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Aphids (Homoptera · Aphididae) of Nepal

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INTRODUCTION

Aphids are group of small homopteran insects which infest aerial and subaerial part of almost all types of plants. They feed on the phloem sap of plants and as such the plants may show stunted growth, curling of leaves and sometimes also galls or pseudogall formation on the leaves and stems. Indirectly these insects may also damage the host plants by transmitting plant viruses. Sometimes fungus grows on the honey dew excreted by the aphids on the plants. This fungal growth hinders photo-synthesis by the leaves of the host plant.

There was no report on the aphid fauna of this region till 1965 when Rana and Sharma reported a few species for the first time. Since then a few stray papers have been published (Sharma 1968, Chakrabarti and Raychaudhuri 1972, Ghosh, Basu and Raychaudhuri 1973, Das and Raychaudhuri 1976, 1977 and Miyazaki 1977) which reported new records and species from the kingdom of Nepal. Through these works and also the present one about 116 species under 64 genera have come to be known so far from this area. Among these Das & Raychaudhuri (1976, 1977) reported 13 species under 13 genera as new records from Nepal and described a new species also. Apart from the already known species from this area 5 new species and 11 new records for Nepal are included in this paper. So a total of 116 species under 64 genera have been considered here. Among these, material of 82 species could be examined by the author. For these species running keys, necessary description, biological notes and distribution have been provided and the rest of species have been just listed along with necessary references. The aphid material are at present with the Entomology laboratory, Calcutta University. All the aphid material were collected by the author himself excepting those where the name of collectors have been mentioned.

At the end, the entire work has been summarised focussing the salient features about the composition of aphid fauna of Nepal. A catalogue of aphids on economic crops of Nepal has also been given.

TOPOGRAPHY

Nepal, an adjacent country of India, enjoys a climate varying between subtropical to alpine.

Nepal lies between 80°15'-88°15' east longitude and 25° 5'-30° 30' north latitude. It is bounded on the north by Tibet (region of the Peoples Republic of China), on the east by Sikkim and West Bengal (India) and on the South and West by Bihar and Uttar Pradesh (India). Nepal is 750 km long east west and between 140 and 250 km wide north south. The country covers the central Himalayan region.

Kathmandu the capital of the country is situated at the centre. The valley is situated on the lap of the mighty Himalayan at an altitude of about 1475 m above sea level. The valley covers an area of 310 sq. km. and its population is about 50,000. For the visual landscape it has an exotic setting. It is surround on north west by Nagarjun range (2176 m), on north-east by Sivapuri (2966 m), on south west by Chndragiri (2736 m) and on sout-east by Phulchoki (3018 m). This beautiful dale is surrounded by green hills having snow capped peaks.

Almost all the big rivers in northern India have their origin in the great Himalayan range. In Nepal Himalaya also a few big rivers viz., Gandak, Kosi, Gharghara, Sarda, Rapti, Bagmati etc. have originated. The main river Bagmati and its tributaries, viz., Bishnumati, Hanumante and Manahare have followed a zig zag course through this Kathmandu Valley aiding thereby to the fertility of the soil.

The climate of Kathmandu Valley where intensive investigation was carried out is in general temperate. The temperature varies from -5°c to 36°c within a year.

Rainfall is more (175 to 187 cm per year) in the eastern portion of the country but in the wastern portion it is less (75 to 87 cm per year).

Natural vegetation of Nepal also follows the pattern of climate and altitude. A tropical moist zone of deciduous forests occur in the Tarai belt, consisting mainly of Khair (*Accacia* sp.), Sisso (*Dalbergia sisso*), Sal (*Shorea robusta*).

In the altitude of 1667 m to 3334 m vegetation consists of many species of pines, Oaks, Alnus, Rhododendrons Quercus, Poplars, walnut, Apple, Peach, Pear etc. Rhododendrons are more in number though Fir mixed with Birch also present fietween 3334 m -4000 m. The vast forest area below the timber line in the great Himalayan Range covers spruce, Fir, Cypress, Junipers and Birch. Alpine vegetation occupies higher parts of the great Himalayan Range. Grassy vegetation affords valuable grazzing ground in summer at an altitude of 4667 m to 5000 m.

The climatic condition and vegetational pattern have been supposed to be congenial for the abundance of aphids. From that point of view the present survey was undertaken for exploration of the aphid fauna of Nepal and Kathmandu Valley in particular.

ABBREVIATIONS

The following abbreviations of the body parts have been used.

p. t.,	— Processus terminalis
b. d. III	— Basal diameter of antennal segment III
U. r. s.	— Ultimate rostral segment
F. T. C.	— First tarsal chaetotaxy
h. t. 2	— Second tarsal segment of hind leg
Coll.	— Collector
Aptera	— Apterous viviparous female
Alate	— Alate viviparous female
b. d. Sip	— Basal diameter of siphunculi

CLASSIFIED LIST OF THE APHID SPECIES OF NEPAL

Family APHIDIDAE
Subfamily ANNOECIINAE
Tribe AICEONINI

1. Genus **Aiceona** Takahashi
   1. *Aiceona himalaica* Miyazaki

Subfamily APHIDINAE
Tribe APHIDINI

2. Genus **Aphis** Linn
   2. *Aphis craecivora* Koch
   3. *Aphis fabae solanella* Theobald
   4. *Aphis gossypii* Group
   5. *Aphis nosturtii* Kaltenbach
   6. *Aphis spiraecola* Patch
3. Genus **Hysteroneura** Davis
   7. *Hysteroneura setariae* (Thomas)
4. Genus **Melanaphis** Van der Goot
   8. *Melanaphis donacis* (Passerini)
5. Genus **Rhopalosiphum** Koch
   9. *Rhopalosiphum maidis* (Fitch)
   10. *Rhopalosiphum mymphaeae* (Linn.)
   11 *Rhopalosiphum rufiabdominalis* (Sasaki)

6. Genus **Schizaphis** Borner
   12. *Schizaphis gramminum* (Rondoni)
   13. *Schizaphis rotundiventris* (Signoret)

7. Genus **Toxoptera** Koch
   14. *Toxoptera aurantii* (B. d. F.)
   15. *Toxoptera citricidus* (Kirkaldy)
   16. *Toxoptera odinae* (Van der Goot)

Tribe MACROSIPHINI

8. Genus **Acyrthosiphon** Mordvilko
   17. *Acyrthosiphon pisum* (Harris)

9. Genus **Amphorophora** Buckton
   18. *Amphorophora ampullata bengalensis* H. R. L. & Basu

10. Genus **Aulacorthum** Mordvilko
    19. *Aulacorthum solani* (Kaltenbach)

11. Genus **Brachycaudus** Van der Goot
    20. *Brachycaudus helichrysi* (Kaltenbach)

12. Genus **Capitophorus** Van der Goot
    21. *Capitophorus hippophaes javanicus* H. R. L.

13. Genus **Chaetosiphon** Mordvilk
    22. *Chaetosiphon* (*Pentatrichopus*) *tetrarhodus* (Walk.)

14. Genus **Coloradoa** Wilson
    23. *Coloradoa rufomaculata* (Wilson)

15. Genus **Dactynotus** Rafinesque
    24. *Dactynotus* (*Uromelan*) *compositae* Theobald
    25. *Dactynotus sonchi* (Linn.)

16. Genus **Diphorodon** Borner
    26. *Diphorodon cannabis* (Passerini)

17. Genus **Dysaphis** Borner
    27. *Dysaphis ramanii* sp. nov.

18. Genus **Hyperomyzus** Borner
    28. *Hyperomyzus carduellinus* (Theobald)

19. Genus **Liosomaphis** Walker
    29. *Liosomaphis himalayensis* Basu

20. Genus **Lipaphis** Mordvilko
    30. *Lipaphis erysimi* (Kaltenbach)

21. Genus **Macrosiphoniella** del Guercio
    31. *Macrosiphoniella kalimpongense* Basu and Raychaudhri.
    32. *Macrosiphoniella sanborni* (Gillette)
    33. *Macrosiphoniella spinepes* Basu
    34. *Macrosiphoniella yomogifoliae* (Shinji)

22. Genus **Macrosiphum** Passerini
    35. *Macrosiphum* (*S*) *miscanthi* (Takahashi)
    36. *Macrosiphum rosae* (Linn.)
    37. *Macrosiphum* (*S*) *rosaeiformis* Das
    38. *Macrosiphum* (*S*) *sikkimensis* Ghosh & Raychaudhuri

23. Genus **Macromyzus** Takahashi
    39. *Macromyzus woodwardiae* Takahashi

24. Genus **Matsumuraja** Schumacher
    40. *Matsumuraja capitophoroides* H. R. L.

25. Genus **Micromyzus** Van der Goot
    41. *Micromyzus nigrum* Van der Goot

26. Genus **Myzus** Passerini
    42. *Myzus filicis* Basu
    43. *Myzus ornatus* Laing
    44. *Myzus persicae* (Sulzer)

27. Genus **Neoacyrthosiphon** Tao
    45. *Neoacyrthosiphon nepalensis* Ghosh. Basu & Raychaudhuri

28. Genus **Neomyzus** Van der Goot
    46. *Neomyzus circumflexus* (Buckton)

29. Genus **Oedisiphm** Van der Goot
    47. *Oedisiphum soureni* Basu

30. Genus **Pleotrichophorus** Borner
    48. *Pleotrichophorus glandulosus* (Kaltenback)

31. Genus **Perillaphis** Takahashi
    49. *Perillaphis perillae* (Shinji)

32. Genus **Rhopalosiphoninus** Baker
    50. *Rhopalosiphoninus latysiphon* (Davidson)

33. Genus **Sinomegoura** Takahashi
    51. *Sinomegoura citricola* Van der Good
    52. *Sinomegoura nepalensis* sp. nov.

34. Genus **Shinjia** Shinji
    53. *Shinjia pteridifoliae* (Shinji)

Subfamily DREPANOSIPHINAE

35. Genus **Chromaphis** Walker
    54. *Chromaphis hirsutustibis* Kumar and Lavigne
36. Genus **Mesocallis** Matsumura
    55. *Mesocallis obtusirostris* Ghosh
37. Genus **Shivaphis** Das
    56. *Shivaphis celti* Das
38. Genus **Taoia** Quednau
    57. *Taoia indica* Ghosh and Raychaudhuri

Subfamily GREENIDEINAE

Tribe CERVAPHIDINI

39. Genus **Sumatraphis** Takahashi
    58. *Sumatraphis celti* Takahashi

Tribe GREENIDEINI

40. Genus **Eutrichosiphum** Essig & Kuwana
    59. *Eutrichosiphum* (*Paratrichosiphum*) *alnicola* (Basu)
    60. *Eutrichosiphum* (*Paratrichosiphum*) *alnifoliae* sp. nov
    61. *Eutrichosiphum* (*Neoparatrichosiphum*) *Khasyanum* Ghosh & Raychaudhuri
    62. *Eutrichosiphum* (*Eutrichosiphum*) *pasaniae pseudopasaniae* Szelegiewicz
    63. *Eutrichosiphum* (*Eutrichosiphum*) *quercifoliae* Raychaudhuri, Ghosh, Benerjee & Ghosh
41. Genus **Greenidea** Schouteden
    64. *Greenidea* (*Greenidea*) *ficicola* Takahashi
    65. *Greenidea* (*Greenidea*) *formosana* (Maki)
    66. *Greenidea* (*Greenidea*) *longirostris* Basu
    67. *Greenidea* (*Greenidea*) *photiniphaga* Raychaudhuri, Ghosh, Banerjee & Ghosh.
42. Genus **Mollitrichosiphum** Suenaga
    69. *Mollitrichosiphum* (*Metatrichosiphon*) *alni* Ghosh, Ghosh and Raychaudhuri
    70. *Mollitrichosiphum* (*Metatrichosiphon*) *buddlejae* Ghosh, Banerjee & Raychaudhuri
    71. *Mollitrichosiphum* (*Mollitrichosiphum*) *godavariense* sp. nov.

