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SOME SOUTH AFRICAN MITES.
Mainly Tetranychidae and Eriophyidae.

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MANY of the mites described below occur on the surface of citrus fruits; the *Oligonychus*, described from Natal, is distinct from those hitherto recorded as attacking tea plants; the Eriophyidae are in most cases actual or potential sources of economic damage.

Of those described from citrus fruits, the species *Tenuipalpus australis* is widely spread throughout South Africa and Southern Rhodesia; it is invariably found on the disfiguring surface scars which depreciate the market value of the fruit. Thrips and mechanical rubbing have been proved to cause scarring of fruit, but the actual damage caused by *Tenuipalpus* has not yet been proved. These mites are invariably found on scarred fruits, and when present in large numbers the scars are correspondingly more severe. This points strongly to the mites being one of the causative agents of the scarring. The species *Tenuipalpus ornatus* is found associated with *australis*, but is a comparatively rare species.

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TETRANYCHIDAE.

Tenuipalpus australis, n. sp.

Plate I, Plate III, Figs. C-J.

Colour: Dull, uniform red when alive.

Body: Broad and rounded anteriorly, tapering posteriorly; mounted specimens vary somewhat in shape; Plate I is a camera lucida outline; other specimens are more wrinkled and corrugated, especially at anterior suture and posteriorly to hinder pair of legs. The body is often constricted posteriorly to the latter, and occasionally much elongated.

There is a distinct division into cephalothoracic and abdominal portions. Dorsal surface reticulate and bearing five rows of hairs as in Plate I. The hairs are palmate and serrate (Plate III, Fig. F). The posterior row is terminal in position, and the eight hairs are usually seen projecting beyond the body.

Eyes: Two eyes, or cornea of equal size, situated laterally and immediately posterior to the base of second pair of legs.

Mouth-parts: As in Plate I. Mandibular plate cone-like and very finely striated longitudinally. Chelicera can be protuded to a considerable length.

Pedipalps: Dorsal view of female palp as in Plate IA; male palp as in Plate III, Fig. D.

Legs: Shorter than body, stout, very much wrinkled transversely. Arrangement of hairs as in Plate I; dotted rings represent ventral hairs. The hairs appear simple under oil immersion, though it is

possible that they may be slightly plumose. Tarsal armature complicated. Figs. C, F, G, H, I, and J, Plate III, show aspects of first and second tarsi. In all tarsi a terminal onychium is present bearing two stout, curved claws, six tenent hairs, and a median and apparently finely pectinate structure. There appear also to be two other plumose or finely pectinate structures which lie so closely appressed to the claws that usually the latter appear pectinate. In *T. ornatus*, n. sp., these structures are distinctly separate from the claws. At the base of the onychium are two stout tubercles bearing setae, and laterally to these (dorsally and ventrally) are two pairs of setae on smaller tubercles (Plate III, Figs. C-J). Centro-dorsally on the tarsus is a very long seta on a stout tubercle flanked by a smaller seta, and a club-shaped hair in the case of tarsus 1 and a pair of club-shaped hairs in tarsus 2 (Plate III, Figs. H, E, and I). Tarsi 3 and 4 are similar, but without the setae or club-shaped hairs lateral to the long dorso-central seta.

Abdominal Structures: Anus ventral, sub-terminal, flanked by two pairs of seta. Immediately anterior is a somewhat quadrilateral structure, transversely divided and bearing two pairs of widely separated setae; this presumably is the vulva.

Measurements: Length of body, 0.27 mm.; greatest breadth, 0.14 mm.

Specimens: Found on citrus fruits at Groot Drakenstein, Western Cape Province; Durban, Natal; Pretoria and district, Tomango, Tzaneen, and Rustenburg, Transvaal; Bathurst, Eastern Cape Province; and Mazoe, Southern Rhodesia. Probably responsible for a certain amount of surface scarring of fruit. Collectors, C. P. v. d. Merwe, J. C. Faure, R. Jack, B. Smit, Miss B. Hardenberg, R. W. E. Tucker.

Tenuipalpus ornatus, n. sp.

Plate II, Figs. A-H.

Colour: Uniform red when alive.

Body: Egg-shaped, divided into cephalothorax and abdomen; also with a line of demarcation level with fourth pair of legs, but no constriction. Dorsal surface coarsely reticulate. Numerous broad palmate, serrate hairs on body and legs; altogether over forty appear on the dorsal, lateral, and posterior body surface. Ventral surface finely striate and bearing normal scattered hairs. Terminal portion of body bearing ten whip-like setae, as long as body length, serrate in outline, and set on prominent tubercles. Large and small palmate hairs are also present terminally. In the type specimen a similar arrangement of hairs can be seen apparently just under the skin, including another set of ten whip-like hairs; this double effect is probably due to an approaching moult.

