

Journal of
Acarology

Volume 12 (1 & 2)

December 1987

ACAROLOGICAL SOCIETY OF INDIA

JOURNAL OF ACAROLOGY

The Journal, appearing biannually in June and December each year, publishes original research papers on all aspects of Acari, such as taxonomy, zoogeography, biology, ecology, morphology, physiology, evolution, control, etc. pertaining to any country.

Published by : The ACAROLOGICAL SOCIETY OF INDIA, Department of Entomology, University of Agricultural Sciences, Bangalore 560 065, India.

Chief Editor :
G.P. CHANNABASAVANNA Professor of Entomology (Emeritus), University of Agricultural Sciences, Bangalore 560 065, India.

Editorial Board :
S.K. BHATTACHARYYA Zoological Survey of India, 8 Lindsay Street, Calcutta 700 016, India.
V. DHANDA National Institute of Virology, Poona 411 001, India.

S. EHARA Biological Laboratory, Faculty of Education, Tottori University, Tottori, Japan.

SWARAJ GHAI Division of Entomology, Indian Agricultural Research Institute, New Delhi 110 012, India.

L.S. HIREGOUDAR Veterinary Hospital, University of Agricultural Sciences, Dharwad 580 005, India.

D. MacFARLANE British Museum (Natural History), Cromwell Road, London SW 7 5BD, England.

J.A. McMURTRY Division of Biological Control, University of California, Riverside, California 92502, U.S.A.

V.I. MITROFANOV Lenin All Union Academy of Agricultural Sciences, State Nikita Botanical Garden, Yalta, Crimea, U.S.S.R.

M. van de VRIE Research Station for Floriculture, Linnaculusaan 2a, Aalsmeer, The Netherlands.

Executive Editor :
C.A. VIRAKTAMATH Department of Entomology, University of Agricultural Sciences, Bangalore 560 065, India.

Executive Council of the Society :
President :
G.P. CHANNABASAVANNA Department of Entomology, University of Agricultural Sciences, Bangalore.

Vice-Presidents :
S.K. GUPTA Zoological Survey of India, Calcutta.
S. CHAKRABARTI University of Kalyani, Kalyani.
M. MOHANASUNDARAM Department of Entomology, TNAU, Coimbatore.
H.R. BHAT National Institute of Virology, Poona.

Secretary :
B.K. NAGESHACHANDRA Department of Entomology, University of Agricultural Sciences, Bangalore.

Treasurer :
P.S. JAGADISH Department of Entomology, University of Agricultural Sciences, Bangalore.

Membership and Subscription Rates :

| | |
|-------------------|--|
| Life Members | Rs.300 (India) or US \$ 100 (abroad). |
| Active Members : | Rs. 30 (India) or US \$ 10 (abroad) per annum. |
| Student Members : | Rs. 10 (India) or US \$ 5 (abroad) per annum. |

An Admission fee of Rs.10 (India) or US \$ 5 (abroad) is payable by all members.
Members get the Journal of Acarology and Acarology Newsletter free.
Annual Subscription Rates for non-members and institutions : Rs.100 (India) or US \$ 30 (abroad).

Rates for advertisements will be supplied on request; please make all Money Orders and bank drafts payable to ACAROLOGICAL SOCIETY OF INDIA.

JOURNAL OF ACAROLOGY

**Volume 12 (1 & 2)
December 1987**

ACAROLOGICAL SOCIETY OF INDIA
Department of Entomology, University of Agricultural Sciences
G.K.V.K., Bangalore 560 065, India

JOURNAL OF ACAROLOGY

Volume 12 (1 & 2), 1987

CONTENTS

- B.K. MONDAL AND B.G. KUNDU. Three new species of *Megalotocepheus* 1
(Acari : Oribatei, Otocepheidae) from Darjeeling, India
- M.MOHANASUNDARAM. Studies on the genus *Aceria* (Acari: Eriophyidae) 15
from south India

(Date of publication : October 31, 1990)

THREE NEW SPECIES OF MEGALOTOCEPHEUS (ACARI : ORIBATEI, OTOCEPHEIDAE) FROM DARJEELING, INDIA

B.K. MONDAL and B.G. KUNDU*

Department of Zoology, Ananda Chandra College, Jalpaiguri-735 101, India.

ABSTRACT

Three new species of the genus *Megalotocepheus* Aoki, viz., *M. darjeelingensis*, *M. aokii* and *M. bengalensis* are described from the soils in the district of Darjeeling, West Bengal, India. The genus *Megalotocepheus* was not previously known from India. A key to the new species and a brief historical account of the genus are also provided.

INTRODUCTION

The genus *Megalotocepheus* was erected by Aoki (1965) with *Megalotocepheus japonicus* as the type-species from Otsuki, Central Japan. While revising the subfamily Otocepheinae under the family Otocepheidae, Aoki (1965) also included two more new species i.e., *M. latus* and *M. himalayensis* in the genus. The fourth included species was *M. crinitus*, originally described by Berlese (1905) as *Carabodes (Otocepheus) crinitus*. The latter species was previously included in the genus *Otocepheus* by Trägårdh (1931) and *Tetracondyla* by Newell (1956). Zlotin and Krivolutsky (1969) discovered *M. tianschanicus* from mountainous Central Tianshan. Balogh (1970) described two new species, *M. ceylonicus* and *M. loksai* from Ceylon. Mahunka (1973) reported *M. ceylonicus* from Ceylon. Thus, eight species have so far been described under the genus. The genus *Megalotocepheus* is being reported here for the first time from India.

As a result of investigation of the oribatid mites in forest and tea plantation soils in Darjeeling, the authors encountered three species, viz., *M. darjeelingensis*, *M. aokii* and *M. bengalensis* which are considered here as new to science. All measurements are in micrometers. The types of these species are deposited in the laboratory of the department of Zoology, Presidency College, Calcutta.

Megalotocepheus Aoki

Generic diagnosis : Lateral lamelliform expansion (*spa.l*) distinctly developed, protruding laterally beyond the lateral margin of prodorsum, terminating at or near insertion of rostral setae; tutorium weakly or strongly developed, not reaching insertion of rostral setae; lamellae widely or narrowly spaced, lamellar tips generally forming prominent projections; dorsal and ventral bothridial plates (*tbd* and *tbv*) present; sensillus slender, with fusiform head; interlamellar wrinkles (*rin*) usually

* Zoological Survey of India, 'M' Block, New Alipore, Calcutta-700 053

well-developed; lateral and median prodorsal condyles (*co. pl* and *co. pm*) present; pedotecta 2-3 tail fin-shaped, symmetric; notogaster with straight anterior border, rather stout; lateral notogastral condyles (*co. nl*) widely spaced; median notogastral condyles (*co. nm*) absent; marginal ridge (*vm*) present; typically ten (exceptionally nine) pairs of notogastral setae present; notogastral fissures five pairs; orifice of latero-abdominal gland (*gla*) situated usually at level of *ti*; anal aperture with parallel outer margins; adanal fissures (*iad*) situated obliquely or longitudinally, close to or somewhat distant from anal aperture; anal setae two (occasionally three) pairs; adanal setae three pairs; genital setae four pairs; aggenital setae one pair; epimeral setal formula 3-1-3-3; a short sternal ridge (*c.st*) on epimera I; legs monodactylous; palp five segmented.

Key to the new species of *Megalotocephus*

1. Lateral lamelliform expansions (*spa.l*) reaching insertions of rostral setae; lamellar setae roughened unilaterally on outer side; interlamellar wrinkles (*rin*) hardly developed; *iad* minute, oblique and placed apart antero-lateral to the anal field; median prodorsal condyles (*co. pm*) confluent *M. darjeelingensis* sp. nov.
 - *spa.l* not reaching insertions of rostral setae; lamellar setae barbed unilaterally on outer surface; interlamellar wrinkles weakly or strongly developed; *iad* comparatively large, parallel or oblique and placed close to antero-lateral field of anal plate; *co. pm* separate
2. *spa.l* broad; tutorium weakly developed; interlamellar wrinkles weakly developed; *co. pm* rounded posteriorly; two pairs of anal setae present..... *M. aokii* sp. nov.
 - *spa.l* narrow; tutorium strongly developed; interlamellar wrinkles strongly developed; *co. pm* triangular posteriorly; three pairs of anal setae present *M. bengalensis* sp. nov.

Megalotocephus darjeelingensis sp. nov.

(Figs. 1 and 2)

Adult : Colour dark to medium brown.

Prodorsum : Mid-dorsal and posterior part of prodorsum rough and punctate; *spa.l* narrow and reach insertion of lamellar setae anteriorly; rostrum smooth, without any marginal edge; rostral setae incurved, outwardly barbed, 150-203 long, nearly equal to their mutual distance, inserted at anterior end of *spa.l*; lamellar setae (*la*) deeply incurved, meeting anteriorly, outwardly roughened, 180-225 long, nearly twice as long as their mutual distance, located a little beyond tip of the lamellae; interlamellar setae (*int*) slightly roughened, blunt at tips, 170-210 long, twice as long as their mutual distance, located medial and anterior to bothridium; anterior exobothridial setae smooth, minute, adjacent to bothridial plate anteriorly; bothridium longer than broad, open antero-laterad, ventral bothridial plate (*tbo*) weakly projecting; sensillus with narrow stalk and small fusiform head with inner core and slightly roughened outer surface,

NEW SPECIES OF MEGALOTOCEPHEUS

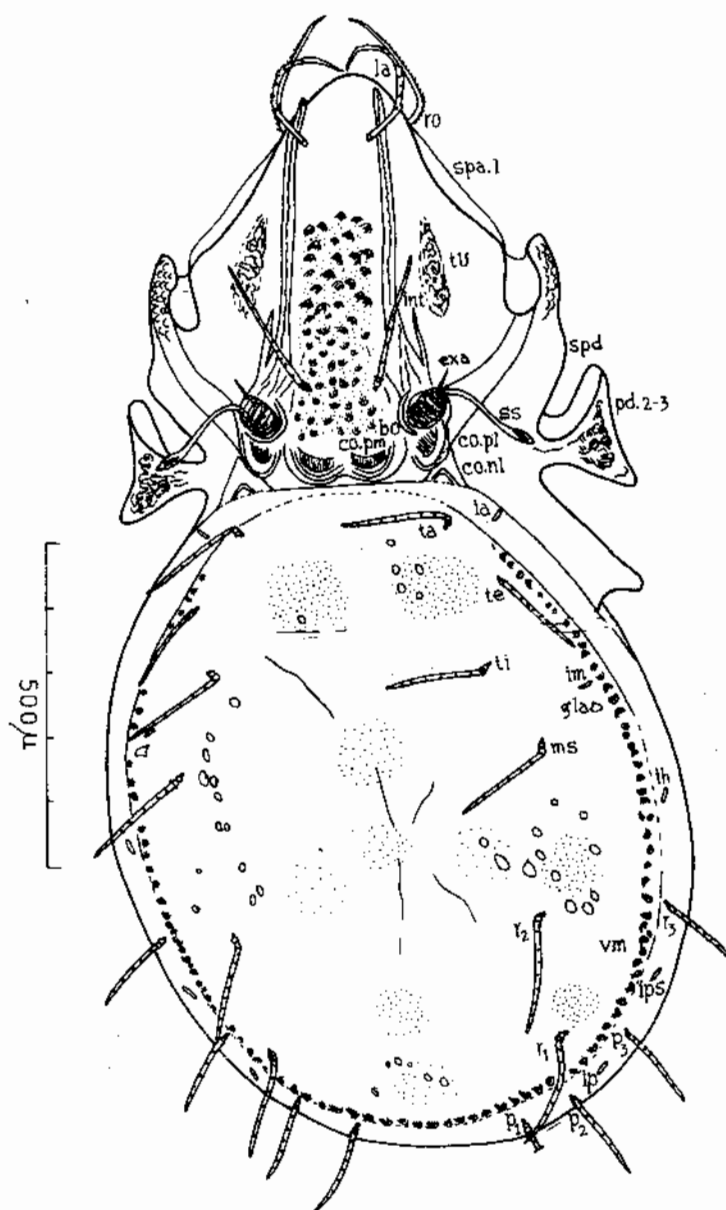


Fig.1. *Megalotocepeus darjeelingensis* sp. nov. (dorsal view), ro = rostral seta, la = lamellar seta, int = interlamellar seta, exa = anterior exobothridial seta, ss = sensillus, bo = bothridium, spa.1 = lateral lamelliform expansion, tu = tutorium, pd. 2-3 = pedotecta complex II-III, spd = subpedotectum, co. pl = lateral prodorsal condyle, co. pm = median prodorsal condyle, co. nl = lateral notogastral condyle, ta, te, ti, ms, r1, r2, r3, p1, p2, p3 = notogastral setae, vm = marginal ridge, la, im, th, ips, ip = dorsal lyrifissures, gla = orifice of latero-abdominal gland.

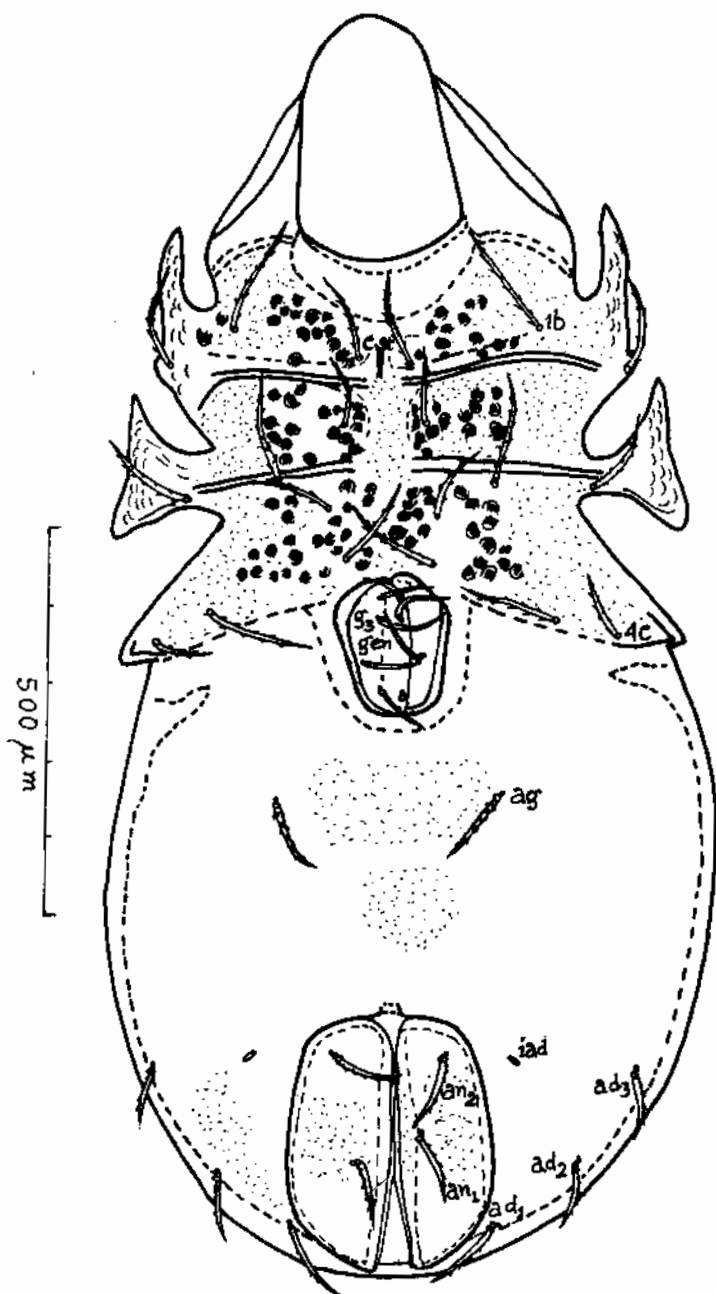


Fig.2. *Megalotocyrpheus darjeelingensis* sp. nov. (ventral view), an_1 , an_2 = anal setae, ad_1 , ad_2 , ad_3 = adanal setae, iad = adanal fissure, gen = genital plate, g_3 = genital seta, ag = aggenital seta, $1b$, $4c$ = epimeral setae, $c. st$ = sternal ridge.

187-195 long, directed postero-laterad; lamellae mostly parallel, well-separated, hardly converging anteriorly; interlamellar wrinkles (*rin*) hardly developed; tutorium poorly developed; median prodorsal condyles (*co. pm*) broadly rounded, confluent and reaching posteriad almost to notogaster; lateral prodorsal condyles (*co. pl*) lobe-like; pedotecta complex II - III (*pd. 2-3*) tail fin-shaped, conspicuously projecting laterally from the prodorsum; subpedotectum (*spd*) well-developed.

Notogaster : Notogaster punctate, with some scattered irregular foveolae, broadest in the middle, anterior border straight, posterior border rounded; median notogastral condyles (*co. nm*) absent, lateral notogastral condyles (*co. nl*) sharply triangular, touching *co. pl* laterally and project quite forward anteriorly, distance between them 22 RLN¹; marginal ridge (*vm*) thin, rough, extending anteriorly just below the insertion of *ta* setae; ten pairs of notogastral setae including *ms*, comparatively short, blunt at tips, slightly roughened, 120-180 long, their RLN varies from 11.6-17.5; setae *ta*, *ti*, *ms*, *r2* medio-lateral, *te* antero-lateral, *r1* postero-lateral and *p1*, *p2*, *p3* and *r3* postero-marginal, *r1* longest and *r3* smallest, *te* situated laterally in mid distance between *ta* and *ti*, mostly somewhat closer to *ti* than to *ta*; distance $ta - ta < ti - ti < r2 - r2 < te - te < ms - ms$; *gla* lateral, situated between *ti* and *ms*, much closer to *ms*; five pairs of notogastral fissures, *ia* situated at the level of insertions of *ta* laterally, *im* above *gla*, *ih* far above *r3*, *ips* in between *p3* and *r3*, and *ip* between *p2* and *p3*, all laterally.

Anogenital region : Each anal plate minutely punctate, nearly thrice as long as wide, with lateral margins parallel; anal setae two pairs, outwardly barbed, nearly equal, 90-105 long, inserted in anterior half of each plate, *an1* being more inclined towards inner margin; adanal setae three pairs, sparsely roughened outwards, with blunt tips, 75-105 long, *ad2* and *ad3* nearly equal, *ad1* longer than each of them; *ad1* postero-lateral, *ad2* lateral to the anal field, *ad3* posterior to the level of the anterior margin of anal plate marginally; *iad* minute, oblique and placed apart antero-lateral to the anal field, nearly at the level of insertion of *ad3*; distance between anal and genital aperture 2.36 times as long as the latter; each genital plate twice as long as its maximum width; genital setae four pairs, glabrous, with pointed tips, 45-75 long, nearly equal, except *g3* longer; aggenital setae one pair, slightly roughened, 75-90 long, situated at the first one third the distance between genital and anal aperture, their mutual distance (27.7 RLN) more than one and half times the maximum width of genital plates.

Epimeral region : Epimeral region with rough microsculpture; epimera I and II separate, III and IV fused; sternal ridge developed between epimera I only; epimeral setae barbed, long, 75-150 long, setae *1b* longest and *4c* smallest; epimeral setal formula 3-1-3-3.

Legs : All tarsi monodactylous, claws curved, sharply bent at distal one fifth.

Body : Length, 1365-1657; width, 675-863.

¹ RLN (Relative length to notogaster) = $\frac{\text{Length (or distance) of any structure}}{\text{Length of notogaster}} \times 100$

HOLOTYPE : ♀, INDIA: West Bengal: Darjeeling, Darjeeling forest Div., Tonglu forest range, Palmajua forest bungalow area (Alt. 2300 m. approx.), 16.viii. 1977, from rotten leaves of *Cryptomeria japonica*, B.K. Mondal coll. **PARATYPES** : 1 ♀, same data as for holotype; 1 ♀ Darjeeling, Lebong Tea Estate (Alt. 2000m. approx.), 2.ix.1978, from decaying trunk of a tea plant (*Thea sinensis*), B.K. Mondal coll.; 1 ♀, Darjeeling, Lopchu Tea Estate (Alt. 1200 m. approx.), 2.ix.1978, from loose humus, B.K. Mondal coll.

Remarks : Amongst the described species of *Megalotocepheus* the present new species bears the closest resemblance to *M. himalayensis* Aoki, 1965. The inclusion of the latter species under *Megalotocepheus* was tentative (Aoki, 1965) because of the presence of nine pairs of notogastral setae, poorly developed interlamellar wrinkles and minute *iad*, which are not commonly observed in *Megalotocepheus* species. The present species is similar to *M. himalayensis* in the nature of lateral lamelliform expansion (*spa.l*), rostral, lamellar and interlamellar setae, structure of lateral prodorsal and notogastral condyles (*co. pl* and *co. nl*), tutorium, weak interlamellar wrinkles and minute *iad* etc. It can however, be distinguished from Aoki's species by the presence of ten pairs of notogastral setae including setae *ms* (nine pairs in *himalayensis*, setae *ms* being absent), slightly roughened notogastral setae, and presence of anterior exobothridial setae.

Megalotocepheus aokii sp. nov.

(Figs. 3 and 4)

Adult : Colour brown to light brown.

Prodorsum : Posterior mid-dorsal portion of prodorsum weakly punctate; *spa.l* broad, not reaching the insertion of rostral setae; rostrum flattened laterally; rostral setae outwardly barbed, moderately curved inwards, 105-125 long, slightly shorter than their mutual distance, placed laterally on rostrum; lamellar setae distinctly barbed outwards, deeply incurved, 150-180 long, meeting each other apically, nearly thrice as long as their mutual distance, inserted a little beyond the anterior tip of lamellae, slightly beyond the level of insertion of rostral setae; interlamellar setae faintly barbed bilaterally, 130-154 long, about two and half times as long as their mutual distance, placed at the middle of inner lateral margin of the interlamellar wrinkles, which are weakly developed; bothridium cup-shaped, longer than broad, directed antero-laterad, dorsal bothridial plate (*tbd*) cover the anterior rim of bothridium, ventral bothridial plate (*tbv*) broadly triangular; sensillus with a narrow stalk and a fusiform smooth head, with an internal core, bent sharply at right angle to the stalk, directed postero-laterad; lamellae subparallel to each other, terminating in blunt apices; tutorium weakly developed; median prodorsal condyles (*co. pm*) rounded posteriorly, well-developed, separated by a short distance; lateral prodorsal condyles (*co. pl*) smoothly arched, being touched or overlapped by its notogastral counter-parts; pedotecta complex II-III (*pd.* 2-3) tail fin-shaped, distinctly projecting laterally from prodorsum; subpedotectum (*spd*) well-developed.

NEW SPECIES OF MEGALOTOCEPHEUS

Notogaster: Notogaster with well marked punctation and foveolae throughout, much longer than broad, anterior margin straight with obscure inner undulations; median notogastral condyles (*co. nm*) absent; lateral notogastral condyles (*co. nl*) large, pyramidal, widely spaced, average distance between them 22 RLN; marginal ridge (*vn*) well-developed, reaching the level of *ia* anteriorly; notogastral setae ten pairs, long, bilaterally faintly barbed with blunt tips, 108-158 long, ranging from 18-27 RLN; setae *ta*, *te* antero-lateral, *ti*, *ms* medio-lateral, *r1*, *r2* postero-lateral and *p1*, *p2*, *p3* and *r3* postero-marginal; setae *te* in between *ta* and *ti*, more inclined towards *ti*; distance *te* - *te*, *ms* - *ms* and *r2* - *r2* nearly equal, distance *ta* - *ta* < *ti* - *ti* < *te* - *te*; distance *p1* - *p2* < *p2* - *p3*; *gla* pateral and parallel to the follicle of *ti*; notogastral fissures five pairs, all lateral, *ia* obliquely transverse, between *ta* and *te*, nearer *ta*, *im* above *gla*, *ih* parallel to the lateral margin, between *ti* and *ms*, *ips* slightly oblique, between *r2* and *r3* and *ip* slightly oblique, between *p2* and *p3*.

Anogenital region: Ventral plate punctate with scattered foveolae; each anal plate of the same microsculptures as the ventral plate, about twice as long as broad with parallel outer margins with two barbed anal setae, 58-77 long, *an1* < *an2*, *an1* much inclined inwards and *an2* outwards of each anal plate; adanal setae three pairs, barbed, nearly equal, 63-72 long, distance *ad1* - *ad2* < *ad2* - *ad3*; *iad* moderately large, oblique or closely parallel to the antero-lateral margin of the anal aperture, distance between anal and genital apertures two and half times as long as the latter; each genital plate nearly twice as long as its maximum width, with four glabrous setae, 36-41 long, nearly equal in length, setae *g1* and *g2* closely associated posteriorly and *g3* and *g4* closely approximated anteriorly, leaving a wide gap between two groups; aggenital setae one pair, glabrous, with pointed tips and rounded follicles, 72-77 long, situated much closer to genital than to anal apertures, their mutual distance nearly twice the maximum width of the genital plates and 30 RLN on average.

Epimeral region: Epimeral region punctate with scaly microsculptures; epimera I-II separate, III-IV fused; sternal ridge between epimera I only; epimeral setae long, barbed, with pointed tips, 41-117 long, setae *1a* smallest, *4b* longest; epimeral setal formula 3-1-3-3.

Legs: All tarsi monodactylous, claws curved.

Body: Length, 959-1125; width, 464-605.

HOLOTYPE: ♀, INDIA: West Bengal: Darjeeling, Darjeeling forest Div., Ghum-Simana forest range, Sukiapokhri forest block (Alt. 2100 m. approx.), 21.ix.1978, from decaying leaves of *Cryptomeria japonica*, B.K. Mondal coll. *PARATYPES*: 2 ♀♀, Darjeeling, Tukvar North Tea Estate (Alt. 900m. approx.), 29.x.1977, from litter of *Thea sinensis*, B.K. Mondal coll.; 1 ♀, Darjeeling, Mim Tea Estate (Alt. 1700 m. approx.), 5.ix.1978, from humus around the roots of a young tea plant (*Thea sinensis*), B.K. Mondal coll.

Remarks: This species is similar to *Megalotocepheus japonicus* Aoki, 1965 in the number and general arrangement of the notogastral setae, notogastral fissures, nature of rostrum,

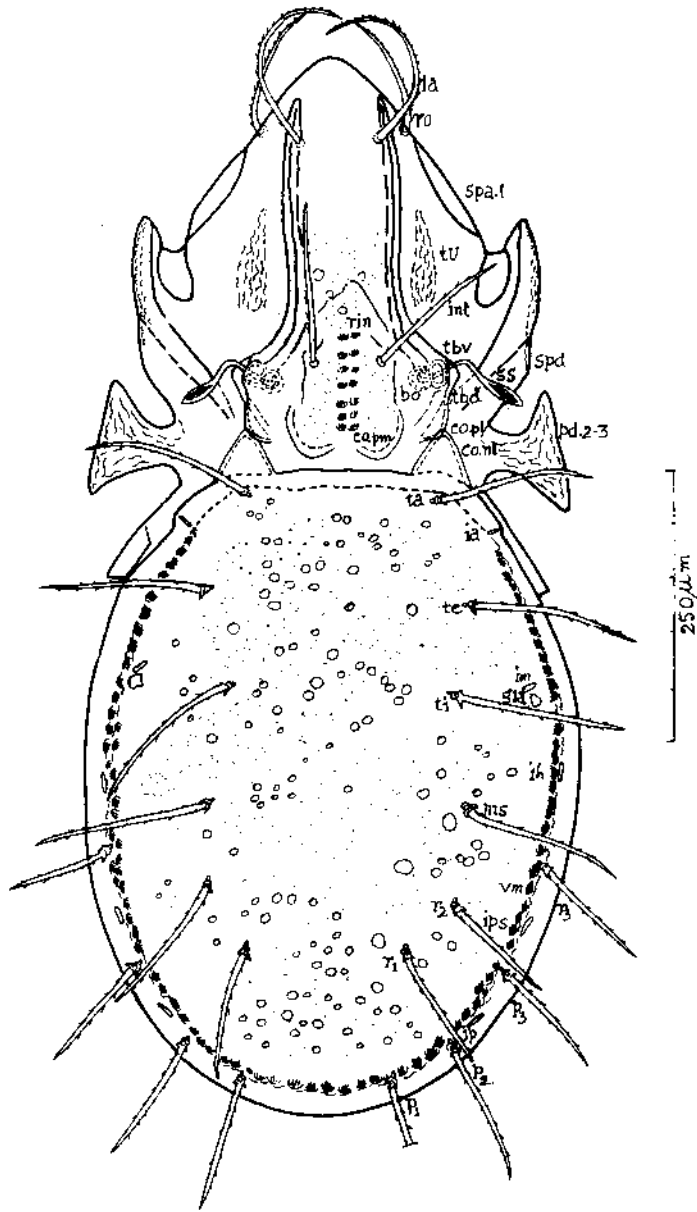


Fig.3. *Megalotocepheus aokii* sp. nov. (dorsal view), *ro* = rostral seta, *la* = lamellar seta, *int* = interlamellar seta, *ss* = sensillus, *bo* = bothridium, *tbv* = ventral bothridial plate, *ibd* = dorsal bothridial plate, *spla.l* = lateral lamelliform expansion, *tU* = tutorium, *pd.2-3* = pedotecta complex II-III, *spd* = sub-pedotectum, *rin* = interlamellar wrinkles, *co. pl* = lateral prodorsal condyle, *co. pm* = median prodorsal condyle, *co. nl* = lateral notogastral condyle, *ta*, *te*, *ti*, *ms*, *r1*, *r2*, *r3*, *p1*, *p2*, *p3* = notogastral setae, *vm* = marginal ridge, *ia*, *im*, *ih*, *ips*, *ip* = dorsallyirifissures, *gla* = orifice of latero-abdominal gland.

NEW SPECIES OF MEGALOTOCEPHEUS

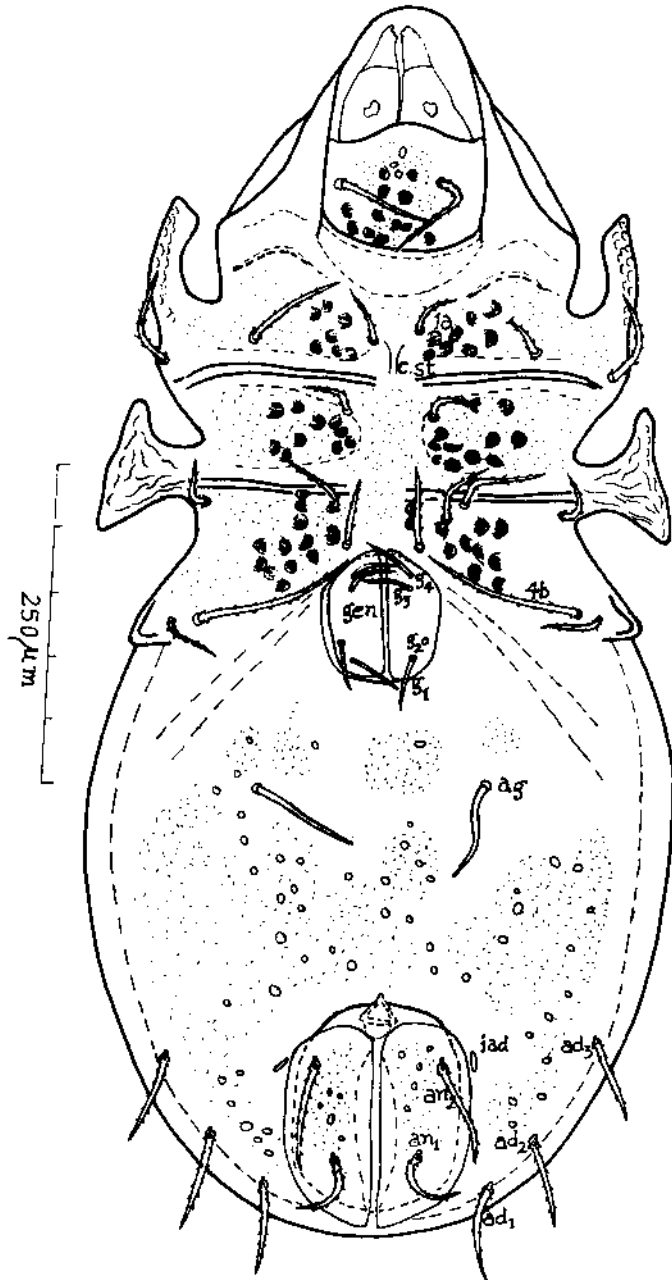


Fig.4. *Megalotocepheus aokii* sp. nov. (ventral view), *an*₁, *an*₂ = anal setae, *ad*₁, *ad*₂, *ad*₃ = adanal setae, *iad* = adanal fissure, *gen* = genital plate, *g*₁, *g*₂, *g*₃, *g*₄ = genital setae, *ag* = aggenital seta, *la*, *4b* = epimeral setae, *c.st* = sternal ridge.

extension of *spa.l* beyond rostral setae, nature of tutorium, structure of lateral prodorsal and notogastral condyles, nature and position of *iad* and structure and disposition of genital setae. It differs from *japonicus* in the structure of sensillus, broader *spa.l*, median prodorsal condyles (*co. pm*) being separated, barbed nature of notogastral setae with blunt apices, marginal ridge (*vm*) being extended far anteriorly and the barbed nature of the epimeral setae.

Megalotocephus bengalensis sp. nov.
(Figs. 5 and 6)

Adult : Colour brownish-light yellow.

Prodorsum : Prodorsum punctate posteriorly with two longitudinal rows of muscle scars in the interbothridial region; *spa.l* narrow, not reaching the follicles of rostral setae anteriorly; rostrum broad, flattened; rostral setae prominently barbed outwards, deeply incurved, 140-154 long, nearly equal to their mutual distance, placed far posterolaterally on rostrum; lamellar setae unilaterally barbed outwards, deeply incurved, 138-149 long, nearly twice as long as their mutual distance, situated a little beyond the slightly incurved lamellar tip, below the level of insertion of rostral setae; interlamellar setae bilaterally finely barbed with rounded follicles and blunt apices, 80-100 long, one and half times as long as their mutual distance, located mesad and anterior to the bothridium; exobothridial setae absent; bothridium a depressed cup, directed antero-laterad; dorsal bothridial plate (*tbd*) incomplete, ventral bothridial plate (*tbo*) semicircular, slightly protruding, sensillus with a narrow stalk and nearly an equal, smooth, fusiform head with an inner core, directed postero-laterad; lamellae weakly sigmoid, well-separated from each other, with blunt apices, not reaching anterior border of rostrum; interlamellar wrinkles (*rin*) well-developed; tutorium well-developed; median prodorsal condyles (*co. pm*) broadly triangular posteriorly, well-separated from each other; lateral prodorsal condyles (*co. pl*) well-developed, rounded, ear-shaped, touching the inner and anterior margin of *co. nl*; pedotecta complex II-III (*pd. 2-3*) tail fin-shaped, distinctly projecting out laterally from the prodorsum, irregularly granulate; subpedotectum (*spd*) moderately developed.

Notogaster : Notogaster elongate, oval, with slightly undulating anterior margin and rounded posterior margin, finely granulate, interrupted by irregular crack lines; median notogastral condyles (*co. nm*) absent; lateral notogastral condyles (*co. nl*) well-developed with evenly rounded anterior margin, well-separated, distance between them 22 *RLN* on average; marginal ridge (*vm*) weakly developed, posteriorly undulating and anteriorly terminating below *gla*; notogastral setae ten pairs, bilaterally faintly barbed, with rounded follicles and subpointed tips, 59-113 long, varying from 10-19 *RLN*; setae *ta* antero-marginal, *te* antero-lateral, *ti* and *ms* mid-lateral, *r1* and *r2* postero-lateral and *p1*, *p2*, *p3* and *r3* postero-marginal; setae *te* placed in between *ta* and *ti*, nearer to the latter; distance $ta - ta < ti - ti < te - te < ms - ms$; *gla* lateral, just above the anterior termination of marginal ridge in between *te* and *ti*; notogastral fissures five pairs, all marginal (*ia* not discernable on dorsal aspect), *im* above *gla*, *ih* in between *ti* and *ms*, *ips* between *p3* and *r3* and *ip* between *p2* and *p3*.

NEW SPECIES OF MEGALOTOCEPHEUS

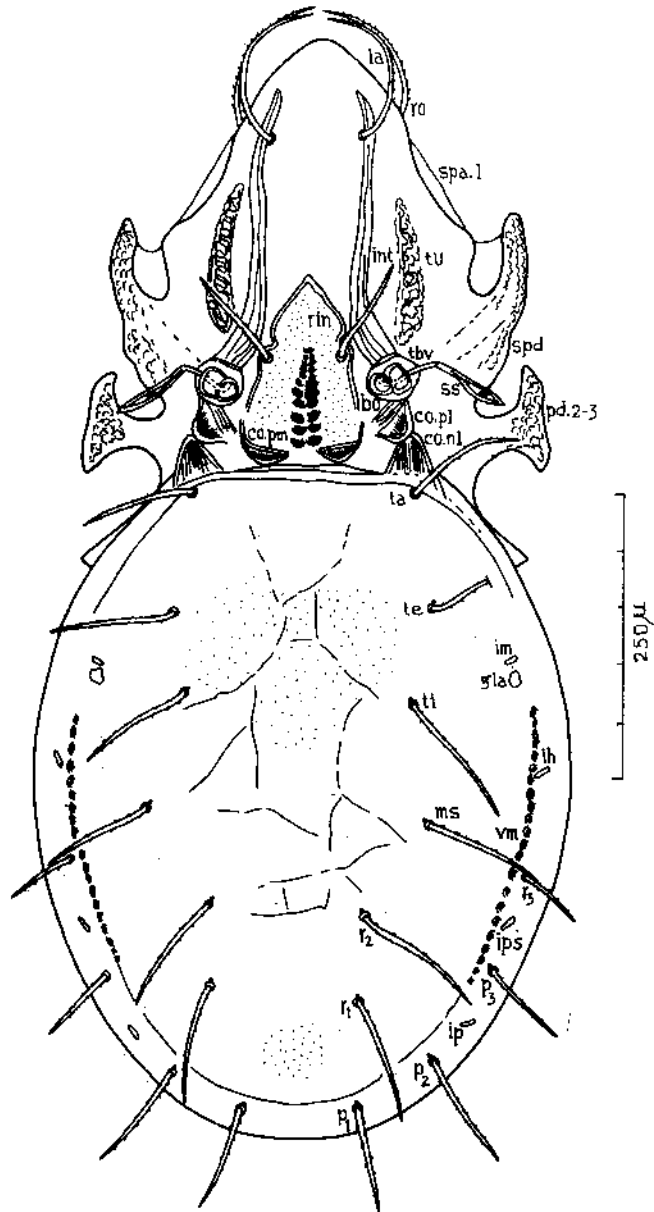


Fig.5. *Megalotocepheus bengalensis* sp. nov. (dorsal view), ro = rostral seta, la = lamellar seta, int = interlamellar seta, ss = sensillus, bo = bothridium, tbv = ventral bothridial plate, spa.1 = lateral lamelliform expansion, tl = tutorium, pd.2-3 = pedotecta complex II-III, spd = sub-pedotectum, rin = inter lamellar wrinkles, co. pl = lateral prodorsal condyle, co. pm = median prodorsal condyle, co. nl = lateral notogastral condyle, la, te, ti, ms, r1, r2, r3, p1, p2, p3 = notogastral setae, vm = marginal ridge, im, ih, ips, ip = dorsal lyrifissures, gla = orifice of latero-abdominal gland.