Subfamily HORMAPHIDINAE

43. Genus **Astegopteryx** Karsch
    72. *Astegopteryx minuta* (Van der Goot)

44. Genus **Ceratovacuna** Zehntner
    73. *Ceratovacuna Indica* Ghosh, Pal and Raychaudhuri
    74. *Ceratovacuna lanigera* Zehntner
    75. *Ceratovacuna perglandulosa* Basu, Ghosh & Raychaudhuri
45. Genus *Neoceratovacuna* Ghosh, Pal and Raychaudhuri
    76. *Neoceratovacuna panicicola* (Takahashi)
46. Genus **Paraoregma** Ghosh, Pal and Raychaudhuri
    77. *Paraoregma alexandri* (Takahashi)

Subfamily LACHNINAE

Tribe CINARINI

47. Genus **Cinara** curtis
    78. *Cinara saraswatae* sp. nov.

Tribe LACHNINI

48. Genus **Nippolachnus** Matsumura
    79. *Nippolachnus Piri* Matsumura

Subfamily PEMPHIGINAE

49. Genus **Eriosoma** Leach
    80. *Eriosoma lanigerum* (Hausmann)
50. Genus **Prociphilus** Koch
    81. *Prociphilus cornifoliae* Sing, Das & Raychaudhuri
51. Genus **Tetraneura** Hartig
    82. *Tetraneura nigriabdominalis* (Sasaki)

Key to the subfamilies of APHIDIDAE

1. First tarsal segment with 9 or more hairs. Processus terminalis much shorter than base of segment VI. Primary rhinaria non ciliated. Siphunculi conical or poriform. Cauda semioval ... ... Lachninae

   First tarsal segment with less than 9 hairs ... 2

2. Either one or both dorsoapical hairs on second tarsal segment with expanded or funnel shaped apices. ... 3

   Dorsoapical hairs on second tarsal segment never with funnel shaped apices 4

3. Eyes in apterae 3 faceted. Abdomen never with marginal or dorsal processi. Siphunculi poriform to slightly cone shaped. Cauda knobbed. Secondary rhinaria in alatae subannular. Head in apterae with or without horn like processi ... ... Hormaphidinae

Eyes in apterae usually multifaceted and abdomen without processi, if 3 faceted, abdomen with marginal or darsal processi. Siphunculi mostly elongated, rarely cone shaped. Secondary rhinaria in alatae circular to transversely oval. Head in apterae never with horn like processi ... ... Greenideinae

4. Tergite 8 and cauda in apterae shortened. Head and pronotum in apterae at least laterally free. Dorsoapical hairs on 2nd tarsal segment with fine apices. Eyes in apterae 3 faceted. Siphunculi absent or present as small cones or even as chitinised rims. Secondary rhinaria in alatae subcircular ... ... Pemphiginae

Tergite 8 and cauda not shortened 5

5. Siphunculi on slightly raised cones and encircled by whorls of hairs. Head and prothorax in apterae always fused. Eyes 3 or multifaceted. Cubitus and anal veins in forewing usually much apart at base ... Anoeciinae

Siphunculi usually elongate but sometimes appear as short truncated cones and never encircled by hairs. In apterae head and prothorax usually distinct and eyes usually multifaceted, if fused the eyes 3 faceted 6

6. Subanal plate usually weakly to strongly indented and cauda knobbed, if entire then cauda semioval. Eyes in apterae 3 faceted; head and prothorax in apterae fused. Empodial hairs mostly strap like, sometimes hair like. Body sometimes with wax pores ... ... Drepanosiphinae

Subanal plate always entire and cauda usually elongate though seldom short and subpentagonal or even semioval. Eyes in apterae always multifaceted. Empodial hairs fine ... ... Aphidinae

Subfamily ANOECIINAE

Tribe AICEONINI

Aiceona Takahashi 1921. *Aphididae of Formosa*, **1** : 85

Type species : *Aiceona actinodaphnis* Takahashi, 1921.

Aiceona Takahashi ; Raychaudhuri, 1980, Aphids of North East India and Bhutan, 40.

Distribution : China ; India ; Japan ; Malayasia ; Nepal ; Taiwan and Thailand.

Aiceona himalaica Miyazaki, 1977. *Kontyu*, **45**(2) : 207

Material examined : 20 apterae, 1 alate, 3 alate oviparae, 2 alate males, Balambu, 13.x.1976 on *Litsea polyantha.*

Alate viviparous female. Body elongate, oval, about 2.29 mm long with 1.00 mm wide. Head brown and smooth ; frons convex, with long acute hairs. Antennae 6-segmented, about 0.66 x the body, brown ; flagellum imbricated, with long and fine hairs, longest one about 3.55 x b.d. III ; segments III, IV & V with 32, 11 and 5 protuberant circular secondary rhinaria respectively ; p.t. and base of segment VI each with a protuberant secondary rhinarium placed equidistally from circular, nonciliated primary rhinaria ; p.t. about 0.50 x base of segment VI. Eyes multifaceted with distinct ocular tubercles. Rostrum extending upto mid coxae ; u.r.s. about 0.96 x h.t.2, with-6 secondary hairs. Abdomen pale, smooth, dorsal hairs long and sub acute, longer cauded, the longest one on anterior tergites about 4.22 x b.d. III ; 8th tergite with 6 long hairs, these about 5.30 x b.d. III. Siphunculi ring like, on cone and surrouuded by small hairs. Cauda semicircular with many long hairs. Legs except pale bases of femora brown, smooth ; hairs on legs long and fine ; F. T C. 8, 8, 8. Wing pale, normal, inner margin of subcosta and pterostigma of forewing with a few long hairs.

Biological notes : Yellowish apterae and ash colored alatae were collected from the under surface of heavily infested tender leaves. Host plant did not show appreciable damage symptoms. Small black ants were seen in association with the aphids.

Remarks : The present material has been tentatively put under the species *A. himalaica* Miyazaki inspite of some differences viz., 8th targal hair 7-8 vs. 10-13, flagellar hair 3.40-3.50 vs. 2.70-3.00 x b.d. III ; antennal segment III longer than segment IV & V together vs. subequal. The alate viviparous female is described for the first time.

Distribution : Nepal.

Subfamily APHIDINAE

The subfamily Aphidinae has been divided into two tribes viz., Aphidini and Macrosiphini.

Key to the tribes

Spiracles of abdominal segments 1 and 2 placed far apart. Lateral abdominal tubercles present on segments 1 and 7 ; sometimes also on segments 2-6	APHIDINI
Spiracles of abdominal segments 1 and 2 placed close together. Lateral abdominal tubercles absent from segments 1 and 7 but may be variably present on segments 2-5	MACROSIPHINI

Tribe APHIDINI

Key to the genera

1. Abdomen with stridulatory ridges posterolaterally on ventre and hind tibiae with some peg-like structure ... **Toxoptera** Koch

   Abdomen without such stridulatory ridges and tibiae without such peg like structures 2

2. Dorsum of abdomen specially in apterae with spinular polygonal reticulations, each polygon enclosing a group of spinules ... ... **Rhopalosiphum** Koch

   Dorsum of abdomen in apterae without such spinular polygonal reticulation ... ... —3

3. Siphunculi short, at most 2.50 x its basal width ; cauda short, usually longer than siphunculi and with many hairs ... ... **Melanaphis** V.d.G.

   Siphunculi longer, always more than 2.50 x its basal width ; cauda elongate, usually shorter than siphunculi and with a few to many hairs ... ... —4

4. Cauda pale and constricted medially ; hearing 4 hairs; siphunculi dark ; hind wing with one oblique vein ... —**Hysteroneura** Davis

   Cauda not constricted medially, usually concolorous with siphunculi and with 4 to many hairs ; hindwing with two oblique veins ... ... —5

5. Media of forewing once branched ; p.t. in apterae usually 4-5 x base of segment VI ; cauda with 4-6 hairs ... ... **Schizaphis** Borner

   Media of forewing twice branched ; p.t. in apterae 1.30-5.00 x base of segment VI ; cauda with 4 to many hairs ... ... —**Aphis** Linn.

Genus **Aphis** Linn

Aphis Linn., 1758. *Syst. Nat.*, **1** (10th ed.) : 451.

Type species : Aphis sambuci Linn., 1758.

Aphis Linn. ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 49.

Distribution : Cosmopolitan.

Key to the species of the genus **Aphis** Linn.

Apterous viviparous female :

1. Longest hair on forefemora longer than its basal diameter ... ... —2

   Longest hair on forefemora shorter than its basal diameter ... ... —3

2. Longest hair on 7th tergite about 0.62-1.00 x b.d. III. Cauda with 8-11 hairs. Processus terminalis about 2.20-2.80 x base of segment VI ... ... —*spiraecola* Patch

   Longest hair on 7th tergite about 2.00-2-20 x b.d. III. Cauda with 12-14 hairs. Processus terminalis about 2.87-3.37 x base of segment VI ... ... —*fabae solanella* Theobald

3. Abdominal dorsum usually with a dark patch and with polygonal reticulations. Processus terminalis about 2.10-2.60 x base of segment VI. Cauda with 6-7 hairs ... ... —*craccivora* Koch

   Abdominal dorsum never with such patch ... —4

4. Cauda blunt apically. Siphunculi 1.50-1.86 x cauda —*gossypii* group

   Cauda pointed at apex. Siphunculi about 1.00-1.20 x cauda ... ... —*nasturtii* Kaltenbach

Alate viviparous female :

1. Longest hair on fore femora as long as to longer than its basal diameter ... ... —2

   Longest hair on fore femora distinctly shorter than its basal diameter ... ... —3

2. Longest hair on abdominal tergite 7 about 0.85-1.35 x b.d. III ... ... —*spiraecola* Patch

   Longest hair on abdominal tergite 7 about 2.00-2.85 x b.d. III ... ... —*fabae solanella* Theobald

3. Ultimate rostral segment as long as h.t. 2 ... —*craccivora* Koch

   Ultimate rostral segment longer than h.t. 2 ... —4

4. 8th tergal hair about 1.30-2.00 x b.d. III. Cauda blunt apically ... ... —*gossypii* group

   8th tergal hair about 2.50-3.00 x b.d. III. Cauda pointed at apex ... ... —*nasturtii* Kaltenbach

Aphis craccivora Koch

Aphis craccivora Koch, 1854. *Die Pflanzen Aphiden.* **1** : 24.

Aphis craccivora Koch ; Sharma, 1968. *Nep. J. Agr.*, **3** : 106.

Material examined : 8 apterae and 4 alatae, Tundikhel, 15.x.1976 ; 2 apterae and 3 alatae, Narayanthan, 19.x.1976 on *Vicia faba.*

Biological notes : Dark brown insects were collected from the tender shoots and undersurface of leaves. Heavy infestation was noted. The growth of the plant appeared stunted and the leaves became slightly curled. Black ants and a few coccinelid beetles were seen in association with the insects.

Distribution : Cosmopolitan.

Aphis fabae solanella Theobald

Aphis fabae solanella Theobald : 1914. *Bull. ent. Rec.*, **4** : 325.

Aphis fabae solanella Theobald ; Sharma, 1968. *Nep. J. Agri.*, **3** : 107.

Material examined : 6 apterae, 4 alatae, Ratna Park, 16. iv. 1975 ; 2 apterae, 3 alatae, Thomal, 17.x.1974 on *Solanum nigrum.*

Biological notes : Dark brown insects were collected from the undersurface of the leaves. Infestation was heavy and leaves appeared curled. Black ants were seen in association with the insects.

Distribution : Africa ; Europe ; India ; Middle East ; Nepal.

Aphis gossypii Group

Aphis gossypii Group ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 54.

Material examined : 12 apterae, 4 alatae, 6 nymphs, Kamal pokari, 19.x.1974 on *Cucurbita maxima* ; 4 alatae, Balaju, 18.x.1974, on *Duranta* sp. ; 14 apterae and 4 nymphs, Kirtipur, 22.iv.1975, on *Gardenia florida* ; 3 apterae, Nagarkot, 12.x.1976, on *Phyllanthus* sp.

Biological notes : Greenish insects were collected from the tender shoots and undersurface of the leaves. Infestation was moderate. No damage symptom to the host plant was apparent.

Distribution : Cosmopolitan.