Eyes: Two eyes or cornea of approximately equal size, situated laterally and immediately posterior to the base of second pair of legs.

Mouth-parts: As in Plate II, Fig. A. Mandibular plate produced anteriorly to form a long, bluntly pointed rostrum. The mandibles, of which the tips are just shown in Fig. A, can be extended to at least the length of the body. The mouth can be seen ventrally about the posterior third of the rostrum.

Pedipalps: Thumb almost cylindrical, about five times as long as broad. Terminal finger slender and just over two-thirds length of thumb; digitulae seta-like. Claw and setae as in Plate II, Fig. A.

Legs: Short and stout; first and second pair slightly longer than third and fourth. Ornamented with serrate leaf-like hairs as in Plate II, Fig. B, of first leg. Tarsal armature complicated, but essentially the same plan as in *T. australis*. Four pulvilli bearing long fine hairs are present. In Figs. F and G these are shown with short hairs to avoid confusion; Fig. H shows length of one set. The total effect of these interlacing hairs, in conjunction with the numerous other setae, etc., as shown in Figs. D and E, makes the total tarsal armature confusing. The figures are made by camera lucida drawing from legs retracted in external skin prior to moulting; they have therefore a weaker, more simplified, appearance than functioning armature; they show clearly, however, the tenent hairs, onychium, setae, clavate hairs, etc., of the tarsi.

Abdominal Structures: Anus and presumably vulva as in Plate II, Fig. C. The double effect mentioned above causes a certain amount of confusion.

Measurements: Length of body, 0.39 mm.; greatest breadth, 0.17 mm.

Specimens: Two from the surface of oranges, Groot Drakenstein, Western Cape Province. Collector, R. W. E. Tucker.

An almost perfect specimen was received later, collected from surface of an orange, Tomango, Transvaal, by Miss B. Hardenberg. This species is much rarer than *T. australis*, but may also be connected with citrus scarring.

Anychus africanus, n. sp. *Ewhel*

Plate IV, Figs. A-G.

Female.

Colour: Dull red.

Body: Obese, uniformly rounded anteriorly; in some specimens it appears divided into four transverse segments.

Eyes: Translucent, situated above second pair of legs.

Surface: Finely striated and bearing twenty-six rod-like serrate appendages on the dorsal surface, and set on large, distinct tubercles.

Eight of these appendages form two longitudinal median lines and are considerably shorter than the anterior, lateral, and posterior ones. The posterior fringe is composed of four appendages. Sometimes these serrate rods show a tendency towards being spatulate at the tip.

Mandibular Plate: Retractable, emarginate, only slightly tapering anteriorly and as long as broad (Fig. D, Plate IV).

Mandibles: Long, slender, and protrusible; suctorial proboscis also present (Figs. A and D, Plate IV).

Pedipalp: Figs. B, C, and E, Plate IV. Thumb very bluntly conical, only slightly longer than broad. Finger tapering slightly distally and four times as long as broad. Two digituli, slender and

like stout setae in appearance. Three setae present on thumb, making a total of six appendages to the thumb. The claw of the penultimate joint is strong, well curved, and extends to just over half-way along thumb.

Legs: Shorter than body. Tarsus slightly longer than tibia or patella, which are both of same length; femur twice as long as tibia or patella. Tip of tarsus not provided with a claw, a vestigial rudiment only being present. The usual four tenent hairs arise from the end of the onychium. Spination of tarsus, etc., as in Figs. A and E, Plate IV.

Male.

As in above description, save that legs are much longer than body and relatively more slender than in female; body also smaller, less obese, broad anteriorly, and tapering posteriorly. In the legs the tarsus is only a little longer than the tibia or patella, which are equal, and the femur is barely one and a half times the length of either of the latter. The mandibular plate is scarcely emarginate in male, and is as long as broad. Anus ventral and terminal. Penis as in Fig. G, Plate IV; protrusible in a dorsal direction.

Measurements: Female—Length, including mouth-parts, 0.34 mm.; greatest breadth, 0.19 mm. Male—Length, including mouth-parts, 0.3 mm.; greatest breadth, 0.19 mm.

These measurements represent the usual size; occasional larger and smaller specimens were mounted.

Specimens: Numerous specimens from oranges and lemons, and also from Plumiera (Frangipani), Durban, Natal. Collected by C. P. v. d. Merwe.

Oligonychus merucci, n. sp.

Plate V, Figs. A-G.

Female.

Dorsal Surface: Very finely striate, bearing numerous long minutely serrate hairs.

Eyes: One moderately large and prominent eye on each side above second pair legs.

Mandibular Plate: Strongly emarginate.

Collar Trachea: Long, slightly sinuous, as in Plate V, Fig. F.