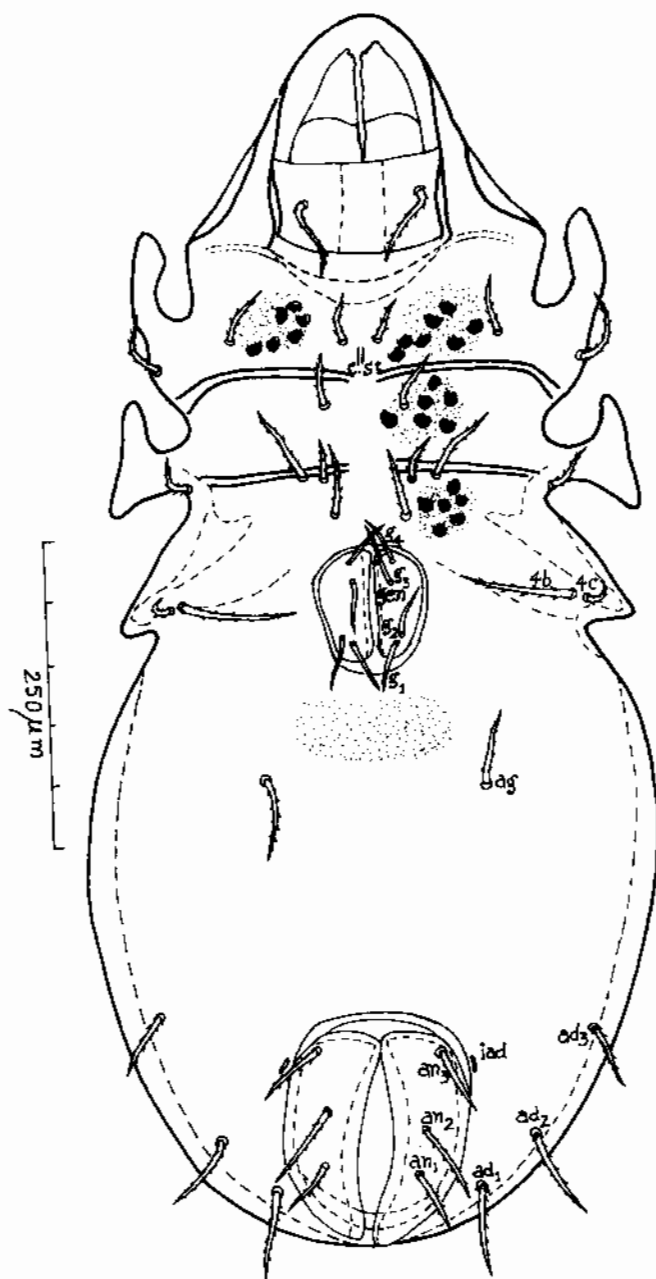


Fig. 6. *Megalotocephalus bengalensis* sp. nov. (ventral view), an_1, an_2, an_3 = anal setae, ad_1, ad_2, ad_3 = adanal setae, iad = adanal fissure, gen = genital plate, g_1, g_2, g_3, g_4 = genital setae, ag = aggerital seta, $4b, 4c$ = epimeral setae, $c.st$ = sternal ridge.

Anogenital region : Ventral plate punctate, each anal plate more than twice as long as broad, with three bilaterally barbed setae, pointed at tips, 45-63 long, *an*₁ inner and posterior, *an*₂ inner and median and *an*₃ marginal and anterior in position; *an*₁ < *an*₃ < *an*₂; adanal setae three pairs, bilaterally barbed, with pointed tips, 40-58 long, *ad*₁ postero-marginal, *ad*₂ postero-lateral and *ad*₃ antero-lateral of the anal field; *iad* moderately large, slightly oblique or parallel to the antero-lateral margin of the anal plates, situated slightly below the level of insertion of *an*₃; interspace between anal and genital plates more than thrice the maximum width of the genital plates; each genital plate more than twice as long as its maximum width, with four glabrous, moderately long setae, 31-41 long; *g*₁, *g*₂ and *g*₃, *g*₄ form two distinct groups leaving a wide interspace while they are closely approximated to each other posteriorly and anteriorly on the genital plates; aggenital setae one pair, faintly barbed, with rounded follicles and pointed tips, 57-63 long, their mutual distance nearly twice the maximum width of the genital plates and about 31 RLN.

Epimeral region : Epimeral region punctate with scaly microsculptures; epimera I and II separate, III and IV fused; sternal ridge of epimera I present; epimeral setae barbed with rounded follicles and pointed tips, 22-81 long, setae 4*b* longest and 4*c* shortest; epimeral setal formula 3-1-3-3.

Legs : All tarsi monodactylous, claws strongly curved.

Body : Length, 963-1145; width, 450-595.

HOLOTYPE : ♀, INDIA : West Bengal : Darjeeling, Darjeeling forest Div., Tonglu forest range, Palmajua forest bungalow area (Alt. 2300 m. approx.), 16.viii. 1977. from decomposed leaves of *Cryptomeria japonica*, B.K. Mondal coll. **PARATYPE :** 1 ♀, Darjeeling, Darjeeling forest Div., Senchal forest range, Sonada forest block (Alt. 2100 m. approx.), 21.ix.1978, from soil under a plant (*Quercus liniata*), B.K. Mondal coll.

Remarks : This new species is very similar to *Megalotocepheus latus* Aoki, 1965, the common characters being well-developed interlamellar wrinkles (*rin*), structure of prodorsal and notogastral condyles, arrangement of prodorsal and notogastral setae, disposition of *gla* and notogastral fissures, extension of the marginal ridge (*vm*) and three pairs of anal setae. It differs from Aoki's species by the nature of lamellar tips, structure of sensillus, narrower *spa.1*, strongly developed turtorium, development of two longitudinal rows of muscle scars in the interbothridial region, presence of irregular crack lines on the notogaster and barbed nature of anal and adanal setae.

DISCUSSION

Most members of the genus share many common characters but a few deviations create some problems regarding the generic concept. The occurrence of nine pairs of notogastral setae in *M. himalayensis* (other members possess ten pairs), the presence of minute *iad* in the same species as well as in one species included here (*M. darjeelingensis*) (not a generalised finding) and the presence of three pairs of anal setae in *M. latus* as well as in one species included here (*M. bengalensis*) are unusual features. As these

peculiarities are observed in different geographical regions, perhaps they have become a permanent feature in the species concerned. Our present state of knowledge concerning the genus *Megalotocepheus* is not adequate and as the number of species described in the genus is not large, it is premature to split the genus at present.

ACKNOWLEDGEMENTS

The authors are grateful to Prof. S.K. Dasgupta, Head, Department of Zoology, Presidency College, Calcutta and to Dr. D.K. Chakrabarti, Assistant Professor of Zoology, Presidency College, Calcutta for providing laboratory facilities.

REFERENCES

- AOKI, J. 1965. A preliminary Revision of the Family Otocephidae (Acari, Cryptostigmata) I. Subfamily Otocephinae. *Bull. Nat. Sci. Mus. Tokyo*, 8 : 259-341.
- BALOGH, J. 1970. New oribatids (Acari) from Ceylon : The scientific results of the Hungarian Soil Zoological Expedition. *Opusc. Zool., Budapest*, 10 : 33-67.
- BERLESE, A. 1905. Acari nuovi. Manipulus IV. Acari di Giava. *Redia*, 2 : 154-176.
- MAHUNKA, S. 1973. Neue und interessante milben aus dem Genfer Museum : IX Otocephid species from Ceylon (Oribatida). *Redia*, 54 : 83-103.
- NEWELL, I. 1956. The genus *Tetracondyla* in the Pacific (Acari, Oppiidae). *Proc. Haw. Ent. Soc.*, 16(1) : 113-121.
- TRÄGÅRDH, I. 1931. Acarina from the Juan Fernandez Islands. *The Natural History of Juan Fernandez and Easter Islands, ed., Skottsberg, Uppsala*, 3(4) : 553-628.
- ZLOTIN, R.I. and KRIVOLUTSKY, D.A. 1969. Fauna i landsaftnoe raspredelenie pancirnych k lescej (Oribatei) V Vysokogor, jach vnutrennogo Tjan Sanja. *Pedobiologia*, 9(3) : 254-270..

STUDIES ON THE GENUS ACERIA (ACARI : ERIOPHYIDAE) FROM SOUTH INDIA

M. MOHANASUNDARAM

Department of Agricultural Entomology
Tamil Nadu Agricultural University
Coimbatore-641 003, India

ABSTRACT

A total of 59 species of *Aceria* Keifer, including 33 new species, collected from south India during 1972 to 1983 are treated in this paper. The new and some of the poorly known species are described and illustrated. The new species of *Aceria* described are *abutilonae*, *acalyphae*, *acanthae*, *achyranthi*, *ailanthae*, *aeruae*, *anisomelae*, *asperae*, *asystasiae*, *berberae*, *borreriae*, *commiphorae*, *corchorae*, *feroniae*, *linnae*, *kigeliae*, *leucopyrae*, *longisetae*, *madukkaraiensis*, *marudamalaiensis*, *mimusopae*, *mitragynae*, *obliquae*, *phyllanthae*, *securinegae*, *serndanurensis*, *siruvaniensis*, *subramanii*, *trianthema*, *vitifoliae*, *waltheriae*, *xeromphisi* and *ziziphi*. A key to the known Indian species of *Aceria* is also provided.

INTRODUCTION

The eriophyid mites are one of the smallest arthropods which generally measure 125 to 250 μ m in length. They are phytophagous and live in diverse situations such as under surface of leaves, inside buds, on shoot and fruits. The symptoms produced on plants as a result of their attack include rusting, crinkling, edge rolling, yellowing and production of various kinds of galls and erineum. A few species are also known to vector phytopathogenic viruses (Slykhuis, 1969).

There are 56 known species of *Aceria* Keifer known from India to date (Ghosh and Chakrabarti, 1988). Several of these are pests of agricultural and horticultural crops (Jeppson *et al.*, 1975), while some are found on weeds and forest plants.

In the present paper, a total of 59 species of *Aceria* including 33 new species are reported from south India which were collected during 1972 to 1983. Some of the poorly described species are redescribed and illustrated. A key to 99 known Indian species of *Aceria* including the new species is also provided.

MATERIAL AND METHODS

All available flora collected from 1972 to 1983 from south India were screened for mites. Shoots, buds and leaves were collected in polyethylene bags, brought to the laboratory and observed under a stereo-binocular microscope at 40 x magnification. The mites were mounted in the standard Hoyer's medium, placing several mites per slide, properly labelled and warmed at 45°C in an oven for 3 to 4 hours. They were ringed to

seal the edge of the cover slip when the medium was completely dry. The cleared mites were studied under a phase contrast microscope. All drawings were made with the help of a camera lucida. The following abbreviations are used to denote the various parts in the figures : AP 1 - internal female apodeme with gland; CS - lateral view of cauda; D - dorsal view of mite; DA - dorsal view of shield; ES - side skin structure; F - featherclaw; LT - foreleg tarsus; GFI - female genitalia and coxae from below; GM - male genitalia; HLT - hind leg tarsus; L1 - left foreleg; L2 - left hind leg; S - side view of mite.

In the descriptions all measurements given are in micrometers. The type material has been deposited in the Department of Agricultural Entomology Collections, Tamil Nadu Agricultural University, Coimbatore, India.

RESULTS AND DISCUSSION

Aceria Keifer

Keifer (1944) redefined the genus *Eriophyes* restricting its scope to include those species with the setigerous shield tubercles placed a little anterior to rear shield margin thus directing the setae ahead or centrad. Remaining species with setigerous shield tubercles placed on the shield margin directing the setae caudad over the abdomen (which were hitherto placed in *Eriophyes*) were relegated to his new genus *Aceria*. Newkirk and Keifer (1971), based on the study of type species of *Eriophyes*, suppressed the genus *Aceria* as a junior synonym of the former. They transferred all the species to *Aceria* to *Eriophyes*. Further, they referred all the species with the dorsal shield tubercles placed away from shield margin with setae projecting anteriorly or centrad (which were referred to the genus *Eriophyes* till 1971) to the genus *Phytoptus* (*s. str.*) and those referred to *Phytoptus* till 1971 to the new genus *Phytocoptella* Newkirk and Keifer. These changes led to confusion since several workers used the name *Aceria* because of its long usage, while a few used *Eriophyes* in place of *Aceria*. The changes proposed by Newkirk and Keifer (1971) were also opposed by several acarologists (Lindquist, 1977; Shevtchenko, 1975). Shevtchenko (1975) applied to the International Commission on Zoological Nomenclature for the use of the plenary powers to designate *Phytoptus vitis* Pagenstecher, 1857, as the type species of *Eriophyes* von Siebold, 1851, and *Phytoptus avellanae* Nalepa, 1899, as the type species of *Phytoptus*. The application was supported by Lindquist (1975) and other acarologists. The Commission voted on the case in 1977 and the suggestions of Lindquist (1975) won the majority (ICZN, 1979). Hence, the generic name *Aceria* Keifer (1944) is used herein in the original sense as prior to Newkirk and Keifer (1971).

The members of *Aceria* could be recognised by the following characters. Body worm-like and circular in cross section. Rostrum usually small, if large, chelicerae evenly curved. Shield usually subtriangular, dorsal setigerous paired tubercles in subdorsal position on rear shield margin and directing the setae caudad. Legs with usual setae and simple featherclaw. Abdominal rings equal in number both dorsally and ventrally, nearly always microtuberculate. Female genitalia slightly behind coxae; cover flap furrowed or smooth; usually with a single row of longitudinal scoring; anterior female apodeme of normal length in ventral view.

GENUS ACERIA FROM SOUTH INDIA

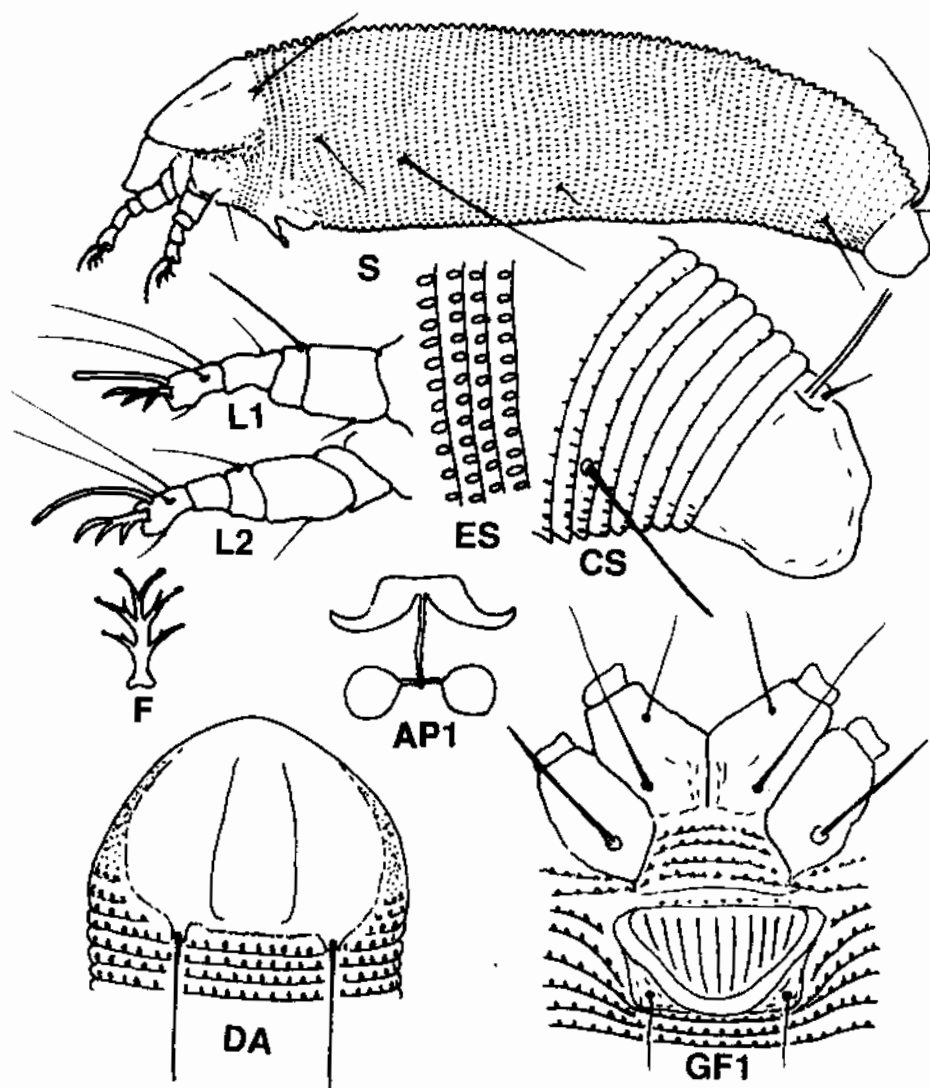


Fig.1. *Aceria abutilonae* sp. nov.

1. *Aceria abutilonae* sp. nov.
(Fig. 1)

Female : 175-180 long, 43 thick, worm-like, white, rostrum 17 long, evenly downcurved; antapical seta minute, 1 long. Dorsal shield 25 wide, 22 long with only admedian lines, sides of shield slightly granular. Dorsal tubercles at shield margin, 10 apart; dorsal setae 22 long, pointing backwards. Foreleg 22 long, tibia 5 long, tibial seta 3 long, thin and placed at basal 1/3; tarsus 6.5 long; claw 9 long, tapering and curved slightly; featherclaw 3-rayed. Hindleg 20 long, tibia 4 long, claw 12 long. Coxae with a

clear sternal line, all three setigerous coxal tubercles present, coxal area clear. Abdomen with about 75 rings, uniformly microtuberculate both dorsally and ventrally, telosomal rings with sparse and minute microtubercles; lateral seta 8 long, on ring 10; first ventral seta 40 long, on ring 22; second ventral seta 3 long, on ring 40; third ventral seta 16 long, on ring 6 from behind; caudal seta 20 long; accessory seta 3 long. Female genitalia near coxae, 15 wide and 7 long; cover flap with 10 lines; genital seta 3 long.

Male : Unknown.

HOLOTYPE: ♀, on slide, INDIA: Tamil Nadu: Coimbatore, TNAU Campus, 13.i.1973, ex *Abutilon hirtum* D. Gon. (Malvaceae), M. Mohansundaram Coll. *PARATYPES*: many ♀♀ on 10 slides, data as in the holotype (Coll. No.46).

Remarks: This species is closely related to *Aceria puttarudriahi* ChannaBasavanna (1966) but may be differentiated from it by the 3-rayed featherclaw and by the presence of admedian lines on the dorsal shield.

Relation to host: Mites were found among dense mat of hair on stem and leaves as vagrants.

2. *Aceria acalyphae* sp. nov.

(Fig. 2)

Female: White; 140-150 long, 44 thick, worm-like, cylindrical; rostrum 11 long, evenly downcurved; antapical seta 4.5 long, shield 22 long, 32 wide, broadly triangular, blunt at anterior end, with characteristic markings. Median line represented by one or two dart-like basal branchings at shield base; admedians clear, complete, converge anteriorly; first submedian clear, second submedian represented in anterior 1/3 joining first submedian posteriorly. A short curved line at base of each shield tubercle. Margin of shield represented by clear lines, sides of shield with small broken lines. Dorsal tubercles at base of shield 17.5 apart, dorsal setae 30 long, pointing backwards. Foreleg 20 long, tibia 3.5 long, tibial seta 1.5 long, placed at its midlength, tarsus 5.5 long, claw 5.5 long, curved, blunt at tip; featherclaw 4-rayed. Hindleg 22 long, tibia 3.5 long, tarsus 5.5 long, claw 6.5 long, similar to foreclaw. Coxae marked with thick lines. First setigerous coxal tubercles close to anterior end of forecoxae; second setigerous coxal tubercles behind the first at base of forecoxae, third coxal tubercles placed wide apart. Abdomen uniformly microtuberculate both dorsally and ventrally; lateral seta 15 long, on ring 12; first ventral seta 22 long, on ring 23; second ventral seta 5 long, on ring 36; third ventral seta 11 long, on ring 6 from behind; caudal seta 50 long, accessory seta thick, 2.5 long. Female genitalia 16 wide, 10 long, coverflap with 12 lines, genital seta 8 long.

Male: Unknown.

HOLOTYPE : ♀, on slide, INDIA: Tamil Nadu: Coimbatore, Marudamalai, 24.xii.1972, ex *Acalypha fruticosa* Forsk. (Euphorbiaceae), M. Mohansundaram Coll. *PARATYPES*: Many ♀♀ on 10 slides, data as in holotype (Coll. No.37).

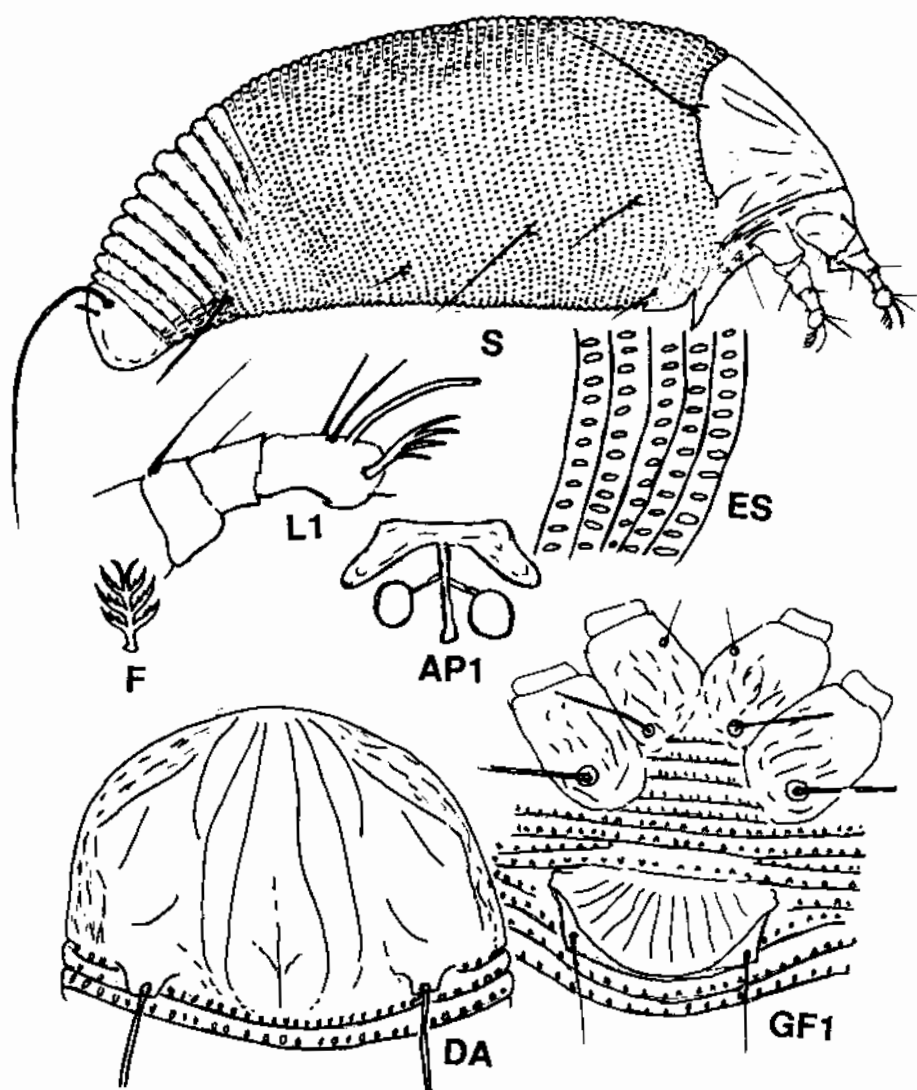


Fig.2. *Aceria acalyphae* sp. nov.

Remarks: This species resembles *Aceria neocynodonis* (Keifer, 1960) but may be differentiated by the 4-rayed featherclaw, and the number of ribs on female genital coverflap.

Relation to host: Mites cause whitish erineal patches on both sides of the leaf.

3. *Aceria acanthae* sp. nov.
(Fig.3)

Female: 140-150 long, 40 thick, rostrum 15 long, evenly downcurved; antapical seta 2 long; shield 30 wide and 20 long, median line represented clearly at base and fades away anteriorly; admedian wavy, first submedian diverging diagonally, represented in posterior half only; 2nd submedian short, similar to first; third submedian forming shield margin, all lines connected by a cross line at rear shield margin; dorsal tubercles at rear shield margin, 15 apart; dorsal setae 25 long, pointing backwards. Foreleg 23 long, tibia 2 long; tarsus 5 long; claw 5 long, slightly curved; featherclaw 4-rayed. Hindleg 20 long; tibia 4 long, claw 6 long, similar to foreclaw. Coxal area granular, sternal line clear, all three setigerous coxal tubercles present. Abdomen with about 68 rings, uniformly microtuberculate; lateral seta 13 long, on ring 10; first ventral seta 25 long, on ring 24; second ventral seta 4.5 long, on ring 40; third ventral seta 12 long, thick, on ring 6 from behind; caudal seta 45 long, accessory seta 4 long. Female genitalia 12 long, 17 wide, coverflap with 8 lines, genital seta 3 long.

Male: Unknown.

HOLOTYPE: ♀, on slide, INDIA: Tamil Nadu: Coimbatore: Siruvani Hills, near falls, 25.vii.1976, ex *Asystasia* sp. (Acanthaceae), M. Mohanasundaram Coll. *PARATYPES*: many ♀♀ on 5 slides, data as in holotype (Coll. No.248).

Remarks: This species is related to *Aceria justiciae* ChannaBasavanna (1966), but may be differentiated by the shield pattern, number of lines on the female genital coverflap and the granular coxal area.

Relation to host: The mites cause white erineal patches on both sides of the leaves.

4. *Aceria achyranthi* sp. nov.
(Fig.4)

Female: 160-170 long, 60 broad; rostrum 15 long, evenly down curved; antapical seta 3 long. Shield 30 long, 40 wide, smooth, except for a faint median and admedian lines in a few specimens at rear end of shield; sides of shield granular, dorsal tubercles 20 apart at shield margin, dorsal seta 20 long, pointing backwards. Foreleg, 25 long, tibia 7 long, tibial seta 5 long, placed at basal 1/3, tarsus 6 long; claw 7 long, featherclaw 5-rayed. Hindleg 23 long, tibia 6 long, claw 7 long. Coxae with a clear sternal line, coxal area with fine markings and granulations; all three setigerous coxal tubercles present. Abdomen with 75-78 rings, uniformly microtuberculate both dorsally and ventrally; lateral seta 23 long, on ring 15; first ventral seta 45 long, on ring 28; second ventral seta 7 long, on ring 45; third ventral seta 22 long, on ring 6 from behind; caudal seta 50 long; accessory seta 5 long. Female genitalia 20 wide, 12 long, coverflap with 10-12 lines, genital seta 11 long.

Male: Unknown.

GENUS ACERIA FROM SOUTH INDIA

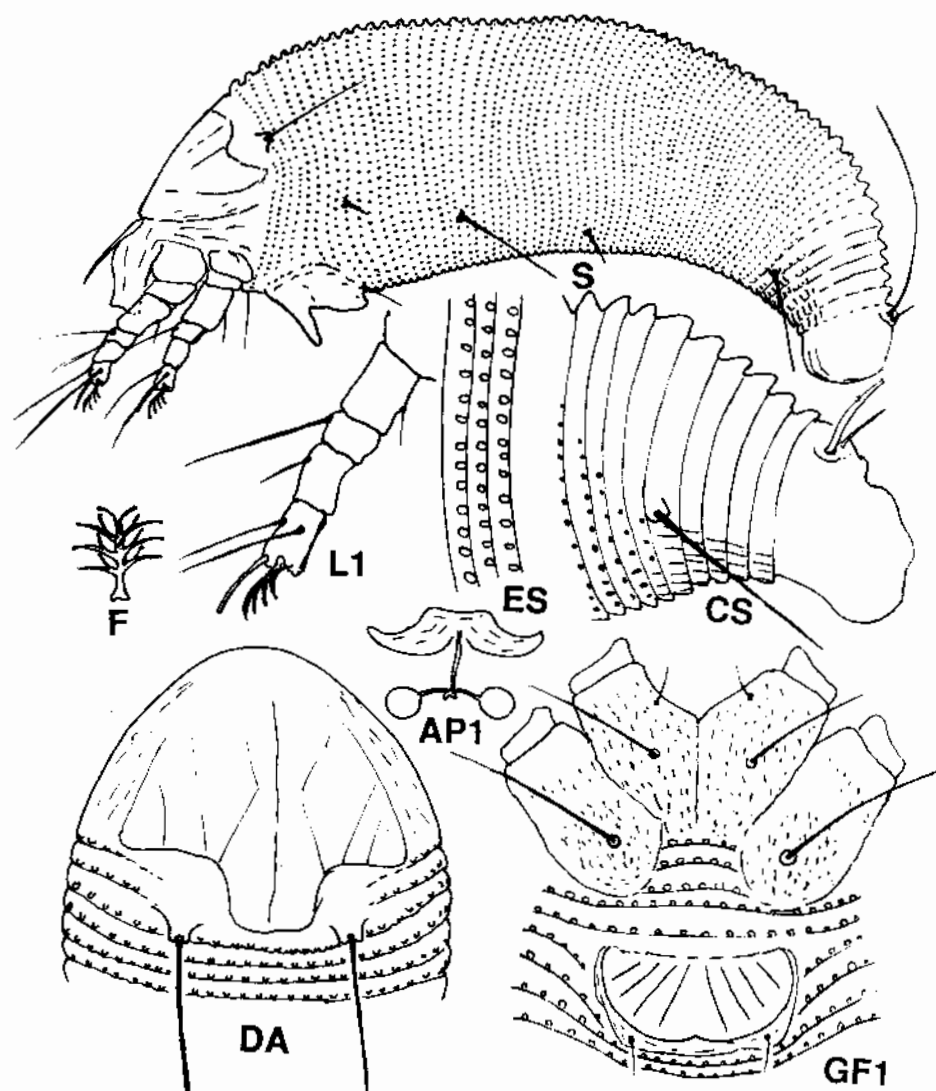


Fig. 3. *Aceria acanthae* sp. nov.

HOLOTYPE : ♀, on slide, INDIA: Karnataka: Bangalore, UAS campus, 24.iv.1974, ex *Achyranthes aspera* Linn. (Amaranthaceae). M. Mohanasundaram.Coll. **PARATYPES**: many ♀♀ on 8 slides, data as in holotype (Coll. No.127).

Remarks: This species resembles *Aceria houstoniae* (Keifer, 1965a) but differs by the 5-rayed featherclaw and the scorings in the coxal area.

Relation to host: The mites are under surface leaf vagrants causing slight rusting.

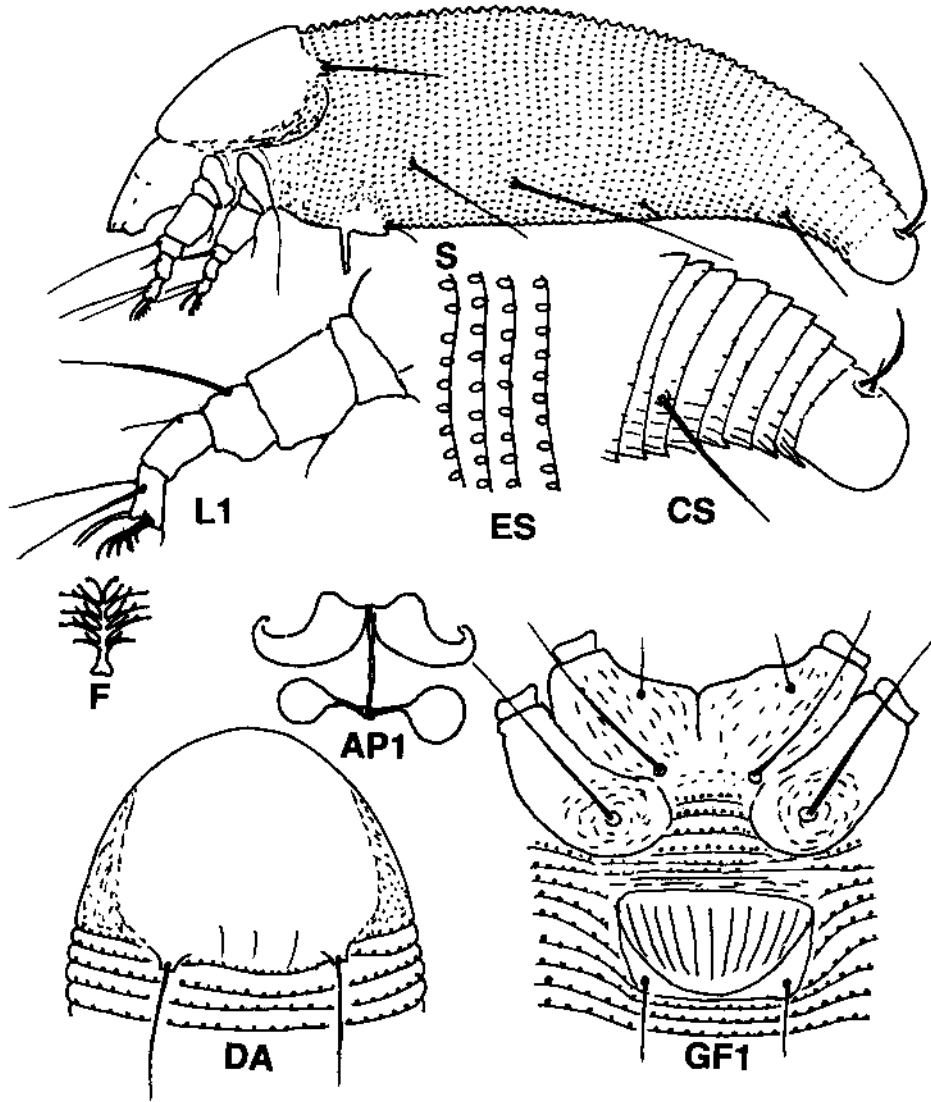
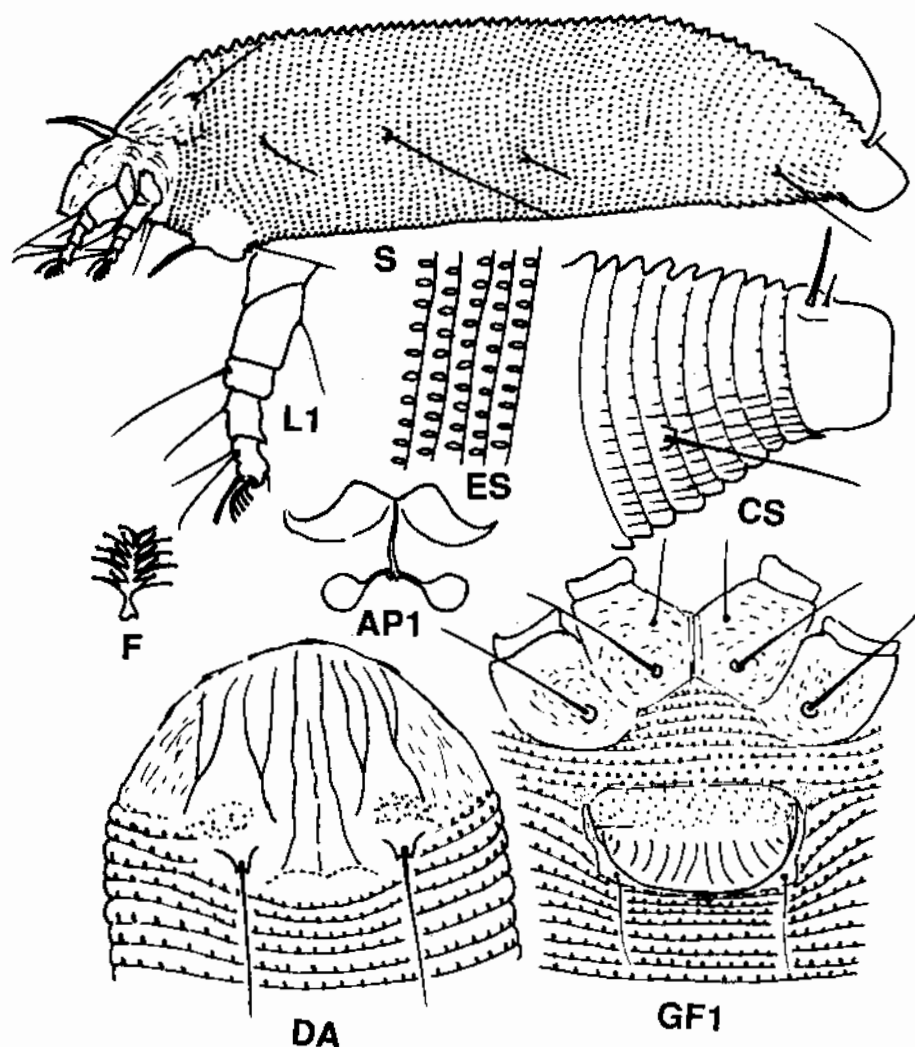


Fig. 4. *Aceria achyranthi* sp. nov.