Aphis nasturtii Kaltenbach

Aphis nasturtii Kaltenbach, 1843. *Mon der Fam, der Pflanzen*, 76

Aphis nasturtii Kaltenbach ; Chakrabarti and Raychaudhuri, 1975. *Orient*, Insects, **9** (2) : 198.

Material examined : 3 alatae, Patan, 20.x.1974, on *Lycopersicum esculantum* ; 10 apterae, 6 nymphs, Pokhra, 19.iv.1975, on *Woodfordia floribunda.*

Biological notes : Yellowish insects were collected from the mild infested tender shoots.

Distribution : Europe ; India ; Nepal ; Pakistan and Taiwan.

Aphis spiraecola Patch

Aphis spiraecola Patch, 1914. *Bull. Me. agric. Exp. Stn, 233* : 270.

Aphis spiraecola Patch ; Sharma, 1968. *Nep. J. Agri.*, **3** : 110.

Material examined : 6 apterae, Kamal Pokari, 18.x.1974 on *Communis bengalensis* ; 9 apterae, 2 alatae, Ratna Park, 15.iv.1975, on *Gardenia florida* ; 12 apterae, 1 alata and 4 nymphs, Pokhra, 18.iv.1975, on *Capsicum annum.*

Biological notes : Black insects were collected from the undersurface of leaves and also from the tender buds. Infestation was heavy and as a result the leaves appeared slightly curled.

Distribution : Cosmoplitan.

Genus **Hysteroneura** Davis

Hysteroneura Davis ; 1919. *Can. Ent.*, **51** : 263.

Type-species : Siphonophora setariae Thomas, 1878.

Hysteroneura Davis ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 60.

Distribution : Africa ; America ; India ; Japan ; Korea ; Nepal ; Taiwan.

Hysteroneura setariae (Thomas)

Siphonophora setariae Thomas, 1878. *Bull. Ill. St. Lab. nat. Hist.*, **1** (2) : 5.

Hysteroneura setariae (Thomas) ; Davis, 1919. *Can. Ent.*, **51** : 263.

Hesteroneura setariae (Thomas) ; Ghosh, Ghosh and Raychaudhuri, 1971. *Proc. zool. Soc.* Calcutta. **24** : 49.

Material examined: 6 apterae, 2 alatae, Balaju, 18.x.1974 on *Eleusine corocana*

Biological notes : Inflorescence of the host plant was found to be mildly infested with dark brown insccts.

Distribution : Africa ; India ; Japan ; Korea ; Nepal ; North and South America ; Taiwan,

Genus **Melanaphis** van der Goot

Melanaphis van der Goot, 1917. *Contrib. Fauna Indes. Neerl.*, **1** (3) : 60.

Type-species : Aphis bambusae Fullaway, 1910 (Attributed to Kirkaldy in the original description of the genus.)

Melanaphis Van der Goot ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 62.

Distribution : Africa ; Australia ; Ceylon ; China ; Egypt ; Hawaii ; India ; Iran ; Japan ; Java ; Nepal and Taiwan.

Melanaphis donacis (Passerini)

Longianguis donacis Passerini, 1860. *Gli Afidi*, 309.

Melanaphis donacis (Passerini), Raychaudhuri, and Banerjee, 1974. *Orient. Insects*, **8** (3) : 375.

Material examined : 6 apterae, Kathmandu, 30.iii.1972 on Bamboo, Coll. A. K. Ghosh ; 8 apterae and 4 alatae, Thahachal 14.iv.1975, on *Phragmites karka.*

Biological notes : Black insects with fine whitish powdery secretion were collected from the base of tender leaves. Black ants were seen in association with the insects.

Remark : Ghosh, Basu and Raychaudhuri (1973) earlier reported this species as *Melanaphis pahanensis* Takahashi.

Distribution : India; Mediterranean countries ; Nepal.

Genus **Rhopalosiphum** Koch

Rhopalosiphum Koch, 1854. *Die pflanzen Aphiden*, **1** : 23.

Type-species : Aphis nymphaeae Linn., 1761.

Rhopalosiphum Koch ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 67.

Distribution : Cosmopolitan.

Key to the species of the Genus **Rhopalosiphum** Koch

Apterous viviparous female :

Siphunculi slightly swollen or clavate on distal half. Processus terminalis 3.00-4.25 x base of segment VI. Body about 4.50-5.50 x siphunculi — —	*nymphaeae* (Linn.)
Siphunculi cylindrical. Processus terminalis about 1.75-2.50 x base of segment VI. Body about 9-14 x siphunculi	*maidis (Fitch)*

Alate viviparous female :

1. Eighth abdominal tergite with 4-8 hairs. Antennae 5- segmented. Media of forewing usually once branched. Siphunculi cylindrical — —	*rufiabdominalis* (Sasaki)
Eighth abdominal tergite with 2 hairs. Antennae 6-segmented. Media of forewing usually twice branched. Siphunculi swollen on distal half —	*nymphaeae* (Linn.)

Rhopalosiphum rufiabdominalis (Sasaki)

Toxoptera rufiabdominalis Sasaki, 1899. *Rep. Hokkaido agric. Exp. Sta.*, **17** : 202.

Rhopalosiphum rufiabdominalis (Sasaki) ; Doncaster, 1956. *Bull. Ent. Res.*, **47** : 742.

Rhopalosiphum rufiabdominalis (Sasaki) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 126.

Material examined : 2 alatae, Aghore, 30.ix.1971 on *Lycopersicum esculatum*, Coll. S. Chakraborti ; 8 alatae, Balambu, 13.x.1976 on unidentified plant ; 3 alatae, Narayanthan, 19.x.1976 on *Calocasis* sp.

Biological note : Black vagrant alatae were collected from the under surface of the leaves.

Distribution : Cosmopolitan.

Rhopalosiphum maidis (Fitch)

Aphis maidis Fitch, 1856. *Trans. N. Y. State Agr. Soc.*, **15** : 531.

Rhopalosiphum maidis (Fitch) ; Palmer, 1952. *Thomas Say foundation* **5** : 217.

Rhopalosiphum maidis (Fitch) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 125.

Material examined : 8 apterae, Sayambhu, 10.x.1976 on *Echinocloa crustovanish* : 1 aptera, Narayanthan, 19.x.1976 on *Eleusin corocana.*

Biological notes : Greenish insects were collected from the base of leaf sheath showing mild infestaion.

Distribution : Cosmopolitan.

Rhopalosiphum nymphaeae (Linn.)

Aphis nymphaeae Linn. 1761. *Fauna Suecica*, II. 260.

Rhopalosiphum nymphaeae (Linn.) ; Gerstaecker, 1856. *Arch. Naturgesch*, **21** : 272.

Rhopalosiphum nymphaeae (Linn.), Sharma, 1968. *Nep. J. Agri.*, **3** : 125.

Material examined: 7 apterae, 1 alata, Royal Botanical Garden, Godavai, 28.iii.1973 on *Nelumbium speciosum*, Coll, A. K. Ghosh ; 2 alatae, Bhaktapur, 6.x.1976 on *Lycopersicum* sp. ; 1 alata, Dhulikel, 6.x.1976 on *Calocasis* sp. ; 4 alatae, Narayanthan, 19.x.1976 on *Prunus persica.*

Biological notes : Black alatae were collected from the under surface of leaves.

Distribution : Cosmopolitan.

Genus **Schizaphis** Borner

Schizaphis Borner, 1931. *Anz. Schadlingsk.*, **7** : 10.

Type species : Aphis graminum Rondani, 1847.

Schizaphis Borner ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 71.

Distribution : Africa ; Australia ; Canada ; Ceylon ; India ; Japan ; Nepal ; Pakistan and U. S. S. R.

Key to the species of the Genus **Schizaphis** Borner

Apterous viviparous female :

Siphunculi never more than 2 x cauda. Ultimate rostral segment shorter (0.70-0.90 x) than h.t. 2 ... ... *graminum* (Rondani)

Siphunculi more than 2 x cauda. Ultimate rostral segment longer (1.02-1.16 x) than h.t. 2 ... ... *rotundiventris* (Signoret)

Schizaphis rotundiventris (Signoret)

Schizaphis rotundiventris (Signoret) ; Eastop, 1966. *Aust. J. Zool.*, **14** : 498.

Schizaphis rotundiventris (Signoret) ; Chakrabarti, Ghosh, and Raychaudhuri, 1971. *Sci. Cult.*, **37** : 248.

Material examined : 12 apterae, 20 nymphs, Sayambhu, 16.iv.1975 on *Prunus* sp.

Biological notes : Black insects were collected from the undersurface of the densely infested leaves which appeared curled. Small red ants were present with the insects.

Distribution : Africa ; Australia ; India ; Israel ; Nepal ; Subah ; Sierra Leone ; Pakistan ; The Philippines and Sri Lanka.

Schizaphis graminum (Rondani)

Aphis graminum Rondani, 1852. *Nuov. Ann. Sci. nat.* Bologna, **6** (3) : 10.

Schizaphis graminum (Rondani) ; Bodenheimer, and Swirski, 1957. *Aphidoidea of Middle East*, 312.

Schizaphis graminum (Rondani), Sharma, 1968. *Nep. J. Agri.*, **3** : 127.

Material examined : 7 apterae, 6 nymphs, Pokhara, 16.iv.1975 on *Phragmites karka*.

Biological notes : Yellowish insects were present on the bases of tender leaves. Infestations was mild. Big black ants were present.

Distribution : Cosmopolitan.

Genus **Toxoptera** Koch

Toxoptera Koch, 1857. *Die Pflanzen Aphiden*, **3** : 253.

Type species : *Aphis aurantii* Boyer de Fonscolembe.

Toxoptera Koch ; Raychaudhuri, 1980, Aphids of North East India and Bhutan, 74.

Distribution : Cosmopolitan.

Key to the species of the Genus **Toxoptera** Koch

Apterous viviparous female :

1. Siphunculi shorter than cauda. Body about 12-19 x siphunculi. Eighth abdominal tergite with 5-12 hairs ; longest hair on antennal segment III about 2.20-2.75 x b.d. III. F.T.C. 3, 3, 2 ... ... *odinae* (V.d.G.)

   Siphunculi never shorter than cauda. Body about 5.50-8 x the siphunculi. Eighth abdominal tergite with 2-3 hairs. Longest hair on antennal segment III about 0.50-2.00 x b.d. III. F.T.C. 3, 3, 3 ... 2

2. Siphunculi densily imbricated, longer than cauda which bears 20-54 hairs. Subgenital plate with 22-50 hairs. Middle hair of first tarsal segment longer than the lateral ones ... ... *citricidus* (Kirkaldy)

Siphunculi less imbricated, as long as cauda which bears 10-26 hairs. Subgenital plate with 12-20 hairs. All hairs on first tarsal segment of similar length ... *aurantii* (B.d.F)

Toxoptera citricidus (Kirkaldy)

Myzus citricidus Kirkaldy, 1907. *Proc. Hawaii ent. Soc.*, **1** : 100.

Toxoptera citricidus (Kirkaldy) ; Takahashi, 1950. *Ann. ent. Soc. Am.* **43** : 495.

Toxoptera citricidus (Kirkaldy) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 130.

Material examined : 14 apterae, Thomal, 17.x.1974 ; Balaju, 18.x.1974, Balambu, 13.x.1976 on *Citrus* sp.

Biological notes : Black insects were collected from the tender shoots and undersurface of leaves which were heavily infested. Leaves appeared slightly curled. No ant was noticed in association with aphid.

Distribution : Cosmopolitan.

Toxoptera odinae (Van der Goot)

Longiunguis odinae V.d.G., 1917. *Contrib. Fauna Indes Neerl.*, **1** (3) : 113.

Toxoptera odinae (V.d.G.) ; Eastop, 1958. *Aphididae of East Africa*, 76.

Toxoptera odinae (V.d.G.) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 130.

Material examined : 2 apterae, Balaju, 4.x.1976, on *Justicia* sp.

Biological notes : Reddish brown insects were collected from the undersurface of tender leaves. Infestation was mild.

Distribution : China ; India ; Japan ; Java ; Korea ; Malaya ; Nepal ; Sri Lanka ; Sumatra ; South America ; Taiwan ; Thailand and The Philippines.

Toxoptera aurantii (Boyer de Fonscolombe)

Aphis aurantii Boyer d.F. 1841, *Ann. ent. Soc.*, **10** : 178.