Suctorial Bulb: Strongly corrugated or striated.

Pedipalp: As in Plate V, Figs. D and H. Terminal finger short, dilated distally, situated in a sunken area. Digituli slender and small. Setae as shown. Short dorsal spur on third segment.

Tarsal Armature: As in Plate V, Fig. B.

Anus: Ventro-terminal, with two setae about midway down each side.

Measurements: Length, 0.45 mm.; breadth, 0.24 mm.

Male.

Body: Slenderer and more tapering posteriorly.

Mandibular Plate: Strongly emarginate.

Collar Trachea: Shorter and more strongly fixed than in female (Plate V, Fig. G).

Pedipalp: Terminal finger smaller than in female. Dorsal spur stronger and more conspicuous (Plate V, Fig. C).

Tarsal Armature: As in Plate V, Fig. A.

Penis: Strongly curved (Plate V, Fig. E).

Measurements: Length, 0.37 mm.; breadth, 0.19 mm.

Specimens: From tea plants, Kearnsy Estates, Stanger, Natal, 25.10.22. Collector, C. P. v. d. Merwe. This species causes a certain amount of damage to tea plants.

EUPODIDAE.

Tydeus citri, n. sp.

Plate III, Figs. A and B.

Colour: Pale, hyaline.

Body: Tapering bluntly anteriorly and fairly sharply posteriorly. Divided posteriorly to second pair of legs by transverse suture.

Surface: Finely striate and bearing a few moderately long setae, as in Plate III, Fig. A.

Eyes: Apparently single; one on each side above second pair legs, and surrounded by wrinkled, corrugated skin.

Mandibles: Prominent, broad at base, tapering anteriorly, terminating in a curved fang which appears to be portion of a chelate apparatus, of which the other half is rudimentary.

Maxillae: Apparently united to form a sucking proboscis, containing suctorial bulb and tube as shown.

Pedipalp: Four-jointed; terminal joint longer than preceding joint and bearing four long stout setae, as in Plate III, Fig. A.

Legs: Five-jointed, bearing sparse, moderately long hairs. Tarsi terminating in two long curved claws and a broad median pulvillus; the latter is strongly but finely pectinate, often making the claws look pectinate when they coincide with it in position; the claws are very finely pectinate, if at all.

Genital Apparatus: Pear-shaped and situated centrally on ventral surface of abdomen. Four to six tubercles can be faintly seen down each side.

Anus: Terminal in position.

Measurements: Length, 0.17 mm.; breadth, 0.074 mm.

Specimens: Several females from oranges, Groot Drakenstein, Cape Province, and from lemons, Durban, Natal. Collectors, C. P. v. d. Merwe and R. W. E. Tucker. Usually found associated with scale insects, which it probably feeds on, either dead or alive.

ERIOPHYIDAE.

Eriophyes dichrostachia, n. sp.

Plate V, Fig. I.

Body: Stout, tapering very gradually; rings narrow, punctation medium; about 85 rings.

Shield: Small, bearing fine longitudinal ridges or striation. Dorsal setae short, fine, wide apart, and directed backwards; tubercles medium size.

Capitulum: Short and stout; pedipalps bearing very short dorsal setae. Mandibles not usually erected.

Legs: Fairly short and stout. Feather hair long, medium strength, six to seven short rays. Claw not longer than feather hair.

Setae: First thoracic setae fine and very short; second thoracic setae moderately long; third longer; both latter set on large tubercles about centre of lower half of epimeron, as in Fig. I, Plate V. Genital setae medium and fine. Lateral setae fine, medium length, about twelve rings down body. First ventral setae similar but slightly longer, about twelve rings from the laterals. Second ventrals only slightly shorter than first ventrals, about twenty rings from the latter; third ventrals short, only moderately strong, about five to six rings from caudal flaps. Caudal setae very long and strong, dorsal in position; accessory setae absent, or very fine and inconspicuous.

Vulva: Small, six to seven rings from sternum; flap apparently smooth and unstriated.

Measurements: Average length, 193 μ ; breadth, 34 μ ; depth, 35 μ . Adult female specimens vary from 155 μ to 195 μ in length.

Specimens: On galls on leaves of *Dichrostachys mutans*, Durban. Collector, C. P. v. d. Merwe.

Eriophyes mallyi, n. sp.

Plate V, Figs. J and L.

Body: Cylindrical, tapering, finely punctate; about seventy-five to eighty rings.

Shield: Small, strongly ridged and reticulate. Dorsal setae very fine and shorter than shield; directed backwards, set on small tubercles wide apart.

Capitulum: Proboscis short; mandibles short, fine, and not usually erected.