5. *Aceria ailanthae* sp. nov.

(Fig.5)

Female: 175-185 long; 45 thick. Rostrum 13 long; antapical seta 3 long. Shield 25 long, 30 wide, with a clear pattern of lines; median line complete except for the anterior 0.25; admedians complete; first submedian slightly arched; second submedian joined with first at base; third submedian bifurcating anteriorly at shield margin; sides of shield with

Fig. 5. *Aceria ailanthae* sp. nov.

fine striations. Dorsal tubercles at shield margin, 12 apart; dorsal seta 20 long, pointing backwards. Area near base of dorsal tubercles granular. Foreleg 20 long, tibia 5 long; tibial seta 5 long; tarsus 5 long; claw 7 long, curved; featherclaw 5-rayed. Hindleg 18 long; tibia 4 long; claw 9 long, curved. Coxae with a clear sternal line; all three setigerous coxal tubercles present; coxal area granular. Abdomen with about 78 rings, uniformly microtuberculate; lateral seta 15 long, on ring 12; first ventral seta 35 long, on ring 27; second ventral seta 5 long, on ring 47; third ventral seta 14 long, on ring 6 from behind; caudal seta 50 long; accessory seta 2 long. Female genitalia 10 long, 20 wide, coverflap with 12 lines; genital seta 6 long.

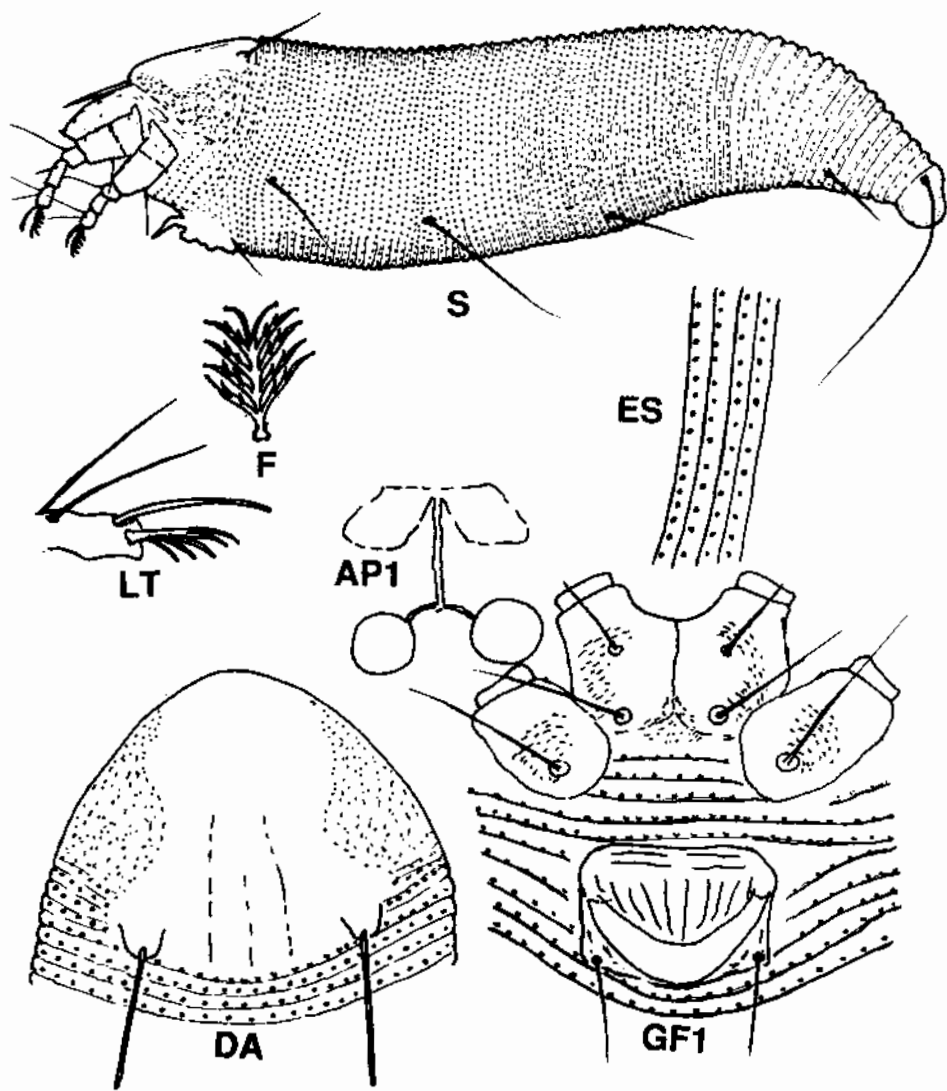


Fig. 6. *Aceria aertae* sp. nov.

Male: 170 long, 40 thick, genitalia 12 wide, genital seta 5 long.

HOLOTYPE : ♀, on slide, INDIA: Tamil Nadu, Somanur (Coimbatore district), 24.iii.1977, ex *Ailanthus excelsa* Linn. (Simarubaceae), M. Mohanasundaram. Coll. *PARATYPES*: many ♀♀ and ♂♂ on slides, data as in holotype. (Coll. No.256).

Remarks: This species resembles *Aceria palafoxiae* (Keifer, 1965a) in general appearance but differs in its shield pattern.

Relation to host: The mites are under surface leaf vagrants.

6. *Aceria aervae* sp. nov.

(Fig.6)

Female: 210-230 long, white, worm-like, 45 thick. Rostrum 15 long, projecting forward, antapical seta 5 long. Shield 30 long, 30 wide, triangular; median line, faint, broken at 0.33 length, admedians faint, represented in the basal 0.66, either sides of shield granular to mid length. Dorsal tubercles on shield margin, 20 apart, setae 20 long, projecting backwards. Foreleg 30 long, tibia 7 long, tibial seta placed at basal 0.33, 6 long, tarsus 5 long; claw 7 long, tapering, slightly arched; featherclaw 5-rayed including bifid tip. Hindleg 25 long, tibia 4 long, tarsus 5 long, claw 7 long. Coxal area granular at base of setigerous tubercles, first setigerous coxal tubercle wider apart from median approximation, second coxal tubercle in line with the first at base of fore coxae, third coxal tubercle wider apart. Abdomen with 80 rings, uniformly microtuberculate; microtubercles fade out towards posterior end dorsally, elongate ventrally and in last 7 segments form elongated microstriae. Lateral seta 30 long, on ring 10; first ventral seta 55 long, on ring 24; second ventral seta 20 long, on ring 41; third ventral seta 25 long, on ring 7 from behind. Caudal seta 55 long, accessory seta 2 long. Female genitalia 15 long and 20 wide. Coverflap with 10 lines, a few broken, genital seta 22 long.

Male: Unknown.

HOLOTYPE : ♀, on slide, INDIA: Tamil Nadu, Thirumalayampalayam (Coimbatore district), 17.ix.1974, ex *Aerva lanata* Juss. (Amarantaceae), M.Mohanasundaram. Coll. *PARATYPES* : ♀♀, on 5 slides, data as in holotype (Coll.No.147).

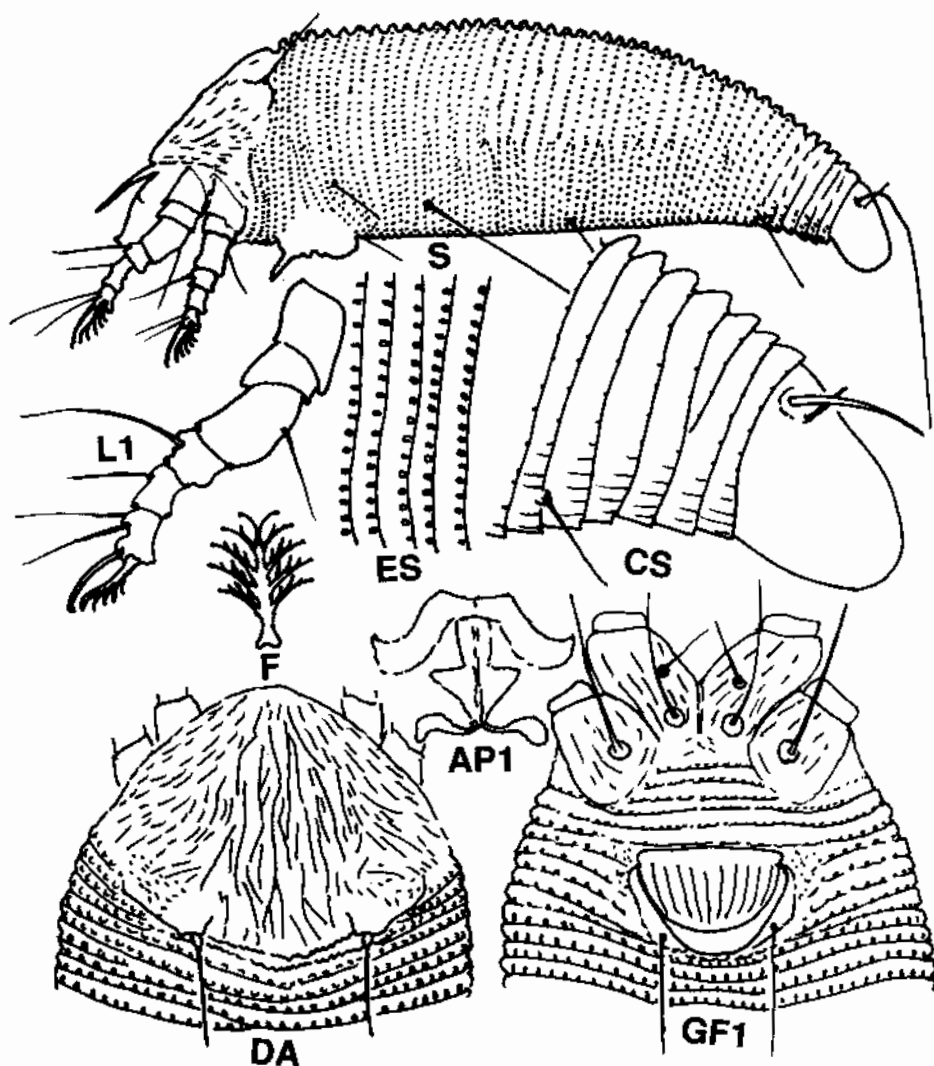
Remarks: This species is related to *Aceria macrodonis* (Keifer, 1965b) but can be differentiated by the wider granular area of the shield, and the lines of genital coverflap. It is also closely related to *Aceria achyranthi* sp. nov. but can be differentiated from it by the large size, longer second ventral seta, coxal scorings, and by the scorings on the genital coverflap.

Relation to host: Mites were under surface leaf vagrants among the white hairs.

7. *Aceria anisomelae* sp. nov.

(Fig.7)

Female: 170-180 long, worm-like, 50 thick. Rostrum 15 long, evenly downcurved; antapical seta 5 long. Shield triangular, 27 long, 35 wide, with a pattern of short, numerous, complex lines which cannot be clearly designated as median, admedian and submedians. Dorsal tubercles at rear shield margin, 16 apart with dorsal setae 10 long, thick at base, pointing backwards. Foreleg 26 long, tibia 6 long, tibial seta 4 long, near mid point; tarsus 6 long, claw 7.5 long, featherclaw 5-rayed. Hindleg 24 long, tibia 5 long, claw 7.5 long. Coxae broadly connate with a clear sternal line; all three setigerous tubercles present, coxal area with shortline-like granulations. Abdomen with about 68 rings, uniformly microtuberculate; microtubercles along posterior border of each ring.

Fig. 7. *Aceria anisomelae* sp. nov.

Lateral seta 10 long, on ring 12; first ventral seta 35 long, on ring 24; second ventral seta 12 long, on ring 41; third ventral seta 20 long, on ring 7 from behind; caudal seta 65 long; accessory seta 3 long. Female genitalia 12 long, 17 wide, coverflap within 10-12 longitudinal lines; genital seta 22 long.

Male: 145-155 long, 35 thick, genitalia 11 wide, genital seta 12 long.

HOLOTYPE: ♀, on slide, INDIA: Tamil Nadu: Serndanur Railway Station, 17.viii.1975, ex *Anisomeles malabarica* R. Br. (Lamiaceae), M. Mohanasundaram Coll.
PARATYPES: many ♀♀ and ♂♂ on 5 slides, data as in holotype (Coll. No.186).

Remarks: This species resembles *Aceria lepidosparti* (Keifer, 1951) but may be differentiated by the shield design, coxal granulations and by its longer genital setae.

Relation to host: The mites are under surface leaf vagrants.

8. *Aceria asperae* sp. nov.

(Fig.8)

Female: 120-130 long, white, worm-like, 35 thick. Rostrum 15 long, evenly downcurved. Antapical seta not visible, shield 23 long, 25 wide, triangular, median line faint, broken in middle, admedian lines complete, wavy, submedian represented in middle of shield only, sides of shield, base of tubercles with granulations; dorsal tubercles 10 apart, dorsal seta 6 long, pointing backwards. Foreleg 17 long, tibia 5 long, tibial seta 2 long, placed at mid length; tarsus 5 long, claw 5 long, curved, blunt at tip. Featherclaw 4-rayed. Hindleg 15 long; tibia 4 long, tarsus 3.5 long, claw 5 long. Coxal area clear. Abdomen with about 55 rings, uniformly microtuberculate both dorsally and ventrally. Lateral seta 14 long on ring 10, first ventral seta 27 long, on ring 19; second ventral seta 3 long, on ring 32, third ventral seta 13 long, on ring 5 from behind; caudal seta 45 long, accessory seta minute, dot-like. Female genitalia 10 long, 15 wide, coverflap with 12-14 lines; genital seta 3 long.

Male: Unknown.

HOLOTYPE: ♀, on slide, INDIA: Tamil Nadu: Coimbatore, Kinathukadavu, 24.vii.1974, ex *Streblus asper* Lour. (Moraceae), M. Mohanasundaram. Coll. **PARATYPES:** many ♀♀ on two slides, data as in holotype (Coll No.96).

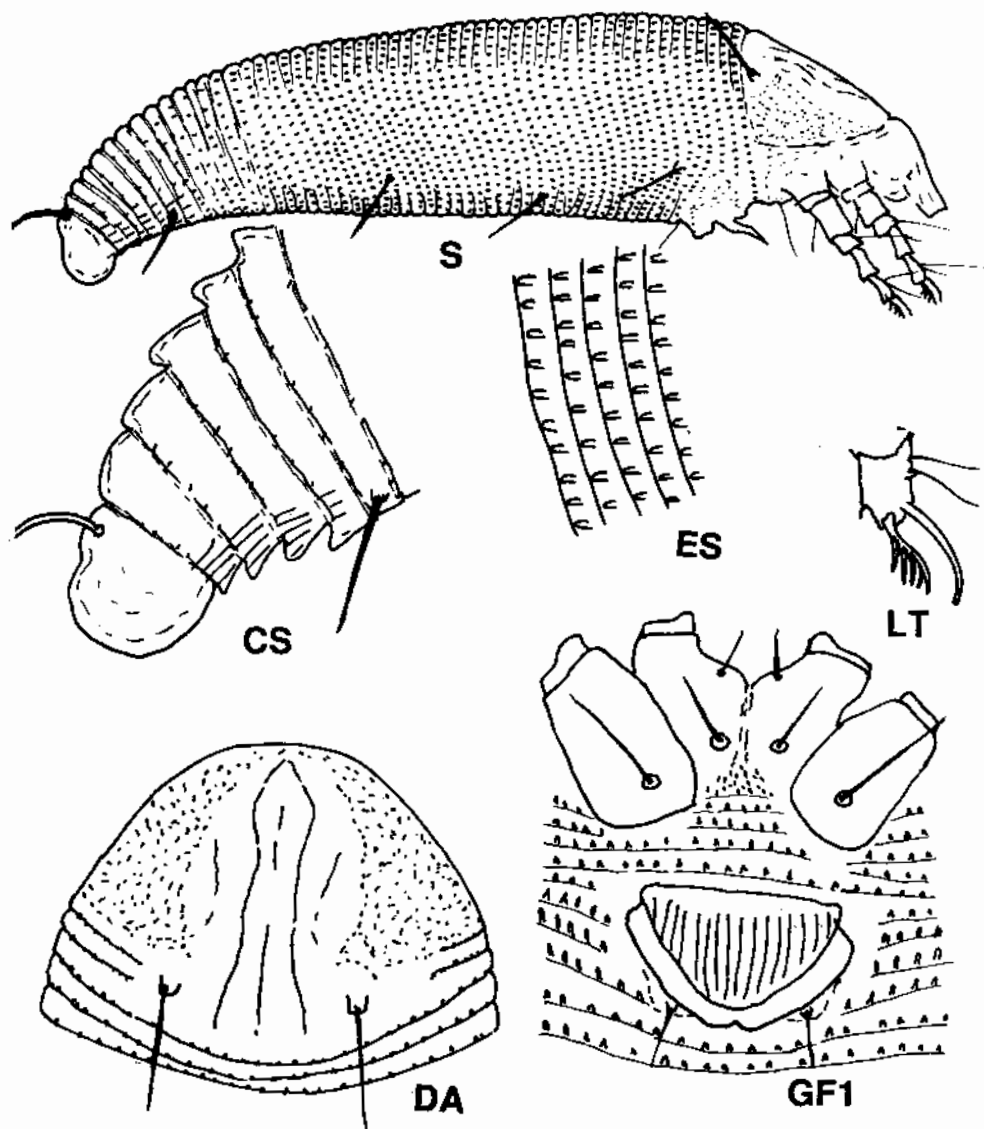
Remarks: This species resembles *Aceria jasmini* ChannaBasavanna (1966), but may be differentiated by the lines on the shield, shorter first ventral seta, and by the greater number of lines on genital coverflap.

Relation to hosts: The mites are under surface leaf vagrants without causing any feeding symptoms.

9. *Aceria asystasiae* sp. nov.

(Fig.9)

Female: White, elongate, worm-like, 220-225 long, 45-50 thick. Rostrum 13 long, evenly downcurved; antapical seta 3 long; shield 22 long, 36 wide, with very faint pattern. Median line faintly seen at base of shield in a few specimens. Admedians joined basally to form 'U'. Lateral edge of shield marked by a line in the basal one third, sides of shield clear. Dorsal tubercles on posterior margin of shield, prominent, 18 apart, with setae pointing backwards; dorsal setae 22 long. Foreleg 20 long, tibia 3.5 long, tibial seta wanting; tarsus 6 long; claw 6 long, curved, blunt at tip; featherclaw 4-rayed. Hindleg 18 long, tibia 3.5 long, tarsus 5.5 long, claw 7.5 long. Coxae smooth, first and second setigerous coxal tubercles in line, third setigerous tubercle wide apart. Abdomen with 65-70 uniformly tuberculate rings, microtubercles round, situated at centre of each ring,

Fig. 8 *Aceria asperae* sp. nov.

fading out towards last 6 rings. Lateral seta 18.5 long, on ring 10; first ventral seta 38.5 long, on ring 24; second ventral seta 6.5 long, on ring 39; third ventral seta 13.5 long, on ring 6 from behind. Caudal seta 51.5 long, accessory seta 4.5 long. Female genitalia 18.5 wide, 11 long, cover flap with 8 small wavy lines; genital setae 6.5 long.

Male: Unknown.

HOLOTYPE: ♀, on slide, INDIA: Tamil Nadu: Coimbatore, TNAU Campus. 2.xi.1972, ex *Asystasia gangetica* (Linn.) Anders. (Acanthaceae) M. Mohanasundaram.

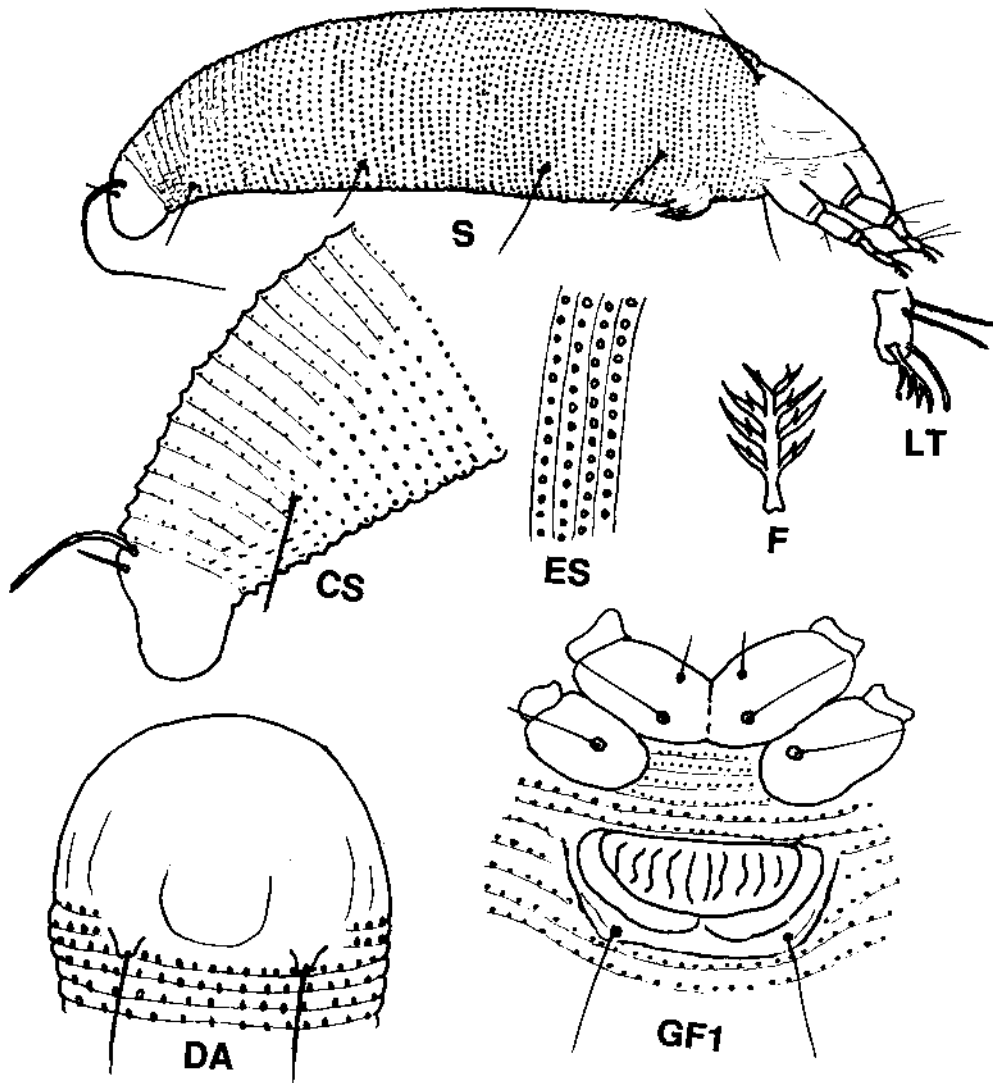


Fig. 9. *Aceria asystasiae* sp. nov.

Coll. PARATYPES: many ♀♀, data as in holotype (Coll. No.20); 4 slides TNAU campus, 11.xi.1972. ex *Asystasia* sp. (Coll. No.24), 5 slides with ♀♀, Marudamalai, Coimbatore, 24.xii.1972 ex *Barleria noctiflora* (Acanthaceae) (Coll. No.39).

Remarks: This species resembles *Aceria abutilonae* sp. nov. but can be distinguished by the 4-rayed featherclaw.

Relation to host: The mites cause whitish erineal patches on the lower side of the leaf with pitting and crinkling on the upper surface.

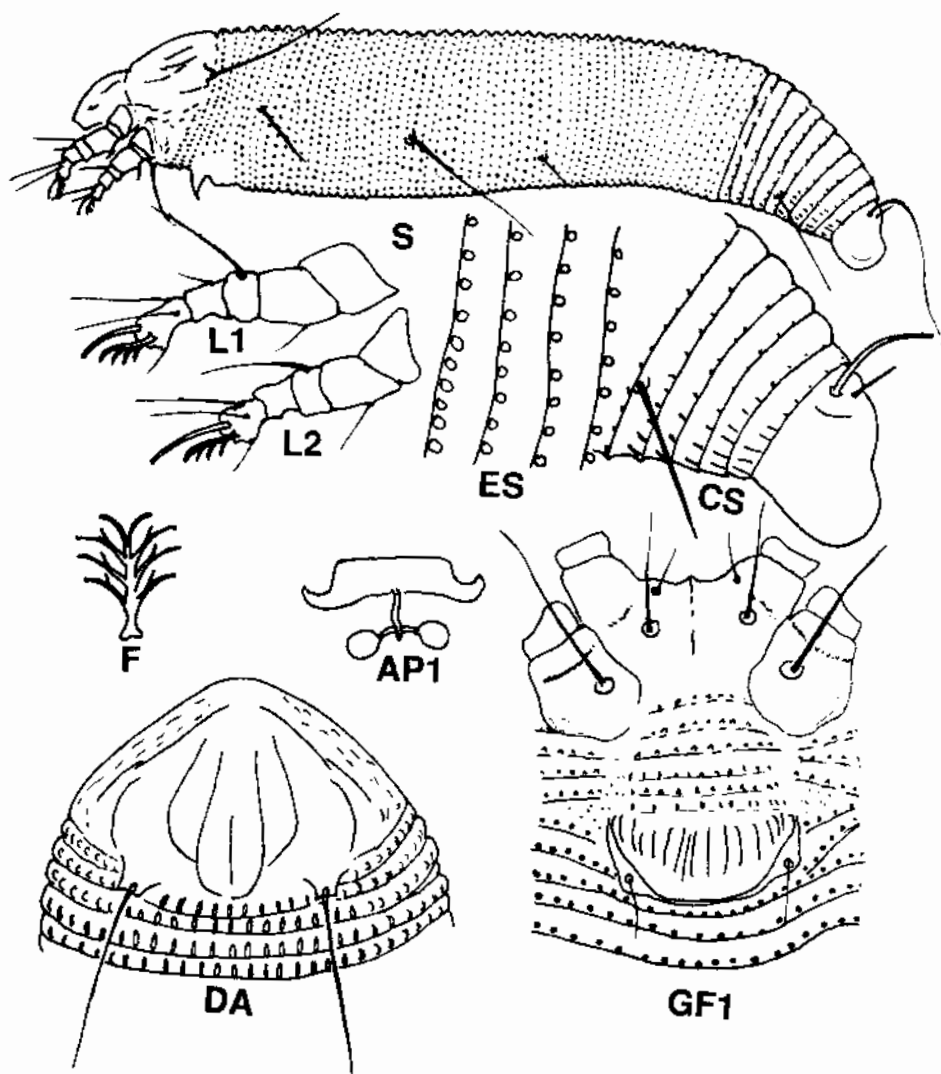


Fig. 10. *Aceria barleriae* ChannaBasavanna

10. *Aceria bambusae* ChannaBasavanna (1966)

Material examined: INDIA: Karnataka: Bangalore, Lalbagh, 19.vi.1974, ex *Bambusa* sp. (Poaceae) (Coll. No.113).

Relation with hosts: The mites were found between leaf sheath and stem.

GENUS ACERIA FROM SOUTH INDIA

11. *Aceria barleriae* ChannaBasavanna (1966)
(Fig.10)

Material studied: INDIA : Tamil Nadu : Coimbatore, TNAU Campus, 10. xi. 1972, ex *Blepharis molluginifolia* Pers. (Acanthaceae) (Coll. No.23).

Relation with host : The mites were found in the white erineal growth on the lower side of leaf. The plant is a new host record for this mite.

12. *Aceria berberae* sp. nov.
(Fig.11)

Female : 210-220 long : 50 thick, worm-like. Rostrum 20 long, uniformly downcurved, antapical seta 7 long. Shield 40 wide, 28 long, with a clear pattern of lines. Median nearly complete, admedians complete; first submedian diagonally represented in mid part of shield with a cross line at posterior end, second submedian on either side of shield, third submedian represented in anterior half, joined with the fine scorings. Dorsal tubercles at shield margin, 20 apart, dorsal seta 20 long, pointing backward and outward. Foreleg 25 long, tibia 6 long, tibial seta 5 long; tarsus 6 long, claw 7 long; featherclaw 5-rayed. Hindleg 24 long, tibia 5 long; claw 7 long. Coxae with a clear sternal line, all three setigerous coxal tubercles present; coxal area with fine scorings. Abdomen with about 62 rings, uniformly micro-tuberculate, lateral seta 27 long, on ring 11; first ventral seta 60 long, on ring 21; second ventral seta 7 long, on ring 37; third ventral seta 32 long, on ring 6 from behind, caudal seta 75 long, accessory seta 8 long. Female genitalia a little away from coxal base; 12 long and 22 wide; coverflap with 10-12 lines, genital seta 40 long.

Male : 190-200 long, 25 thick, genitalia 17 wide; genital seta 17 long.

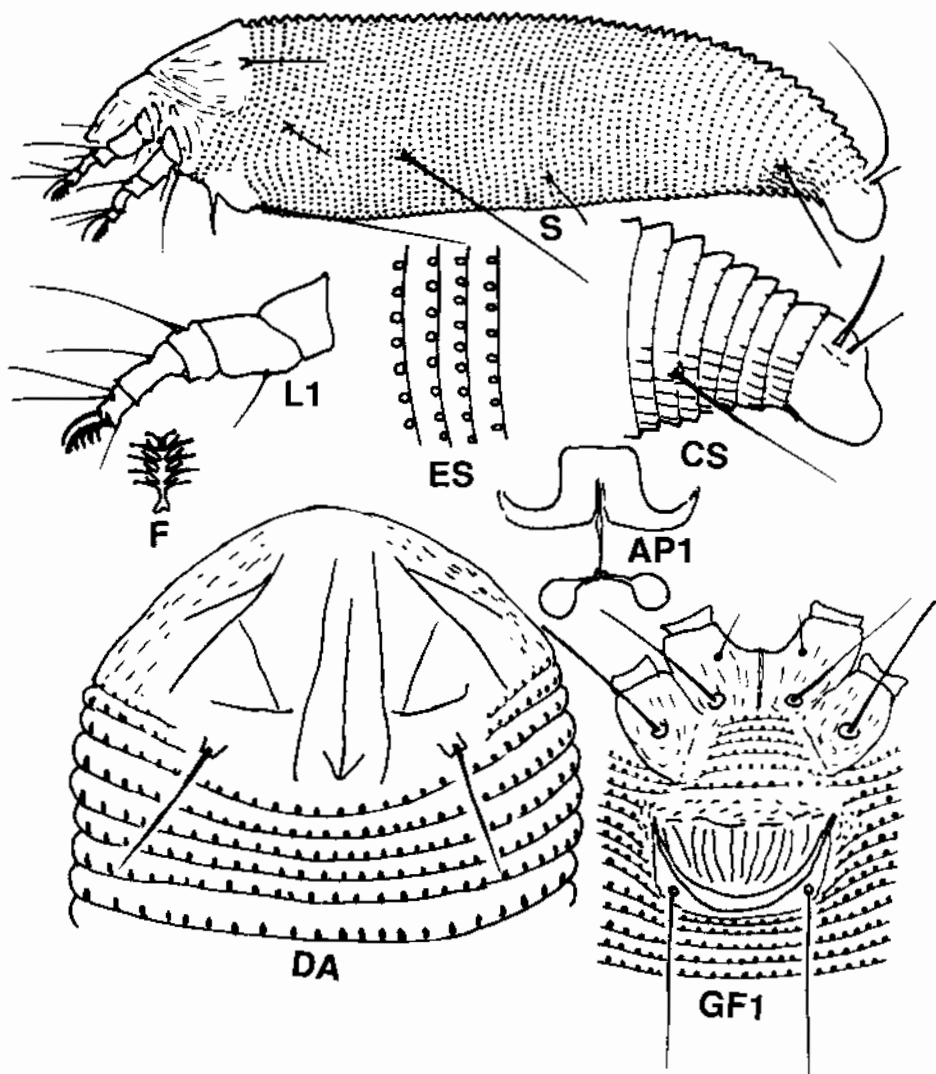
HOLOTYPE : ♀, on slide, INDIA : Tamil Nadu : Nilgiris : Ootacamund, Botanic gardens, 1.v. 1976, ex *Berberis tinctoria* (Berberidaceae). *PARATYPES* : Several ♀♀ and ♂♂ on two slides, data as in holotype (Coll. No.234).

Remarks : This species is related to *Aceria astibonis* (Keifer, 1960) but can be distinguished from it by the shield pattern, and by the long first ventral seta.

Relation with host : The mites were found in the vegetative buds.

13. *Aceria borrieriae* sp. nov.
(Fig.12)

Female : White, Worm-like, 190-200 long, 50 thick. Rostrum 15 long projecting forward and evenly down curved; antapical seta 7 long. Shield 33 long and 45 wide, broadly triangular, median line restricted to basal half of shield, admedians complete, slightly wavy; first submedian clear except for the basal 0.33; second and third submedians placed laterally; two oblique lines between first and second submedian at about middle of shield. Dorsal tubercles on rear margin of shield, 20 apart, 22 long, projecting backward. Foreleg 25 long; tibia 6 long, tibial seta 5 long, placed at midlength;

Fig. 11. *Aceria berberae* sp. nov.

tarsus 5 long; claw fairly straight 7 long; featherclaw 5-rayed including bifid tip. Hindleg 22 long; tibia 5 long; tarsus 5 long, claw 7 long. Coxae with few granulations and stripes; all three setigerous tubercles and setae present. Abdomen with about 55 rings, uniformly microtuberculate both dorsally and ventrally, fading towards last 5 or 6 segments, where they are represented as microstriae. Lateral seta 25 long, on ring 10; first ventral seta 50 long, on ring 21; second ventral seta 10 long, on ring 33; third ventral seta 20 long, on ring 50 or 5 from behind; caudal seta 45 long; accessory seta 2 long. Female genitalia 10 long, 20 wide; coverflap with 8 thick, short lines; genital seta 10 long.

GENUS ACERIA FROM SOUTH INDIA

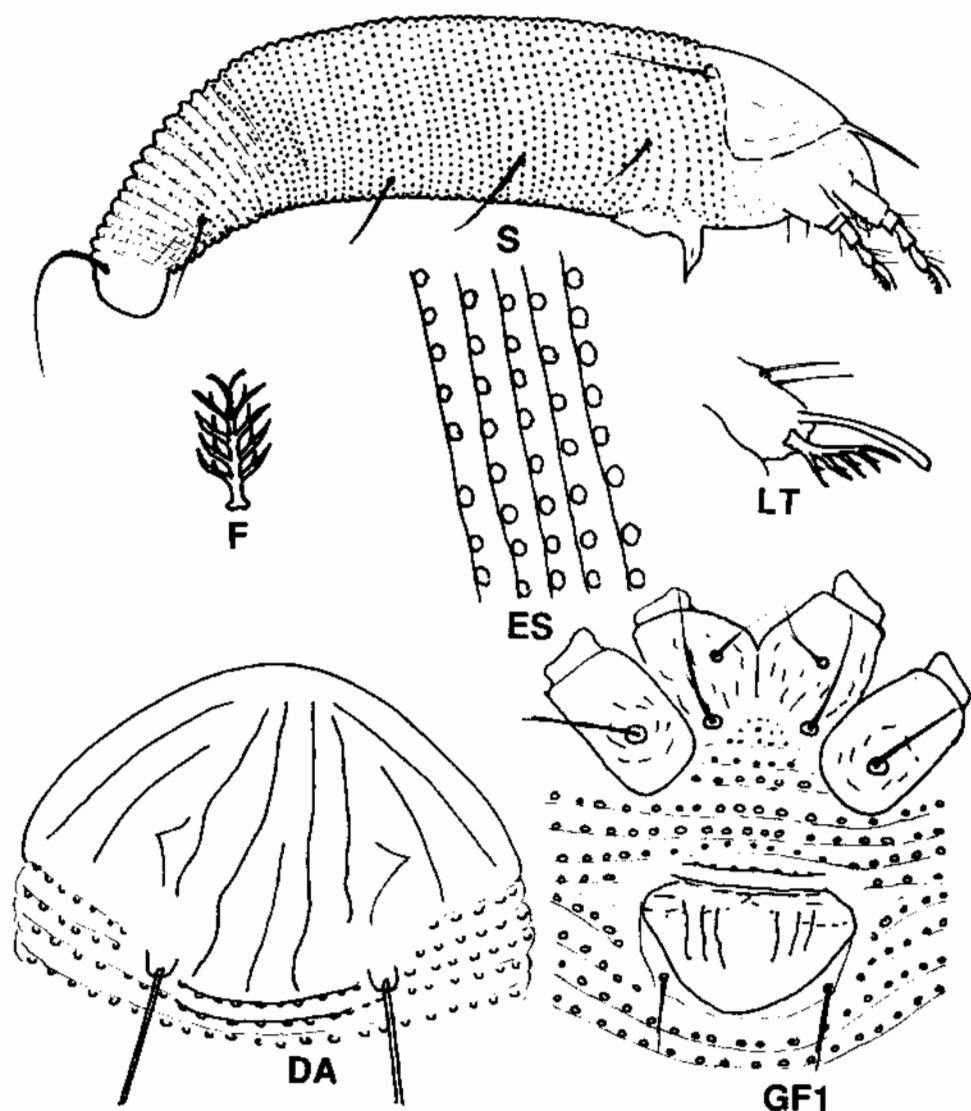


Fig. 12. *Aceria borreriae* sp. nov.