Toxoptera aurantii (B.d.F) ; Koch, 1856. *Die Pflanzen Aphiden*, 254.

Toxoptera aurantii (B.d.F) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 129.

Material examined : 14 apterae, 1 alata, Balaju, 18.x.1974 on an unidentified plant ; 4 apterae, Thapathali, 17.iv.8975 ; 2 apterae, 3 nymphs, Bhaktapur, 6.x.1976 ; 5 apterae, Kirtipur, 9.x.1976 ; 1 alata and 1 aptera, Balambu, 13.x.1976 ; 10 apterae, 4 alatae, Nagarjun, 14.x.1976 on *Solanum* sp.

Biological notes: Black insects were collected from the under-surface of slightly infested leaves. Small red ants were present.

Distribution: Cosmopolitan.

Key to the genera : Tribe MACROSIPHINI

1. Tarsi atrophied, without claws ... ... *Shinjia* Takahashi
   Tarsi normal, claw present 2
2. Head with anteriorly directed finger like precessi arising from near inner margin of lateral frontal tubercles ... ... *Diphorodon* Borner
   Head without such processi 3
3. First antennal segment with inwardly directed sausage shaped processi ... ... *Matsumuraja* Schumacher
   First antennal segment without such process ... 4
4. Cauda subpentagonal, at most as long as basal width 5
   Cauda elongate, always longer than basal width ... 7
5. Head with a pair of spinal tubercles on dorsum ... *Dysaphis* Borner
   Head without such tubercles 6
6. Ultimate rostral segment elongate, always extending upto middle of abdomen. Dorsum of abdomen rugose ... ... *Oedisiphum* V.d.G.
   Ultimate rostral segment not so elongate, never extending beyond hind coxae; dorsum of abdomen rugose ... ... *Brachycaudus* V.d.G.
7. Ultimate rostral segment stilleto shaped ... 8
   Ultimate rostral segment not stilleto shaped ... 9
8. Siphunculi reticulated with isodiametrical cells at apex. Dorsal hairs not with expanded apices ... *Macrosiphoniella* del Guercio
   Siphunauli not reticulated as above, but with a few transverse striae at apex. Dorsal hairs with expanded apices ... ... *Pleotrichophorus* Borner
9. Siphunculi bag-pipe like ... ... *Rhopalosiphoninus* Baker
   Siphunculi of various shape but never bag-pipe like —10
10. Second tarsal segment with spinules in transverse rows ... ... —11
    Second tarsal segment never with spinules as above —12
11. Apterae with secondary rhinaria. Hairs with blunt to incrassate apices. Cauda tongue shaped. Siphunculi distinctly clavate ... ... *Amphorophora* Buckton
    Apterae without secondary rhinaria. Hairs with slightly capitate apices, cauda basally constricted. Siphunculi cylindrical ... ... *Neoacyrthosiphon* Tao
12. Body with capitate hairs ... ... —13
    Body without capitate hairs ... ... —14

13. F.T.C. 5, 5, 5. Processus terminalis 3-5 x base of segment VI ... ... *Chaetosiphon* Mordvilko

F.T.C. 3, 3, 3. Processus terminalis 6-8 x base of segment VI ... ... *Capitophorus* V.d.G.

14. Siphunculi near apex reticulate with isodiametrical cells ... ... —15

Siphunculi without such reticulations but may be with a few interconnecting striae near the apex ... —17

15. Abdominal dorsum with polygonal reticulations ... *Macromyzus* Takahashi

Abdominal dorsum without polygonal reticulations —16

16. Dorsal abdominal hairs mostly on sclerotic bases and on slightly raised sockets. Secondary rhinaria protuberant ... ... *Dactynotus* Rafinesque

Dorsal abdominal hairs hardly on sclerotic bases and on raised sockets. Secondary rhinaria not protuberant ... ... *Macrosiphum* Passerini

17. Head with spinules 18

Head without spinules 23

18. Head only ventrally spinulose ; lateral frontal tubercles less developed ... ... *Sinomegoura* Takahashi

Head only dorsally or both dorsally and ventrally spinulose. Lateral frontal tubercles well developed 19

19. Head with a pair of spinal tubercles and spinulose dorsally ; Dorsal body hairs much longer than b.d. III *Perillaphis* Takahashi

Head without such tubercles. Dorsal body hairs never longer than b.d. III 20

20. Head with a prominent median frontal prominence ... *Aulacorthum* Mordvilko

Head without median frontal prominence ... 21

21. Dorsum of abdomen in apterae usually with a horseshoe shaped patch ... ... *Neomyzus* V.d.G.

Dorsum of abdomen in apterae without such patch ... 22

22. Siphunculi about 2.60 x cauda ; p.t. about 4-7 x base of segment VI ... ... *Micromyzus* V.d.G.

Siphunculi about 1.90-2.50 x cauda ; p.t. about 1.80-4.75 x base of segment VI ... ... *Myzus* Passerini

23. Siphunculi clavate or gently swollen apically ... 24

Siphunculi cylindrical 25

24. Apterae without secondary rhinaria ... ... *Liosomaphis* Walker

Apterae with secondary rhinaria ... ... *Hyperomyzus* Borner

25. Hairs on dorsum of abdomen short with blunt apices. Frons in apterae 'V' shaped ... ... *Acyrthosiphon* Mordvilko

Hairs on dorsum of abdomen with acute or expanded apices. Frons in apterae not as above 26

26. Hairs on dorsum of abdomen with apices like partly opened fan. Cauda blunt at apex ... ... *Coloradoa* Wilson

Hairs on dorsum of abdomen with acute apices. Cauda elongate and narrowed apically ... ... *Lipaphis* Mordvilko

Genus **Acyrthosiphon** Mordvilko

Acyrthosiphon Mordvilko, 1914. *Fauna de la Russie*, **1** : 75.

Type-species : *Aphis pisi* Kaltenbach, 1843 (= *Aphis pisum* Harris, 1776).

Acyrthosiphon Mordvilko ; Raychaudhuri, 1980, Aphids of North East India and Bhutan, 89.

Distribution : Cosmoplitan.

Acyrthosiphon pisum (Harris)

Aphis pisum Harris, 1776. *Exposit. English Insects*, London, 66.

Acyrthosiphon pisum (Harris) ; Hille Ris Lambers, 1947. *Temminckia*, **7** : 247.

Acyrthosiphon pisum (Harris) ; Ghosh, Basu, and Raychaudhuri, 1971. *Kontyu*, **39** (2) : 121.

Material examined : 17 apterae, 2 alatae, 3 nymphs, Balaju, 14.iv.1975 ; 2 alatae, 2 nymphs, Godavari, 15.iv.1975 on *Pisum arvense*.

Biological notes : Greenish insects were collected from the heavily infested tender shoots and leaves. Leaves were slightly curled. No ant was observed in association.

Distribution : Cosmopolitan.

Genus **Amporophora** Buckton

Amphorophora Buckton, 1876. *Monograph of the British aphides* London, **1** : 187.

Type-species : *Amphorophora ampullata* Buckton, 1876.

Amphorophora Buckton ; Raychaudhuri, 1980, Aphids of North East India and Bhutan, 95.

Distribution : America ; Europe ; India ; Japan ; Korea and Nepal.

Amphorophora ampullata bengalensis Hille Ris Lambers and Basu

Amphorophora ampullata bengalensis Hille Ris Lambers and Basu, 1966, *Ent. Ber.* **26** : 14.

Amphorophora ampullata bengalensis Hille Ris Lambers and Basu ; Ghosh, Ghosh, and Raychaudhuri, 1971. *Proc. zool. Soc.* Calcutta, **24** : 49.

Material examined : 6 apterae, Ratna Park, 15.x.1974 ; 7 apterae, 3 nymphs, Sayambhu, 16.iv.1975 ; 6 apterae, Gosala, 4.x.1975 on *Pteris aculina*.

Biological notes : Greenish insects were collected from the under-surface of leaves. The infestation was mild. Ants were not found in association.

Distribution : India and Nepal.

Genus **Aulacorthum** Mordvilko

Aulacorthum Mordvilko, 1914. *Faune de la Russie*, **1** : 68. (Type-species : *Aphis solani* Kaltenbach, 1843.)

Aulacorthum Mordvilko ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 100.

Distribution : Cosmopolitan.

Aulacorthum solani (Kaltenbach)

Aphis solani Kaltenbach, 1843. *Mon. der Fam. der Pflanzen*, 15.

Aulacorthum solani (Kaltenbach) ; Hille Ris Lambers, 1949. *Temminckia*, **8** : 182.

Aulacorthum solani (Kaltenbach) ; Ghosh, Banerjee, and Raychaudhuri, 1971. *Proc. zool. Soc.* Calcutta, **24** : 101.

Material examined : 6 apterae, 4 nymphs, New Road, 16.iv.1975 on *Garanium* sp. ; 7 apterae, 4 nymphs, Patan, 20.x.1974 on unidentified plant.

Biological notes : Light green insects were collected from the under-surface of leaves showing mild infestation. No damage.

Genus **Brachycaudus** van der Goot

Brachycaudus van der Goot, 1913, *Tijdschr, Ent.* **56** : 97. (Type-species : *Aphis myosotidis* Koch, 1856) (=*Aphis helicrysi* Kaltenbach, 1843)

Brachycaudus van der Goot ; Raychaudhuri, 1980, Aphids of North East India and Bhutan, 106.

Distribution : Cosmopolitan.

Brachycaudus helichrysi (Kaltenbach)

Aphis helichrysi Kaltenbach, 1843. *Mon. der Fam. Pflan Zen.*, 102.

Brachycaudus helichrysi (Kaltenbach) ; V.d.G. 1913. *Tijdschr. Ent.*, **56** : 97 (in Cottier, 1953).

Brachycaudus helichrysi (Kaltenbach) ; Ghosh, Ghosh and Raychaudhury, 1971, *Proc. zool. Soc. Calcutta*, **24** : 49.

Material examined : 6 apterae, Ratna Park, 20.x.1974 on *Lycopersicum esculantum* ; 4 alatae and 3 apterae, Balaju, 14.iv.1975 on *Ageratum conezoits*, 3 apterae and 2 nymphs ; New Road, 18.x.1974 on *Nicotiana plumbaginifolia* ; 10 alatae, 8 apterae and 6 nymphs, Kirtipur, 22.iv.1975 on *Prunus* sp.

Biological notes : Greenish insects were collected from the under-surface of heavily infested tender leaves which appeared curled. Ants were not observed with the aphids.

Distribution : Cosmopolitan.

Genus **Capitophorus** Van der Goot

Capitophorus V.d.G. 1913. *Tijdschr. Ent.*, **56** : 84. (Type-species : *Aphis carduina* Walker, 1850.)

Capitophorus Van der Goot ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 111.

Distribution : Cosmopolitan.

Capitophorus hyppophaes javanicus Hille Ris Lambers

Capitophorus hippophaes javanicus Hille Ris Lamber 1953. *Temminckia*, **9** : 156.

Capitophorus hippophaes javanicus Hille Ris Lamber ; Basu and Raychaudhuri, 1976. *Orient. Insects*, **10** (4) : 574.

Material examined : 6 aptera, 1 nymphs, Thapathali, 16.x.74 ; 6 apterae, 3 nymphs, Gokarna, 8.x.1976 ; 7 apterae, 2 nymphs, Kirtipur, 9.x.1976 on *Polygonum alatum* ; 9 apterae, 4 nymphs, Pokhara, 17.x.1976 on *Polygonum hydropiper*.

Biological notes : Light green insects were collected from the under-surface of leaves. Infestation was mild. No damage symptom was noticed.

Distribution : Australia ; China ; Europe ; Japan ; Java ; India ; Korea ; Nepal ; New Zealand ; Pakistan and Taiwan.

Genus **Chaetosiphon** Mordvilko

Chaetosiphon Mordvilko, 1914. *Fauna de la Russie*, **1** : 71. Type-species : *Capitophorus chaetosiphon* Nevsky, 1928 (fixed by Nevsky, 1924)

Chaetosiphon Mordvilko, Eastop, 1966. *Aust. J. zool.* **14** : 436-437.