Legs: Medium size and stout. Pedal hairs broad and strong, five-rayed. Claw only moderately long and slender. Leg setae as in Figs. J and L, Plate V.

Setae: First thoracic seta short; second thoracic seta strong and moderately long; third thoracic seta very long and strong. Lateral seta moderately long and strong, situated twelve to thirteen rings from shield. Genital setae very fine and short. First ventral setae very long and strong, twenty-four to twenty-six rings along abdomen. Second ventral setae very short and fine. Third ventral setae moderately long and fairly strong, five to six rings from caudal flaps. Caudal setae moderately long and strong, dorso-lateral in position; accessory setae absent or very fine and inconspicuous.

Vulva: Situated almost immediately posterior (about three rings) to epimera of legs. Flap not, or very indistinctly, striated.

Measurements: Average length of adult ♀, 176 μ ; breadth, 30 μ .

Specimens: Forms conspicuous galls on leaves of *Vangueria infausta*. Collected by Dr. C. W. Mally at Drieviersboom, 28.11.24.

Eriophyes diceyi, n. sp.

Plate V, Fig. K.

Body: Fairly broad, cylindrical, and tapering gradually; rings fine, punctation medium. Rings about eighty.

Shield: Moderately long, with two pronounced lines down centre and finer lines at sides. Dorsal setae fine, not longer than shield, directed anteriorly; tubercles close together, i.e. not more than one-third total width of shield apart.

Capitulum: Proboscis long; mandibles not readily erected.

Legs: Long and fairly slender. Pedal hairs fairly long, not very broad at base, and four-rayed. Claw and setae as in Fig. K, Plate V.

Setae: First thoracic setae very short, as in Fig. K, Plate V. Second thoracic setae moderately long and stout. Third thoracic setae very long and strong, placed as in Fig. K, Plate V. Lateral setae moderately long and fine, situated ten rings down body. First ventral setae similar and twenty-five rings down. Genital setae very fine and short; second ventral setae very fine and small, situated fifteen rings from first ventral; third ventral setae fairly long and fine, five rings from caudal flaps. Caudal setae dorso-lateral, very long and fine; accessory setae pin-like and distinct.

Vulva: Situated almost posterior to epimera. Flap not, or very indistinctly, striated.

Measurements: Length, 200 μ ; breadth, 38 μ . Specimen somewhat contracted. Another very large specimen was 230 μ in length and 38 μ in depth, seen sideways. Owing to position and size, legs and proboscis seem relatively shorter, but, other characters coinciding, the specimen is considered to be above species.

Specimens: Found under scales of dormant oak buds at Orchard Rail, Hex River. Collector, R. W. E. Tucker, March and August, 1922.

Eriophyes hexensis, n. sp.

Plate V, Fig. M.

Body: Cylindrical, tapering very gradually at first, but more rapidly towards caudal extremity. Rings narrow, punctation fine. About ninety rings.

Shield: Small, triangular, striated longitudinally. Dorsal setae longer than shield, strong, wide apart and directed posteriorly.

Capitulum: Short and stout; setae on pedipalps short; mandibles seldom erected.

Legs: Moderately long, setae long, as in Fig. M, plate V. Pedal hairs small, strong, and four-rayed.

Setae: First thoracic setae high up towards anterior corner of epimeron I; small but fairly stout; second thoracic setae neither long nor strong; third thoracic setae moderately long and strong, as in Fig. M, Plate V. Lateral setae medium length and fine, twelve rings down body; genital setae moderately long and strong. First ventral setae stronger, very long, about twenty-six rings down body; second ventral setae short and fine, about twenty-six rings from first ventral setae; third ventral setae long and strong, about seven rings from caudal flaps. Caudal setae very long and strong, almost lateral in position. Accessory setae fine and fairly long.

Venter: Flap conspicuously striated; situated eight to ten rings from epimera.

Measurements: Average length, 190μ ; breadth, 37μ ; some specimens were smaller; others ranged up to 200μ long and 38μ broad.

Specimens: On taibos (Rhus), Hex River Valley, causing deformation of young shoots and open cup-shaped galls on leaves. Collector, R. W. E. Tucker, 10.1.23.

Eriophyes meruei, n. sp.

Plate V, Fig. N.

Body: Narrow, cylindrical, tapering rapidly; narrowly ringed and finely punctate. Number of rings about eighty.

Shield: Large, fairly well ridged. Dorsal setae shorter than shield, moderately fine, directed posteriorly; tubercles very wide and almost lateral in position.

Capitulum: Proboscis medium size, maxillae not readily erected. Dorsal setae of pedipalps very long and prominent.

Legs: Fairly long and slender. Pedal hairs very long and slender; only slightly broadened out at base; six-rayed. Claw very long and slender. Leg setae very long, as in Fig. N, Plate V.