Male : Unknown.

HOLOTYPE : ♀, on slide, INDIA : Kerala: Pazhayanur : Malachi, 7.x.1973, ex *Borreria hispida* K. Schum. (Rubiaceae). *PARATYPES* : several ♀♀ on six slides, data same as in holotype (Coll. No.68), ex *Borreria articularis* (Linn.) F.N. Will.

Remarks : This species is closely related to *Aceria byersi* Keifer (1961) and can be differentiated from it by the shield pattern.

Relation to host : The white mites were found in the axils of buds and flower bracts.

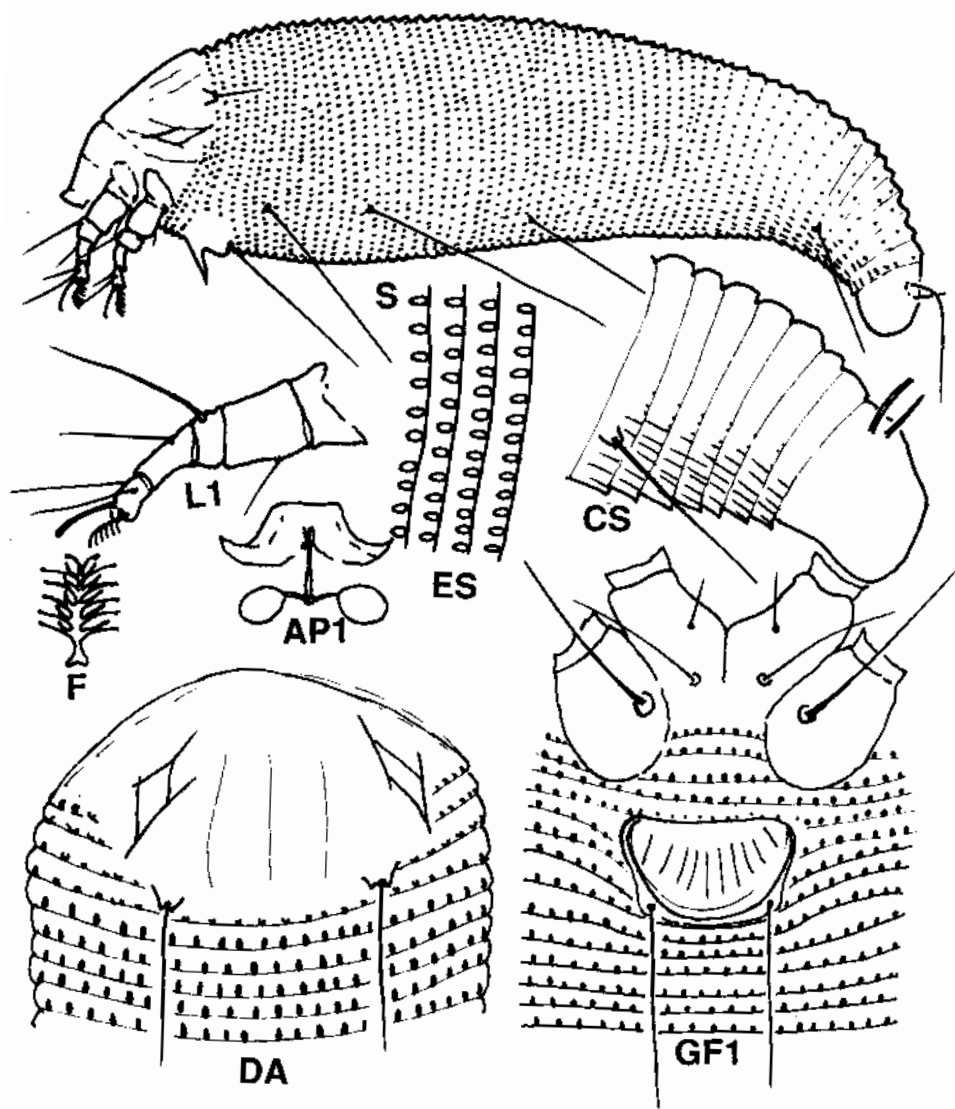


Fig. 13. *Aceria cernuus* (Masse)

14. *Aceria cernuus* (Masse, 1927)
(Fig. 13)

As the original description of this mite is inadequate, it is redescribed here.

Female : 210-220 long, 50 thick, worm-like. Rostrum 18 long; antapical seta 5 long. Shield 25 long, 35 wide. Dorsal tubercles on shield margin, 17 apart; dorsal seta 9 long,

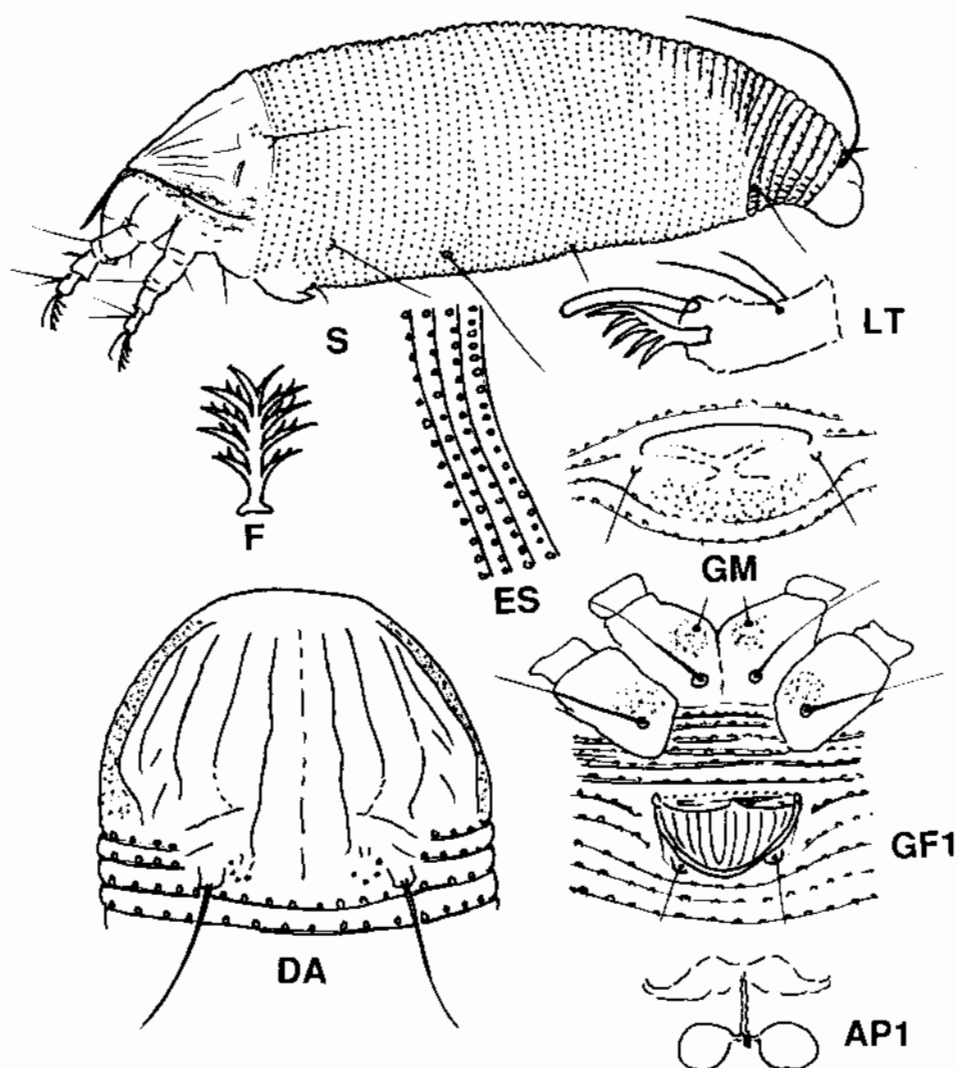


Fig. 14. *Aceria commiphorae* sp. nov.

pointing backwards. Foreleg 25 long, tibia 5 long; tibial seta 8 long, tarsus 7 long, claw 7 long, curved, featherclaw 6-rayed. Hindleg 20 long, tibia 4 long, claw 7 long. Coxae with all three setigerous tubercles, coxal area with faint markings. Abdomen with 58-60 uniformly microtuberculate rings; lateral seta 25 long, on ring 10; first ventral seta 65 long, on ring 20; second ventral seta 37 long, on ring 32; third ventral seta 20 long, on ring 7 from behind; caudal seta 45 long, accessory seta 4 long, very thin. Genitalia 18 wide, 12 long, coverflap with 10 lines, genital seta 40 long.

Male : 200 long, 50 thick, genitalia 15 wide; genital seta 23 long.

Material examined : INDIA : Tamil Nadu : Walayar, 16.iii.1977, ex *Zizyphus jujuba* Lamarck (Rhamnaceae) (Coll.No. 255).

Relation to host : Mites were found in irregular, reddish galls in the leaf axils.

15. *Aceria commiphorae* sp. nov.

(Fig.14)

Female : 140-160 long; 45-50 thick, worm-like, whitish to cream-coloured. Rostrum 14 long; projecting obliquely forward, antapical seta 3.5 long. Shield 37.5 wide 24 long; broadly rounded in front; median line incomplete, broken; admedian lines complete, wavy; first submedian clear in anterior half, fairly straight and diverging towards posterior side; second submedian clear for 0.75 length of shield, starting from anterior and diverges for half length and then converges; third submedian nearly as long as second and diverging in anterior 0.75, converging posteriorly; either side of base of admedian lines towards dorsal tubercles, with characteristic strokes and dots; two short broken lines between second and third submedians. Sides of shield finely granulate. Dorsal tubercles on rear margin, 22 apart; dorsal setae 16.5 long, pointing backwards. Foreleg 25.5 long; tibia 5.5 long, with seta indistinct; tarsus 5 long; claw 7.7 long, slightly curved with blunt tip. Featherclaw 5-rayed including bifid tip. Hindleg 18.5 long; tibia 4.5 long; tarsus 5.5 long, with claw 6.5 long. Fore and hind coxae with fine basal punctations, first and second setigerous tubercles in a line, third placed widely apart. Abdomen with 55-60 rings, microtuberculate, microtubercles closely set, ventral tubercles dot-like, dorsal tubercles elongate, oval. The last six rings on ventral aspect with tubercles arranged closely to form striae. Last four rings dorsally with very fine tubercles while next six rings with large sized tubercles placed wide apart. Lateral seta 16.5 long, on ring 9; first ventral seta 4 long, on ring 22, second ventral seta 10 long, on ring 37; third ventral seta 16.5 long, on ring 6 from behind. Caudal seta 95 long; accessory seta 5.5 long. Female genitalia 13.5 long and 19 wide. Cover flap with 10 or 11 lines; seta 10 long.

Male : Unknown.

HOLOTYPE : ♀, on slide, INDIA : Tamil Nadu: Coimbatore, 10.x.1972, ex *Commiphora caudata* Engl. (Burseraceae), M. Mohanasundaram Coll. (No.8).
PARATYPES : several ♀♀ on 20 slides, data as in holotype; a few ♀♀ : Erode, 20.iii.1974, ex *Commiphora baryi* Engl. (No.85); Coimbatore, 8. i.v. 1974, ex *Commiphora caudata* Engl. flowers (No.36).

Remarks : This species is related to *Aceria sheldoni* (Ewing, 1937) but may be separated from it by the shield pattern and measurements.

Relation to host : The mites caused extensive erineum on the leaflets, petiole and terminal portions resulting in severe distortion of the leaflets. The affected inflorescences were modified into green bunched structure.

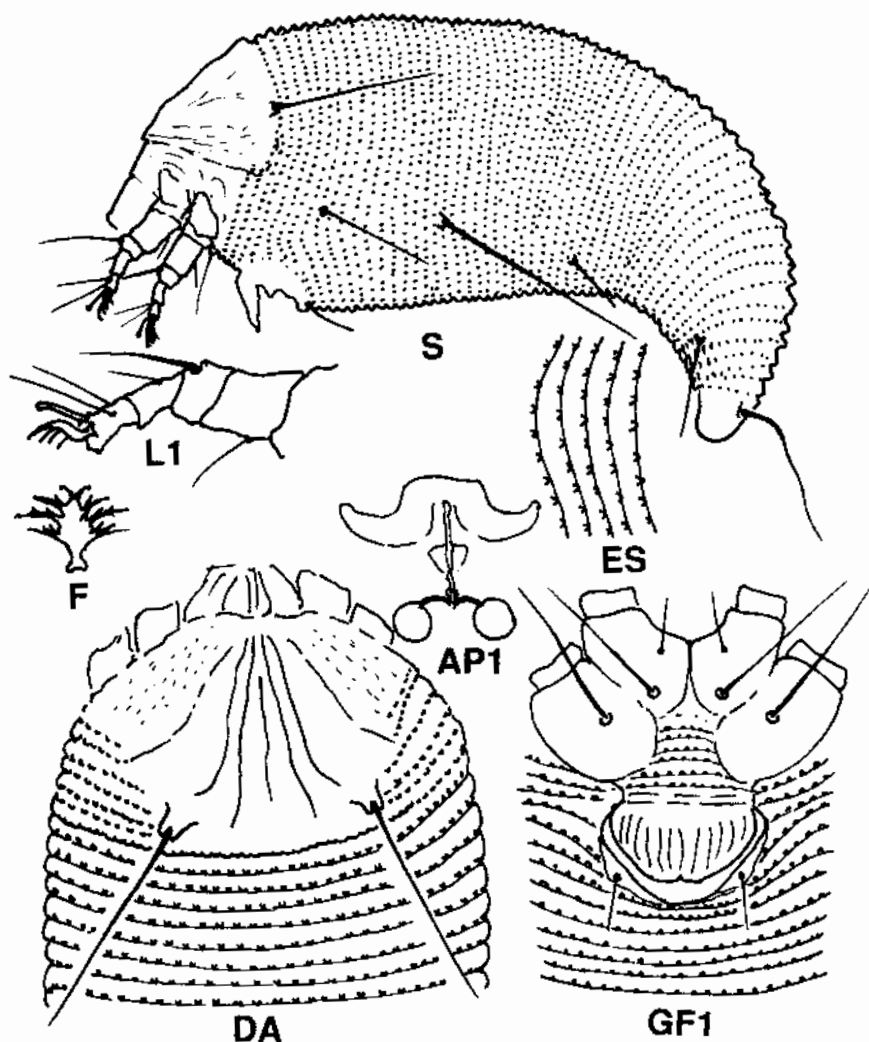


Fig. 15. *Aceria corchorae* sp. nov.

16. *Aceria corchorae* sp. nov.
(Fig.15)

Female : 180-190 long, 50 thick, worm-like. Rostrium 15 long; antapical seta 3 long. Shield 27 long and 35 wide, with a clear pattern of lines. Median nearly complete, admedians complete, converge anteriorly; first submedian complete, diverges posteriorly; second submedian on lateral shield border represented by broken lines; sides of shield with fine scorings. Dorsal tubercles on rear shield margin, 20 apart; dorsal seta 45 long, pointing backwards and outwards. Foreleg 27 long; tibia 7 long, tibial seta 3

long; tarsus 5 long; claw 5 long; featherclaw 4-rayed. Hindleg 25 long; tibia 5 long; claw 6 long. All usual leg setation present. Coxae with all three setigerous coxal tubercles, coxal area clear. Abdomen with about 56 rings, uniformly micro-tuberculate along posterior margin of each ring. Lateral seta 30 long, on ring 10; first ventral seta 55 long, on ring 20; second ventral seta 7 long, on ring 35; third ventral seta 25 long, on ring 6 from behind; caudal seta 55 long, accessory seta 2 long. Female genitalia closer to coxal base; 13 long; 20 wide, coverflap with 12 lines, genital seta 10 long.

Male : Unknown.

HOLOTYPE : ♀, on slide, INDIA : Tamil Nadu : Coimbatore, TNAU campus, 16.vi.1975, ex *Corchorus olitorius* L. (Tiliaceae), M. Mohanasundaram Coll. (No.174).
PARATYPES : several (♀♀ on six slides, data as in holotype.

Remarks : This species resembles *Aceria spinulifera* (Keifer, 1938) but can be differentiated by the 4-rayed featherclaw and granular sides of shield.

Relation to host : Mites were found as under surface leaf vagrants. The leaves of affected plants were hairy and reduced in size.

17. *Aceria crotalariae* ChannaBasavanna (1966)

Material studied : INDIA : Tamil Nadu : Coimbatore, 1.ii.1973, ex *Desmodium triflorum* DC (Fabaceae), M. Mohanasundaram Coll. (No.47); four slides, Thadagam, Coimbatore, 1.ii.1973, ex *Crotalaria retusa* Linn. (No.48); two slides, Coimbatore, 3.viii. 1974, ex *Crotalaria biflora* Linn. (No.101); 3 slides, Bangalore, 22.vi.1974, ex *Crotalaria biflora* Linn. (No.121); three slides, Bangalore, 4.vii.1974, ex *Crotalaria verrucosa* Linn. (No.135). All are new host records.

18. *Aceria cymbopogonis* (Mohanasundaram and Subramaniam, 1977)

Material examined : INDIA : Tamil Nadu : Mettupalayam 16.iv.1975, ex *Cymbopogon martini* Wats (Poaceae) (Coll. No.171).

Relation to host : The mite affects terminal shoot, leaves and sheath became twisted and deformed, showing extensive chlorosis. Mites were found within the twisted sheath in furrows.

19. *Aceria dalbergiae* ChannaBasavanna (1966)

Material examined : INDIA : Karnataka : Bangalore Lalbagh, ex *Dalbergia sissoo* Roxb. (Fabaceae) (Coll. No.112).

Relation to host : The mites were found in the buds covered by the bud scales.

20. *Aceria dichrostachyia* (Tucker, 1926)
(Fig.16)

Since the original description of this species is adequate the mite is redescribed and figured here.

Female : White, worm-like, round in cross section, 160-170 long, 40 thick. Rostrum 13 long, evenly downcurved, antapical seta 5 long. Shield triangular, 25 long and 30 wide, with a clear pattern. Median line clear and straight, admedians fairly straight, bulged at mid point of shield, submedians parallel to admedians, second submedian wavy, broken at about middle, shield edge with branching lines, short strokes and lines between second submedian and shield edge. Sides of shield granular with dots. Dorsal tubercles 15 apart, dorsal seta 25 long, projecting backwards. Foreleg 20 long, tibia 4 long, tibial seta 3 long at about middle, tarsus 5 long, claw short, blunt 3 long; featherclaw 7-rayed, rays branching. Hindleg 20 long, tibia 4 long, tarsus 5 long, claw 7 long, tapering and curved, featherclaw similar to foreclaw. All 3 coxal setae present, first and second coxal tubercles in line and third widely apart; coxal area granular and studded with fine dots. Abdomen with 60-65 rings; uniformly microtuberculate dorsally and ventrally, microtubercles fade out towards last 10 posterior segments, last 5 sternites with microstriae. Lateral seta 15 long, on ring 11; first ventral seta 30 long, on ring 20; second ventral seta 35 long, on ring 35, third ventral seta 15 long, on ring 5 from behind; caudal seta 60 long, borne on a protuberance, accessory seta 2 long. Female genitalia 10 long and 15 wide, coverflap without any scorings with fine dots basally and clear distally; genital seta 8 long.

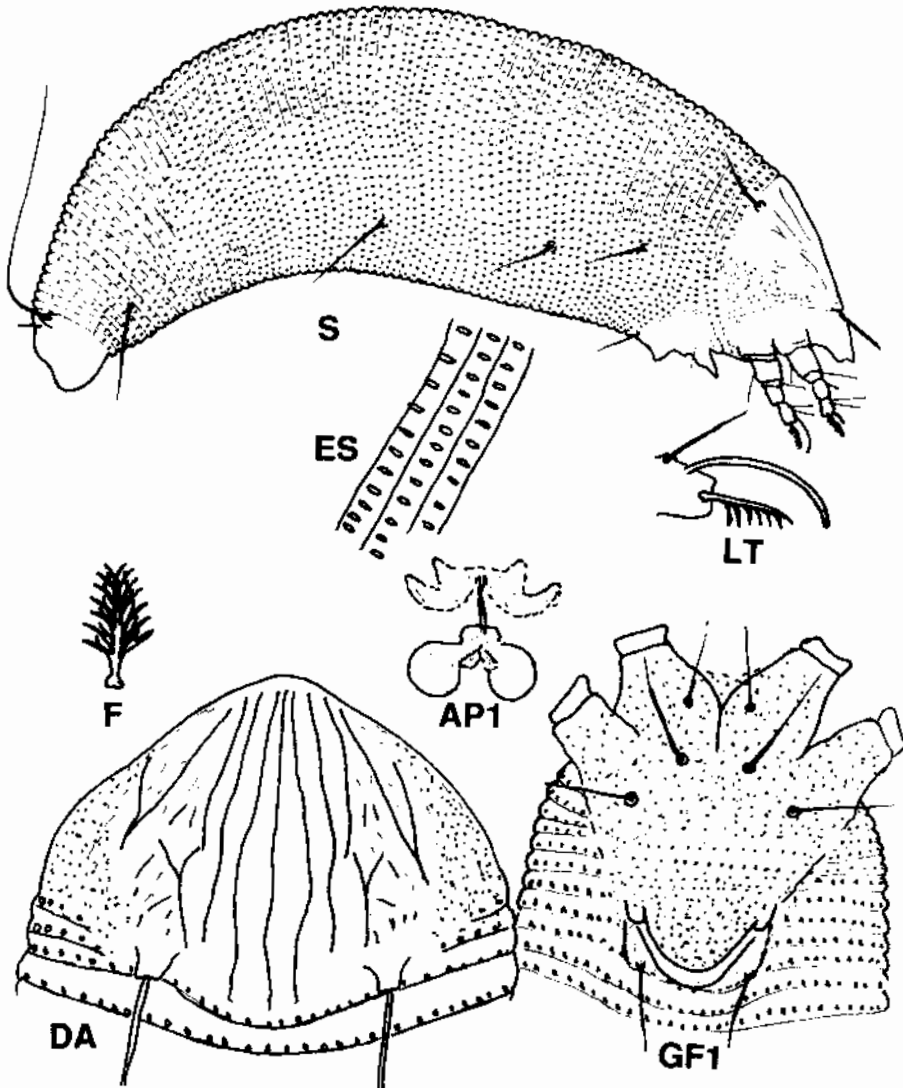
Male : Unknown.

Material studied : INDIA : Tamil Nadu : Anamalai, Vattaikaranpudur, 29.xii.1973, ex *Acacia leucophloea* (Fabaceae), M.Mohanasundaram Coll. (No.76); Coimbatore, Thirumalaiyampalayam, 17.ix.1974, ex *Dichrostachys cinerea* W.A., (No.148); Walayar, 13.10.1974, ex *Acacia* sp. (No.111). Karnataka : Nandi Hills, 8.vii.1974, ex *Acacia pennata* (Willd.) Sweet. (No.145).

Relation to host : The affected secondary rachis and leaflets of the compound leaves were slightly thickened to form pinkish galls. Mites were found within the galled leaflets.

21. *Aceria linnae* sp. nov.
(Fig.17)

Female : 210-220 long, white worm-like, 55 thick. Rostrum 17 long, evenly downcurved; antapical seta 4 long. Shield 30 long and 40 wide, triangular with fine, numerous, short and long wavy striations and with granular dots at base of dorsal tubercles. Dorsal tubercles 20 apart, with dorsal setae 5 long, pointing backwards. Foreleg 25 long; tibia 5 long, tibial seta at mid point, 5 long; tarsus 7 long; claw 5 long, curved, featherclaw 6-rayed. Hindleg 22 long; tibia 5 long, tarsus 7 long; claw 5 long.

Fig. 16. *Aceria aichrostachya* (Tucker)

Coxae with all three setiferous tubercles and setae; coxal area granular and with striations. Abdomen with about 65 rings, uniformly microtuberculate, microtubercles elongate dorsally, occupying more than 3/4th of width of ring, fading out posteriorly; last 10-15 tergites without microtubercles; ventrally microtubercles small, elongate, occupying about 0.25 width of each ring, last 10 sternites with microstriations. Lateral seta 15 long on ring 11; first ventral seta 50 long on ring 23; second ventral seta 45 long, on ring 38; third ventral seta 11 long, on ring 6 from behind; caudal seta 70 long. Female genitalia 20 wide and 15 long, coverflap with about 15-20 lines and basally with characteristic concentric scorings; genital seta 15 long.

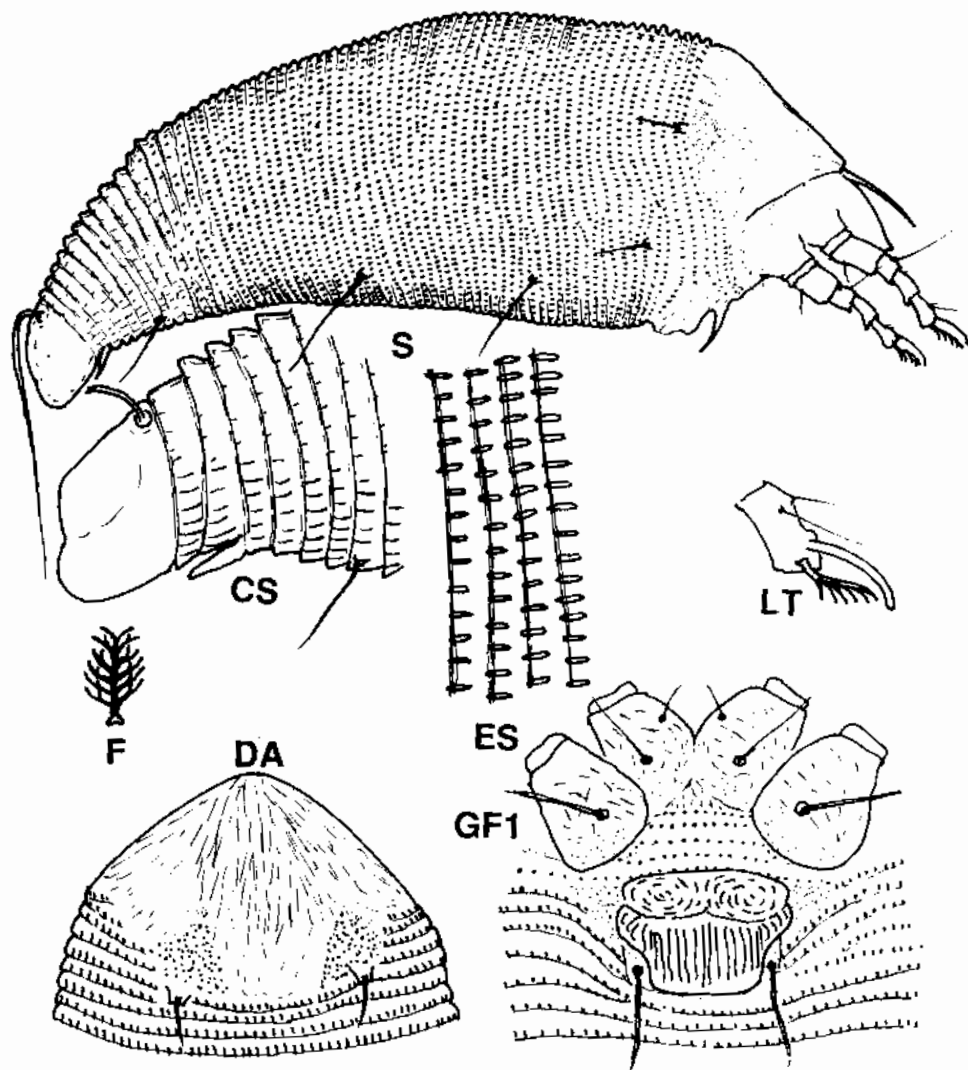


Fig. 17. *Aceria linnae* sp. nov.

Male : Unknown.

HOLOTYPE : ♀, on slide, INDIA : Tamil Nadu : Coimbatore, Marudamalai, 1.i.1974, ex *Indigofera linnaei* Ali (Fabaceae), M.Mohanasundaram Coll. (No.78).
PARATYPES : several ♀♀ on six slides, data as in holotype.

Remarks : This species resembles *Aceria gastrotrichus* (Nalepa, 1918) but may be differentiated by the granular areas surrounding the base of dorsal tubercles, 6-rayed featherclaw and by the markings on the female genital coverflap.

Relation to host : Mites were found as vagrants on tender shoot and buds.

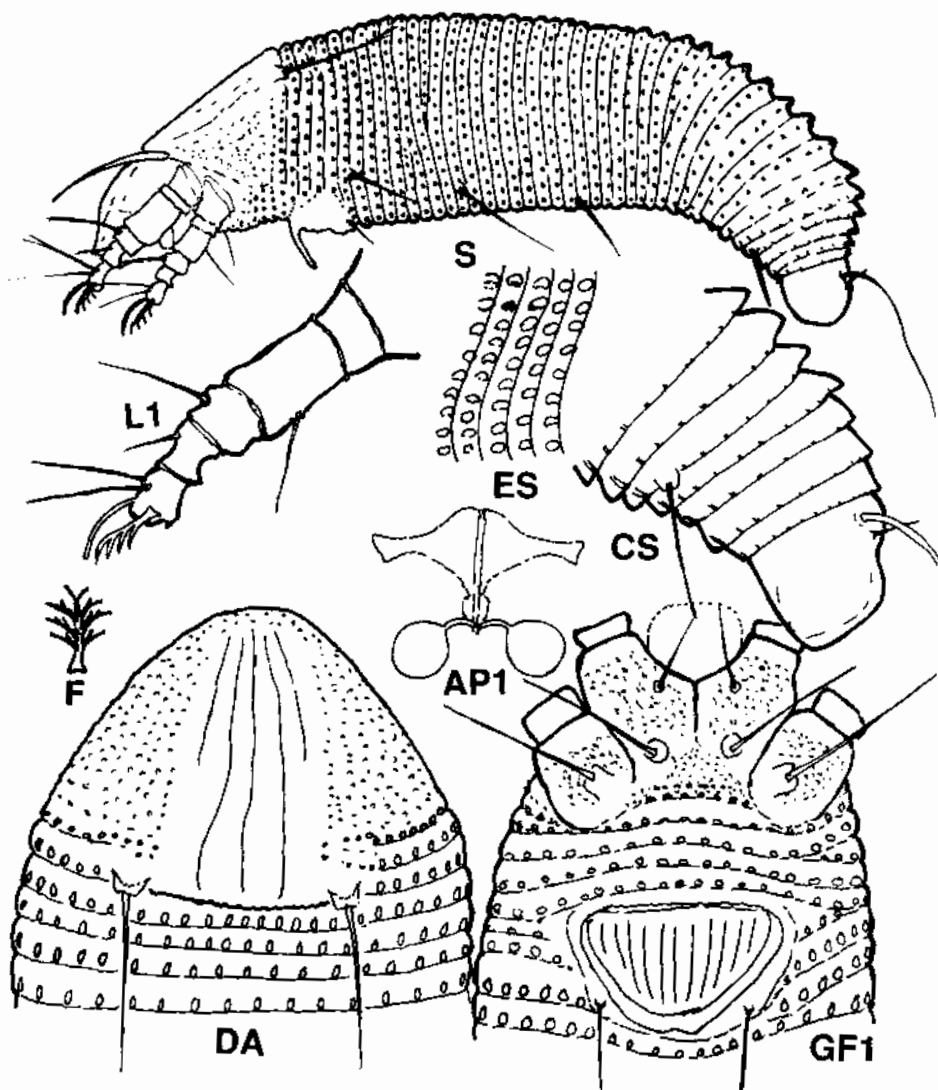


Fig. 18. *Aceria feroniae* sp. nov.

22. *Aceria erythrinae* ChannaBasavanna (1966)

Material studied: INDIA: Tamil Nadu: Coimbatore, 7.iv.1975, ex *Erythrina indica* L. (Fabaceae) (Coll. No.159).

Relation to host: Mites were found among the stellate hairs on the tender shoot and leaf base.

23. *Aceria feroniae* sp. nov.
(Fig.18)

Female: Light pink, 130-140 long, 35 thick. Rostrum 16 long, evenly down curved; antapical seta 4 long; shield 15 wide and 20 long; median line complete, fairly straight; admedian slightly wavy, converge slightly anteriorly, submedian represented in anterior half of shield; sides of shield granular; dorsal tubercles on rear shield margin, 15 apart; dorsal setae 15 long, pointing backwards. Foreleg 15 long; tibia 3 long, tibial seta 3 long, placed at basal 0.33; tarsus 3 long; claw 5.5 long, curved; featherclaw simple, 4-rayed. Hindleg 14 long, tibia 3 long, claw 6 long, similar to foreclaw. Coxal area granular, first and second setigerous tubercles in line, third setigerous tubercles placed wider apart below the line joining second set of tubercles. Abdomen with 50 rings, tergites and sternites uniformly microtuberculate; microtubercles along posterior margin of each ring; last five tergites with reduced number of microtubercles, last five sternites with microstriations. Lateral seta 15 long, on ring 11; first ventral seta 20 long, on ring 21; second ventral seta 4 long, on ring 32; third ventral seta 12 long, on ring 5 from behind; caudal seta 40 long; accessory seta 4 long. Female genitalia 10 long, 15 wide, coverflap with 12 lines; genital seta 16 long.

Male: Unknown.

HOLOTYPE : ♀, on slide, INDIA: Tamil Nadu: Coimbatore, TNAU Botanic Gardens, 30.vii.1975, ex *Feronia elephantum* Corr. (Rutaceae), M. Mohanasundaram Coll. (No.182). *PARATYPES* : several ♀♀ on two slides, data as in holotype.

Remarks: This species resembles *Aceria crotalariae* ChannaBasavanna (1966) but can be differentiated by the shield pattern, 4-rayed featherclaw and measurements of setae and body structures.

Relation to host: The mites were found among bud hairs.

24. *Aceria gastrotichus* (Nalepa, 1918)

Material examined: INDIA: Tamil Nadu: Coimbatore, 28.iii.1973, ex *Ipomoea staphylina* R.S. (Convolvulaceae), Mohanasundaram Coll. (No.51)

Relation to host : Mites were found in small pustule-like galls on leaves, petiole and stem.

25. *Aceria granati* (Canestrini and Massalongo, 1894)
(Fig.19)

Phytopus granati Canestrini and Massalongo, 1894. *Atti. Soc. Veneto - Trent.* (2) 1 : 465.
Aceria granati: Keifer, 1952. *Bull. Calif. Insect Pest Surv.* 2 : 1-123.

The original description of the mite is not adequate and therefore the mite is redescribed and figured here.

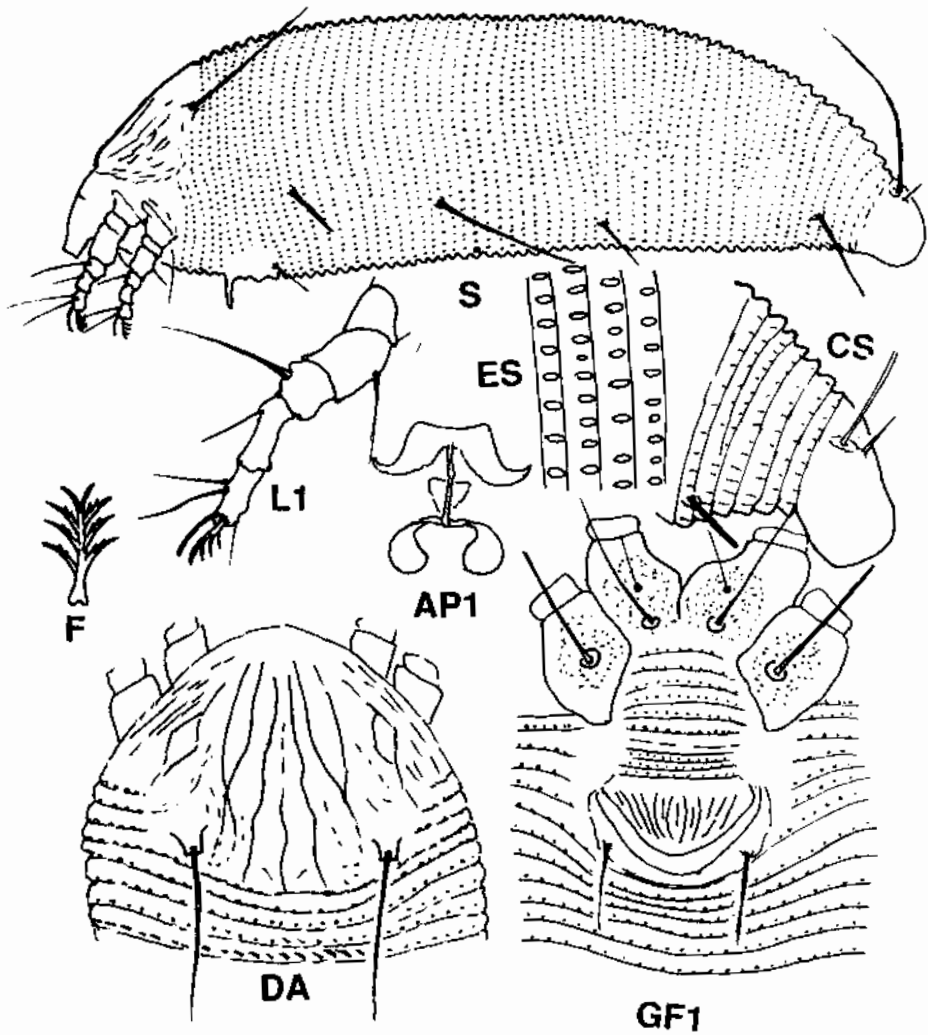


Fig. 19. *Aceria granati* (Canestrini and Massalongo)

Female: Light brown, worm-like 220-230 long, 55 thick. Rostrum 16 long, projecting obliquely downward, antapical seta 5 long. Shield triangular, 28 long and 40 wide with a clear pattern. Median line wavy, represented at the posterior half of shield and fades away anteriorly. Admedians wavy, complete, converge anteriorly; first and second submedians represented in anterior 0.75 and join posteriorly and represented as broken lines. Sides of shield with small broken lines. Dorsal tubercles on rear margin of shield, 22 apart; dorsal setae 42 long, projecting backwards. Foreleg 32 long, tibia 8 long, tibial

seta 6 long at basal 0.66 ; tarsus 7 long, claw 8 long curved, featherclaw 4-rayed. Hindleg 30 long, tibia 7 long, claw 7 long. Coxal area granular, all three setigerous coxal tubercles present. Abdomen with about 65 rings, uniformly microtuberculate, telosomal rings with microstriations. Lateral seta 25 long, on ring 12; first ventral seta 45 long, on ring 25, second ventral seta 8 long, on ring 37; third ventral seta 22 long, on ring 6 from behind, caudal seta 60 long; accessory seta 2 long. Female genitalia moderately away from coxae, 15 long and 20 wide, coverflap with 10-12 lines, genital seta 12 long.

