 0.51mm and the male is 0.6mm long and 0.42 broad. The striations on the sternal plate differ from those of the other species. The sternal plate is broader than long whilst the sternal plate of the previously described species is longer than broad. The second pair of legs of the male is enlarged and the femur bears a spur.

Macrocheles gigas

The length of the female is 0.51mm and the breadth is 0.35mm. It is smaller than the previous described species. The lines on

the/....

the sternal plate differ from those of the other species. Some of the setae are pectinate. The colour of this mite is white while all the others are light-brown. Leg II bears three spines on the apex.

Family: Pachylaelaptidae

The parapodal, peritremal and metapodal plates are fused into one and extend posterior to coxae IV. The forked seta on the palpal tarsus has three tines. All the tarsi are provided with pretarsi.

Genus:- Pachylaelaps

The ventral and genital plates are united; the anal plate is separate. The distal end of tarsus II has one strong well-developed spine. Leg II of the male is armed with a spur.

Pachylaelaps potchefstroomi

The length of the female is 0.53mm long and 0.34mm broad. The male measures 0.5mm and 0.31mm, the nympha 0.49mm and 0.32mm. The striations on the sternal plate is characteristic.

Family: Parasitidae

The tarsi of all the legs are provided with pretarsi, caruncles and claws. The forked seta on the palpal tarsus has three tines. The dorsal plate is divided in two. The epistome is tricentate.

Genus: Pergamasus

Colour dark. The posterior dorsal shield is tri-angular and it is not broader than long as in Parasitus. The genu of the pedipalp has two knife-like setae. The general appearance is similar to that of the other species of Pergamasus.

Pergamasus bloemhofi

The posterior dorsal shield bears thirteen pairs of setae; one pair of which is long and pectinate. The measurements of

the/.....

the nympha differ from that of other species; the length is 0.84mm and the breadth is 0.56mm. The uncovered area of the venter bears twenty-two pairs of setae.

Genus: Parasitus

The posterior dorsal shield is broader than long. The genu of the pedipalp with two knife-like setae and the femur with a bi-pronged seta. The general appearance is similar to that of other species of Parasitus. The external appearance of the internal malae is characteristic.

Parasitus potchefstroomi

The length of the nympha is 0.53mm and the breadth is 0.35mm. The posterior dorsal plate bears fifteen pairs of setae. The reticulation on the sternal plate is characteristic. The uncovered area of the venter bears eleven pairs of setae.

Family: Ascaidae

A bifurcate seta is present on the base of the palpal tarsus and the dorsal plate is divided in two. The tarsi of all the legs have pretarsi, caruncles and claws.

Genus: Gamasellus

The form of the sternal plate of the nymphae is characteristic. The form of the divided dorsal plate is also characteristic.

Gamasellus potchefstroomi

The measurements of the nympha differ from those of other species. The length is 0.25mm and the breadth is 0.15mm. There are two pairs of thick setae present on the coxae of legs II and III.

Family: Laelaptidae

The specialized seta on the palpal tarsus has two tines. The genital plate is dropshaped. The dorsal plate is undivided.

Subfamily:/.....

Subfamily: Hypoaspidinae

Anterior border of the epistome with continous or serrate margin. Genital plate with one pair of spines.

Genus: Hypoaspis

Male with ventral plates all united; anal plate separate in female. Coxae not armed with tooth-like spines, they are always hair-like. In the female the genital and ventral plates are fused together. The peritremal plate does not surround coxa IV.

Hypoaspis potchefstroomi

The length of the female is 0.76mm and the breadth is 0.51mm. The male is 0.71mm long and 0.51mm broad. There is a pair of very long curved setae present on the posterior edge of the dorsal shield. Long characteristic setae also occur on the fourth pair of legs.

Subfamily: Hyletastinae

The anterior margin of the epistome with a lance-shaped projection.

Genus: Copriphis

The legs of the males are provided with spurs or spur-like processes. When a peritremal plate is present, it is very small and does not stretch beyond coxa. IV. No metapodal plates are developed.

Subgenus: Peletiphis

No peritremal plates are present. The metapodal plates are absent. The form of the epistome is characteristic.

Peletiphis potchefstroomi

The length of the female is 0.57mm and the breadth is 0.38mm. The male measures 0.53mm and 0.35mm. The dorsal plate is covered with thick long setae. The anterior and lateral borders of the sternal plate are well-chitinised. Leg II of the male is strikingly enlarged; the femur of leg IV bears a spur and the trochanter,

femur/.....

femur and genu are provided with spines.

Peletiphis bloemhofi

The body of the male is 0.53mm long and 0.38mm broad and the nympha is 0.46mm long and 0.34mm broad. The dorsal plate is also covered with long, thick setae; the setae are longer than those of the previously described species. Two of the setae on the posterior side are smaller than the others.

Peletiphis Heliocopris

The nympha measures 0.43mm in length and 0.25mm in breadth. The form of the sternal plate of the nympha is characteristic. The setae on the dorsal plate are shorter than those of the other species. The two limbs of the chelicerae are shorter than those of the previous described species.

Peletiphis hamadryas.

The length of the male is 0.45mm and the breadth is 0.24mm. It is slightly smaller than the male of the other species. The spurs on legs III and IV are characteristic.

Copriphis potchefstroomi

The nympha is 0.28mm long and 0.21mm broad. Two endopodal plates lie between coxae II and III and coxae III and IV. The fixed limb of the chelicera has two teeth and the movable has one.

Alliphis fochvillei

The length of the female is 0.35mm and the breadth is 0.22mm. The setae on the body are short. There are two small peritremal plates present. The form of the sternal and the genital plate is characteristic.

Genus:-/.....

Genus:- Uroiphis

A broad peritremal plate is present. The metapodal plates are small and rounded. The form of the epistome is characteristic.

Uroiphis potchefstroomi

The idiosoma of the female is 0.49mm long and 0.36mm broad; the male measures 0.38mm and 0.21mm respectively. The sternal plate of the female bears a pair of setae which is thicker than the other two pairs.

Uroiphis onitis

This species is bigger than the previously described one. The idiosoma of the female is 0.68mm long and 0.57mm broad. The male is 0.66mm long and 0.53mm broad and the nympha is 0.57mm long and 0.46mm broad. The posterior pair of setae of the sternal plate of the female and those on the metasternal plate and the genital plate are thicker than the other setae. Three of the five pairs of setae on the sternal plate of the male are thicker than the others. In the nympha four of the five pairs of setae are thicker than the others. Near the genital plate lie three pairs of small rounded plates which are characteristic.

Family: Pachylaeloptidae

The parapodal, peritremal and metapodal plates are fused into one. The forked seta on the palpal tarsus has three tines.

Diagnostic characteristic of the species

The female is 0.38mm long and 0.26mm broad. The dorsal plate bears 35 pairs of setae. The reticulation on the sternal and ventro-anal plate is characteristic. The ventro-anal plate bears four pairs of setae in addition to the three anals. The form of the epistome is characteristic.