Setae: First thoracic setae very small; second thoracic setae short and fine; third thoracic setae long, strong, and in horizontal line with second thoracic setae, as in Fig. N, Plate V. Lateral setae long, moderately strong, almost level with genital setae, and nine to ten rings down body. Genital setae short and fine. First ventral setae very long and moderately strong, fifteen to sixteen rings from lateral setae; second ventral setae short and pin-like, nineteen to twenty rings from first ventral; third ventral setae moderately long and fine, six rings from caudal flap. Caudal setae dorso-lateral in position, long and fine; accessory setae fine and inconspicuous or absent.

Venter: Situated three to four rings posterior to epimera; flap shallowly striated.

Measurements: Largest ♀ 200μ long, 30μ broad; average length, 170μ long and 26μ broad.

Specimens: Found in buds of sugar-cane, Durban, Natal, damaging buds and dwarfing growth. Collector, C. P. v. d. Merwe, Durban.

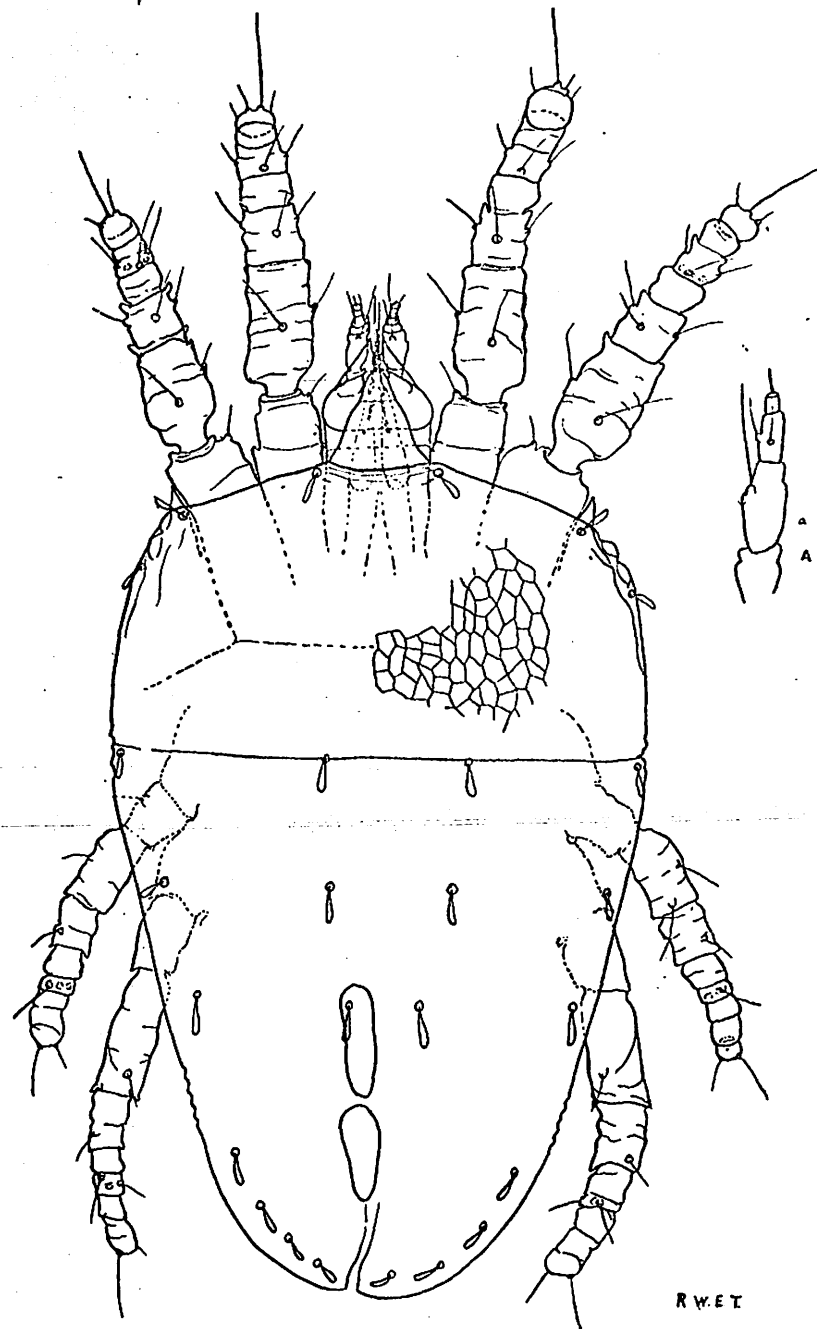


PLATE I.

Tenuipalpus australis n. sp.

Dorsal view of female; ventral structures indicated by dotted lines; (a), more enlarged dorsal view of female pedipalp.