Male: Unknown.

Material examined: INDIA: Tamil Nadu: Coimbatore, 24.x.1972, ex *Punica granatum*. M. Mohanasundaram Coll. (No.67).

Relation to host: Mites cause rolling of margin and deformation of tender leaves. Eggs, larvae and adults were seen within the leaf-rolls.

26. *Aceria holopteliae* ChannaBasavanna (1966)

Material examined: INDIA: Tamil Nadu: Coimbatore, 23.x.1972 ex *Holoptelia integrifolia* Blanch. (Ulmaceae) M. Mohanasundaram Coll. (No.16).

Relation to host : Mites were found in the white erineal patches on lower side of leaf. Older erineal were brown, cup- like and curved, thus distorting the leaf.

27. *Aceria infectoriae* ChannaBasavanna (1966)

Material examined: INDIA: Tamil Nadu: Thiruppur, 22.vii.1974, ex *Ficus bengalensis* L. (Moraceae), M. Mohanasundaram Coll. (No.93).

Relation to host : Mites were found in the bud covered by scales; the affected buds were killed.

28. *Aceria jasmini* ChannaBasavanna (1966)

Material examined: INDIA: Tamil Nadu: Coimbatore, 13.xi.1972, ex *Jasminum auriculatum* Vahl. (Oleaceae), M. Mohanasundaram Coll. (No.27).

Relation to host : Mites were found in profuse erineal patches on either side of the leaves. The affected plants did not bear flowers.

29. *Aceria justiciae* ChannaBasavanna (1966)

Material examined: INDIA: Tamil Nadu: Vettaikaranputhur, 29.xii.1973, ex *Achyranthes aspera* L. (Amarantaceae) (Col. No.79); Vedapatti, 30.vii.1974, ex *Justicia glabra* Koen. (Acanthaceae) M. Mohanasundaram, Coll. (No.99).

Relation to host : The mites caused white erineal patches on both sides of the leaves. Both plants are new host records of the mite.

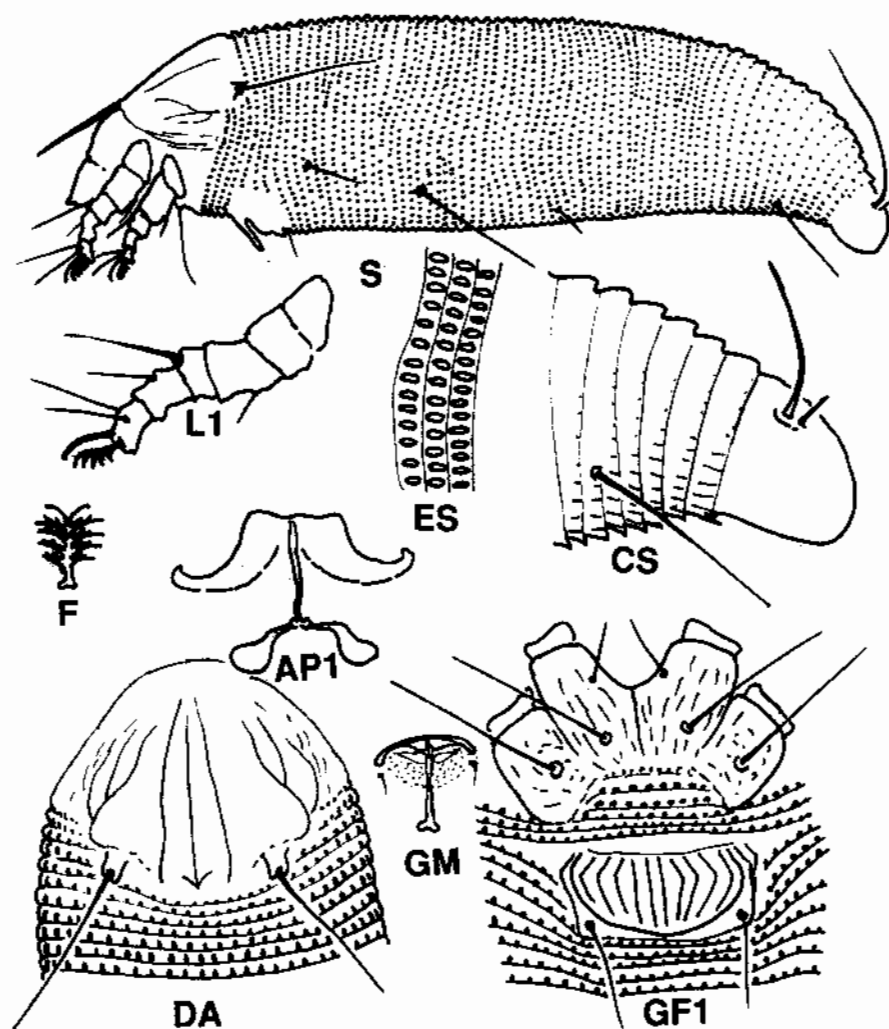


Fig. 20. *Aceria kigeliae* sp. nov.

30. *Aceria kigeliae* sp. nov.
(Fig. 20)

Female: White, worm-like, 110-120 long; 35 thick. Rostrum 14 long, evenly downcurved; antapical seta 3 long. Shield 20 long, 24 wide, median line faint, admedians fairly straight, sides of shield with branching lines and granular. Dorsal tubercles at rear shield margin, 12 apart; dorsal setae 16 long directed backward and outward. Foreleg 20 long, tibia 4 long; tibial seta 5 long; tarsus 4 long; claw 5 long, slightly curved; featherclaw 5-rayed. Hindleg 17 long; tibia 3 long; claw 6 long. Coxae with a clear sternal line; all

three setigerous tubercles present; coxal area granular with short lines. Abdomen with 57-60 rings uniformly microtuberculate, microtubercles elongate; lateral seta 17 long, on ring 10; first ventral seta 35 long, on ring 20; second ventral seta 6 long, on ring 33; third ventral seta 12 long, on ring 6 from behind; caudal seta 40 long; accessory seta 3 long. Female genitalia 10 long and 16 wide, coverflap with 14 lines; genital seta 15 long.

Male: 100-110 long; 33 thick; genitalia 14 wide, genital seta 10 long.

HOLOTYPE : ♀, on slide: INDIA: Tamil Nadu: Coimbatore, 19.vii.1975, ex *Kigelia pinnata* D.C. (Bignoniaceae), M. Mohanasundaram Coll. (No.179). *PARATYPES*: several ♀♀ and ♂♂ on five slides, data as in the holotype.

Remarks: The species is closely related to *Aceria sapindi* ChannaBasavanna (1966) and can be differentiated from it by the absence of submedian lines and 5-rayed featherclaw.

Relation to host: The mites were found within buds and leaf axils.

31. *Aceria leucopyrae* sp. nov.

(Fig.21)

Female: White, worm-like, 200-210 long, 45 thick. Rostrum 18 long, evenly downcurved; antapical seta 5 long; shield 25 long and 35 wide, almost bare except two short lines representing the admedians at the rear shield margin. Dorsal tubercles at shield margin, 21 apart; dorsal seta 26 long, pointing backwards; sides of shield with thin scoring. Foreleg 27 long; tibia 8 long, tibial seta 5 long; claw 6.5 long; featherclaw 8-rayed. Hindleg 24 long; tibia 7 long; claw 6.5 long. Coxae with all three setigerous coxal tubercles, coxal area with short elongate markings. Abdomen with about 60 rings, uniformly microtuberculate except for few posterior rings; lateral seta 35 long, on ring 10; first ventral seta 37 long, on ring 20; second ventral seta 30 long, on ring 30; third ventral seta 30 long, on ring 5 from behind; caudal seta 100 long; accessory seta 4 long; female genitalia 15 long and 18 wide, coverflap with about 12 lines; genital seta 30 long.

Male: Unknown.

HOLOTYPE : ♀, on slide, INDIA: Tamil nadu: Aliyarnagar forest, 20.xi.1975, ex *Securinega leucopyrus* (Willd.) Muller (Euphorbiaceae), M. Mohanasundaram Coll. (No.201). *PARATYPES*: several ♀♀ on 5 slides, data as in the holotype.

Remarks: This species resembles *Aceria achyranthi* sp. nov. but can be separated from it by the 8-rayed featherclaw and measurements.

Relation to host: The mites produce wavy elongated galls protruding on the upper surface on the simple leaves. All stages of the mite were found inside the galls.

32. *Aceria litchii* (Keifer, 1943)

Material studied: INDIA: Karnataka, Bangalore, Lal Bagh, 19.vi.1974, ex *Litchi chinensis* Sonn. (Sapindaceae), M. Mohanasundaram Coll. (No.117).

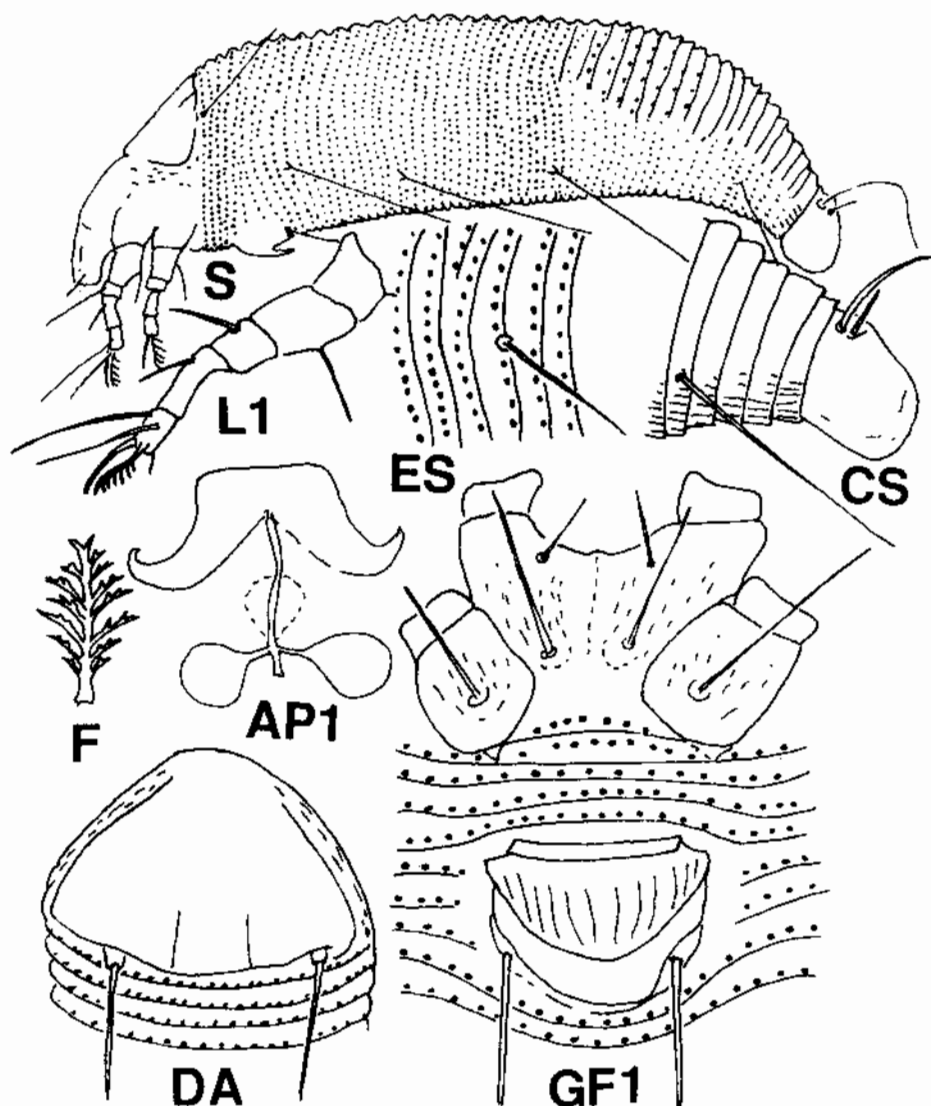


Fig. 21. *Aceria leucopyrae* sp. nov.

Relation to host: Mites produce light brown to white, sparse erineal patches in the initial stages, which turn into reddish-brown later. Leaves are severely deformed.

33. *Aceria litseae* Keifer (1972)

Material studied: INDIA: Tamil Nadu: Nilgiris, Dodbetta, 22.iv.1976, ex *Litsea wightiana* (Nees), Hook (Lauraceae), M. Mohanasundaram Coll. (No.229).

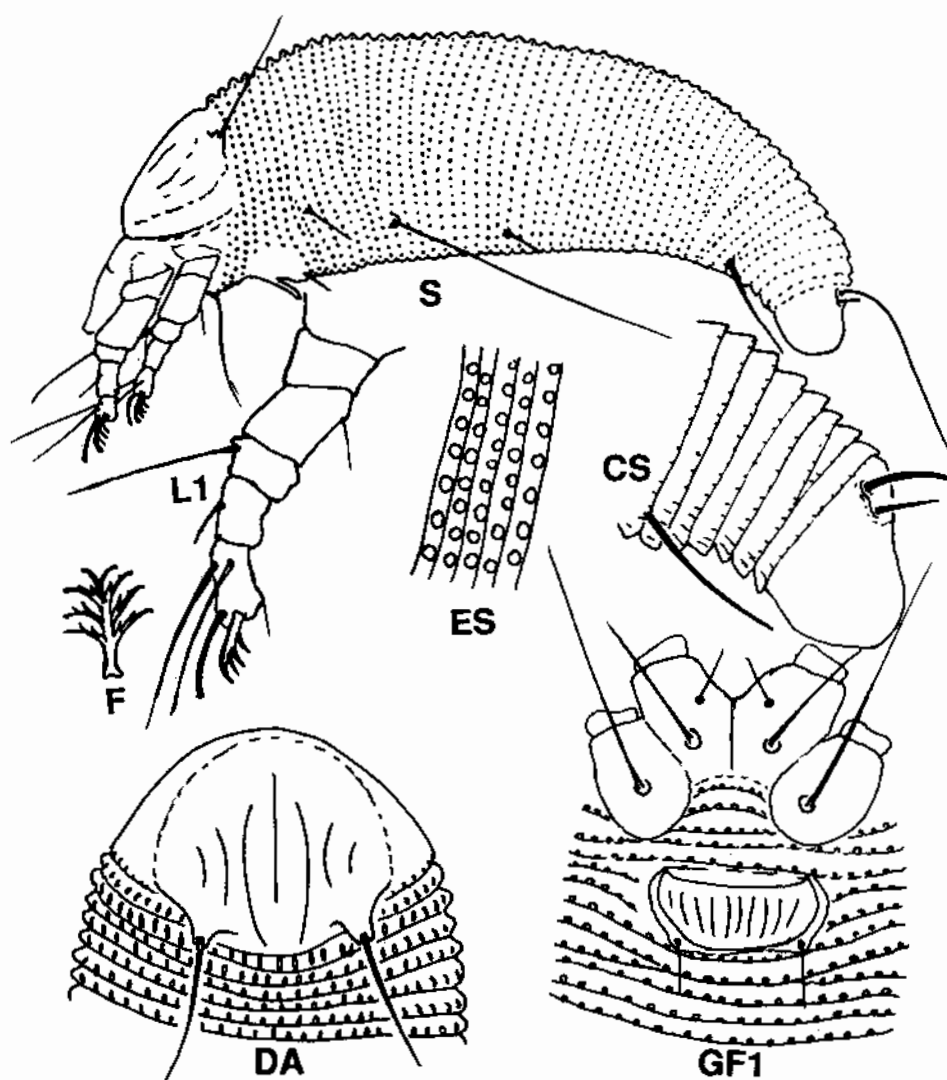


Fig. 22. *Aceria longisetae* sp. nov.

Relation to host: The affected leaves were with depressions on the lower side with brown erineum, protuberances on the upper side.

34. *Aceria longisetae* sp. nov.
(Fig.22)

Female: Worm-like, 150-160 long, 42 thick. Rostrum 15 long, evenly down curved; antapical seta 4 long. Shield 25 long, 35 wide; median present in centre of shield, admedians curved, two submedians represented by short lines, sides of shield clear.

Dorsal tubercles on rear shield margin, 13 apart, dorsal seta 17 long, pointing backwards. Foreleg 22 long, claw 6 long, featherclaw 4-rayed. Hindleg 20 long, tibia 4 long, claw 9 long. Coxae with a clear sternal line, all three setigerous tubercles present, coxal area smooth. Abdomen with about 65 uniformly microtuberculate rings, lateral seta 12 long, on ring 10; first ventral seta 60 long, on ring 20; second ventral seta 4 long, on ring 33; third ventral seta 14 long, on ring 6 from behind; caudal seta 45 long; accessory seta 4 long. Female genitalia 6 long, 17 wide, coverflap with 10 lines; genital seta 3 long.

Male: Unknown.

HOLOTYPES: ♀ on slide, INDIA: Tamil Nadu: Walayar Forest, 20.ix.1975, ex unidentified shrub, M. Mohanasundaram Coll. (No.192). *PARATYPES:* Several females on 4 slides, data as in the holotype.

Remarks: This species resembles *Aceria nerii* ChannaBasavanna (1966) in its 4-rayed featherclaw, clear coxal area and the long first ventral seta but differs by the shield pattern.

Relation to host: Mites were under surface leaf vagrants.

35. *Aceria lycopersici* (Wolffenstein, 1879)

Phytoptus lycopersici Wolffenstein, 1879. *Monatschr. Gartenb.* 22 : 190-192.

Phytoptus cladophthrus Nelepa, 1892. *Anz. Akad. Wiss. Wien*, 29 : 190-192.

Eriophyes cladophthirus: Nelepa, 1898. *Das Tierreich*, 4 : 35

Aceria lycopersici : Lamb. 1953. *Bull. ent. Res.*, 44 : 347.

Material studied: INDIA: Tamil Nadu: Coimbatore, 12.x.1972, ex *Solanum melongena* (Solanaceae), M. Mohanasundaram Coll. (No.25).

Relation to host: Mites were found among stellate hairs of the tender leaves.

36. *Aceria mangiferae* Sayed (1946)

Material studied: INDIA: Tamil Nadu: Coimbatore, Pannimadai, 29.xii.1972, ex *Mangifera indica* L. (Anacardiaceae), M. Mohanasundaram Coll. (No.40), Thadagam, Coimbatore 1.ii.1973 on mango (Col. No.49), Seshanganur (South Arcot district), 4.iv.1973 on mango (Col. No.57); CIBC Compound, Hebbal, Bangalore, 30.vi.1974 (Col. No.133).

Relation to host: The mites were found both in healthy and malformed vegetative and flower buds. At Thadagam, Coimbatore, the mites were also associated with *Metaculus mangiferae* (Attiah)

37. *Aceria marudamalaiensis* sp. nov.

(Fig.23)

Female: White, worm-like, 220-230 long, 50 thick. Rostrum 18 long, evenly downcurved; antapical seta 5 long. Shield 40 wide and 27 long. Median line clear at shield base, broken anteriorly; admedians complete; first submedian faint, represented at shield base only; second submedian bent and represented at sides of shield; sides of shield with faint lines. Dorsal tubercles 18 apart, dorsal setae 18 long, pointed backwards. Foreleg 30 long; tibia 7 long, tibial seta 5 long at about middle; tarsus 6 long; claw 6 long, slightly arched tapering and blunt at tip; featherclaw 5-rayed, rays with branches. Hindleg 26 long; tibia 5 long; tarsus 6 long; claw 7 long. Coxae with all 3 setigerous tubercles, coxal area with a few markings. Abdomen with 55-58 rings, uniformly microtuberculate, the microtubercles are oval in shape on dorsal aspect, fading out posteriorly; they are round, granular in ventral aspect, last 8 sternites with elongate microtubercles. Lateral seta 50 long, on ring 8; first ventral seta 55 long, on ring 19; second ventral seta 35 long, on ring 33; third ventral seta 30 long, on ring 5 from behind; caudal seta 65 long, accessory seta 6 long, very thin. Female genitalia away from coxal base, 12 long and 20 wide; coverflap without lines except for a few dots or scorings at base; genital seta 40 long.

Male: Unknown.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore, Marudamalai, 1.i.1974, ex *Indigofera linnaei* Ali (Fabaceae), M. Mohanasundaram Coll. (No.78).

Remarks: This species resembles *Aceria arbutifloris* Keifer (1962b) but differs in having sides of shield with fewer granules, scorings on coxal area and clear female cover flap.

Relation to host: Mites were found among buds and on stem of plants attacked by the tingid, *Phenotropis cleopatra*.

38. *Aceria medicaginis* (Keifer, 1941)

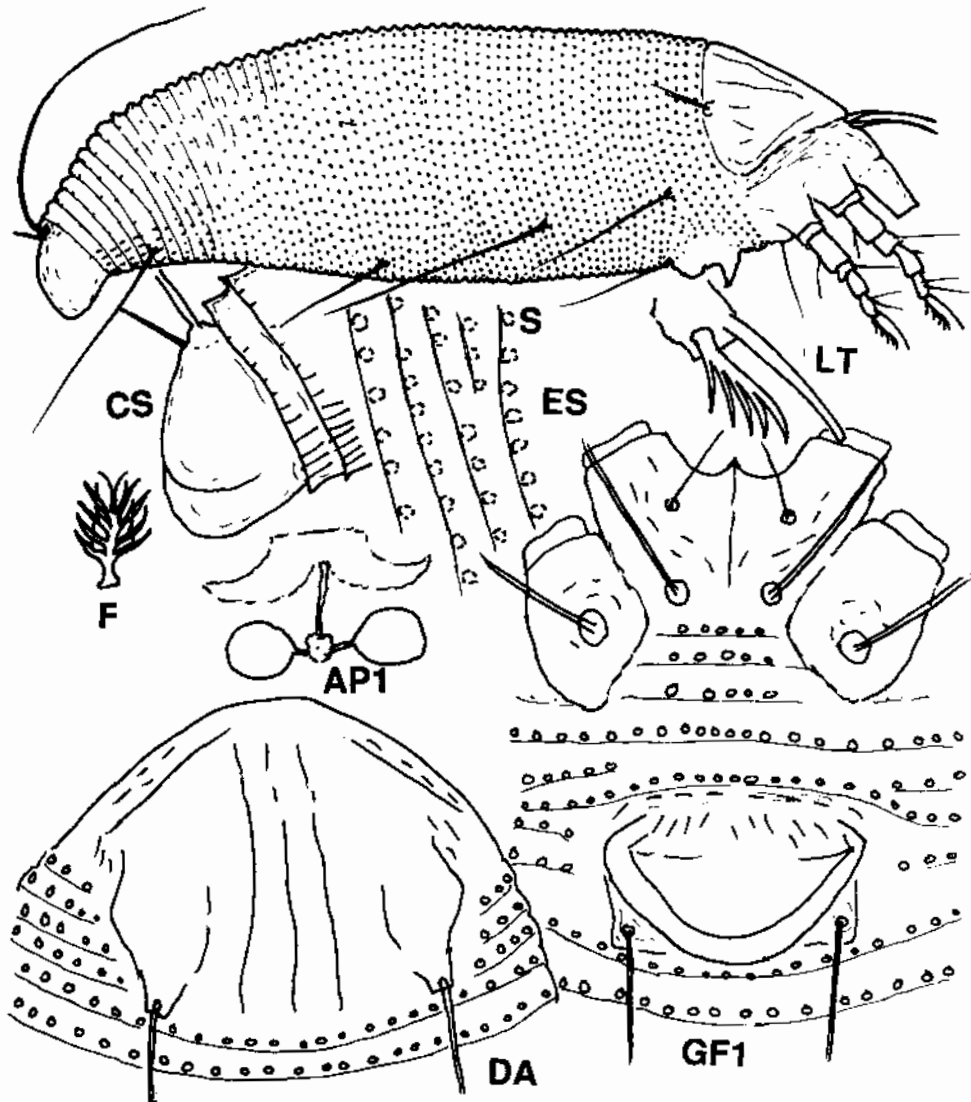
Material studied: INDIA: Tamil Nadu: Mangalam Village near Tiruppur, 13.viii.1974, ex *Medicago sativa* L. (Fabaceae) (No.105).

Relation to host: Mites were in axillary buds and below leaf petioles.

39. *Aceria mimusopae* sp. nov.

(Fig.24)

Female: White, worm-like, 170-180 long, 40 thick. Rostrum 20 long projecting a little forward and then bends down, antapical seta very minute, less than 1. Shield 25 wide, 24 long, broadly rounded in front. Median line faintly seen at base of shield, admedian lines thin, run nearly parallel. First submedian represented at middle part of shield; second submedian converging toward anterior end; thick curved lines at shield margin; sides of shield granular. Dorsal tubercles prominent, at rear shield margin, 12 apart; dorsal setae 15 long, projecting caudad. Foreleg 20 long, tibia 5 long, tibial seta 5 long at

Fig. 23. *Aceria marudamalaiensis* sp. nov.

about middle; tarsus 5 long; claw 4 long, slightly curved; featherclaw 5-rayed; hindleg 18 long; tibia 4 long; tarsus 4 long; claw 8 long, fairly straight; coxal area with all setigerous tubercles and setae granular. Abdomen with 60-65 rings; uniformly microtuberculate, last 8 tergites broad with sparse microtuberculation. Lateral seta 22 long, on ring 12; first ventral seta 30 long, on ring 22; second ventral seta 17 long, on ring 37; third ventral seta 12 long, on ring 60 or 6 from behind, very thick; caudal seta 50 long, accessory seta 1 long. Female genitalia 15 wide, 12 long, with basal scoring and jumbled short lines, genital seta 8 long.

GENUS ACERIA FROM SOUTH INDIA

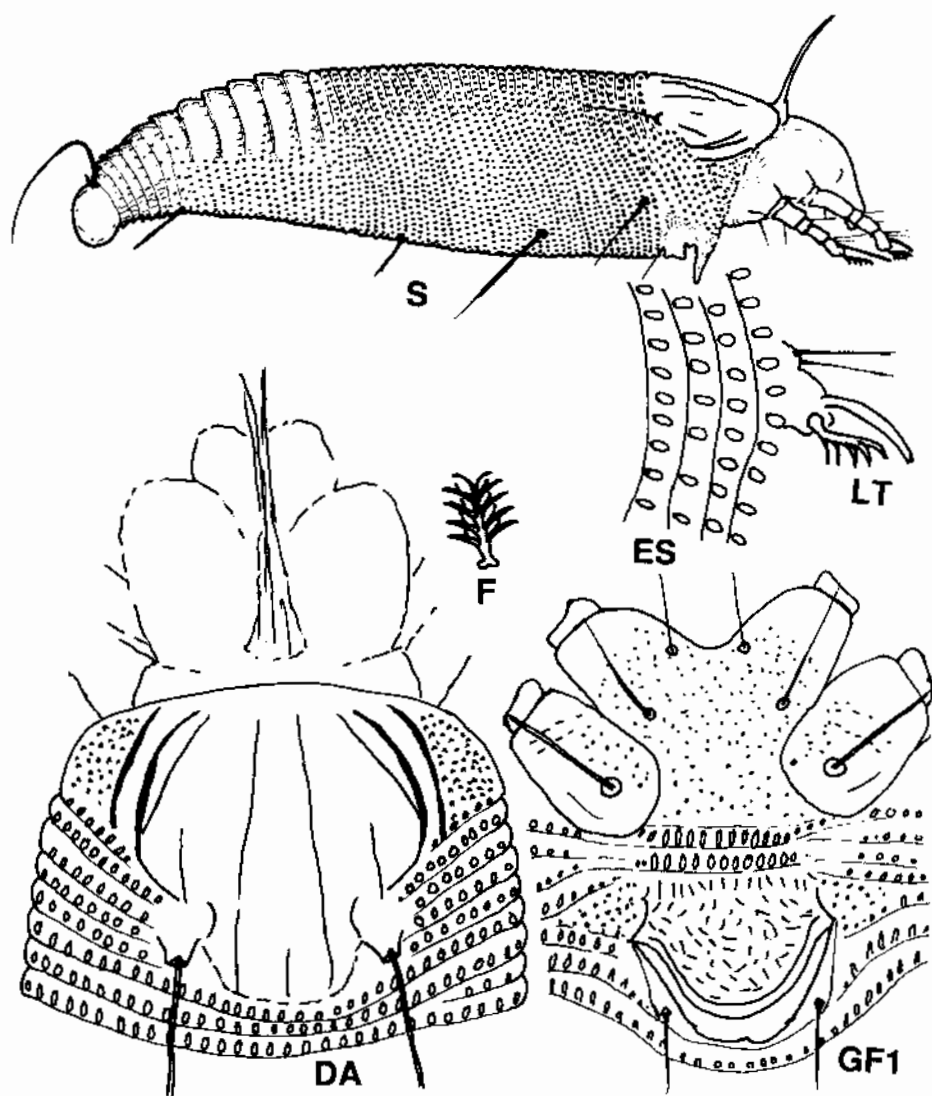


Fig. 24. *Aceria mimusopae* sp. nov.

Male: 160 long, 40 thick; genitalia 11 wide, genital seta 6 long.

HOLOTYPE : ♀ on slide, INDIA: Tamil Nadu: Coimbatore near Anamalai, 29.xii.1973 ex *Mimusops elengi* Linn. (Sapotaceae), M. Mohanasundaram Coll. (No.75);
PARATYPES: several ♀♀ and ♂♂ on ten slides; data as in the holotype.

Remarks: This species is unique in having the granular coxal area, female genital coverflap with indiscriminate scorings and last thonsomal tergites being broad.

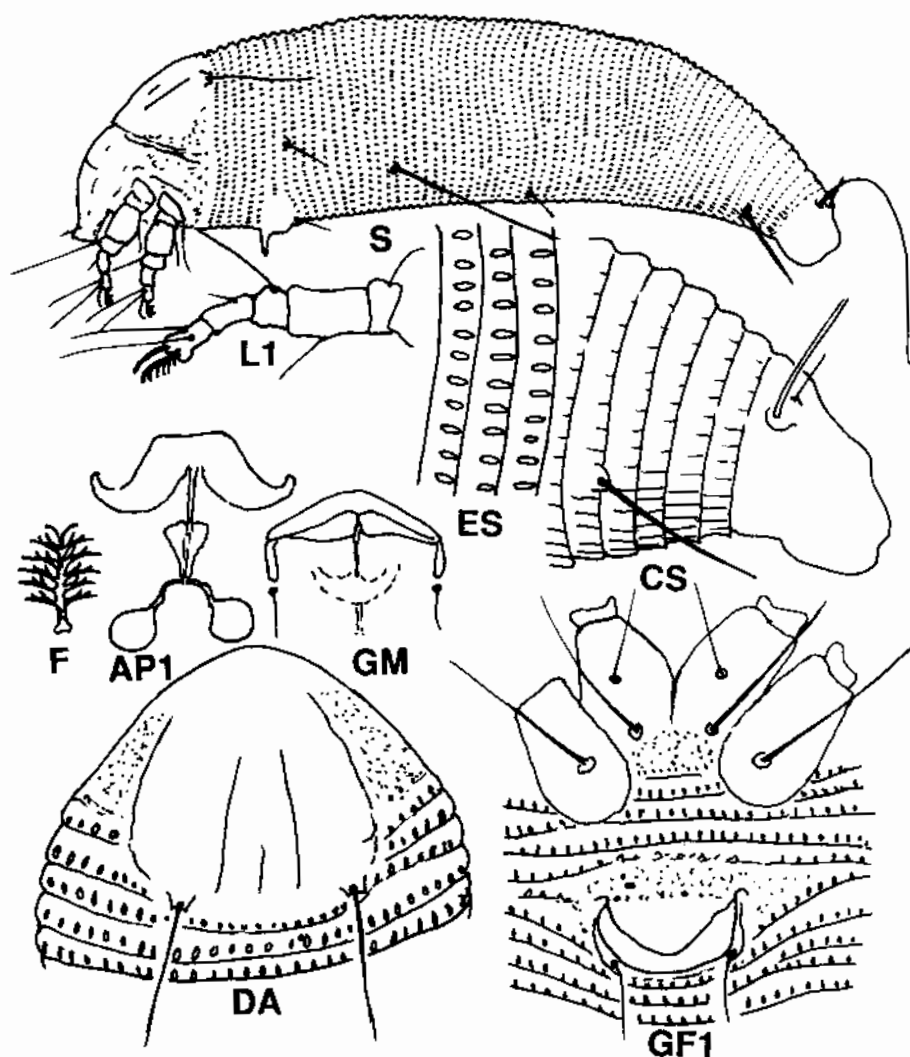


Fig. 25. *Aceria mitragynae* sp. nov.

Relation to host: The mites were found in the buds of terminal twigs within the bud scales and a few were also found on the buds.

40. *Aceria mitragynae* sp. nov
(Fig. 25)

Female: 200-210 long, 50 thick. Rostrum 20 long, projecting forward and downward, antapical seta 4 long; shield triangular, 27 long and 30 wide, with a short faint median line represented at posterior end, admedians represented for about 0.75 length of shield;

sides of shield granular; dorsal tubercles at rear shield margin, 20 apart; dorsal setae 25 long, projecting backwards. Foreleg 30 long, tibia 8 long, tibial seta 3 long; tarsus 7 long; claw 6 long, straight; featherclaw 6-rayed. Hindleg 27 long; tibia 6 long, claw 8 long, straight. Coxae with all three setigerous coxal tubercles, coxal area clear. Abdomen with about 54-56 rings uniformly microtuberculate both dorsally and ventrally, last few tergites without microtubercles; lateral seta 7 long, on ring 9; first ventral seta 50 long, on ring 19; second ventral seta 10 long, on ring 32; third ventral seta 25 long, on ring 5 from behind; caudal seta 95 long; accessory seta 5 long. Female genitalia 10 long and 15 wide, coverflap without lines; genital seta 5 long.

Male: Unknown.

HOLOTYPE: ♀ on slide, INDIA: Karnataka: Bangalore, Lalbagh, 19.vi.1974, ex *Mitragyna parvifolia* (Roxb.) Korth. (Rubiaceae), M. Mohanasundaram Coll. (No.114).
PARATYPES: several ♀♀ on 8 slides, data as in the holotype.

Remarks: This species resembles *Aceria abutilonae* sp. nov. and *Aceria ligustri* Keifer (1943) but can be differentiated by the 6-rayed featherclaw and by the clear female genital coverflap.

Relation to host: Mites were found in small erineal patches and cavity formed in the corners of leaf veins along the mid rib.

41. *Aceria nerii* ChannaBasavanna (1966)

Material studied: INDIA: Tamil Nadu: Coimbatore, Botanical garden, 2.iv.1975, ex *Nerium odorum* Soland (Apocynaceae) (Coll. No.150).

Relation to host: Mites were found in buds and leaf axils.

42. *Aceria obliquae* sp. nov. (Fig.26)

Female: White 160-170 long, worm-like, 30 thick. Rostrum 12 long projecting obliquely forward, antapical seta 5 long. Shield 22 wide, 15 long, triangular, without any pattern except a short broken line at each side of shield base; dorsal tubercles at rear shield margin, 10 apart, dorsal setae 20 long, projecting backwards. Foreleg 20 long, tibia 4 long, tibial seta absent; tarsus 4 long; claw 6 long; featherclaw 4-rayed. Hindleg 17 long, tibia 4 long; claw 12 long, straight. Coxae narrowly connate with a clear sternal line, coxal area granular at anterior half of the coxae. Abdomen with 60 rings, uniformly microtuberculate, microtubercles elongated on the dorsal side and rounded laterally and ventrally; lateral seta 17 long, on ring 9; first ventral seta 40 long, on ring 20; second ventral seta 4 long, on ring 33; third ventral seta 15 long, on ring 5 from behind; caudal seta 55 long; accessory seta 5 long. Female genitalia 10 long, 15 wide; coverflap with 10-12 lines, genital seta 2 long.

Male: Unknown.