Distribution : Cosmopolitan.

Chaetosiphon (Pentatrichopus) tetrarhodus (Walker)

Aphis tetrarhodus Walker, 1849. *Ann. Mag. nat. Hist.*, **2** (3) : 42.

Chaetosiphon (Pentatrichopus) tetrarhodus (Walker) ; Hille Ris Lambers, 1953. *Temminckia*, **9** : 78.

Chaetosiphon (Pentatrichopus) tetrarhodus (Walker) ; Chakrabarti and Ghosh, 1970. *Indian J. Hort.*, **27** (3-4) : 227.

Material examined : 8 apterae, Ratna Park, 16.x.1974 on *Rosa* sp.

Biological notes : Yellowish insects were collected from the under-surface of tender leaves.

Distribution : Africa ; Far East ; Europe ; India ; Nepal ; North America and New Zealand.

Genus **Coloradoa** Wilson

Coloradoa Wilson, 1910. *Ann. ent. Soc. Am.*, **3** : 323. [Type-species : *Aphis rufomaculata* Wilson, 1908.]

Caloradoa Wilson ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 124.

Distribution : Cosmopolitan.

Coloradoa rufomaculata (Wilson)

Aphis rufomaculata Wilson, 1908. *Ent. News*, **19** : 261.
Coloradoa rufomaculata (Wilson) ; 1910. *Ann. ent. Soc. Am.*, **3** : 323.
Coloradoa rufomaculata (Wilson) ; Ghosh, Basu, and Raychaudhuri, 1973. *Sci. Cult.*, **39** : 200.

Material examined : 1 aptera, 1 nymph, Daman, 31.iii.1972 on *Chrysanthemum* sp., Coll. S. Chakrabarti.

Biological notes : Nothing known

Distribution : Africa ; Australia ; Europe ; India ; Nepal and North America.

Genus **Dactynotus** Rafinesque

Dactynotus Rafinesque, [818. *Amer. Mon Mag.* **3** : 18. [Type-species : *Aphis hieraccium paniculatum]* Rafinesque 1818.
Dactynotus Rafinesque ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 128.

Distribution : Cosmopolitan.

Key to the species of the genus **Dactynotus** Rafinesque

Apterous viviparous female :

Cauda pale ; u.r.s. shorter (0.81-0.91 x) than h.t. 2 ; segment III with 19-28 secondary rhinaria ; cauda with 19-22 hairs ... ... *(Dactynotus) sonchi* (Linn.)

Cauda dark ; u.r.s. longer (1.20-1.58 x) than h.t. 2 ; segment III with 24-47 secondary rhinaria ; cauda with 15-18 hairs ... ... *(Uromelan) Compositae* Theobald

Alate viviparous female :

Cauda pale, with 18-19 hairs ; u.r.s. shorter than h.t. 2 ; siphunculi at most 2 x cauda ... ... *(Dactynotus) sonchi* (Linn.)

Cauda dark, with 12-14 hairs ; u.r.s. longer than h.t.2 ; siphunculi more than 2 x cauda ... ... *(Uromelan) compositae* Theobald

Dactynotus (Dactynotus) sonchi (Linn.)

Aphis sonchi Linn. 1767. *Syst. Nat.* **1** (12th ed), 735.
Dactynotus sonchi (Linn.), Borner, 1932, in *Soraurer Hanob. d. Pflanzenker* ed. *IV. vol. V pars*, 2, 630.
Dactynotus sonchi (Linn.) ; Eastop, 1966. *Aust. J. Zool.*, **14** : 440.

Material examined : 3 apterae, 1 alata, Balaju, 14.iv.1975 ; 4 apterae, 1 alata, Kirtipur, 22.iv.1975 ; 7 apterae, 1 nymph, Ratna Park, 12.iv.1975 on *Sonchus asper*.

Biological notes : Chocolate brown insects were collected from the tender shoots where mild infestation was noticed.

Distribution : Africa ; Australia ; Egypt ; Europe ; India ; Nepal and South America.

Dactynotus (Uromelan) compositae Theobald

Dactynotus compositae Theobald; 1915. *Bull. ent. Res.*, **6** : 123.
Dactynotus (Uromelan) cosmpositae (Theobald) ; Eastop, *The Aphididae of East Africa*, p. 37.

Material examined : 4 apterae and 3 alatae, Balaju, 14.iv.1975 on *Senecio chrysanthoides* ; 3 apterae and 1 nymph, Ratna Park, 13.iv.1975 on *Sonchus asper.*

Biological note : Reddish brown to black insects were collected from the undersurface of leaves and tender shoots. Heavy infestation was observed. Inflorescence showed malformation. A few big black ants were associated with the insects.

Distribution : Africa ; India ; Nepal and Taiwan.

Genus **Diphorodon** Borner

Diphorodon Borner, 1939. *Arb. Physio. angew. Ent. Berl.*, **6** (1) : 79. [Type-species : *Phorodon cannabis* Passerini, 1860.]
Diphordon Borner ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 132.

Remark : The genus has been treated here in the sense of Miyazaki (1971).

Distribution : Africa ; Central Asia ; China ; Europe ; India ; Japan ; Nepal and Pakistan.

Diphorodon cannabis (Passerini)

Phorodon cannabis Passerini, 1860. *Gli Afidi*, 34.
Phorodon (Diphorodon) cannabis Passerini, Borner, 1939. *Arb. Physiol. angew. Ent. Berl.* **6** (1) : 79.
Diphorodon cannabis (Passerini), Miyazaki, 1971. *Insecta Matsum*, **34** (1) : 114.

Material examined : 1 apterae, 1 nympth, Gokarna, 8.x.1976 ; 11 apterae, 4 alatae, 4 nymphs, Balambu, 13.x.1976 on *Cannabis sativa.*

Biological notes : Pale greenish insects were collected from bases of tender leaves and buds of the host plants where mild infestation was noticed.

Distribution : Europe ; India ; Japan ; Nepal and Pakistan.

Genus **Dysaphis** Borner

Dysaphis Borner, 1931. *Anz. Schadlingsk*, **7** : 9. [Type-species : *Aphis angelicae* Koch. 1854.]

Dysaphis Borner ; Raychaudhuri. 1980. Aphids of North East India and Bhutan, p. 134.

Distribution : Cosmopolitan.

Dysaphis ramani, sp. nov.

Apterous viviparous female :

Body 1.88-2.12 mm long with 1.15-1.31 mm as maximum width. Head pale brown, faintly scabrous with a pair of spinal tubercles on dorsum ; cephalic hairs long with blunt apices, about 2.00 x b.d. III ; segments I and II concolorous with head, sparsely imbricated ; flagellum gradually more distinctly imbricated apicad and darker from middle of segment III ; haris on segment III long with blunt apices, about 1.40-2.10 x b.d. III ; primary rhinaria ciliated ; p.t. about 3.40-3.60 x base of segment VI ; secondary rhinaria absent. Mesothoracic furca with separate arms. Rostrum reaching up to hindcoxae ; u.r.s. about 1.10-1.20 x h.t. 2, and with 2 secondary hairs as long as primary hairs. Abdomen pale, with scattered sclerotic patches on dorsum ; hairs on dorsum long with bluntish to acute apices, having sclerotic bases, the longest hair on anterior tergites about 1.50-2.50 x b.d. III ; each of segments 7 and 8 with a complete transverse sclerotic patch dorsally ; 8th tergite with 4 long acute hairs, these about 3.30 x b.d. III ; lateral tubercles present on segments 1-5 ; 8th tergite also with a spinal tubercle. Siphunculi dark, short, cylindrical, imbricated and with 1-2 rows of transverse striae near well developed flange. Cauda subpentagonal, wider than long with 5-6 hairs. Subgenital plate broadly oval with 16-17 hairs posteriorly and 2 hairs anteriorly. Legs pale brown and faintly imbricated ; hairs on tibiae and femora with bluntish to fine apices ; F.T.C. 3,3,2.

Measurements of the holotype : Length of body 1.88, width 1.18 ; antenna 0.88 ; antenal segments III:IV:V:VI 0.20:0.11:0.11 : (0.06+0.25) ; u.r.s. 0.12 ; h.t.2 0.11 ; siphunculus 0.12 ; cauda 0.09.

Holotype : Apterous viviparous female, Godavari, 15. iv. 1975, from *Cretaegus* sp. (Rosaceae), Paratypes : 11 apterous viviparous females with collection data same as holotype.

Biological notes : Dark brown insects covered with powdery granules were collected from undersurface of leaves of the host plant which was heavily infested. As a result of infestation leaf curling symptom was observed. Large black ants were seen in association with these insects.

Remarks : The new species comes close to *D. foeniculus* (Theobald) but differs by the following characters : flagellar hairs 2.00 x b.d. III (Vs.

1.10-1.60) ; hair bases on the dorsum of abdomen with less sclerotic bases (Vs. more sclerotic hair bases) ; antennal segment III prominently scabrous all over (Vs. almost smooth excepting a few imbrications near apices) ; subgenital plate with 2 hairs anteriorly and 16-17 hairs posteriorly (Vs. 4-9 hairs anteriorly and 17-22 hairs posteriorly).

Distribution : Nepal.

Genus **Hyperomyzus** Borner

Hyperomyzus Borner, 1933. *Kline Mittelungen uber Blattlaus*, sellisverlag, Naumburg, 2 [Type-species : *Aphis lactucae* Linn. 1758.]

Hyperomyzus Borner ; Raychaudhuri, 1980. Aphids of North East India and Nepal. p. 145.

Remark : The genus has been used here in the sense of Hille Ris Lambers (1949).

Distribution : Australia ; Africa ; Cameroon ; Fizi ; Java ; India ; Nepal.

Hyperomyzus carduellinus (Theobald)

Rhopalosiphum carduellinus Theobald, 1915. *Bull. ent. Res.*, **6** : 113.

Hyperomyzus carduellinus (Theobald) ; Muller, and Scholl, 1958. Some notes on the aphid fauna of south Africa. *J. ent. Soc. 8th Afr.*, **21** : 396.

Hyperomyzus carduellinus (Theobald) ; Eastop, 1966. *Aust. J. Zool.*, **14** : 448.

Material examined : 1 aptera, 2 alatae, Thapathali, 17. iv. 1975 ; 1 aptera, 3 apterae, 4 nymphs, Godavari, 5.x.1976 ; 2 apterae, 4 alatae, 2 nymphs, Nagarkot, 12.x.1976 on *Sonchas* sp.

Biological notes : Brownish insects were collected from the underside of the leaves of the host plant. The insects were mostly solitary in habit.

Distribution : Africa ; Australia ; Fizi India ; Indonesia ; Nepal.

Genus **Liosomaphis** Walker

Liosomaphis Walker, 1868. *Zoologist* (2), **3** : 1119. [Type-species : *Aphis berberidis* Kaltenbach, 1843.]

Liosomaphis Walker ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 158.

Distribution : Australia ; England ; Europe ; India ; Japan ; Nepal ; New Zealand ; and North America.

Liosomaphis himalayensis. Basu

Liosomaphis himalayensis Basu, 1964. *J. Linn. Soc. (Zool.)*. **45** (305) : 231.

Liosomaphis himalayensis Basu, Ghosh, 1969. *Proc. zool. Soc. Calcutta*, **22** : 126.

Material examined : 12 apterae, Godavari, 5.x.1976 ; 11 apterae, 10 alatae, 5 nymphs, Balambu, 13.x.1976 on *Berberis asiatica.*

Biological notes : Pale green insects were collected from the under-surface of heavily infested tender leaves and shoots ; leaves appeared slightly curled.

Distribution : India and Nepal.

Genus **Lipaphis** Mordvilko

Lipaphis Mordvilko, 1928. Keys for the identification of Russian insects (in Russian), 200. [Type-species : *Aphis erysimi* Kaltenbach, 1843.]

Lipaphis Mordvilko ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 159.

Distribution : Cosmopolitan.

Lipaphis erysimi (Kaltenbach)

Aphis erysimi Kaltenbach, 1843. *Mon. Fam. Pflanzen.* 99.

Lipaphis erysimi (Kaltenbach) : Mordvilko, 1928. Keys to the identification of insects of European Russia, p. 200.