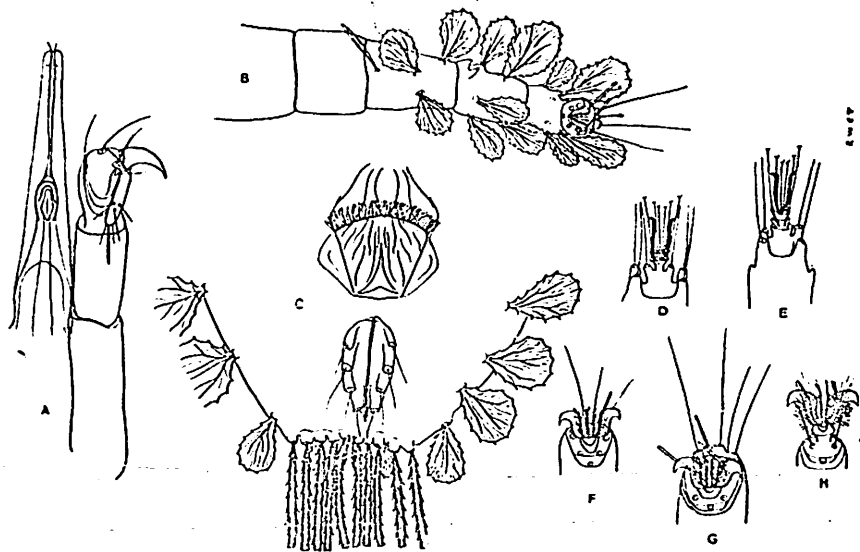


PLATE II.

Tenuipalpus ornatus n. sp.

- Fig. A.... Rostrum and palp showing mouth, palpal armature, and appendages.
 Fig. B.... First leg showing leaf-like hairs and tarsal armature and appendages.
 Fig. C.... Posterior ventral surface, showing ten long abdominal hairs, leaf-like hairs, anus and vulva.
 Fig. D.... Tarsus I retracted within outer, normal skin. Tenent hairs, claws, and setae shown.
 Fig. E.... Tarsus II, the same.
 Fig. F.... Normal (old skin) tarsus of second leg, showing stouter claws, external clavate hairs, setae, etc. In this, and Fig. G, the long fine hairs of the two pairs of pulvilli are purposely drawn short, and the tenent hairs, etc., omitted to avoid confusion. Other setae are indicated by their basal circles.
 Fig. G.... First tarsus as above.
 Fig. H.... Third tarsus showing long hairs of the four pulvilli. Owing to the superposition of all these hairs, it was not possible to say whether the tarsal claws were pectinate.