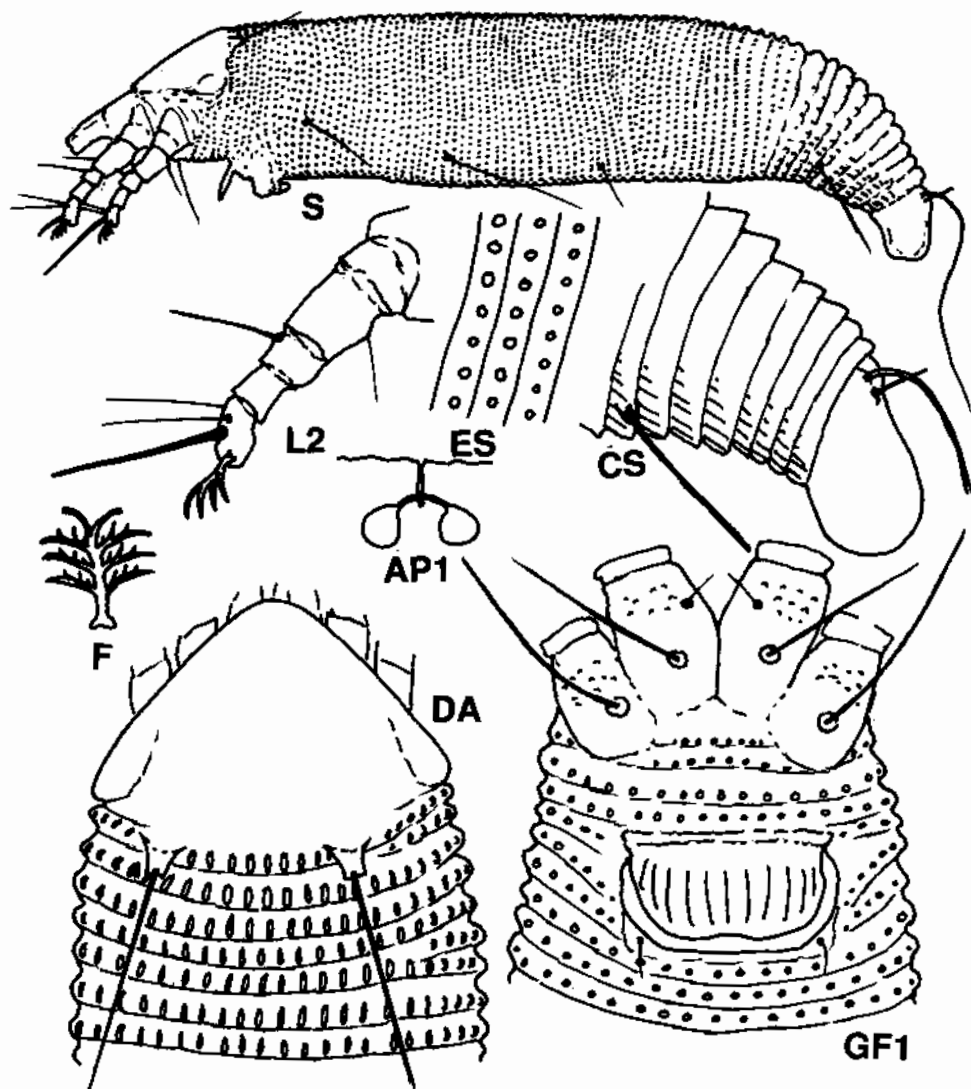


Fig. 26. *Aceria obliquae* sp. nov.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore, TNAU Botanical Garden, 15.iv.1975, ex *Cordia obliqua* Willd. (Boraginaceae), M. Mohanasundaram Coll.(No.162). **PARATYPES:** several (♀♀) on 10 slides, data as in the holotype.

Remarks: This species is related to *Aceria beniciae* Keifer (1966b) but can be differentiated by the 4-rayed featherclaw, granular coxae and by the presence of ribs on the female genital coverflap.

Relation to host: The mites cause erineae on both sides of the leaf.

GENUS ACERIA FROM SOUTH INDIA

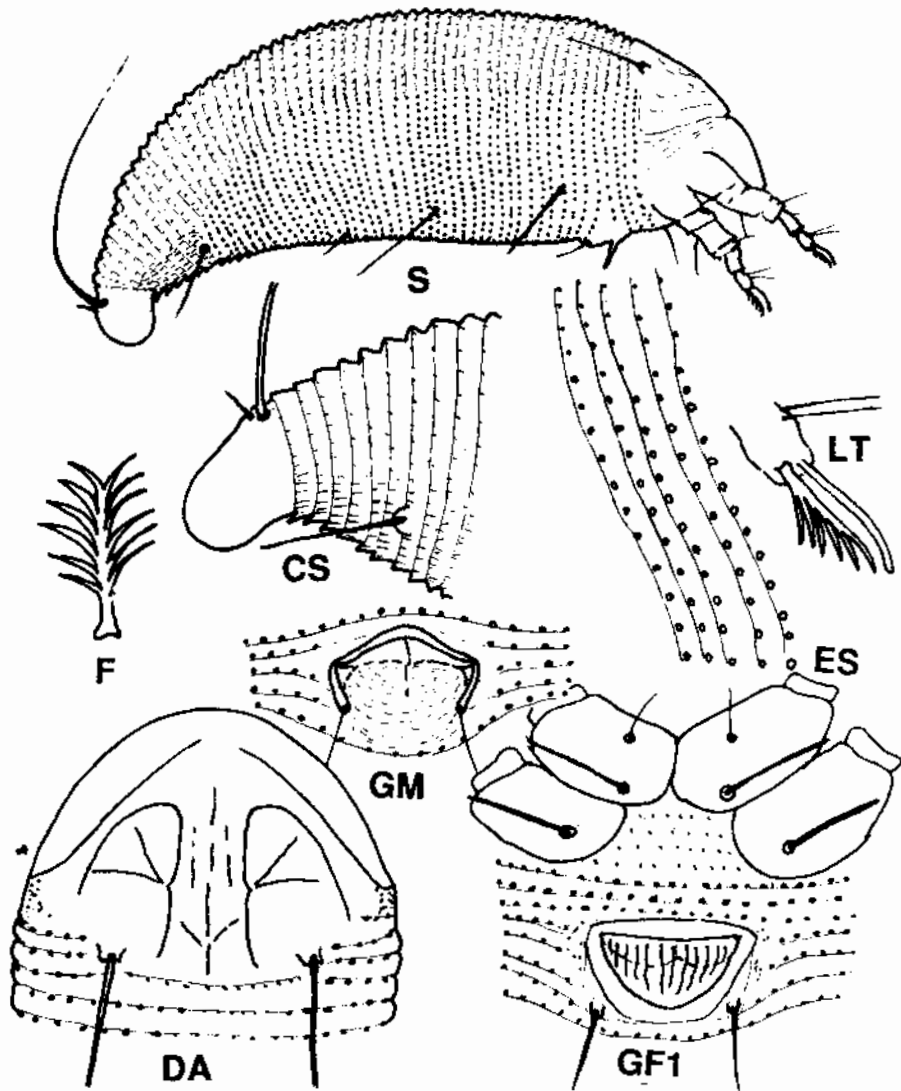
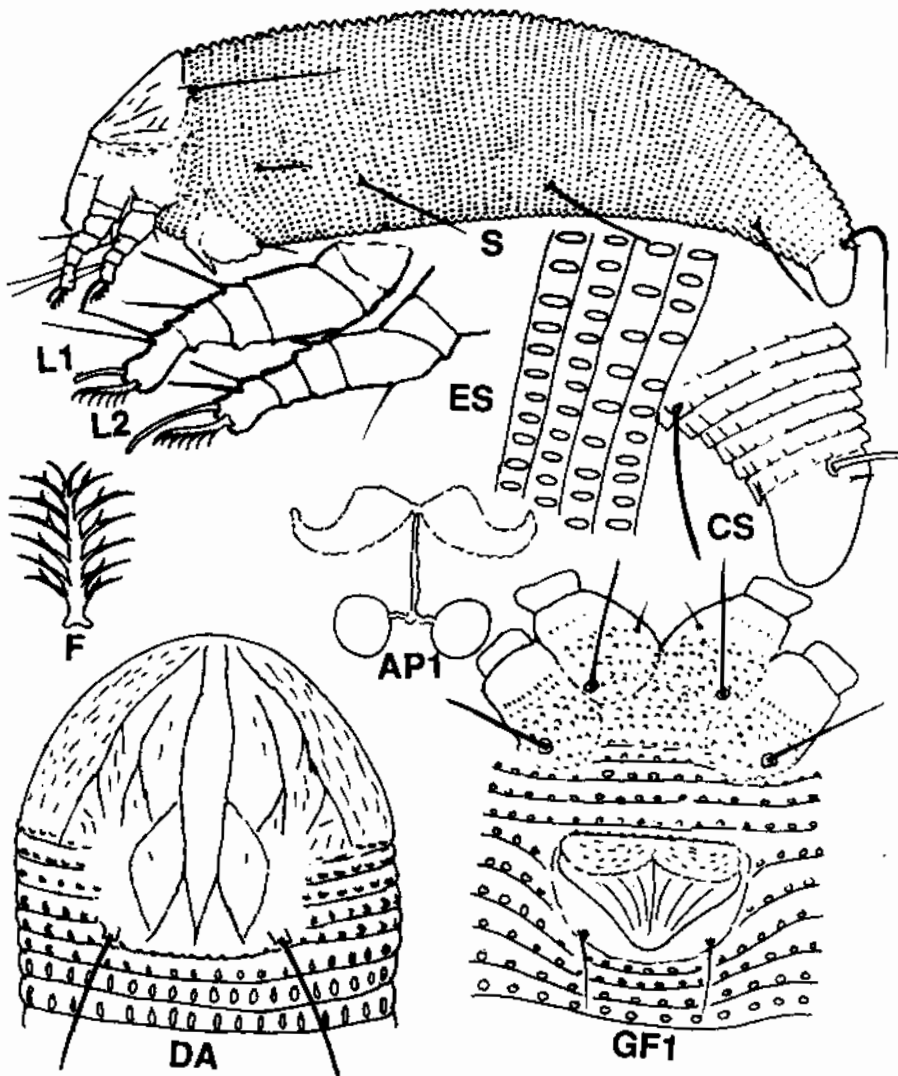


Fig. 27. *Aceria phyllanthae* sp. nov.

43. *Aceria phyllanthae* sp. nov.
(Fig. 27)

Female: White, worm-like, 160-170 long, 55 thick. Rostrum 20 long, evenly downcurved, antapical seta 3 long. Shield 27.5 long and 38.5 wide, triangular; median line clear in the basal half, vanishing anteriorly; admedians faintly seen in mid part of shield; submedians strong, bent towards anterior end and form an arch with the second submedians, with one cross line and one diagonal line in between. A straight line on each side of shield along border which end anteriorly. Dorsal tubercles at shield margin, 24

Fig. 28. *Aceria cheriani* (Massei).

apart, directing setae caudad; dorsal setae 15.5 long. Foreleg 22 long; tibia 4.5 long, tibial seta at mid point, 4 long; tarsus 5 long; claw 6.5 long, arched and evenly tapering featherclaw simple, 6-rayed. Hindleg 20 long; tibia 4 long, tarsus 4 long, claw 6.5 long, similar to fore claw. First and second setigerous coxal tubercles in line and third placed widely apart, coxal area clear. Abdomen with 60-65 rings, uniformly tuberculate, microtubercles round and dot-like along posterior margin of each ring, ventrally clear and fading out dorsally, last six rings with microstriae on sternites and with sparse microtubercles on targites. Lateral seta 25 long, on ring 10; first ventral seta 40 long, on ring 24; second ventral seta 11 long, on ring 38; third ventral seta 26 long, on ring 57 or

on ring 6 from behind; caudal seta 66 long, accessory seta 1 long. Female genitalia 16 long, 22 wide, coverflap with 10-12 lines, genital seta 13 long.

Male: 150-155 long, 45 thick, genitalia 16 wide, genital seta 16 long.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore, 15.xi.1972, ex *Phyllanthus maderaspatensis* Linn. (Euphorbiaceae), M. Mohanasundaram Coll. (No.31).

PARATYPES: several ♀♀ and ♂♂ on 10 slides, data as in the holotype.

Remarks: This species is differentiated from all other species of *Aceria* by its characteristic shield pattern and 6-rayed featherclaw.

Relation to host: The mites cause inward curling of leaf margin and slight malformation of leaves. Mites were found within the leaf curls.

44. *Aceria pongamiae* Keifer (1966a)

Aceria pongamiae ChannaBasavanna (1966)

Material Studied: INDIA: Tamil Nadu: Coimbatore, 13.x.1972, ex *Pongamia glabra* Vent. (Leguminosae) in the leaf pouch galls (Coll.No.12); Karnataka: Hessarghatta, Bangalore, 3.vii.1974, (Coll.No.134). Botanical Gardens, Coimbatore, 31.vii.1975, ex *P. glabra* M.Mohanasundaram Coll. (No.183)

45. *Aceria cheriani* (Masse, 1933) (Fig.28)

The original description of this species is not adequate and hence this species is redescribed and figured here.

Female: White, worm-like, 140-160 long, 40 thick. Rostrum 15.4 long evenly downcurved; antapical seta 2 long. Shield 22 long and 27 wide, with a clear pattern. Median line absent; admedians forked at base and complete, first submedians represented in the posterior half of shield, arched and join both ends with the admedians; second submedians forked at base represented in the anterior 0.66 of shield, arched; third submedian at the shield margin with two forks in posterior half; sides of shield with fine lines and strokes; dorsal tubercles at shield margin, 15 apart; dorsal setae 14 long, pointing backwards. Foreleg 24 long, tibia 5 long, tibial seta 5 long, at about middle; tarsus 5 long; claw 4 long; featherclaw 7-rayed including bifid tip. Hindleg 22 long; tibia 4.5 long; tarsus 4.5 long; claw 8 long, slightly arched. Coxae broadly joined, first setigerous coxal tubercles in anterior margin of forecoxae; setae small; second setigerous coxal tubercle at posterior margin of forecoxae, widely separated; third setigerous coxal tubercles wider and farther apart from second. Coxal area heavily granular. Abdomen with about 65 rings, uniformly microtuberculate both dorsally and ventrally, microtubercles oval in shape; lateral seta 16.5 long, on ring 8; first ventral seta 45 long, on ring 18; second ventral seta 50 long, on ring 35; third ventral seta 12 long, thick on ring 6 from behind; caudal seta 65 long, accessory seta 2 long. Female genitalia 10 long and 16 wide; coverflap with 7 lines, base of cover flap granular, genital seta 10 long.

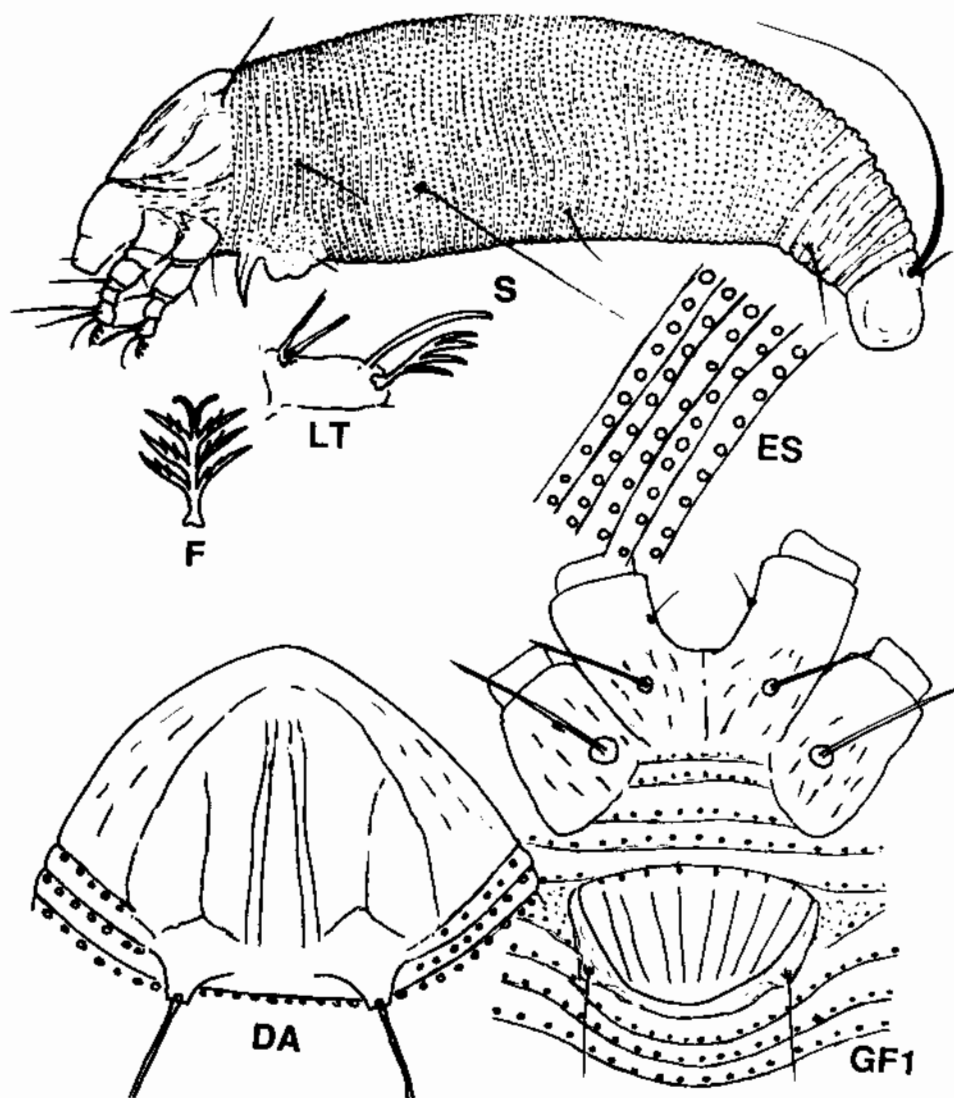


Fig. 29. *Aceria madukkaraiensis* sp. nov.

Material studied: INDIA: Tamil Nadu: Coimbatore, 31.vii.1975, ex *Pongamia glabra* Vent. M. Mohanasundaram Coll.(No.183).

Relation to host : Mites were found inside pouch galls. Galls were small, oblong or kidney-shaped, projecting on the upper surface of the leaves with or without opening on the lower side.

46. *Aceria madukkaraiensis* sp. nov
(Fig.29)

Female: White, elongate, worm-like, 165 to 175 long; 36 thick. Rostrum 12 long, evenly downcurved, antapical seta 5 long. Shield 20 long and 20 wide, with the dorsal tubercles on shield margin. Median line absent, admedian and first submedians closer and parallel, 2nd submedian forked at shield base and shield with a clear border; sides of shield with small elongate lines. Dorsal tubercles 11 apart, dorsal setae 22 long, directed backwards. Foreleg 22 long; tibia 5 long; tibial seta invisible; tarsus 5 long; claw 6 long; featherclaw 4-rayed including bifid tip; hindleg 19 long; tibia 3.5 long; tarsus 4.5 long; claw 6.5 long. Coxae with a clear sternal line, first pair of setigerous tubercles pushed anteriorly; 2nd and 3rd pairs placed widely apart, coxal area granular with short lines. Abdomen uniformly microtuberculate both dorsally and ventrally with about 67 rings; lateral seta 14.5 long, on ring 9; first ventral seta 42 long, on ring 21; second ventral seta 2.5 long, on ring 36; third ventral seta 14.5 long, on ring 6 from behind; caudal seta 44 long; accessory seta 4.5 long. Female genitalia 11 long, 16.5 wide; coverflap with 8 lines, genital seta 2.5 long.

Male: Unknown.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore, Madukkarai Cement Quarry near Walayar Forest, 28.iii.1973, ex unidentified shrub; M. Mohanasundaram Coll. (No.54). *PARATYPES*: Several (♀♀) on 6 slides, data as in the holotype.

Remarks: This species is differentiated from other species of *Aceria* by the double lines in the admedians, apart from other features.

Relation to host: Mites were found in reddish-brown erineal patches on the lower surface of the leaves.

47. *Aceria sacchari* Wang (1964)

Aceria sacchari ChannaBasavanna (1966)

In this species two forms of females namely, the thick and thin forms were seen among the population.

Material studied: INDIA: Tamil Nadu: Kulithalai, 20.iv.1973, ex sugarcane, *Saccharum officinarum* L. (Poaceae) (Coll. No.58); Coimbatore, 15.vii.1975, on sugarcane M.Mohanasundaram Coll. (No.175).

Relation to host: The mites were found in large numbers in blisters formed on the innerside of leaf sheath.

48. *Aceria sapindi* ChannaBasavanna (1966)

Material studied: INDIA: Tamil Nadu: Coimbatore: 21.i.1973, ex *Sapindus emarginatus* (Sapindaceae) (Coll. No.44); Cuddalore, 17.viii.1975, ex *Sapindus saponaria* Linn. M. Mohanasundaram Coll. (No.187).

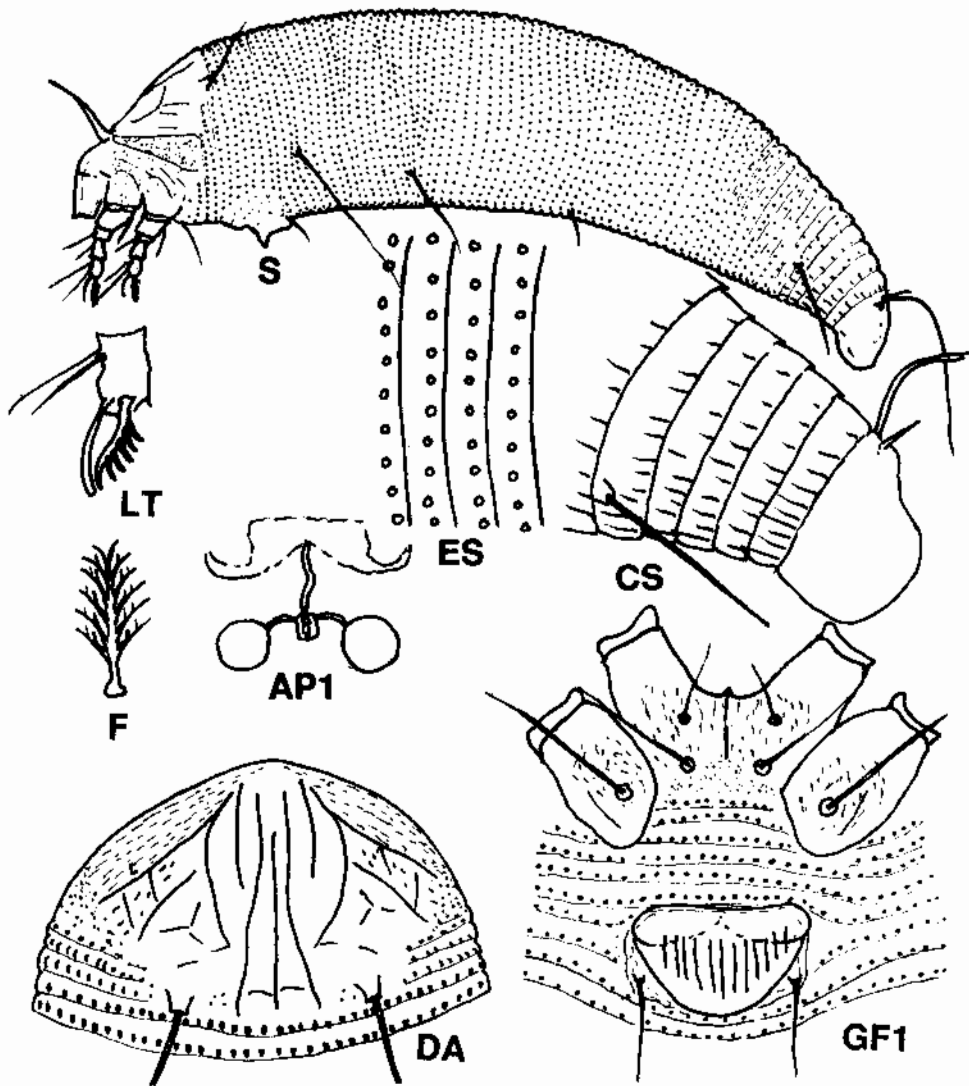


Fig. 30. *Aceria securinegae* sp. nov.

Relation to host: The mites were found as undersurface leaf vagrants, in the flower buds under the bud scales.

49. *Aceria securinegae* sp. nov.
(Fig.30)

Female: White, worm-like 175-185 long, 50 thick. Rostrum 18 long, uniformly downcurved; antapical seta 5 long. Shield 26 long and 35 wide, with a clear pattern. Median line present at basal 0.75; sometimes broken, with joints at the basal region to

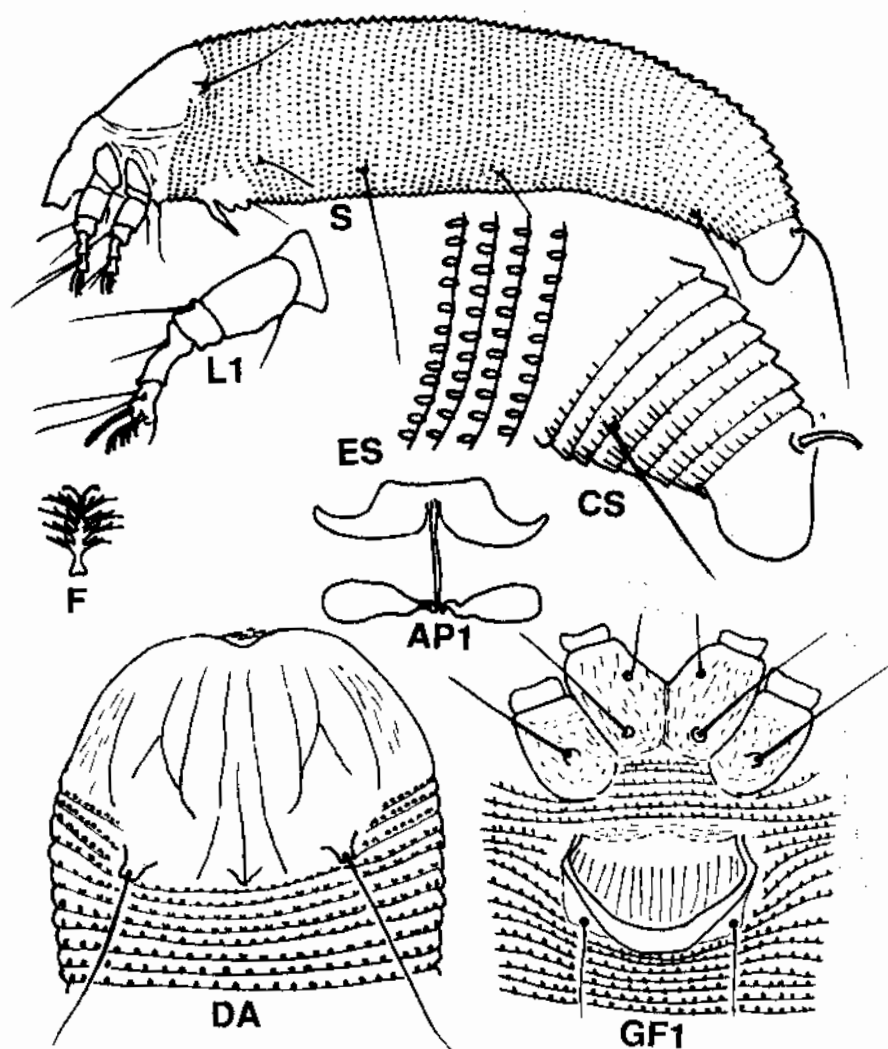


Fig. 31. *Aceria serndanurensis* sp. nov.

admedians; admedians complete, diverge basally and converge anteriorly; first submedian represented in anterior half; second submedian represented in anterior 0.75; curved outward; two oblique lines, on shield margin with cross lines connecting 2nd submedian; sides of shield with fine strokes and dots. Dorsal tubercles 16 apart, on shield margin, dorsal seta 20 long, projecting backwards. Foreleg 25 long; tibia 5 long, tibial seta 3 long, at 0.33 from base; tarsus 5 long, claw curved, featherclaw 6-rayed. Hindleg 23 long; tibia 5 long; tarsus 5 long; claw 6 long. Coxae with first and 2nd setiferous tubercles in line and third widely apart. Coxal area finely granulate. Abdomen with 60 uniformly

tuberculate rings, last 10 tergites without microtubercles, last 8 sternites with microstriae. Lateral seta 50 long, on ring 12; first ventral seta 65 long, on ring 22; second ventral seta 8 long, on ring 36; third ventral seta 20 long, on ring 55 or 6 from behind; caudal seta 95 long, accessory seta 5 long. Female genitalia, a little distance away from coxal base, 12 long and 18 wide; coverflap with 10-12 lines; genital seta 32 long.

Male: 180-200 long, 50 thick, genitalia 15 wide, genital seta 22 long.

HOLOTYPE : ♀ on slide, INDIA: Tamil Nadu: Coimbatore, Marudamalai, 1.i.1974, ex *Securinega leucopyrus* (Willd.) Muell. Arg. Euphorbiaceae), M. Mohanasundaram Coll.(No.90). *PARATYPES* : several ♀♀ and ♂♂ on 10 slides, data as in the holotype.

Remarks : This species resembles *Aceria sheldoni* (Ewing, 1937) but can be differentiated by the 6-rayed featherclaw and slight variations in the shield pattern.

Relation to host: Mites cause wavy gall-like swellings on the upper surface of the leaf. Mites were found inside the hollow galls.

50. *Aceria serndanurensis* sp. nov.

(Fig. 31)

Female: Worm-like, 120-130 long, 40 thick. Rostrum 15 long, uniformly downcurved, antapical seta 2 long. Shield 30 wide, 20 long with a clear pattern of lines. Median line represented in rear half of shield, admedians complete; first submedian represented in the anterior 0.75 of shield; second submedian forked posteriorly, joining with the first submedian posteriorly; third submedian curved, along sides of shield, sides of shield with fine scorings. Dorsal tubercles at shield margin, 13 apart; dorsal setae 20 long pointing backwards and outwards. Foreleg 19 long; tibia 5 long, tibial seta 3 long; tarsus 5 long; claw 5 long; featherclaw 5-rayed. Hindleg 18 long; tibia 4 long; claw 7 long. All usual leg setation present. Coxae with a clear sternal line, all three setigerous coxal tubercles present, first tubercle near anterior border of forecoxae; coxal area with fine scorings. Abdomen with about 62-65 rings, uniformly microtuberculate; lateral seta 18 long, on ring 10; first ventral seta 47 long, on ring 22; second ventral seta 3 long, on ring 37; third ventral seta 11 long, on ring 6 from behind; caudal seta 35 long; accessory seta 1 long. Female genitalia a little away from coxal base, 17 wide, 10 long; coverflap with 14-17 lines, genital seta 9 long.

Male: Unknown.

HOLOTYPE : ♀ on slide, INDIA: Tamil Nadu: Serndanur Railway Station (Villupuram Taluk), 17.viii.1975, ex unidentified tree; M. Mohanasundaram Coll. (No.185). *PARATYPES* : several ♀♀ on 5 slides, data as in the holotype.

Remarks : This species resembles *Aceria swezeyi* (Keifer, 1946) but may be differentiated by the featherclaw and the shield pattern.

Relation to host: Mites were found within the buds

51. *Aceria siruvaniensis* sp. nov.

(Fig. 32)

Female: Worm-like, whitish or creamy 260-270 long, 57 thick. Rostrum 13 long, projecting obliquely forward, antapical seta 5.5 long; shield 38.5 wide and 22 long, obtusely rounded in front and ending posteriorly near dorsal tubercles. The median, admedian and submedian lines obliterated. Shield with broken lines in middle, with regular granulate finger-print-like lines on lateral sides which converge medially. Dorsal tubercles at rear margin, 17.5 apart, dorsal seta 7.5 long, pointing posteriorly. Forelegs 20 long; tibia 3.5 long, with seta at about middle, 4 long; tarsus 5.5 long; claw 7.5 long, moderately arched with blunt tip; featherclaw 4-rayed, including bifid tip. Hindleg 16.5 long; tibia 3.3 long; tarsus 5.5 long; claw 7.5 long. Fore and hind coxae granulate at base and with a few indistinct lines; first setigerous coxal tubercles slightly ahead of coxal approximation, 2nd and 3rd tubercles placed further apart from mid line. Abdomen with 75-80, rings, uniformly microtuberculate both dorsally and ventrally; last 18-20 rings in the posterior end, devoid of microtubercles dorsally. Lateral seta 14.5 long, on ring 11; first ventral seta 27.5 long, on ring 40; third ventral seta 11 long, on ring 6 from behind; caudal seta 38.5 long; accessory seta 4.5 long. Female genitalia 11 long and 17.5 wide, coverflap with 10 faint lines, genital seta 5 long.

Male: Unknown.

HOLOTYPE : ♀ on slide, INDIA: Tamil Nadu: Coimbatore, Siruvani Hills, near Municipal drinking water settling tanks, 8.x.1972, ex unidentified tree, S. Sadakathullah Coll. (No.5). *PARATYPES* : several ♀♀ on 22 slides, data as in the holotype.

Remarks : This species resembles *Aceria anisomelae* sp. nov. but can be differentiated from it by the 4-rayed featherclaw, shield pattern and the scorings on the female genital coverflap. It also resembles *Aceria litseae* (Keifer, 1972) but may be differentiated by its larger size, shorter dorsal setae; nonmicrotuberculated telosomal dorsal rings and equal sized fore and hind claws.

Relation to host : Mites were found in the reddish-brown erineal patches on the lower side of leaves.

52. *Aceria sorghi* ChannaBasavanna (1966)

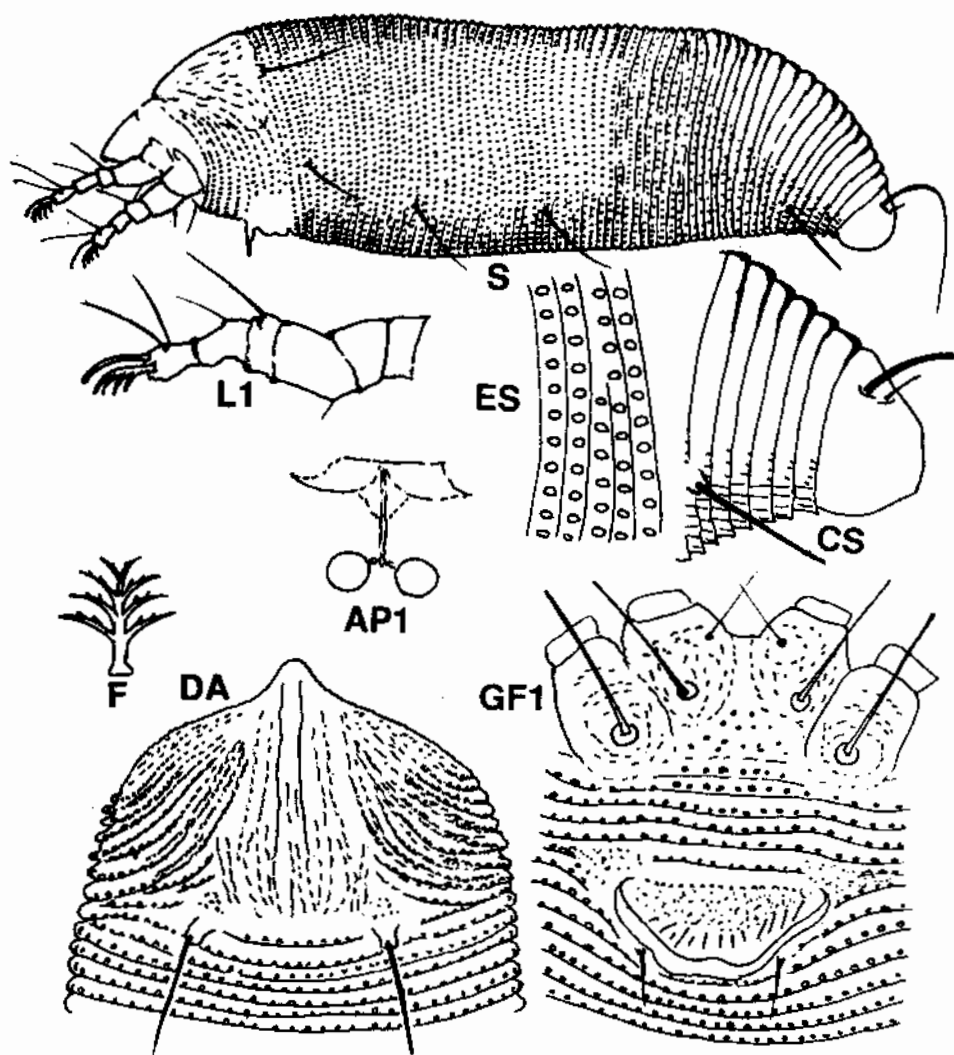
Material examined : INDIA: Tamil Nadu: Coimbatore, Veerakeralam, 29.vii.1975, ex *Sorghum bicolor* (Gramineae) cultivar CSH5, M. Mohanasundaram Coll. (No.181).

Relation to host : Mites were in the leaf sheath and caused twisting of bud and leaf.

53. *Aceria subramani* sp. nov.