Lipaphis erysimi (Kaltenbach) ; Chakraborti and Raychaudhuri, 1975. *Orient. Insects*, **9** (2) : 198.

Material examined : 17 apterae, 4 nymphs, Pokhara, 19.iv.1975 on *Raphanus sativus* ; one alata, Kirtipur, 22.iv.1975 on *Brassica napus* ; 2 apterae, one alata, 6 nymphs, Tahachal, 10.x.1976 on *Rhapanus sativus.*

Biological notes : The greenish apterae and alatae were noticed on heavily infested inflorescences and tender leaves. Inflorescence appeared slightly dried.

Distribution : Cosmopolitan

Genus **Macrosiphoniella** del Guercio

Macrosiphoniella del Guercio, 1911, *Redia*, **7** : 331. [Type-species : *Siphonophora atra* Ferrari, 1872.]

Macrosiphoniella del Guereio ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 166.

Distribution : Cosmopolitan.

Apterous viviparous female :

1. Hindtibiae with a number of thick spine like hairs ... *spinepes* Basu
   Hindtibiae with normal hairs 2
2. Siphunculi as long as cauda ... ... *kalimpongense* Basu and Raychaudhuri
   Siphunculi shorter than cauda 3
3. Antennal segment III with 18-20 secondary rhinaria and these distributed over entire segment ; abdominal dorsum with stout hairs ; ante-siphuncular sclerite present ... ... *sanborni* (Gillette)

Antennal segment III with less than 10 secondary rhinaria and these restricted to basal half; abdominal dorsum with thinner hairs; ante-siphuncular sclerite absent ... ... *yomogifoliae* (Shinji)

Alate viviparous female :

Hindtibiae with a row of spines as in apterae, siphunculi long and stout; about 0.22-0.26 x the body, segment III with 45-65 small to large secondary rhinaria distributed irragularly over the entire length, cauda about 0.50 x siphunculi and bears about 18-20 hairs ... ... *spinepes* Basu

Hind tibiae without such spines; siphunculi at most 0.20 x the body; segment III with at most 30 secondary rhinaria. cauda with 16-19 hairs ... ... *yomogifoliae* (Shinji)

Macrosiphoniella sanborni (Gillette)

Macrosiphum sanborni Gillette, 1908. *Can Ent.*, **40** : 65
Macrosiphoniella sanborni (Gillette), Hille Ris Lambers, 1938. *Temminckia*, **3** : 30.
Macrosiphoniella sanborni (Gillette) ; Basu, and Raychaudhuri, 1976. *Orient. Insects* **10** (2) : 305.

Material examined : 25 apterae, 3 nymphs, Godavari, 15.x.1976 on *Chrysanthemum coronarium.*

Biological notes : Dark brown insects were collected from tender shoots, buds and underside of leaves. Colony was moderately developed.

Distribution : Virtually cosmopolitan.

Macrosiphoniella kalimpongense Basu and Raychaudhuri

Macrosiphoniella kalimpongense Basu and Raychaudhuri 1976. *Orient. Insects*, **10** (2) : 299.

Material examined : 5 apterae, and 2 nymphs, Nagarjun, 14.x.1976, on *Artemisia* sp.

Biological notes : The Greenish insects were collected from the underside of leaves. This species is a new record from Nepal.

Distribution : India and Nepal.

Macrosiphoniella spinipes Basu

Macrosiphoniella spinepes Basu 1967. *Bull. Ent.*, **8** (2) : 151.
Macrosiphoniella spinepes Basu ; Basu, and Raychaudhuri, 1976. *Orient. Insects*, **10** (2) : 304.

Material examined : 5 apterae, 2 alatae, Balaju, 18.x.1974 on *Artemisia vulgaris.*

Biological notes : Heavily infested greenish insects were collected from the tender shoots of the host plants. Bud bursting was observed to be hampered.

Distribution : India and Nepal.

Macrosiphoniella yomogifoliae (Shinji)

Macrosiphum yomogifoliae Shinji, 1922. *Dob. Zasshi*, **34** (407) : 788.
Macrosiphoniella yomogifoliae (Shinji) ; Takahashi, 1931. *Aphididae of Formosa*, **6** : 61.
Macrosiphoniella yomogifoliae (Shinji) ; Basu and Raychaudhuri, 1976. *Orient Insects*, **10** (2) : 305.

Material examined : 11 apterae, 1 alata and 4 nymphs, Gokarna, 8.x.1976 on *Artemisia vulgaris* ; 8 apterae, Daman, 30.ix.1971 on *Artemisia vulgaris*, coll. *S. Chakrabarti.*

Biological notes : Greenish insects were collected from the tender leaves and shoots of host plant. Colonisation was mild.

Distribution : China ; India ; Japan , Korea ; Malayasia ; Nepal and Taiwan.

Genus **Macrosiphum** Passerini

Macrosiphum Passerini, 1860. *Gli Afidi*, 27. [Type-species : *Aphis rosae* Linn. 1958.]
Macrosiphum Passerini ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 176.

Distribution : Cosmopolitan.

Key to the species of the genus **Macrosiphum** Passerini

Apterous viviparous female :

1. Ultimate rostral segment equal to or longer (1.0-1.22) than h.t.2 ; antennal segment III with more (10-19) secondary rhinaria ... ... *rosae* (Linn.)

   Ultimate rostral segment shorter (0.60-0.91) than h.t.2 ; antennal segment III with less (7) secondary rhinaria 2

2. Siphunculi about 0.28-0.38 x body and 2 x cauda ; processus terminalis shorter (0.80-0.85) than segment III ; dorsum of abdomen without sclerotic pigmentation ... ... *rosaeiformis* Das

   Siphunculi about 0.23-0.26 x body and distinctly less than 2 x cauda ; processus terminalis longer (1.22-1.28) than segment III ; dorsum of abdomen with sclerotic patches 3

3. Antennal segment III longer (1.14-1.25) than siphunculi ... ... *miscanthi* Takahashi

   Antinnal segment III as long as siphunculi ... *sikkimensis* Ghosh and Raychaudhuri

Macrosiphum (Sitobion) miscanthi Takahashi

Macrosiphum miscanthi Takahashi, 1921, *Aphididae of Formosa*, **1** : 8.
Macrosiphum (Sitobion) miscanthi Takahashi ; Sharma, 1968. *Nep. J. Agri.*, **3** : 120.

Material examined : 16 apterae, 3 alatae, Sayambhu, 16.iv.1975 on *Andropogon aciculalus.*

Biological notes : Dark brown inseets were collected from the heavily infested infloresence of the host plant. No appreciable damage was noticed.

Distribution : Australia ; China ; England ; India ; Nepal and Taiwan.

Macrosiphum rosae (Linn.)

Aphis rosae Linn., 1758. *Syst. Nat.*, **1** (10th ed.) : 452.
Macrosiphum rosae (Linn.), Passerini, 1860. *Gli Afidi.*, 27.
Macrosiphum rosae (Linn.) ; Sharma, 1968. *Nep. J. Agri.* **3** : 120.

Material examined : 12 apterae, 3 nymphs, Balaju, 18.x.1974 on *Rosa* sp.

Biological notes : Chocolate brown insects were seen to infest tender shoots and undersurface of leaves forming moderate colony. No damage symptom was noticed.

Distribution : Cosmopolitan.

Macrosiphum (Sitobion) rosaeiformis Das

Macrosiphum roseiformis Das, 1918. *Mem. Indian Mus.*, **6**(4) : 158.
Macrosiphum (Sitobion) roseiformis Das ; Ghosh and Raychaudhuri, 1968. *Proc. zool. Soc. Calcutta*, **21** : 185.

Material examined : 10 apterae, 4 alatae, Godavari, 15.iv.1975, on *Rosa* sp.

Biological notes : Bright light green insects were collected from the heavily infested tender shoots. No damage symptom was noticed.

Distribution : China ; India ; Nepal and Pakistan.

Macrosiphum (Sitobion) sikkimensis Ghosh and Raychaudhuri

Macrosiphum (Sitobion) smilacicola sikkimensis Ghosh and Raychaudhuri, 1968. *Ann. ent. Soc. Am.* **61** (3) : 753.

Material examined : 15 apterae, 2 alatae, 1 nymph, Godavari, 5.x.1976 on *Tropeolum* sp.

Biological notes : Greenish insects were collected from the undersurface of tender leaves. No damage to the host plants was observed.

Remarks : Ghosh and Raychaudhuri (1968) described this species as a subspecies of *smilacicola*. Later Basu, Ghosh and Raychaudhuri (1973) reported it as *Macrosiphum* (*S*) *smilacifoliae* Tak. But later on with the availability of more material, it was found that it was neither a subspecies of *smilacicola* nor *smilacifoliae* because of the absence of

pseudorhinaria on femora and tibiae and presence of imbrications at least on antennal segment III. So it has been considered by Raychaudhuri et al. (1980) as a distinct species. This is a new record from Nepal.

Distribution : India and Nepal.

Genus **Macromyzus** Takahashi

Macromyzus Takahashi, 1960. *Kontyu*, **28** (4) : 225.
Type-species : *Myzus woodwardiae* Takahashi, 1921.
Macromyzus Takahashi ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 163.

Remarks: The genus is used here in the sense of Raychaudhuri et al. (1980).

Distribution : India ; Indonesia ; Japan ; Nepal and Taiwan.

Macromyzus woodwardiae Takahashi

Myzus woodwardiae Takahashi, 1921. *Aphididae of Formosa*, **1** : 20.

Material examined : 8 apterae, 2 nymphs, Godavari, 28.iii.1972 on Fern, Coll. *A.K. Ghosh.*

Biological notes : Not known

Distribution : India ; Japan ; Nepal and Taiwan.

Genus **Matsumuraja** Schumacher

Matsumuraja Schumacher, 1921. Aphidologische Notizen. *Zool. Anz.*, **53** : 186. [Type-species : *Acanthaphis rubi* Matsumura, 1918.]
Matsumuraja Schumacher ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 191.

Distribution ; China ; India ; Japan ; Nepal ; Pakistan and Taiwan.

Matsumuraja capitophoroides Hille Ris Lambers

Matsumuraja capitophoroides Hille Ris Lambers, 1966. *Tijdscher. Ent.*, **109** (8) : 215.
Matsumuraja capitophoroides Hille Ris Lambers ; Chakrabarti and Raychaudhuri, 1972. *Curr. Sci.*, **41** (23) : 458-459.

Material examined : 2 apterae, Daman. 30.ix.1971. on *Euphorbia hercta*, Coll. *S. Chakrabarti.*

Biological notes : Not known

Distribution : India ; Nepal and Pakistan.

Genus **Micromyzus** Van der Goot

Micromyzus v.d.G., 1917. *Contrib. Faune Indes Neerl.*, **1** (3) : 52. [Type-species : *Micromyzus nigrum* v.d.G. 1917.]

Macromyzus v.d.G. ; Raychaudhuri, 1980. Aphids of North East Indian and Bhutan, p. 202.

Distribution : Australia, India ; Java ; Japan ; Nepal, Sri Lanka.

Micromyzus nigrum Van der Goot

Micromyzus nigrum v.d.G. 1917, *Contr. faune Indes Neerl.*, **1** (3) : 53.
Micromyzus nigrum v.d.G ; Ghosh, Ghosh, and Raychaudhuri, 1971. *Proc. zool. Soc.* Calcutta, **24** : 165.

Material examined : 17 apterae, 7 nymphs, Nagarjun, 14.x.1976 on *Chilanthus pherinothus.*

Biological notes : Dark brown insects were collected from the underside of leaves. The colony was mildly developed and damage to the host plant was negligible. This species is a new record for Nepal.

Distribution : India ; Indonesia and Nepal.

Genus **Myzus** Passerini

Myzus passerini, 1860. Gli Afidi, 27. [Type-species : *Aphis cerasi* Fabricius, 1758.]
Myzus Passerini ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 207.

Distribution : Cosmopolitan.