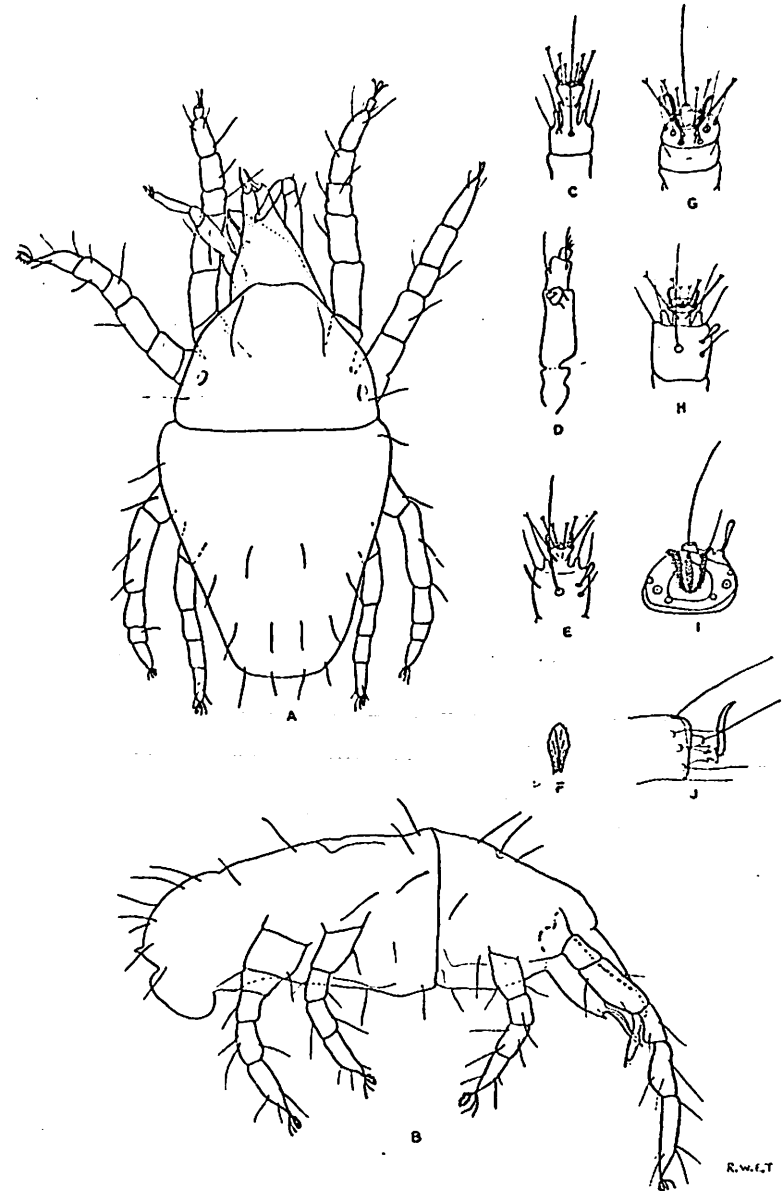


PLATE III.

Tydeus citri n. sp. Figs. A and B.

Tenuipalpus australis n. sp. Figs. C to J.

- Fig. A.... *Tydeus citri*..... Dorsal view.
 Fig. B.... *Tydeus citri*..... Side view.
 Fig. C.... *Tenuipalpus australis*.. Tarsus I; dorsal view, showing caroncle, claws, tenent hairs, and setae.
 Fig. D.... *Tenuipalpus australis*.. Dorsal view of ♂ palp; cf. ♀ palp, Plate IA.
 Fig. E.... *Tenuipalpus australis*.. Dorsal view, tarsus II.
 Fig. F.... *Tenuipalpus australis*.. A body hair (terminal).
 Fig. G.... *Tenuipalpus australis*.. Tarsus I seen end on.
 Fig. H.... *Tenuipalpus australis*.. Tarsus I, dorsal view.
 Fig. I.... *Tenuipalpus australis*.. Direct end on view of tarsus I to show pectinate claws, median structure, and position of setae. Tenent hair and setae not drawn in.
 Fig. J.... *Tenuipalpus australis*.. Lateral view of tarsus I.

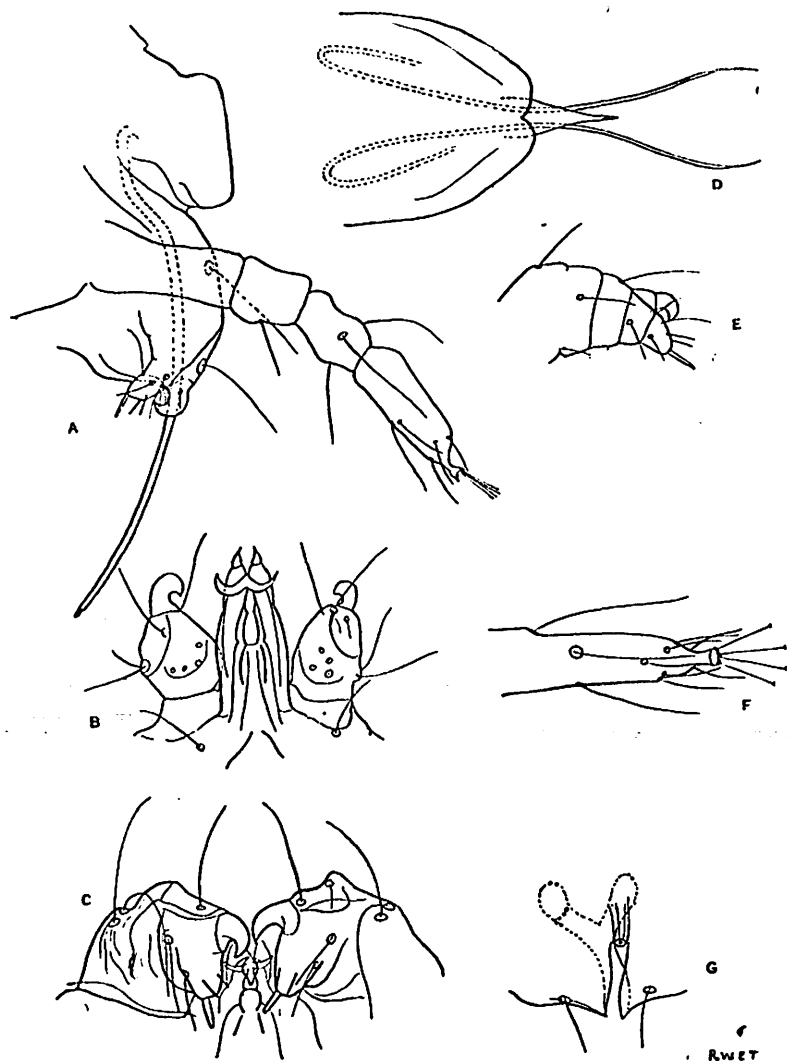


PLATE IV.