(Fig. 33)

Female: Worm-like and white 200-225 long, 66 thick. Rostrum 16.5 long, antapical seta indistinct. Shield 30 long, 46 wide. Median line clear at basal half of shield and fades away towards anterior end. Admedian lines complete, forming spindle-shaped structure; first submedian starts from middle of shield as a branch of admedian line and

Fig. 32. *Aceria siruvaniensis* sp. nov.

runs parallel towards anterior margin; second submedian slightly wavy clear; cross lines connect the median, admedians and second submedian at base a little away from shield margin; several characteristic cross lines forming a clear pattern on shield; shield margin, with a few short lines. Dorsal tubercles clear, 24 apart with seta 20 long, projecting caudad. Foreleg 25 long; tibia 5.5 long, tibial seta short, 1 long; tarsus 8.5 long with claw 8 long, slightly curved tapering with blunt tip. Hindleg 22 long, tibia 4.5 long, tarsus 8.5 long; claw 9 long, similar to fore claw. Featherclaw 6-rayed including bifid tip. Coxae broad, without any markings at their base. First tubercles a little away from the coxal approximation with long setae; 2nd setigerous tubercles a little away from first, while

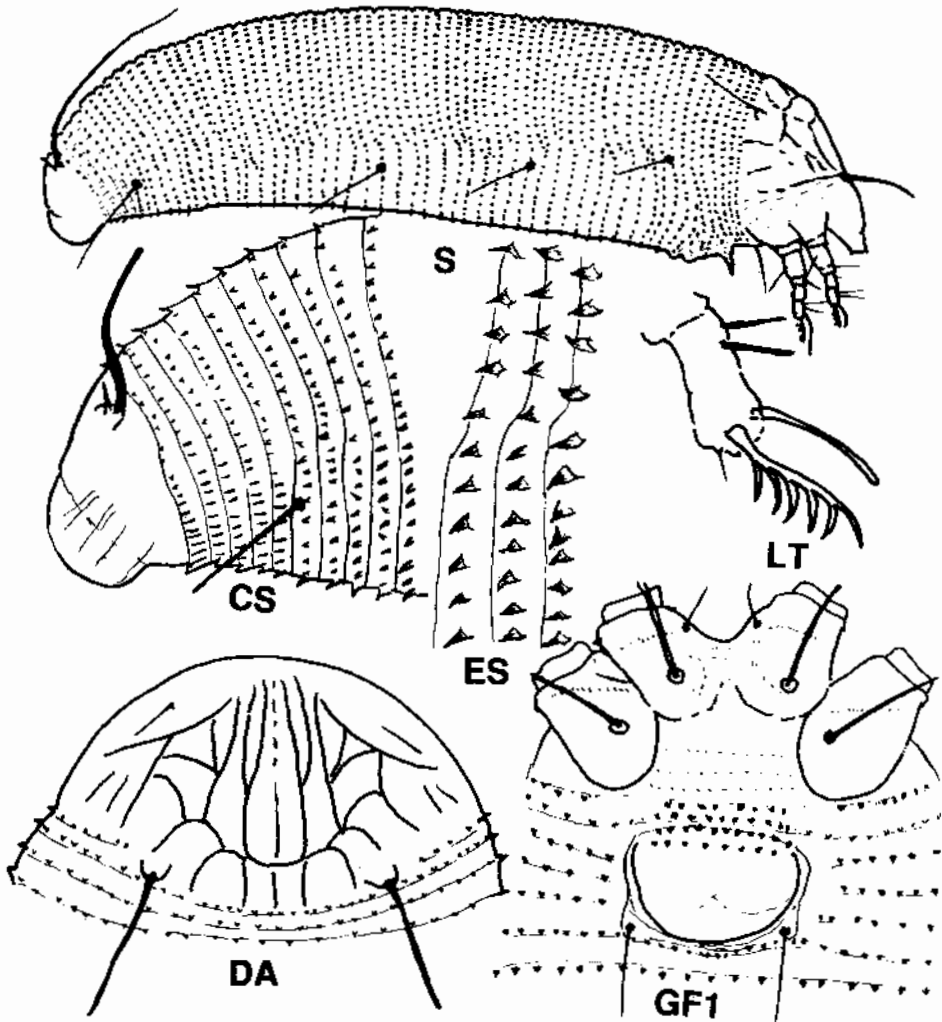


Fig. 33. *Aceria subramani* sp. nov.

third setigerous tubercles placed widely apart at base of hind coxae. Abdomen with 60-65 rings, uniformly microtuberculate, dorsal tubercles small and conical, ventral tubercles globular with a spine-like tip and become more spine-like posteriorly. Last 4 ventral segments with microstriations. Lateral seta 22 long, on ring 9; first ventral seta 60 long, on ring 20; 2nd ventral seta 44 long, on ring 36; third ventral seta 22 long, on ring 5 from behind; caudal seta 110 long; accessory seta 2 long. Female genitalia 21 wide and 14.5 long; coverflap without any lines, genital seta 12 long.

Male: Unknown.

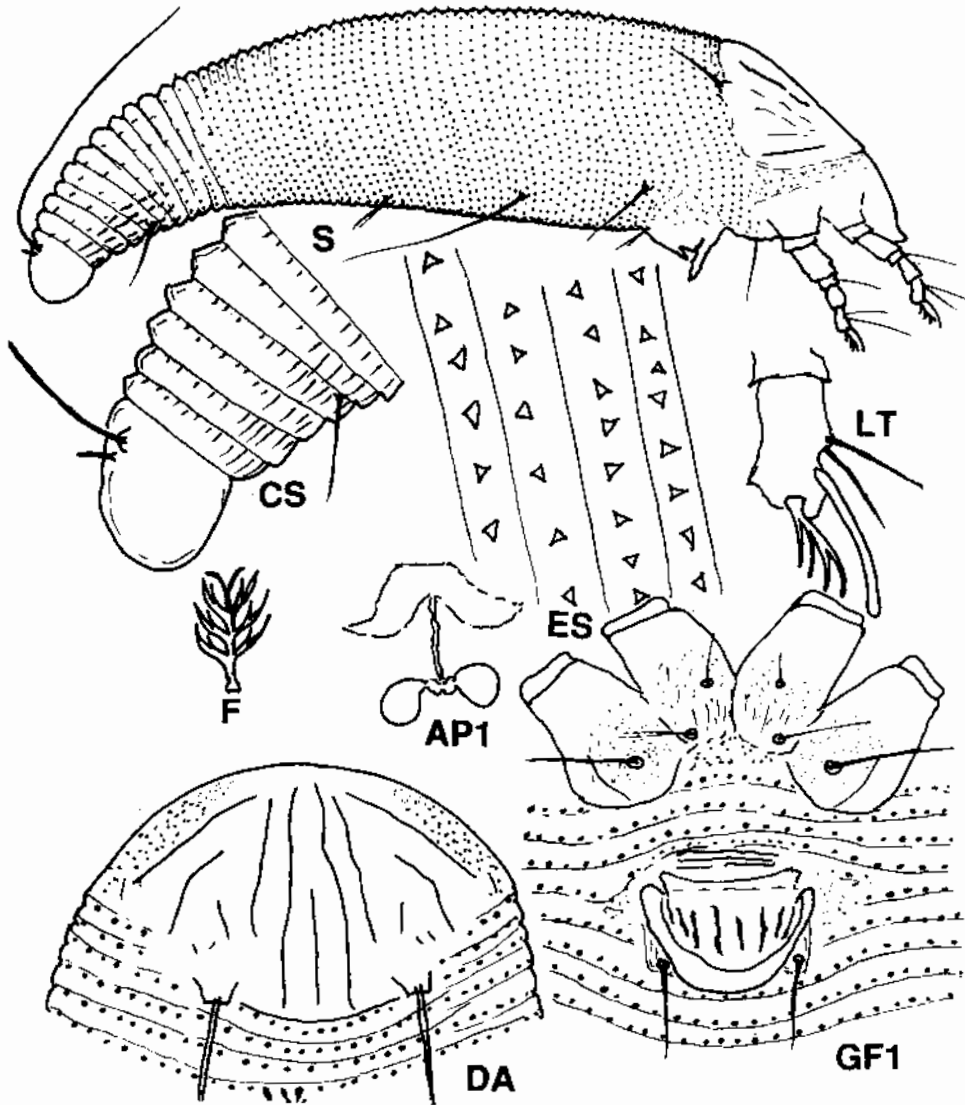


Fig. 34. *Aceria trianthemae* sp. nov.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore, TNAU Campus, 7.xii.1972, ex unidentified hedge plant, M. Mohanasundaram, Coll. (No.22).
PARATYPES: several ♀♀ on 15 slides, data as in the holotype.

Remarks: This species is unique in having shield pattern consisting of cells along the posterior margin, the smooth female genital coverflap and the spiny microtubercles. This species is named in honour of Dr. T.R. Subramanian, former Professor of Entomology, TNAU, Coimbatore.

Relation to host: Mites were found in erineal patches with depressions on the leaves.

54. *Aceria trianthemae* sp. nov.
(Fig.34)

Female: White, worm-like, 220-225 long, 65 thick. Rostrum 20 long, uniformly downcurved, antapical seta 5 long. Shield 35 long, 50 wide, with a clear pattern. Median line represented at basal half only, admedian lines complete, slightly wavy, first submedian represented in anterior 0.75 of shield, second submedian at mid length of shield on either side, third submedian forming border of shield on either side; sides of shield granular; a few broken lines at base of dorsal tubercles between first and second submedians. Dorsal tubercles at rear shield margin, projecting back, 20 apart with dorsal setae 27 long projecting backwards. Foreleg 30 long; tibia 6 long, tibial seta at 0.33 distance, 5 long; tarsus 6 long; claw 7 long, curved and blunt at tip; featherclaw 4-rayed, rays branched. Hindleg 25 long; tibia 5 long, tarsus 6 long; claw 8 long; similar to foreclaw. Coxae with all three setigerous tubercles, coxal area granular and finely dotted. Abdomen with 50-55 rings, uniformly microtuberculate, microtubercles spinelike and triangular, getting elongated towards last 8 segments as microstriae. Lateral seta 30 long, on ring 9; first ventral seta 48 long, on ring 20; second ventral seta 9 long, on ring 30; third ventral seta 20 long, on ring 5 from behind. Caudal seta 50 long, accessory seta 2 long. Female genitalia 15 long, 22 wide, coverflap with 6-8 thick broken lines; genital seta 10 long.

Male: 180 long, 45 thick, genitalia 18 wide, genital seta 5 long; very common.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore, Vettaikaranpudur, near Anamalai, 29.xii.1973, ex *Trianthema decandra* Linn. (Aizoaceae), M. Mohanasundaram Coll. (No.77). *PARATYPES*: several ♀♀ and ♂♂ on 10 slides, data as in the holotype.

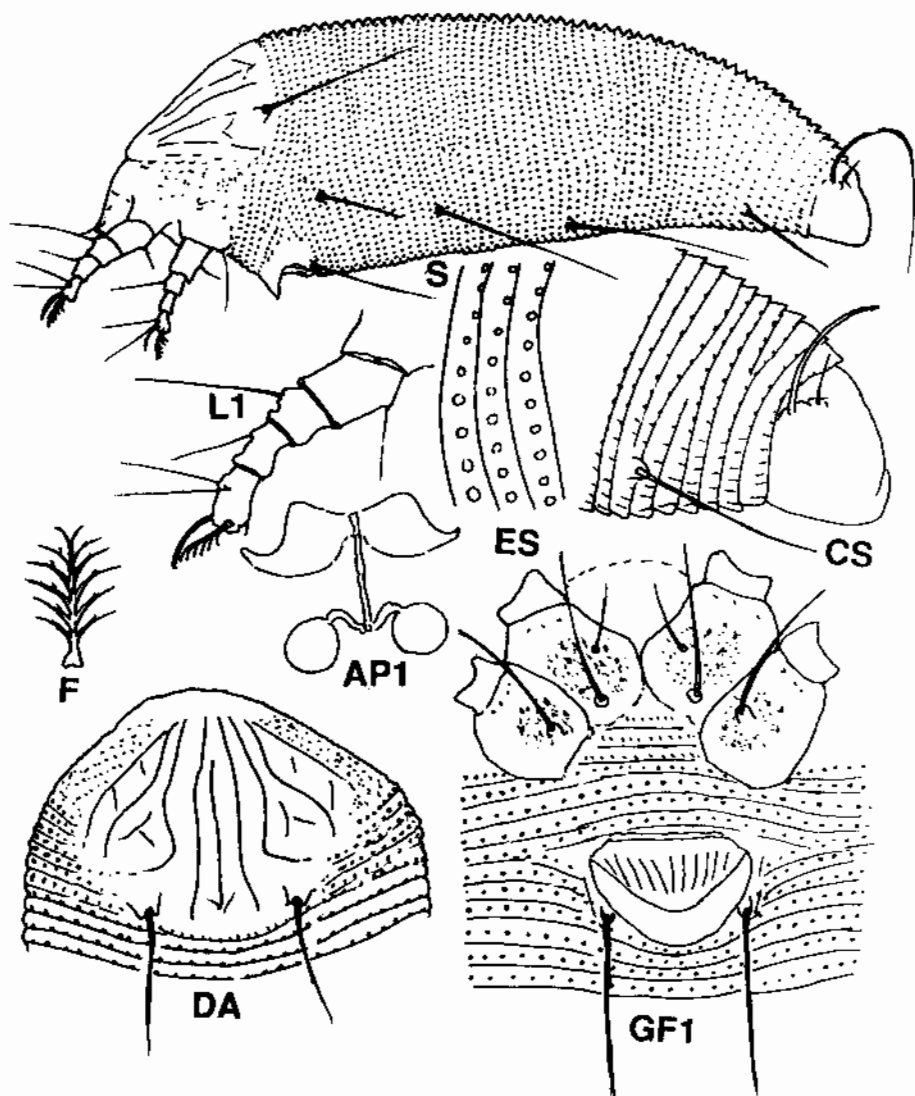
Remarks: This species resembles *Aceria dicoriae* (Keifer, 1962a) but is differentiated by the shield pattern, featherclaw and the scorings on the genital coverflap.

Relation to host: Mites were found in the leaf axils.

55. *Aceria trichocnemum* (Nalepa, 1929)
(Fig.35)

Since the original description and figure are not adequate, this mite is redescribed and figured here.

Female: 160-190 long; 40-50 thick, linear, worm-like, transparent to whitish. Rostrum 14 long, projecting obliquely forward; antapical seta 6 long. Shield 33 wide, 29 long, bluntly rounded in front; median line either complete or slightly broken in middle, admedian lines complete, starting at shield apex running nearly parallel, posteriorly diverging; first submedian arising a little behind from shield apex, diverging slightly, then curving inward to diverge once again towards rear end; second submedian represented by two arms of an incomplete Y-shaped line; third submedian starts from shield apex, diverges slightly and runs along shield margin; sides of shield finely granulate, represented in longitudinal lines. Dorsal tubercles near rear margin, shield extending past tubercles in between; tubercles 19 apart; dorsal seta 50 long, directed

Fig. 35. *Aceria trichonemum* (Nalepa)

caudad. Foreleg 24 long; tibia 5.5 long with seta at about middle, 4.5 long; tarsus 5.5 long, claw 6.5 long, moderately arched and blunt at tip. Feather claw 6-rayed including bifid tip. Hind leg 24 long, tibia 5.5 long, tarsus 5.5 long, claw 6.5 long, similar to foreclaw. Coxae elongate, fore coxae fairly broad, first and second setigerous coxal tubercles are nearer towards the centre, than third coxal tubercles. Seta III on hind coxae as long as the hind legs. Abdomen with 80-85 rings, uniformly microtuberculate both dorsally and ventrally. Lateral seta 52 long on ring 12; first ventral seta 50 long, on ring 27; second ventral seta 33 long, on ring 45; third ventral seta 22 long, on ring 7 from behind. Caudal

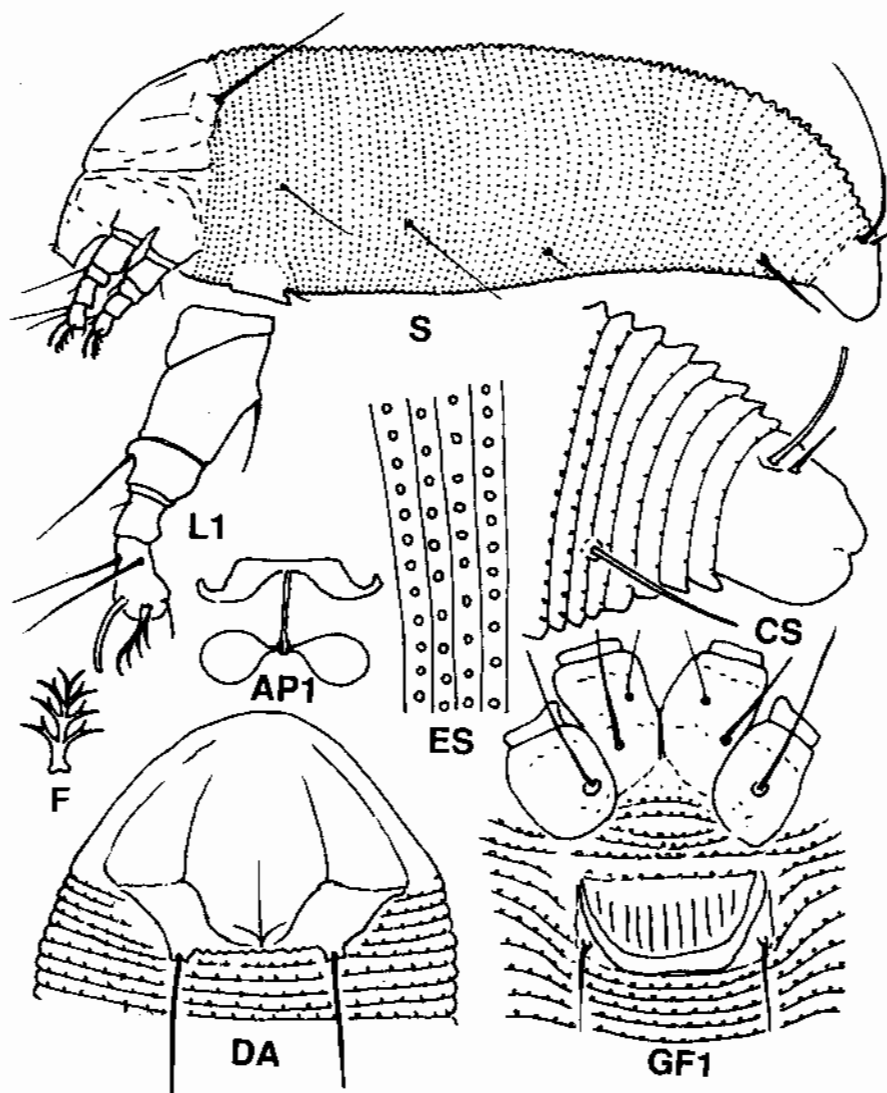


Fig. 36. *Aceria vitifoliae* sp. nov.

seta 53 long, accessory seta 3.5 long. Female genitalia 11 long, 20 wide, coverflap with 10 or 11 lines; genital seta 32 long.

Male: 145 long, genitalia 15 wide, seta 20 long.

Material studied: INDIA: Tamil Nadu: Coimbatore, 7.x.1972, ex *Indigofera viscosa* Lamk. M. Mohanasundaram Coll. (No.50).

Relation to host: Mites were found on tender leaves which develop longer with numerous epidermal hairs. The infested leaves turned velvety and curled along the margin in which the mites were found.

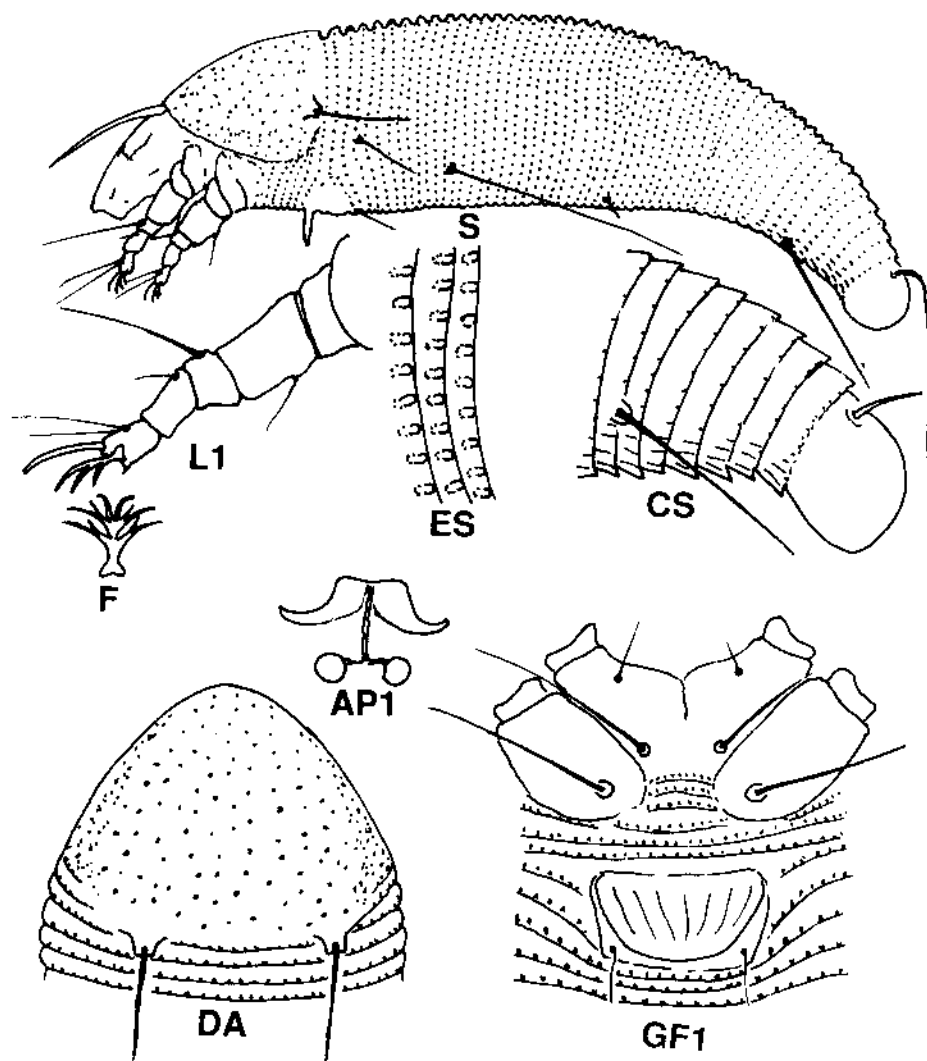


Fig. 37. *Aceria waltheriae* sp. nov.

56. *Aceria vitifoliae* sp. nov.
(Fig.36)

Female: White and worm-like 200 to 210 long, 35 thick. Rostrum 13 long, evenly down curved, projecting forward, antapical seta 3 long. Shield triangular, not projecting over rostrum, with a clear pattern; 28 wide and 20 long; median line represented at the basal 0.33 with an arrow pointing posteriorly, admedians spaced widely apart with basal arch like lines connecting submedians bordering on either side of the shield. Dorsal tubercles 15 apart at rear shield margin with dorsal setae 23 long, pointing backwards.

GENUS ACERIA FROM SOUTH INDIA

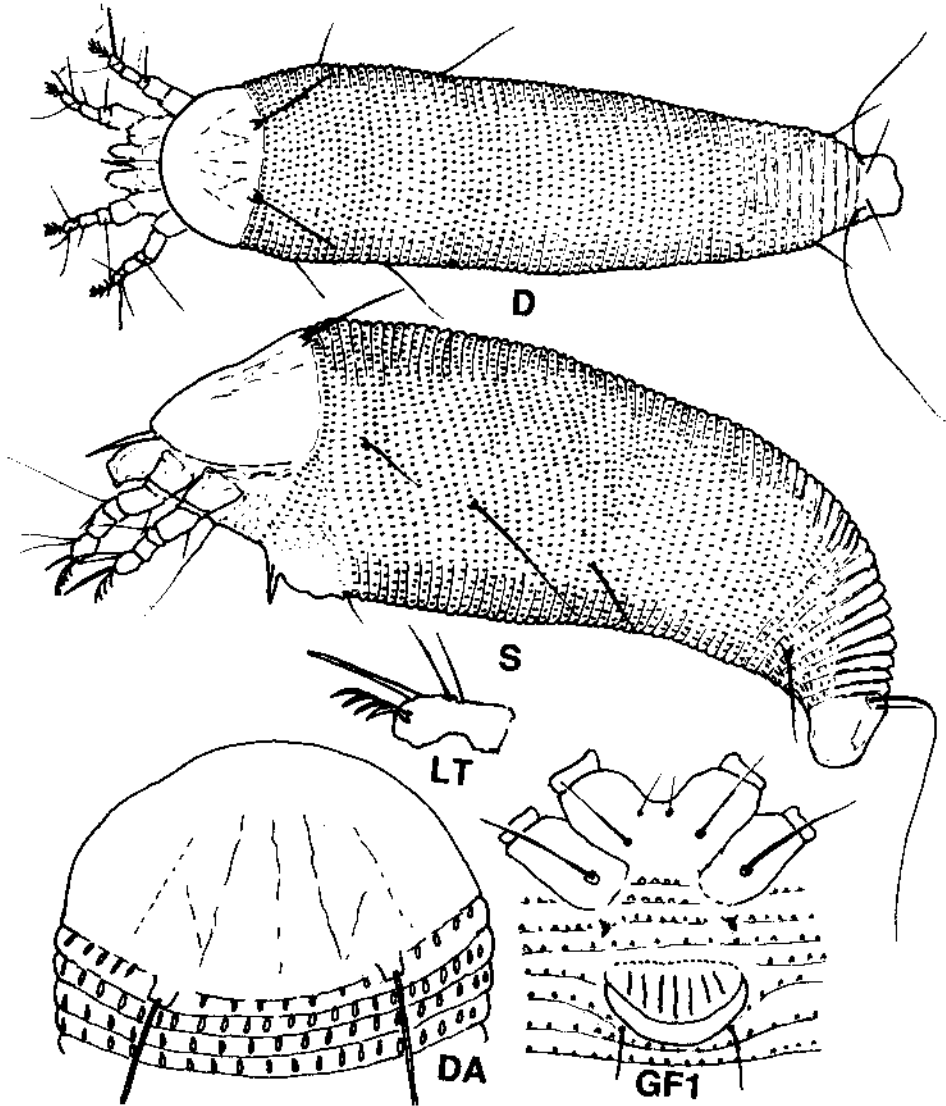


Fig. 38. *Aceria xeromphisi* sp. nov.

Foreleg 20 long; tibia 4 long, tibial seta absent; tarsus 7 long; claw 5 long moderately arched; featherclaw 4-rayed. Hindleg 18 long; tibia 4 long; claw 8 long. Coxae narrowly joined with a clear sternal line; all three setigerous tubercles present; coxal area with a few lines. Abdomen with about 65 rings uniformly tuberculated; lateral seta 8 long, on ring 10; first ventral seta 40 long, on ring 24; second ventral seta 5 long, on ring 38; third ventral seta 12 long, on ring 6 from behind; caudal seta 50 long; accessory seta 3.5 long. Female genitalia 12 long, 18 wide, a little away from hind coxae, coverflap with 10 longitudinal lines; genital seta 7 long.

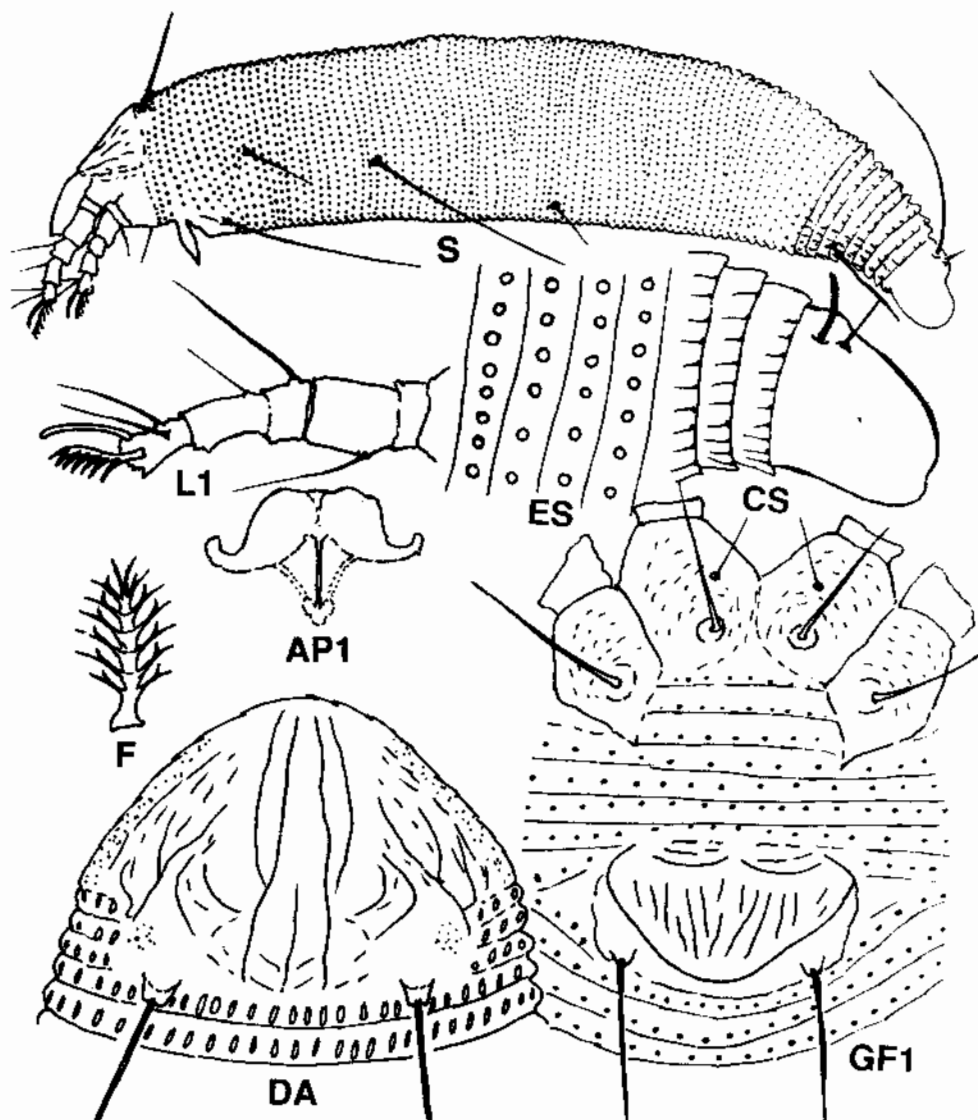


Fig. 39. *Aceria ziziphi* sp. nov.

Male: Unknown.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Gobichettipalayam, 6.x.1975, ex *Hibiscus vitifolius* Linn. (Malvaceae); M. Mohanasundaram Coll.(No.196). *PARATYPES:* several ♀♀ on six slides, data as in the holotype.

Remarks: This species resembles *Aceria acanthae* sp. nov. but can be differentiated by the non-granular coxal area and the scorings on the genital coverflap.

Relation to host: The mites induce crinkling and upward projections on the leaf surface with fine erineum-like hairy growth on the lower side.

57. *Aceria waltheriae* sp. nov.

(Fig.37)

Female: Worm-like, 120-130 long, 40 thick. Rostrum 15 long, evenly down curved, antapical seta 3 long. Shield 35 wide, 27 long without any lines but with dot-like granulations. Dorsal tubercles at rear shield margin, 20 apart, dorsal setae 15 long, tibial seta 4 long, at basal 0.33; tarsus 5 long; claw 5 long, tapering and slightly curved; featherclaw 3-rayed; hindleg 20 long; tibia 4 long; claw 6 long; coxae smooth, with all three setigerous tubercles. Abdomen with about 65 rings uniformly microtuberculate; lateral seta 5 long, on ring 10; first ventral seta 40 long, on ring 20; second ventral seta 7 long, on ring 35; third ventral seta 18 long, on ring 6 from behind; caudal seta 40 long; accessory seta not visible. Female genitalia 15 wide, 12 long; coverflap with 8-10 lines; genital seta 7 long.

Male: 110-115 long, 37 thick; genitalia 15 wide, genital seta 7 long.

HOLOTYPE: ♀ on slide, INDIA: Karnataka: Bangalore, UAS Campus, 22.vi.1974, ex *Waltheria indica* Linn. (Sterculiaceae), M. Mohanasundaram Coll. (No.122). *PARATYPES:* several ♀♀ and ♂♂, on 5 slides, data as in the holotype.

Remarks: This species resembles *Aceria calyptroidii* Keifer (1966b) in its granular shield area but may be differentiated by the 3-rayed featherclaw and non-granular coxal area.

Relation to host: The mites were found among the stellate hairs on the lower side of the leaves.

58. *Aceria xeromphisi* sp. nov.

(Fig.38)

Female: Body cylindrical, whitish, 170-180 long, 44 thick. Rostrum 13 long, projecting obliquely forward; antapical seta 5 long. Shield 22 long, 33 wide, broadly rounded in front, lateral margins of shield not distinct; markings on shield very faint, median line seen faintly as a broken line, admedian discernable on basal 0.66 of shield, submedian obliquely placed, barely visible. Dorsal tubercles placed 14.5 apart, prominent dorsal seta 22 long, projecting backwards. Foreleg, 22 long, tibia 5.5 long; tarsus 5.5 long; claw 4.5 long straight and slightly tapering; featherclaw simple, 4-rayed including bifid tip. Hindleg 16.5 long, tibia 4.5 long; tarsus 5.5 long; claw 7.5 long similar to foreclaw. Abdomen with 57-60 rings, uniformly microtuberculate, dorsal microtubercles elongate, ventral dot-like; last 6 or 7 rings devoid of microtubercles. Lateral seta 13 long, on ring 7, first ventral seta 45 long, on ring 19; second ventral seta 5.5 long, on ring 32; third ventral seta thick, 15.5 long, on ring 6 from behind; caudal seta 60.5 long, accessory seta 4.5 long. Female genitalia 16.5 wide, 11 long, coverflap with 10 lines, genital seta 6.5 long.

Male: Unknown.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore, Marudamalai, 4.xii.1972, ex *Xeromphis spinosa* (Thunb.) (Rubiaceae), M. Mohanasundaram Coll. (No.36).
PARATYPES: several ♀♀, on slides, data as in the holotype.

Remarks: This species resembles *Aceria asystasiae* sp. nov. but can be differentiated by the faint markings on shield and the scorings on the genital coverflap.

Relation to host: Mites produced small galls with hairy interior on the leaves, and mites were found among the hairs.

59. *Aceria ziziphi* sp. nov.
(Fig.39)

Female: White, worm-like, 240-250 long, 45-50 thick. Rostrum 20 long, evenly down curved, antapical seta 8 long. Shield 25 long and 35 wide, with a clear pattern. Median represented at basal half, fades away anteriorly; admedians complete, slightly wavy, first submedian, represented in anterior half of the shield, curved, nearly touching the admedians at the posterior end; other submedians curved and branched. Sides of shield with short lines and granular. Dorsal tubercles at shield margin, projecting setae backwards; dorsal tubercles 20 apart, dorsal setae 25 long. Foreleg 32 long; tibia 8 long; tibial seta 7 long at basal one third; tarsus 7 long, claw 7 long, slightly curved; featherclaw 7-rayed. Hindleg 30 long; tibia 6 long; tarsus 6 long; claw 8 long. Coxae broadly joined, first and second setigerous coxal tubercles in line, third coxal tubercles wide apart; coxal area granular. Abdomen with 70-75 rings, microtuberculate, microtubercles elongated in about 6 rings on tergites behind shield, rest of microtubercles dot-like, last six sternites with microstriae. Lateral seta 25 long, on ring 10; first ventral seta 80 long, on ring 24; second ventral seta 10 long, on ring 41; third ventral seta 30 long, on ring 6 from behind; caudal seta 110 long, accessory seta 5 long. Female genitalia 12 long and 20 wide, cover flap with 5-12 lines, genital seta 55 long.

Male: Unknown.

HOLOTYPE: ♀ on slide, INDIA: Tamil Nadu: Coimbatore TNAU Campus, 9.iv.1975, ex *Ziziphus mauritiana* (Rhamnaceae), M. Mohanasundaram Coll. (No.161).
PARATYPES: several ♀♀ on 11 slides, collection data as in the holotype.

Remarks: This species is differentiated from others by the 7-rayed claw, shield pattern and the scorings on the genital coverflap.

Relation to host: Mites were found in the tender apical shoots among matted hairs.