Key to the species of the genus **Myzus** Passerini

Apterous viviparous female :

1. Abdominal dorsum with segmentally arranged dark patches ; siphunculi heavily imbricated ; processus terminalis about 2.0-2.20 x base of segment VI. ... *ornatus* Laing

   Abdominal dorsum without dark patches as above ; siphunculi smooth or slightly imbricated ; processus terminalis always 3-4 x base of segment VI ... 2

2. Siphunculi clavate, almost smooth ; lateral frontal tubercles slightly convergent at apex ; head heavily spinulose ... ... *persicae* (Sulzer)

   Siphunculi cylindrical, imbricated ; lateral frontal tubercles strongly convergent at apex ; head sparsely spinulose ... ... *filicis* Basu

Myzus filicis Basu

Myzus filicis Basu, 1969. *Orient. Insects*, **3** (2) : 181.
Myzus filicis Basu ; Basu, and Raychaudhuri, 1976. *Orient. Insects*, **10** (1) : 100

Material examined : 26 apterae and 4 nymphs, Nagarkot, 12.x.1976 on Fern.

Biological notes : Yellowish insects were collected from the under-

surface of leaves. Moderate infestation was observed. This species is a new record for Nepal.

Myzus ornatus Laing

Myzus ornatus Laing, 1932. *Entomologist's mon. Mag.* **68** : 52.
Myzus ornatus Laing ; Basu, and Raychaudhuri, 1976. *Orient. Insects*, **10** (1) : 107.

Material examinated : 3 apterae, Aghore, 30.ix.71 on unidentified plant. coll. *S. Chakrabarti.*

Biological notes : Not known

Distribution : Cosmopolitan

Myzus persicae (Sulzer)

Aphis persicae Sulzer, 1776. *Abgekurz Gesch der Ins.*, p. 105.
Myzus persicae (Sulzer) ; Siraki, 1913. *Agr. Expt. St. Formosa spec. Rept.* **8** : 114.
Myzus persicae (Sulzer) ; Basu, and Raychaudhuri, 1976. *Orient. Insects*, **10** (1) : 107.

Material examined : 8 apterae, Balaju, 18.x.1974 on *Hibiscus rosa-sinensis* ; 5 apterae, 5 alatae, 6 nymphs, New Road, 17.iv.1976 on *Tropaeolum majur* ; 3 apterae, 2 alatae, Kirtipur, 22.iv.1975 on unidentified plant.

Biological notes : Greenish insects were collcted from the under-surfaces of leaves, mild infestation. No damage symptom of the host plant was noticed.

Distribution : Cosmoplitan.

Genus **Neoacyrthosiphon** Tao

Neoacyrthosiphon, Tao, 1963. *Plant Part. Bull.* (Taiwan), **5** (3) 189. [Type-species : *Acyrthosiphon taiheisanus* Takahasi, 1935.]
Neoacyrthosiphon Tao ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 219.

Distribution : India ; Japan ; Nepal and Taiwan.

Neoacyrthosiphon nepalensis Ghosh, Basu and Raychaudhuri

Neoacyrthosiphon (Pseudoacyrthosiphon) nepalensis Ghosh, Basu and Raychaudhuri, 1973. *Sci. Cult.*, **33** : 200.

Material examined : 1 aptera, Godavari, 18.iii.72, on *Rhododendron arboreum*, Coll. *A.K. Ghosh.*

Biological notes : Not known

Remarks : This species was published as *Neoacyrthesiphon* (*Pseudoacyrthosiphon*) *nepalensis* by Ghosh, Basu and Raychaudhuri (1973). Later Basu, Ghosh and Raychaudhuri (1976) gave generic status

to *Pseudoacyrthosiphon* on the basis of presence of spinules on u.r.s., F.T.C. 4,4,4 or 3,3,3 and spinulosity on hind tibiae of nymphs. As here the specimens lacks spinulosity on u.r.s., so it has been disignated here as *Neoacyrthosiphon nepalensis* Ghosh, Basu and Raychaudhuri.

Distribution : Nepal.

Genus **Neomyzus** van der Goot

Neomyzus v.d.G. 1915. *Beitr. Z. Kenn. der Molland Blatteause*, p. 7. [Type-species : *Siphonophora circumflexus* Buckton, 1876.]
Neomyzus van der Goot ; 1980. Aphids of North East India and Bhutan, p. 226.

Remark : The genus here is used in the sense of Eastop (1956).

Distribution : America ; Australia ; Europe ; India ; Japan ; Indonesia ; Nepal and New Zealand.

Neomyzus circumflexus (Buckton)

Siphonophora circumflexus Buckton, 1876. *Monograph of the British Aphides*, **1** : 30.
Neomyzus circumflexus (Buckton), Eastop. 1966. *Aust. J. Zool.* **14** : 467.

Material examined : 13 apterae, 1 alata and 2 nymphs, Ratna Park, 16.x.1974 on *Drymaria caudata.*

Biological notes : Greenish yellow insects were collected from the tip of tender shoots. Infestation was mild.

Distribution : Cosmopolitan.

Genus **Oedisiphum** van der Goot

Oedisiphum v.d.G. 1917. *Contrib. Faune Indes Neerl.*, **1** (3) : 122. [Type-species : *Oedisiphum compositarum* v.d.G., 1917.]
Oedisiphum van der Goot ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 230.

Distribution : India, Indonesia and Nepal.

Oedisiphum soureni Basu

Oedisiphum soureni Basu, 1964. *J. Linn. Soc. (Zool.)*, **45** (305) : 238.
Oedisiphum indicum Ghosh, 1969. *Proc. zool. Soc.* Calcutta, **22** : 123.

Material examined : 6 apterae, Aghore, 30.iv.1971, on *Gnaphalium leutoalbum*, Coll. *S. Chakraborti.*

Biological notes : Not known

Distribution : India and Nepal.

Genus **Pleotrichophorus** Borner

Pleotrichophorus Borner, 1930. *Arch. Klassif. Phylogen. Ent.*, **1** : 138. [Type-species : *Aphis glandulosa* Kaltenbach, 1846.]

Pleotrichophorus Borner ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 238.

Distribution : China ; Europe ; India ; Japan ; Korea ; Nepal and Taiwan.

Pleotrichophorus glandulosus (Kaltenbach)

Aphis glandulosa Kaltenbach, 1846. *Stett. Ent. Zeit.*, **7** : 170.

Pleotrichophorus glandulosus (Kaltenbach) ; Borner, 1930. *Arch. Klassif. Phylogen. Ent.*, **1** : 138.

Material examined : 11 apterae, Ratna Park, 13.x.1975 on unidentified plant of compositae.

Biological notes : Pale insects were collected from the undersurface of leaves.

Distribution : Bhutan ; China ; Europe ; India ; Japan ; Korea ; Nepal and Taiwan.

Genus **Perillaphis** Takahashi

Perillaphis Takahasi. 1965. *Insecta Matsum.*, 27 (2) : 101. [Type-species : *Macrosiphum perillae* Shinji, 1924.]

Perillaphis Takahasi ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 236.

Remarks : Takahashi (1965) erected *Perillaphis* as a subgenus of *Aulacorthum* to accommodate the species *Macrosiphum perillae* Shinji having the following characters like presence of longer hairs on antennae, femora, tibiae and dorsum of abdomen. Raychaudhuri et al., (1980) pointed out that beside the above character, the siphunculi of this species possess a few interconnecting transverse striae which form cells before the flange. For these characters they gave a generic status to the subgenus *Perillaphis*. Here *Perillaphis* is used in the sense of Raychaudhuri et. al. (1980). This genus is reported for the first time from Nepal.

Distribution : India ; Japan ; Nepal and Taiwan.

Perillaphis perillae (Shinji)

Macrosiphum perillae Shinji, 1924. *Zool. Mag.*, **36** (431) : 363.

Aulacorthum (Perillaphis) perillae (Shinji) ; Takahashi, 1965. *Insecta matsum.*, **27** (2) : 101.

Material examined : 2 apterae, Nagarkot, 11.x.1976 on *Perilla* sp.

Biological notes : Pale brown insects were collected from the under-surface of the host plant.

This species is a new record for Nepal.

Distribution : India ; Japan ; Nepal and Taiwan.

Genus **Rhopalosiphoninus** Baker

Rhopalosiphoninus Baker, 1920. *U.S.D.A. Bull.*, **826** : 58. [Type-species : *Amphorophora latysiphon* Davidson, 1912.]

Rhopalosiphoninus Baker ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 244.

Distribution : Cosmoplitan.

Rhopalosiphoninus latysiphon (Davidson)

Amphorophora latysiphon Davidson, 1912. *J. econ. Ent.*, **5** : 408.

Rhopalosiphoninus latysiphon (Davidson) ; Baker, 1920, *U.S.D.A. Bull.* **826** : 59.

Rhopalosiphoninus latysiphon (Davidson) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 124.

Material examined: One alata, Kathmandu, 29.iii.1972 on *Calendulla officinalis*, coll. *A.K. Ghosh.*

Biological notes : Not known.

Distribution : Africa ; England ; India ; Japan ; Nepal ; North America ; New Zealand, Tasmania.

Genus **Sinomegoura** Takahashi

Sinomegoura Takahasi, 1960. *Kontyu*, **28** (4) : 228. [Type-species : *Acyrthosiphon photiniae* Takahasi, 1936.]

Sinomegoura Takahashi ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 251.

Distribution : Australia ; China ; India ; Indonesia ; Japan ; Nepal ; New Ginha, The Philippines ; Singapore ; Sumatra and Taiwan.

Key to the species of the genus **Sinomegoura** Takahashi

Apterous viviparous female

Cauda dark, longer than (1.22-1.24) siphunculi with 18-19 hairs. Flagellum pale ... ... *Citricola* Van der Goot

Cauda pale, shorter than (0.87-0.90) siphunculi, with 12-14 hairs. Flagellum dark brown ... ... *nepalensis* sp. nov.

Sinomegoura citricola (van der Goot)

Macrosiphoniella citricola V.d. G. 1917. *Contr. Faune Indes Neerl.*, **1** (3) : 34.

Sinomegoura citricola (v.d.G) Takahashi, 1960. *Kontyu*, **28**, 228.

Material examined: 6 apterae, Ratna Park, 14.iv.1975 on an unidentified plant of Geraniaceae.

Biological notes : Greenish insects were collected from the undersurface of the leaves of the host plant which was weakly infested.

Distribution : Australia ; China ; India ; Indonesia ; Japan ; Nepal ; New guinea ; The Philippines ; Singapore ; and Taiwan.

Sinomegoura nepalensis sp. nov.

Apterous viviparous female :

Body pale, oval, about 2.81-2.88 mm long and 1.38-1.45 mm wide. Head with well developed lateral frontal tubercles bearing sparse spinules ventrally and with median freontal prominence ; dorsal cephalic hairs with acute to acuminate apices, about 0.51 x b.d. III. Antennae 6-segmented, segments I and II pale, spinulose ventrally, flagellum dark brown, segment III smooth except the sparsely imbricafed apices ; rest of the segments of flagellum imbricated, flagellar hairs with bluntish to incrassate apices, the longest hair on flagellum about 0.33 x b.d. III ; with 1-2 nonprotuberant secondary rhinaria at the base of segment III ; primary rhinaria ciliated, p.t. about 3.20-3.66 x base of segment VI. Rostrum reaching upto hind coxae, u.r.s. about 1.18-1.40 x h.t. 2 and with 4 secondary hairs. Mesothoracic furca with a broad base. Abdomen pale, with faint reticulations, dorsal haris like flagellar hairs, the longest hair on anterior tergites about 0.44-0.53 x b.d. III ; 8th tergite with four long hairs about 0.61-0.66 x b.d. III. Siphunculi subcylindrical, pale brown proximally and distally darker ; sometimes with 2-3 preapical striae, flange about 1.11-1.12 x cauda. Cauda pale, elongate, pointed at apex, with 12-14 hairs. Femora pale brown, darker apically, tibae brown, almost smooth, F.T.C- 3,3,3.

Measurment of the holotype : Length of body 2.81, width 1.00 ; antenna 2.95 ; antennal segments III : IV : V : VI 0.76 ; 0.63 : (0.22+0.72) ; u.r.s. 0.14 ; h.t.2 0.11 ; Siphunculi 0.55 ; cauda 0.48.