Anychus africanus n. sp.

- Fig. A.... Side view of head region, showing pedipalp, protruded mandibles, and first leg. Tarsus of latter, showing tenent hairs and vestigial claw.
 Figs. B & C Dorsal and ventral aspects of mouth-parts, showing general position of pedipalp and arrangement of setae. In B the thumb finger and digituli are seen end on.
 Fig. D.... Dorsal view of mandibular plate of female with extended mandibles.
 Fig. E.... Pedipalp, showing thumb, finger, digituli, setae, and claw.
 Fig. F.... First leg of male.
 Fig. G.... Anus and penis of male.

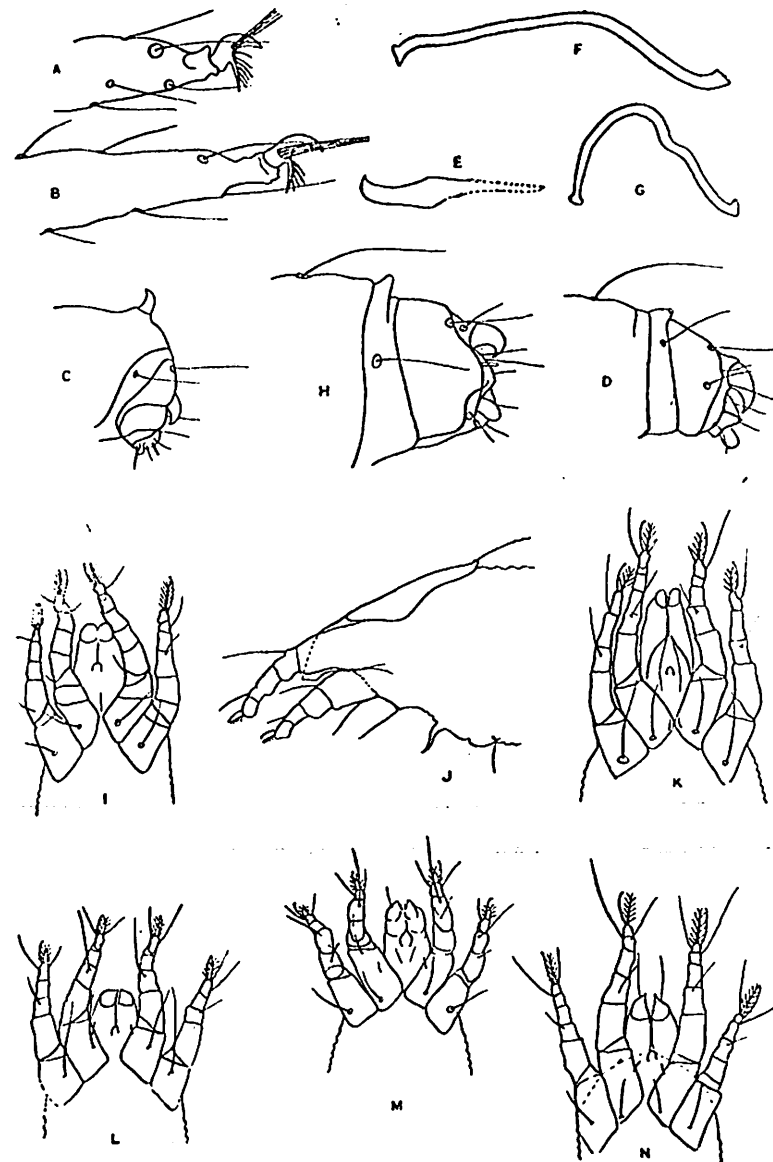


PLATE V.

Oligonychus merwei n. sp. Figs. A to H.*Eriophyes* n. spp. Figs. I to N.

- Oligonychus merwei*.... Fig. A.... Tarsal armature and spination of fourth leg of ♂.
 Fig. B.... Tarsal armature and spination of fourth leg of ♀.
 Fig. C.... Palp of ♂.
 Fig. D & H Palp of ♀.
 Fig. E.... Penis of ♂.
 Fig. F.... Collar trachea of ♀.
 Fig. G.... Collar trachea of ♂.
Eriophyes dichrostachia... Fig. I.... Anterior portion, ventral view.
Eriophyes mallyi..... Fig. J.... Anterior portion, lateral view.
Eriophyes diceyi..... Fig. K.... Anterior portion, ventral view.
Eriophyes mallyi..... Fig. L.... Anterior portion, ventral view.
Eriophyes hexensis..... Fig. M.... Anterior portion, ventral view.
Eriophyes merwei..... Fig. N.... Anterior portion, ventral view.