GENUS ACERIA FROM SOUTH INDIA

Key to Indian species of *Aceria*

1. Featherclaw 3-rayed 2
- Featherclaw more than 3-rayed 4
2. Admedian shield lines connected with median lines at 0.6 part of shield;
on *Diospyros melanoxylon* *dasi* Ghosh and Chakrabarti
- Admedian shield lines when present not connected 3
3. Shield without lines but uniformly sparsely granulate (Fig.37);
on *Waltheria indica* *waltheriae* sp. nov.
- Shield with only admedian lines; sides of shield slightly granular (Fig.1);
on *Abutilon hirtum* *abutilonae* sp. nov.
4. Featherclaw 4-rayed 5
- Featherclaw more than 4-rayed 41
5. Second setigerous coxal tubercles placed at level of anterior coxal
approximation 6
- Second setigerous coxal tubercles placed well behind anterior coxal
approximation 8
6. Coxae finely granulate; median shield line absent; on
Randia dumetorum *randi* Ghosh and Chakrabarti
- Coxae smooth; median shield line present 7
7. Median shield line clearly present on rear 0.5 part of shield;
anterolateral shield margin with 3 diagonal lines; on *Justicia betonica*
. *justiciae* ChannaBasavanna
- Median shield line faintly visible; anterolateral shield margin without
any diagonal lines; on *Holoptelea integrifolia* . . . *holopteleae* ChannaBasavanna
8. Shield surface entirely smooth or with short lateral broken lines 9
- Shield surface with more numerous lines or granules 11
9. Shield surface entirely smooth 10
- Shield surface smooth except for short broken lines on rear shield margin
(Fig.26); on *Cordia obliqua* *obliquae* sp. nov.
10. Coxae with transverse short lines; on *Setaria italica*, *Indigofera heterantha*,
Bougainvillea sp. *ladakhensis* (Rishi and Rather)
- Coxae smooth; on *Alangium* sp. *alangiae* Mohanasundaram
11. Shield surface with faint or broken lines 12
- Shield surface with prominent longitudinal lines 17

12. First setigerous coxal tubercles ahead of anterior coxal approximation . . . 13
 - First setigerous coxal tubercles placed at level of or behind forecoxal approximation 14
13. Shield with broken lines; coxae with broken linear lines; on *Bueitneria andamanensis* *dhanukhariensis* Mohanasundaram and Sharma
 - Shield with complex pattern of lines made of granules; on *Litsea elliptica* *litseae* (Keifer)
14. Coxae ornamented with lines; on *Cordia* sp. . . . *boraginae* Mohanasundaram
 - Coxae smooth 15
15. Genital coverflap with 7 longitudinal lines; shield with admedian and submedian connected by oblique lines (Fig.38) *xeromphisi* sp. nov.
 - Genital coverflap with 10-16 longitudinal lines; shield lines not connected by oblique lines 16
16. Accessory setae present; telosome with reduced microtubercles dorsally; genital coverflap with 10-12 longitudinal lines
 *wandoorensis* Mohanasundaram and Sharma
 - Accessory setae absent; telosome uniformly microtuberculate; genital coverflap with 14-16 longitudinal lines
 *jogimatiensis* Mohanasundaram and Jagadish
17. Shield without any longitudinal lines on its central area 18
 - Shield with longitudinal lines on its central area 22
18. Transverse line near rear shield margin present 19
 - Transverse line near rear shield margin absent 21
19. Transverse line sinuate; genital setae very short, inconspicuous; on *Gossypium herbaceum*. *puttarudriahi* ChannaBasavanna
 - Transverse line evenly arched; genital setae conspicuous and as long as genitalia 20
20. Shield design obsolete; transverse line not connected to short longitudinal line; on *Nerium odorum* *nerii* ChannaBasavanna
 - Shield with short lateral lines; transverse line near rear shield margin connected to short longitudinal lines to form U; on *Asystasia gangetica* *asystasiae* sp. nov.
21. Lateral margin of shield strongly granulated; genital coverflap with 10-12 longitudinal lines; on *Jasminum* spp. *jasmini* ChannaBasavanna
 - Lateral margin of shield smooth; genital coverflap with 4-6 lines; on *Dolichodendron spathacea* *leptothrix* Nalepa

| | | |
|-----|--|-----------------------------------|
| 22. | Median shield line either bifid or trifid | 23 |
| - | Median shield line not forked | 25 |
| 23. | Median shield line forked and forms a trapezium on rear 0.5 part of shield; genital coverflap with indistinct longitudinal scorings; on <i>Strobilanthes</i> sp. | <i>nendiensis</i> ChannaBasavanna |
| - | Median shield line trifid appearing like an arrow, not forming trapezium; genital coverflap with distinct longitudinal scorings | 24 |
| 24. | Lateral shield margin smooth; admedian and submedian lines on shield connected by transverse line; coxal area with sparingly placed short lines; on <i>Hibiscus vitifoliae</i> | <i>vitifoliae</i> sp. nov. |
| - | Lateral shield margin with short lines; Admedians and submedians not connected; coxal area with densely arranged lines; on <i>Acalypha fruticosa</i> | <i>acalyphae</i> sp. nov. |
| 25. | Lateral shield margin granular | 26 |
| - | Lateral shield margin either with scorings or smooth | 31 |
| 26. | Granules on lateral shield margin arranged in lines converging towards median area of shield (Fig.32) | <i>siruvaniensis</i> sp. nov. |
| - | Granules not arranged in any pattern | 27 |
| 27. | Coxae smooth | 28 |
| - | Coxae granulate | 30 |
| 28. | Median shield line indistinct; microtubercles on abdomen sparser dorsally; on <i>Solanum melongena</i> and <i>Lycopersicon esculentum</i> | <i>lycopersici</i> (Wolffensten) |
| - | Median shield line distinct; abdomen uniformly microtuberculate | 29 |
| 29. | First submedians in anterior 0.75 only; second submedians joined anteriorly, not broken; on <i>Mallotus philippinensis</i> | <i>mallotica</i> (Mohanasundaram) |
| - | First submedians complete, diverge posteriorly; second submedians broken, separate; on <i>Corchorus olitorius</i> | <i>corchoriae</i> sp. nov. |
| 30. | Median shield line complete; shield without lines laterally (Fig.18); genital coverflap with 12 lines; on <i>Feronia elephantum</i> | <i>feroniae</i> sp. nov. |
| - | Median shield line on posterior 0.5 only; lateral area with oblique lines (Fig.34); genital coverflap with 9 lines; on <i>Trianthema decandra</i> | <i>trianthema</i> sp. nov. |
| 31. | Second coxal tubercles much ahead and close to first coxal tubercles | 32 |
| - | Second coxal tubercles far below the first coxal tubercles | 33 |
| 32. | Median line only on anterior half of shield; admedian and submedians absent; on <i>Dalbergia sissoo</i> | <i>dalbergiae</i> ChannaBasavanna |

| | | |
|-----|--|--|
| - | Median shield line complete; admedian and submedians present; on <i>Cordia myxa</i> | <i>cordiae</i> ChannaBasavanna |
| 33. | Median shield line absent; admedian and first submedians parallel to each other; second submedians forked near rear shield margin (Fig.29) | <i>madukkaraiensis</i> sp. nov. |
| - | Median shield line present atleast at rear shield margin; other shield design not as above | .34 |
| 34. | Median shield line only on posterior 0.33 | .35 |
| - | Median shield line complete | .36 |
| 35. | Shield margin granulated; coxae strongly tuberculated; on <i>Punica granatum</i> | <i>granati</i> (Canestrini and Massalongo) |
| - | Shield margin with linear short scorings; coxae smooth; on <i>Barleria cristata</i> | <i>barleriae</i> ChannaBasavanna |
| 36. | Coxae granular | .37 |
| - | Coxae smooth | .38 |
| 37. | Two median shield lines; admedian lines incomplete; on <i>Ficus</i> sp. | <i>pustulatus</i> Mohanasundaram |
| - | One median shield line; admedian lines complete, angularly bent at midlength (Fig.3); on <i>Asystasia</i> sp | <i>acanthae</i> sp. nov. |
| 38. | Admedian line incomplete, not reaching midlength of shield | .39 |
| - | Admedian line complete exceeding midlength of shield | .40 |
| 39. | Admedian with oblong, closely set microtubercles, not reaching ring margin; lateral shield margin with winglike expansion near rear margin; on <i>clerodendron inerme</i> and <i>C. viscosum</i> | <i>clerodendronis</i> Farkas |
| - | Abdomen with more or less oval microtubercles touching rear ring margin; winglike expansion absent; on <i>Ruellia patula</i> | <i>ruelliae</i> ChannaBasavanna |
| 40. | Median line only on centre of shield; submedian very short, not joined at rear shield margin; genital coverflap with 10 lines | <i>longisetae</i> sp. nov. |
| - | Median line complete; first submedian forked and joined at rear shield margin; genital coverflap with 6 lines | <i>bueitneriae</i> Mohanasundaram and Sharma |
| 41. | Featherclaw 5-rayed | .42 |
| - | Featherclaw 6, 7 or 8 rayed | .64 |
| 42. | Second ventral setae on abdomen longer than third ventral setae | .43 |
| - | Second ventral setae on abdomen shorter than third ventral setae | .46 |

43. Lateral shield margin with closely set longitudinal fine wrinkles;
coxae smooth; on *Ipomoea staphylana* *gastrotrichus* (Nalepa)
- Lateral shield margin without wrinkles, may be with lines or granules;
coxae granulate or with scorings 44
44. Genital coverflap with 6 lines; on *Acacia* sp. *acaciae* (Mohanasundaram)
- Genital coverflap with irregular scorings or with 10 short scorings 45
45. Lateral shield margin granular; median shield line very short, at rear
shield margin; genital coverflap with irregular short scorings (Fig.24);
on *Mimusops elongi* *mimusopae* sp. nov.
- Lateral shield margin with short lines; median shield line in basal
0.75 length; genital coverflap with 10 lines (Fig.23); on *Indigofera*
linnaei *marudamalaiensis* sp. nov.
46. Abdominal microtubercles stronger ventrally, suppressed on dorsum;
on *Medicago sativa* *medicaginis* (Keifer)
- Abdominal microtubercles more or less evenly developed both dorsally
and ventrally 47
47. Shield without distinct lines or with broken lines 48
- Shield with distinct lines, some may be broken 50
48. Shield design usually indistinct, when distinct, first and second
submedians confluent ahead of dorsal tubercles; on *Citrus limona*
. *sheldoni* (Ewing)
- Shield with short or broken lines 49
49. Shield smooth except for faint representation of median and admedian
lines at rear 0.2 of shield (Fig.4); on *Achyranthes aspera* *achyranthi* sp. nov.
- Shield with broken median and submedians at basal 0.33 and 0.66,
respectively (Fig.6); on *Aerva lanata* *aervae* sp. nov.
50. Genital seta distinctly longer than length of genitalia 51
- Genital seta as long as or shorter than length of genitalia 55
51. Median shield line present; coxae granular or with short scorings;
genital coverflap with lines 52
- Median shield line absent; coxae and genital coverflap smooth; on
Excoecaria agallocha *agallochae* Mohanasundaram
52. Median shield line basally forked or with dart-like branches; coxae
with short lines 53
- Median shield line not forked basally; coxae granular; on *Ficus*
infectoria *infectoriae* ChannaBasavanna

53. Shield with numerous broken lines in centre as well as on sides
(Fig.7); on *Anisomeles malabarica* *anisomelae* sp. nov.
- Shield with complete lines, side with fewer broken lines 54
54. Admedians diverging anteriorly connected to a transverse lines at
base (Fig.11); on *Berberis tinctoria* *berberae* sp. nov.
- Admedians convergent anteriorly, forked at midlength (Fig.20);
on *Kigelia pinnata* *kigeliae* sp. nov.
55. Coxae smooth 56
- Coxae granular, with scorings or tuberculate 57
56. Frontleg claw knobbed; admedian lines on shield not confluent
anteriorly; on *Morus alba* *mori* (Keifer)
- Frontleg claw truncate; admedian lines on shield confluent
anteriorly (Fig.8); on *Streblus asper* *asperae* sp. nov.
57. Coxae granular or with short scorings 58
- Coxae strongly tuberculated 63
58. Coxae granular 59
- Coxae with short scorings 60
59. Coxae sharply granular, submedians not connected by oblique line near
rear shield margin; on *Ficus carica* *ficus* (Cotte)
- Coxae with very few granules around first and third coxal tubercles only;
submedian with an oblique line near rear shield margin (Fig.14) ; on
Commiphora caudata *commiphorae* sp. nov.
60. First and second submedians on shield neither connected nor forked . . . 61
First and second submedians on shield either connected or forked 62
61. Second submedian strongly angled at basal half of shield, first
submedian rather straight (Fig.12) *borreriae* sp. nov.
- Second submedian not angled at anterior half of shield; first submedian
strongly laterally bent almost at right angles in front of dorsal tubercles;
on *Panicum antidotale* *antidotale* (Mohanasundaram)
62. Median shield line dart-like at rear shield margin; first and second
submedians joined *serndanurensis* sp. nov.
- Median shield line simple; first and second submedians separate but
forked at basal 0.33; on *Ailanthus excelsa* *ailanthae* sp. nov.
63. Median shield line almost complete and dart-like at rear shield
margin; on *Litchi chinensis* *litchii* (Keifer)
- Median shield line on 0.5 part of rear shield, simple; on *Crotalaria*
juncea, *Adina sessifolia* *crotalariae* ChannaBasavanna

GENUS ACERIA FROM SOUTH INDIA

| | | |
|-----|--|-----|
| 64. | Featherclaw 6-rayed | .65 |
| - | Featherclaw 7 or 8-rayed | .90 |
| 65. | Genital coverflap with longitudinal lines in two ranks | .66 |
| - | Genital coverflap with longitudinal lines in single rank | .68 |
| 66. | Entire shield surface studded with a large number of close-set fine, discontinuous lines giving shield a wrinkled appearance on <i>Ipomoea staphylina</i> <i>gastrotrichus</i> (Nalepa) | |
| - | Shield surface not as above; with well discernible lines | .67 |
| 67. | Median shield line complete; shield margin without numerous wavy lines; on <i>Mangifera indica</i> <i>mangiferae</i> Sayed | |
| - | Median shield line incomplete; shield margin with numerous short wavy lines; on <i>Coráia dichotoma</i> <i>dichotomae</i> Mohanasundaram | |
| 68. | Entire shield with short, fine, close-set, discontinuous lines without any definite pattern; genital coverflap with 15-20 lines and basal concentric scorings (Fig.17); on <i>Indigofera linnae</i> <i>linnae</i> sp. nov. | |
| - | Shield with weak or strong lines forming a definite pattern; genital coverflap not as above | .69 |
| 69. | Lateral margin of shield with closely set longitudinal scorings | .70 |
| - | Lateral margin of shield smooth or granular | .72 |
| 70. | Coxae smooth; on <i>Cajanus cajan</i> <i>cajani</i> ChannaBasavanna | |
| - | Coxae with scorings | .71 |
| 71. | Median shield line incomplete; first submedians complete; on <i>Aristida</i> <i>setacea</i> <i>setaceus</i> Mohanasundaram | |
| - | Median shield line complete; first submedians restricted to anterior 0.5 of shield; on <i>Securinea leucopyrus</i> <i>securinegae</i> sp. nov. | |
| 72. | Abdomen with unevenly distributed microtubercles dorsally, ventrally or both | .73 |
| - | Abdomen with evenly distributed microtubercles | .76 |
| 73. | Shield with lines faintly seen; microtubercles on abdomen elongate; closely placed dorsally and sparsely placed laterally and ventrally; on <i>Sorghum vulgare</i> <i>sorghi</i> ChannaBasavanna | |
| - | Shield with lines strong; microtubercles on dorsum sparse compared to ventral and lateral aspect | .74 |
| 74. | Coxae with scorings; claw knobbed; on <i>Eragrostis tenella</i> | |
| - | <i>eragrostae</i> Mohanasundaram | |
| - | Coxae smooth; claw simple | .75 |

75. Lateral shield margin granulate, median shield line short, at basal 0.33;
genital coverflap without lines; on *Myragyna parvifolia*
..... *myragynae* sp. nov.
- Lateral shield margin smooth; median shield line in rear 0.75, broken;
genital coverflap with 12 lines; on *Phyllanthus maderaspatensis*
..... *phyllanthae* sp. nov.
76. Forecoxae smooth77
- Forecoxae with a few lines or granules80
77. Shield surface smooth except for a short admedian line near rear
margin; on *Acacia leucophloea* *leucophloae* Mohanasundaram
- Shield surface with more extensive lines78
78. Genital coverflap with 16-20 lines; on *Balanites aegyptiaca*
..... *balanites* (Masseé)
- Genital coverflap with 10-12 lines.79
79. Lines on centre of shield very faint, lateral shield margin with lines
forming a rhombus (Fig.13) *cernuus* (Masseé)
- Lines on centre of shield prominent, only with median, admedians and
submedians *delhiensis* (Mohanasundaram)
80. First setigerous coxal tubercles a little below anterior coxal
approximation81
- First setigerous coxal tubercles at level or above first coxal junction85
81. Admedian and submedian shield lines connected by a wavy cross line;
microtubercles elongate; on *Cymbopogon martini*
..... *cymbopogonis* (Mohanasundaram and Subramaniam)
- No such cross line connecting admedians and submedians82
82. Lateral shield margin granular83
- Lateral shield margin without granules; on *Commelina jacob*
..... *commelinae* (Mohanasundaram)
83. Hind coxae with a bold, oblique line laterad of third coxal tubercle;
genital coverflap with 16 longitudinal lines; on *Erythrina indica*
..... *erythrinae* ChannaBasavanna
- Hind coxae granular or with numerous longitudinal short lines;
genital coverflap with 6-8 longitudinal lines84
84. Hind coxae granular around setigerous tubercles; on *Ficus bengalensis*
..... *banyani* Mohanasundaram
Hind coxae with short, longitudinal lines; on *Saccharum officinarum*
..... *sacchari* Wang

GENUS ACERIA FROM SOUTH INDIA

85. All shield lines connected by arcuate lines near 0.33 of rear shield margin forming cells (Fig.33) *subramani* sp. nov.
 - Shield lines not as above 86
86. Median shield line absent; on *Erythrina sublobata*
 *erythrensis* (Chakrabarti and Ghosh)
 - Median shield line present 87
87. Lateral shield margin not granular; on *Bassia latifolia*
 *bassiae* Ghosh and Chakrabarti
 - Lateral shield margin granular 88
88. Median shield line incomplete; area between first and second submedian without fine short lines 89
 - Median shield line complete; area between first and second submedian with fine short lines; on *Polygala chinensis*
 *polygylae* Mohanasundaram
89. Coxae granular, genital coverflap with 10-12 lines; on *Indigofera viscosa* *trichocnemum* (Nalepa)
 - Coxae with lines; genital coverflap with 16 longitudinal lines; on *Sapindus saponaria* *sapindi* ChannaBasavanna
90. Featherclaw 8-rayed; on *Acacia ferruginea* *vridhdhagiriensis* (Mohanasundaram)
 - Featherclaw 7-rayed 91
91. Second ventral setae on abdomen longer than third ventral setae 92
 - Second ventral setae on abdomen as long as or shorter than third 95
92. Dorsal shield setae shorter than length of rostrum; on *Pongamia glabra*, *P. pinnata* *pongamiae* (Keifer)
 - Dorsal shield setae as long as or longer than length of rostrum 93
93. Coxae with longitudinal short scorings; first coxal tubercles behind anterior coxal approximation; on *Saccharum officinarum* *sacchari* Wang
 - Coxae granulate or tuberculate; first coxal tubercles ahead of anterior coxal approximation 94
94. Shield margin with longitudinal scorings laterally; coxae tuberculate; genital coverflap with lines and anterior transverse scorings *cheriani* (Masseé)
 - Lateral shield margin and coxae granulate; genital coverflap granulate without lines *dichrostachyia* (Tucker)
95. First setigerous coxal tubercles further ahead of anterior coxal approximation 96

GENUS ACERIA FROM SOUTH INDIA

- JEPPSON, L.R., KEIFER, H.H. and BAKER, E.W., 1975. *Mites Injurious to Economic Plants*. Univ. of Calif. Press. Berkely and Los Angeles xiv+614 pp, 74 plates.
- KEIFER, H.H. 1938. Eriophyid Studies I. Bull Calif. Dept. Agric., 27 : 192-193.
- KEIFER, H.H. 1941. Eriophyid Studies XI. Bull Calif. Dept. Agric., 30 : 206.
- KEIFER, H.H. 1943. Eriophyid Studies XIII. Bull Calif. Dept. Agric., 32(3) : 212-222.
- KEIFER, H.H. 1944. Eriophyid Studies XIV. Bull Calif. Dept. Agric., 33 : 18-38.
- KEIFER, H.H. 1946. Eriophyid Studies XVI. Bull Calif. Dept. Agric., 35(1) : 39-48.
- KEIFER, H.H. 1951. Eriophyid Studies XVII. Bull Calif. Dept. Agric., 40(3) : 93-104.
- KEIFER, H.H. 1952. The Eriophyid mites of California. Bull Calif. Insect. Pest Surv., 2 : 123.
- KEIFER, H.H. 1960. Eriophyid Studies B.1: Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1961. Eriophyid Studies B.2. Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1962a. Eriophyid Studies B.6. Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1962b. Eriophyid Studies B.7. Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1965a. Eriophyid Studies B.15. Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1965b. Eriophyid Studies B.16. Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1966a. Eriophyid Studies B.19. Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1966b. Eriophyid Studies B.20. Special Pub. Bur. Ent. Calif. Dept. Agric., 20 pp.
- KEIFER, H.H. 1966c. Eriophyid Studies B.21. Special Pub. Bur. Ent. Calif. Dept. Agric., 24 pp.
- KEIFER, H.H. 1972. Eriophyid Studies C.6. Ento. Res. Div. ARS. USDA, 24 pp.
- LINDQUIST, E.E., 1975. Comment on the proposed descriptions of type-species for *Eriophyes* Siebold, 1851 and *Phytoptus* Dujardin, 1851 (Acarina, Eriophyoidea). *Bull.Zool. Nomencl.*, 32: 17-18.
- LINDQUIST, E.E., 1977. Comments on the proposed designation of type-species for *Eriophyes* Siebold, 1851 and *Phytoptus* Dujardin, 1851 (Acarina, Eriophyidae). *Bull.Zool. Nomencl.*, 33 (3/4) : 146-148.
- MASSEY, A.M. 1927. Descriptions of three new species of gall mites (Eriophyidae) from Sudan. *Ann.Mag.Nat. Hist.*, 20 : 372-375
- MASSEY, A.M. 1933. A new species of gall mite from South India. *Ann. Mag. Nat. Hist.*, 11(10) : 201-203.
- MOHANASUNDARAM, M. and T.R. SUBRAMANIAM. 1977. A new species of eriophyid mite (Acari: Eriophyidae) on cultivated lemon grass in Tamil nadu, India. *Indian J. Acarology*, 2(2) : 39-41.
- NALEPA, A. 1918. Eriophyiden aus Java II. *Verb. Zoolbot. Ges.*, 68 : 40-92.
- NALEPA, A. 1929. Neuer Katalog der bisher beschriebenen Gallmilben, ihrer Gallen and Wirtsflanzen. *Marcellia*, 26 : 67-183.
- NEWKIRK, R.A. and KEIFER, H.H., 1971. Eriophyid studies C-5. ARS, USDA, 24pp.

- SAYED, M.T. 1946. *Aceria mangiferae* n. sp. (*Eriophyes mangiferae* Hassan). *Bull. Soc. Fouad 1 d'ent. Cairo*, 30 : 7-10.
- SHEVTCHENKO, V.G. 1975. Reply to Keifer and Newkirk. *Bull.Zool. Nomencl.*, 32 (2) : 91-94.
- SLYKHUIS, J.T. 1969. Mites as vectors of plant versus. In: *Veruses, Vectors and Vegetation*. Maramarosch, K. (Ed.) Interscience Publ. New York. pp.121-141.
- TUCKER, R.W.E. 1926. Some South American mites mainly Tetranychidae and Eriophyidae. *Union S. Afr. Dept. Agric. Div. Ent. Mem.*, 5 : 2-15.
- WANG, C.S. 1964. A new blister mite on sugarcane in Taiwan, *Aceria sacchari* n. sp. (In: Chinese with English summary). *Rept. Taiwan. Sugar. Expt. Sta.*, 33 : 83-94.
- WOLFFENSTEIN, O. 1879. *Phytoptus lycopersici*. *W. Monatschr. Ver. Beford. Gartenb.* 22 : 424-426.

Aceria,
Aceria al
Aceria ac
Aceria ac
Aceria ac
Aceria ac
Aceria ai
Aceria ae
Aceria ag
Aceria ala
Aceria an
Aceria ant
Aceria arb
Aceria as
Aceria ast
Aceria as
Aceria bal
Aceria ban
Aceria ban
Aceria bar
Aceria bas
Aceria be
Aceria ben
Aceria bor
Aceria bor
Aceria buei
Aceria byer
Aceria caji
Aceria caly
Aceria cern
Aceria cher
Aceria cler

JOURNAL OF ACAROLOGY

Volume 12 1987

Index to genera and species of Acari (New taxa are in bold face)

| | | | |
|-------------------------------|-------------------|---------------------------------|-------------|
| <i>Aceria</i> , | 15,16,61 | <i>Aceria commelinae</i> , | 84 |
| <i>Aceria abutilonae</i> , | 15,17,29,55,77 | <i>Aceria commiphorae</i> , | 15,35,36,82 |
| <i>Aceria acaciae</i> , | 81 | <i>Aceria corchorae</i> , | 15,37,79 |
| <i>Aceria acalyphae</i> , | 15,18,19,79 | <i>Aceria cordiae</i> , | 80 |
| <i>Aceria acanthae</i> , | 15,20,21,74,80 | <i>Aceria crotalariae</i> , | 38,43,82 |
| <i>Aceria achyranthi</i> , | 15,20,22,25,47,81 | <i>Aceria cymbopogonis</i> | 38,84 |
| <i>Aceria ailanthae</i> , | 15,22,23,82 | <i>Aceria dactylonae</i> , | 86 |
| <i>Aceria aervaе</i> , | 15,24,25,81 | <i>Aceria dalbergiae</i> , | 38,79 |
| <i>Aceria agallochae</i> , | 81 | <i>Aceria dasi</i> , | 77 |
| <i>Aceria alangiae</i> , | 15,25,26,65,82 | <i>Aceria delhiensis</i> , | 84 |
| <i>Aceria anisomelae</i> , | 15,25,26,65,82 | <i>Aceria dhanikhariensis</i> , | 78 |
| <i>Aceria antidotatae</i> , | 82 | <i>Aceria dichotomae</i> , | 83 |
| <i>Aceria arbutifloris</i> , | 51 | <i>Aceria dichrostachya</i> , | 39,40,85 |
| <i>Aceria asperae</i> , | 15,27,28,82 | <i>Aceria dicoriae</i> , | 69 |
| <i>Aceria astibonis</i> , | 31 | <i>Aceria donacis</i> , | 86 |
| <i>Aceria asystasiae</i> , | 15,27,29,78 | <i>Aceria eragrostiae</i> , | 83 |
| <i>Aceria balanites</i> , | 84 | <i>Aceria erythrensis</i> , | 85 |
| <i>Aceria bambusae</i> , | 30,86 | <i>Aceria erythrinae</i> , | 42,84 |
| <i>Aceria banyani</i> , | 84 | <i>Aceria feroniae</i> , | 15,42,43,79 |
| <i>Aceria barleriae</i> , | 30,31,80 | <i>Aceria gastrotrichus</i> , | 41,43,81,83 |
| <i>Aceria bassiae</i> , | 85 | <i>Aceria granati</i> , | 43,44,80 |
| <i>Aceria berberae</i> , | 15,31,32,82 | <i>Aceria holoptehiae</i> , | 45,77 |
| <i>Aceria beniciae</i> , | 56 | <i>Aceria infectoriae</i> , | 45,81 |
| <i>Aceria boroginae</i> , | 78 | <i>Aceria jasmini</i> , | 27,78 |
| <i>Aceria borrieriae</i> , | 15,31,33,82 | <i>Aceria jogimatiensis</i> , | 78 |
| <i>Aceria bueitneriae</i> , | 80 | <i>Aceria justiciae</i> , | 20,45,77 |
| <i>Aceria byersi</i> , | 33 | <i>Aceria kigeliae</i> , | 15,46,82 |
| <i>Aceria cajani</i> , | 83 | <i>Aceria ladakhensis</i> , | 77 |
| <i>Aceria calyptridii</i> , | 75 | <i>Aceria leptothrix</i> , | 78 |
| <i>Aceria cernuus</i> , | 34,84 | <i>Aceria lepidosparti</i> , | 27 |
| <i>Aceria cheriani</i> , | 58,59,85 | <i>Aceria leucophloae</i> , | 84 |
| <i>Aceria clerodendroni</i> , | 80 | <i>Aceria leucopyrae</i> , | 15,47,48,86 |

| | | | |
|---------------------------------|-------------|-----------------------------------|-----------------|
| <i>Aceria litseae</i> , | 48,65,78 | <i>Aceria vitifoliae</i> , | 15,71,72,79 |
| <i>Aceria longisetae</i> , | 15,49,80 | <i>Aceria vridhdhagiriensis</i> , | 85 |
| <i>Aceria lycopersici</i> , | 50,79 | <i>Aceria waltheriae</i> , | 11,72,75,77 |
| <i>Aceria macrodonis</i> , | 25 | <i>Aceria wandoorensis</i> , | 78 |
| <i>Aceria madukkaraiensis</i> , | 15,60,61,80 | <i>Aceria xeromphisi</i> , | 15,73,75,78 |
| <i>Aceria mallotica</i> , | 79 | <i>Aceria ziziphi</i> , | 15,74,76,86 |
| <i>Aceria mangiferae</i> , | 50,83 | <i>Carabodes (Otocephus)</i> | |
| <i>Aceria</i> | | <i>crinitus</i> | 1 |
| <i>marudamalaiensis</i> , | 15,51,52,81 | <i>Cryptomeria japonica</i> , | 6,7,13 |
| <i>Aceria medicagenis</i> , | 51,81 | <i>Eriophyes</i> , | 16 |
| <i>Aceria mimusopae</i> , | 15,51,53,81 | <i>Eriophyes cladophthirius</i> , | 16 |
| <i>Aceria mitragynae</i> , | 15,54,84 | <i>Megalotocephus</i> , | 1,2,6,14 |
| <i>Aceria mori</i> , | 82 | <i>Megalotocephus aokii</i> , | 1,2,6,8,9 |
| <i>Aceria nandiensis</i> , | 79 | <i>Megalotocephus</i> | |
| <i>Aceria nerii</i> , | 50,55,78 | <i>bengalensis</i> , | 1,2,10,11,12,13 |
| <i>Aceria obliquae</i> , | 15,55,56,77 | <i>Megalotocephus</i> | |
| <i>Aceria palafoxiae</i> , | 24 | <i>ceylonicus</i> , | 1 |
| <i>Aceria phyllanthae</i> , | 15,57,84 | <i>Megalotocephus</i> | |
| <i>Aceria polygylae</i> , | 85 | <i>crinitus</i> , | 1 |
| <i>Aceria pongamiae</i> , | 59,85 | <i>Megalotocephus</i> | |
| <i>Aceria pustulatus</i> , | 80 | <i>darjeelingensis</i> , | 1,2,3,4,13 |
| <i>Aceria puttardriahi</i> , | 18,78 | <i>Megalotocephus</i> | |
| <i>Aceria randi</i> , | 77 | <i>himalayensis</i> , | 1,6,13 |
| <i>Aceria ruelliae</i> , | 80 | <i>Megalotocephus</i> | |
| <i>Aceria sacchari</i> , | 61,84,85 | <i>japonicus</i> | 1,7,8,10 |
| <i>Aceria sapindi</i> , | 47,61,85 | <i>Megalotocephus latus</i> , | 1,13 |
| <i>Aceria securinegae</i> , | 15,62,83 | <i>Megalotocephus loksai</i> , | 1 |
| <i>Aceria serndanurensis</i> , | 15,63,64,82 | <i>Megalotocephus</i> | |
| <i>Aceria setaceus</i> , | 83 | <i>tianschanicus</i> , | 1 |
| <i>Aceria sheldoni</i> , | 36,64,81 | <i>Metaculus mangiferae</i> | 50 |
| <i>Aceria siruvaniensis</i> , | 15,65,66,79 | <i>Otocephus</i> , | 1 |
| <i>Aceria sorghi</i> , | 65,83 | <i>Phytocoptella</i> , | 16 |
| <i>Aceria spinulifera</i> , | 38 | <i>Phytoptus</i> , | 16 |
| <i>Aceria subramanii</i> , | 15,65,67,85 | <i>Phytoptus avellanae</i> , | 16 |
| <i>Aceria swezeyi</i> , | 64 | <i>Phytoptus cladophthirius</i> , | 50 |
| <i>Aceria trianthemae</i> , | 15,68,79 | <i>Phytoptus granati</i> , | 43 |
| <i>Aceria trichocnemum</i> , | 69,70,85 | <i>Phytoptus lycopersici</i> , | 50 |
| <i>Aceria tulipae</i> , | 86 | <i>Phytoptus vitis</i> , | 16 |
| | | <i>Tetracondyla</i> , | 1 |

Index to genera and species of host plants of Acari

| | | | |
|-----------------------------------|----------|-----------------------------------|----------|
| <i>Abutilon hirtum</i> , | 18,77 | <i>Commiphora baryi</i> , | 36 |
| <i>Acacia</i> , | 39,81 | <i>Commiphora caudata</i> , | 36,82 |
| <i>Acacia ferruginea</i> , | 85 | <i>Corchorus olitorius</i> , | 38,79 |
| <i>Acacia leucophloea</i> , | 39,84 | <i>Cordia</i> , | 78 |
| <i>Acacia pinnata</i> , | 39 | <i>Cordia dichotoma</i> , | 83 |
| <i>Acalypha fruticosa</i> , | 18,79 | <i>Cordia myxa</i> , | 80 |
| <i>Achyranthes aspera</i> , | 21,45,81 | <i>Cordia obliqua</i> , | 56,77 |
| <i>Adina sessifolia</i> | 82 | <i>Crotalaria biflora</i> , | 38 |
| <i>Aerva lanata</i> , | 25,81 | <i>Crotalaria juncea</i> , | 82 |
| <i>Asystasia</i> , | 20,29,80 | <i>Crotalaria verrucosa</i> , | 38 |
| <i>Asystasia gangetica</i> , | 28,78 | <i>Cymbopogon martini</i> , | 38,84 |
| <i>Ailanthus excelsa</i> , | 24,82 | <i>Cynadon dactylon</i> , | 86 |
| <i>Alangium</i> , | 77 | <i>Dalbergia sisso</i> , | 38,79 |
| <i>Allium sativum</i> , | 86 | <i>Desmodium triflorum</i> , | 38 |
| <i>Anisomeles malabarica</i> , | 26,82 | <i>Dichrostachys cineria</i> , | 39 |
| <i>Aristida setacea</i> , | 83 | <i>Diospyros melanoxylon</i> , | 77 |
| <i>Arunda donax</i> , | 86 | <i>Dolichodendron spathacea</i> , | 78 |
| <i>Balanites aegyptiaca</i> , | 84 | <i>Eragrostis tenella</i> , | 83 |
| <i>Bambusa</i> , | 30,86 | <i>Erythrina indica</i> , | 42,84 |
| <i>Bambusa vulgaris</i> , | 86 | <i>Erythrina sublobata</i> , | 85 |
| <i>Barleria cristata</i> , | 80 | <i>Excoecaria agallocha</i> , | 81 |
| <i>Barleria noctiflora</i> , | 29 | <i>Feronia elephantum</i> , | 43,79 |
| <i>Bassia latifolia</i> , | 85 | <i>Ficus bengalensis</i> , | 84 |
| <i>Berberis tinctoria</i> , | 31,82 | <i>Ficus carica</i> , | 82 |
| <i>Blepharis molluginifolia</i> , | 31 | <i>Ficus cunea</i> , | 83 |
| <i>Borreria articularis</i> , | 33 | <i>Ficus infectoria</i> , | 81 |
| <i>Borreria hispida</i> , | 33 | <i>Gossypium herbaceum</i> , | 78 |
| <i>Bougainvillea</i> , | 77 | <i>Hibiscus vitifolius</i> , | 74,79 |
| <i>Bueitneria andamanensis</i> , | 78 | <i>Holoptelia integrifolia</i> , | 45,77 |
| <i>Cajanus cajan</i> , | 83 | <i>Indigofera heterantha</i> , | 77 |
| <i>Citrus limona</i> , | 81 | <i>Indigofera viscosa</i> , | 71,85 |
| <i>Clerodendron inerme</i> , | 80 | <i>Ipomoea staphylina</i> , | 43,81,83 |
| <i>Clerodendron viscosum</i> , | 80 | <i>Jasminum</i> , | 76 |
| <i>Commelina jacob</i> , | 84 | <i>Jasminum auriculatum</i> , | 45 |

| | | | |
|-----------------------------------|----------|-------------------------------|-------------|
| <i>Justicia betonica,</i> | 77 | <i>Punica granatum,</i> | 45,80 |
| <i>Justicia glabra,</i> | 45 | <i>Quercus liniata,</i> | 13 |
| <i>Kigelia pinnata,</i> | 47,82 | <i>Randia dumentorum,</i> | 77 |
| <i>Litchi chinensis,</i> | 47,82 | <i>Ruellia patula,</i> | 80 |
| <i>Litsea elliptica,</i> | 78 | <i>Saccharum officinarum,</i> | 61,84,85 |
| <i>Litsea wightiana,</i> | 48 | <i>Sapindus emarginatus,</i> | 61 |
| <i>Lycopersicon esculentum,</i> | 79 | <i>Sapindus saponaria,</i> | 61,85 |
| <i>Mangifera indica,</i> | 50,83 | <i>Securinega leucopyrus,</i> | 47,64,83,86 |
| <i>Mallotus philippinensis,</i> | 79 | <i>Setaria italica</i> | 77 |
| <i>Medicago sativa,</i> | 51,81 | <i>Sorghum bicolor,</i> | 65 |
| <i>Mimusops elengi,</i> | 53,81 | <i>Sorghum vulgare,</i> | 83 |
| <i>Mitragyna parvifolia,</i> | 55,84 | <i>Streblus asper,</i> | 27,82 |
| <i>Morus alba,</i> | 82 | <i>Stribolanthes,</i> | 79 |
| <i>Nirium odorum,</i> | 55,78 | <i>Thea sinensis,</i> | 6,7 |
| <i>Panicum antidotale,</i> | 82 | <i>Trianthema decandra,</i> | 69,79 |
| <i>Phylanthes maderapatensis,</i> | 59,84 | <i>Waltheria indica,</i> | 75,77 |
| <i>Polygyla chinensis,</i> | 85 | <i>Xeromphisi spinosa,</i> | 76 |
| <i>Pongamia glabra,</i> | 59,60,85 | <i>Ziziphus jujuba,</i> | 36 |
| <i>Pongamia pinnata,</i> | 85 | <i>Ziziphus mauritiana,</i> | 76,86 |

JOURNAL OF ACAROLGY

Volume 12 (1 & 2)

December 1987

CONTENTS

- Three new species of *Megalotocepheus* (Acari : Oribatei, Otocephidae)
from Darjeeling, India
B.K. MONDAL AND B.G. KUNDU 1
- Studies on the genus *Aceria* (Acari: Eriophyidae) from south India
M.MOHANASUNDARAM 15

(Date of publication : October 31, 1990)

M. MOHANASUNDARAM

- SAYED, M.T. 1946. *Aceria mangiferae* n. sp. (*Eriophyes mangiferae* Hassan). *Bull. Soc. Fouad 1 d'ent. Cairo*, 30 : 7-10.
- SHEVTCHENKO, V.G. 1975. Reply to Keifer and Newkirk. *Bull.Zool. Nomencl.*, 32 (2) : 91-94.
- SLYKHUIS, J.T. 1969. Mites as vectors of plant versus. In: *Veruses, Vectors and Vegetation*. Maramarosch, K. (Ed.) Interscience Publ. New York. pp.121-141.
- TUCKER, R.W.E. 1926. Some South American mites mainly Tetranychidae and Eriophyidae. *Union S. Afr. Dept. Agric. Div. Ent. Mem.*, 5 : 2-15.
- WANG, C.S. 1964. A new blister mite on sugarcane in Taiwan, *Aceria sacchari* n. sp. (In: Chinese with English summary). *Rept. Taiwan. Sugar. Expt. Sta.*, 33 : 83-94.
- WOLFFENSTEIN, O. 1879. *Phytoptus lycopersici*. *W. Monatschr. Ver. Beford. Gartenb.* 22 : 424-426.