Alate viviparous female : Body pale, oval, about 2.22-2.29 mm long and 0.97-1.16 mm wide. Head with well developed lateral frontal tubercles, median prontal prominence weakly developed, dorsal cephalic hairs acute about 0.58-0.66 x b.d. III. Antennae 6-segmented, flagellum imbricated, brown except the pale base of segment III with 15-18 circular slightly protuberant secondary rhinaria, primary rhinaria circular, ciliated, p.t. about 3.66-3 99 x base of VI. Rostrum just passed the midcoxae, u.r.s. about 1.36-1.37 x h.t. 2 and with 4 secondary hairs. Abdominal tergum pale smooth, with segmentally arranged marginal pigmented spinular hair bearing patches ; dorsal hairs slightly more pointed than in apterae, longest hair on anterior tergites about 0.41-0.66 x h.t.2. Siphunculi 1.36-1.41 x cauda. Femora and tibiae darker than in apterae. Veins thick slightly bordered, cubitus and anal thicker and darker than media. Otherwise as in apterae.

Measurements of one alate viviparous female :

Length of body 2.29, width 0.97, antennae 3.14, antennal segments III : IV : V : VI 0.69 : 0.65 : 0.62 : (0.20+0.76) ; u.r.s. 0.14 ; h.t.2 ; 0.10 ; Siphunculi 0.47 ; cauda 0.33.

Remark : This species comes close to *Sinomegoura pyri* ghosh and Raychaudhuri but differs by the following characters ; frontal haris about 0.50 x b.d. III vs. 0.75 ; cauda pointed at apex, about 0.92-0.94 x the siphuculi vs. blunt at apex and 0.67 x the siphunculi ; Siphunculi brown vs. pale nearly all over ; u.r.s. about 1.18-1.40 x h.t.2 vs. equal.

Collection data : Holotype, apterous viviparous female, Kirtipnr 9.x.1976 on *Melia* sp. Paratypes and paramorphotypes, six apterous viviparous females and three alate viviparous female with the collection data same as holotype.

Biological notes : Yellowish insects were collected from the mildly infested tender shoots of the host plant.

Distribution : Nepal.

Genus **Shinjia** Takahashi

Shinjia Takahasi, 1938. *Tenthredo*, **2** (1) : 6. [Type-species : *Microtarsus pteridifoliae* Shinji, 1929.]

Shinjia Takahashi ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 249.

Distribution : Australia ; China ; India ; Japan ; Korea ; and Nepal.

Shinjia pteridifoliae (Shinji)

Microtarsus pteridifoliae Shinji, 1929, *Lansania*, **1** : 44.

Shinjia pteridifolia (Shinji) ; Sorin. 1962, *Kontyu*, **30** (1) : 21.

Shinjia pteridifoliae (Shinji) ; Ghosh, and Raychaudhuri, 1970. *Sci. Cult.*, **36** : 48.

Material examined : 8 apterae Ratna park, 13.iv. 1975 on *Polypodium* sp. ; 10 apterae and 6 alatae, Nagarkot, 12.x.1976 on *Pteris acuiena.*

Biological notes : Yellowish insects infested the underside of leaves and remained aggregated specially on the veins.

Distribution : Australia ; China ; India ; Japan ; Korea ; and Nepal.

Subfamily DREPANOSIPHINAE

Key to the genera

1. Processus terminalis slightly longer than base of last antennal segment ; spinal hairs on abdominal tergite 6 slightly closer than those on other segments ... **Mesocallis** Matsumura

Processus terminalis distinctly shorter than the base of last antennal segment ; spinal hairs on abdominal tergite 6 not closer than those on other segments ... 2

2. Wax plates present on head and body; siphunculi also with wax plates but without any hair at its base ... **Shivaphis** Das

Wax plate absent on body and siphhunculi, latter with hairs appended to its base 3

3. Lateral frontal tubercles well developed, first tarsal segments without dorsal hairs ; antennae shorter than body ... ... **Taoia** Quednau

Lateral frontal tubercles not prominent ; first tarsal segments with two dorsal hairs ; antennae shorter than body ... ... **Chromaphis Walker**

Genus **Chromaphis** Walker

Chromaphis Walker, 1870. *Zoologist*, (2) : 2000. [Type-species : *Lachnus juglandicola* Kaltenbach, 1843.]

Chromaphis Walker, 1965. *Can. Ent.* **92** : 1-51.

Head smooth ; frons convex ; lateral frontal tubercles ill developed ; dorsal cephalic hairs long with acute apices. Antennae 6-segmented, shorter than body ; segment III and sometimes segment IV with elliptical secondary rhinaria ; primary rhinaria ciliated, flagellum imbricated, from segment IV apicad ; hairs on flagellum short with acute apices ; p.t. shorter than base of segment VI. Rostrum short, hardly reaching mid-coxae ; u.r.s. shorter to nearly as long as h.t.2, with 3-5 pairs of secondary hairs. Abdominal dorsum slightly rugose, usually pale but sometimes with a median brownish patch on segments 3-6 ; marginal tubercles short, each bearing 2-6 hairs ; dorsal abdominal hairs long and fine. Siphunculi conical, flanged, with two basal hairs. Cauda short with globular apex, bearing many long hairs. Subanal plate indented. Rudimentary gonapophyses usually indistinct. Legs pale but usually with a black spot near apex of tibiae and tarsi with spinules, hairs on legs thin, pointed and much longer except a few thorn like hairs at apex of tibiae ; F.T.C. 7,7,7. Wing venation normal ; pterostigma smoky ; wing veins with dark spots at tips.

Quednau (1973) has elaborately discussed about this genus.

Distribution America ; Europe ; India ; Middle East ; Nepal.

Chromaphis hirsutustibis Kumar and Lavigne

Chromaphis hirsutustibis Kumar and Lavigne, 1970. *Pan-Pacif. Ent.*, **46** (2) : 123.

Chromaphis hirsutustibis Kumar and Lavigne ; Quednau, 1973. *Can. Ent*, **105** : 217-230.

Material examined : 3 alatae and 1 nymph, Godavari, 15.ix.1976 on an unidentified plant.

Biological notes : Stray yellowish laphids were collected from under-surface of leaves. No ant and no damage was noticed.

Distribution : India and Nepal.

Genus **Mesocallis** Matsumura

Mesocallis Matsumura, 1919 *Trans. Sapporo nat. Hist. Soc.*, 7 (2) : 103. [Type-species : *Myzocallis sawashibae* Matsumura, 1917.]

Mesocallis Matsumura ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 291.

Distribution : India : Japan ; Nepal and Taiwan.

Mesocallis obtusirostris Ghosh

Mesocallis obtusirostris Ghosh, 1974. *Orient Insects*, **8** (4) : 428.

Material examined : 3 alatae, and 1 nymph, Nagarjun 14.x.1976 on *Alnus nepalensis.*

Biological notes : Small whitish transparent solitary insects were collected from the underside of the tender leaves. No damage and no ant association was noticed.

Distribution : India and Nepal.

Genus **Shivaphis** Das

Shivaphis Das, 1918. *Mem. Indian Mus.*, **6** (4) : 245. [Type-species : *Shivaphis celti* Das, 1918.]

Shivaphis Das ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 298.

Distribution : India , Japan ; Korea ; Nepal and Taiwan.

Shivaphis celti Das

Shivaphis celti Das, 1918. *Rec. Ind. Mus.*, **6** (4) : 246.
Shivaphis celti Das ; Sharma, 1968, *Nepal J. Agri.* **3** : 128.

Material examined : 2 alatae and 2 nymphs, Ratna Park, 13.iv.1975 ; 2 alatae, Gosala, 7.x,1976 ; 1 aptera and 1 nymphs, Sayambhu, 10.x.1976 on *Celtis* sp.

Biological notes : Insects covered with white waxy threads were collected from the underside of leaves. Insects were mostly solitary on the mid ribs and were not attended by ants. No apparent damage symptom could be noticed.

Distribution : India ; Japan ; Korea ; Nepal ; Pakistan and Taiwan.

Genus **Taoia** Quednau

Taoia Quednau, 1973. *Can. Ent.*, **105** : 217. [Type-species : *Euceraphis chuansiensis* Tao, 1963.]

Taoia Quednau ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 304.

Distribution : China ; India ; Nepal.

Taoia indica (Ghosh and Raychaudhuri)

Euceraphis indica Ghosh and Raychaudhuri, 1972. *Orient. Insects*, **6** (1) : 371.

Material examined : 10 apterae, 2 alatae, Kirtipur, 9.x.1976 ; 14 apterae, 5 alatae, Nagarkot, 11.x.1976 ; 2 apterae, 1 alata, Pokhara, 17.x. 1976 on *Alnus nepalensis*.

Biological notes : Light green very alert insects were collected from the undersurface of the tender leaves. No damage symptom and ants were seen with the aphids.

Remarks : Ghosh and Raychaudhuri (1972) described a new species *Euceraphis indica* but after the publicated of a new genus *Taoia* by Quednau (1973) it was found that the species could be better fitted under that genus because of the absence of cribriform wax pore discision the dorsum of abdomen and in having semicircular secondary rhinaria. So this species has been transfereed to the genus *Taoia* Quednau by Raychaudhuri et al (1980).

Distribution : India and Nepal.

Subfamily GREENIDEINAE

Following Takahashi (1931) the subfamily has been divided into two tribes viz. Cervaphidini and Greenideini.

Key to the tribes

Body with processi ; eyes in apterae 3-faceted	...	Cervaphidini
Body with processi ; eyes in apterae multifaceted	...	Greenideini

Tribe CERVAPHIDINI

Genus **Sumatraphis** Takahashi

Sumatraphis Takahasi, 1935. *Misc. Zool. Sumatrana*, **97** : 3. [Type-species : *Sumatraphis celti* Takahashi, 1935.]

Sumatraphis Takahashi ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, 321.

Distribution : India ; Indonesia ; Nepal.

Sumatraphis celti Takahashi

Sumatraphis celti Takahashi, 1935. *Misc. Zool. Sumatrana*, **97** : 3.

Material examined : 17 apterae, 1 alata, 6 nymphs, Ratna Park, 16.x.1974 on *Celtis* sp.

Biological notes : Greenish insects were collected from the very base of the petiole where mild colony was formed.

Distribution : India ; Indonesia ; Nepal.

Tribe GREENIDEINI

Key to the genera

1. Cauda transversely oval with a median stylus ; siphunculi in apterae reticulated with transversely elongated cells, either near the very base or over its entire length except the spinulose apex ... **Greenidea** Schouteden

   Cauda transversely oval but never with a median stylus ; Siphunculi in apterae never reticulated as above 2

2. Hind tibiae with stridulatory ridges in the form of transverse cuts ... ... **Mollitrichosiphum** Suenaga

   Hind tibiae without stridulatory ridges ... **Eutrichosiphum** Essig and Kuwana

Genus **Eutrichosiphum** Essig and Kuwana

Eutrichosiphum Essig and Kuwana, 1918. *Proc. Calif. Acad. Sci.*, **8** (3) : 97. [Type-species : *Trichosiphum passaniae* Okajima, 1908.]

Eutrichosiphum Essig and Kuwana ; 1980. Aphids of North East India and Bhutan, p. 326.

Distribution : China ; India ; Indonesia ; Japan ; Java ; Malaysia ; Nepal and Taiwan.

Remarks : Essing and Kuwana (1918) erected the genus *Eutrichosiphum* under the tribe Greenideini for the aphid having 5-segmented antennae. Takahashi (1931) erected the genus *Paratrichosiphum* with *Greenidea tattakanum* as type-species when he separted genus from *Eutrichosiphum* chiefly by the presence of 6-sgemented antennae and described a few other specics under the genus. Later, Raychaudhuri (1956) found the genus *Paratrichosiphum* a heterogenous group and he transferred all the species except two, the type species *tattakanum* and his new species *javanicum* to other genera. In recent times difference in the number of antennal segments is not given sufficient imbortance for generic separation. In view of the above discussion *Paratrichosiphum* is considered here as a subgenus of *Eutrichosiphum*.

Key to the Subgenera of the genus **Eutrichosiphum** Essig & Kuwana

1.	Antennae 5 segmented	**Eutrichosiphum**
	Antennae 6 segmented	2
2.	Some hairs near base of siphunculi with furcated apices	**Neoparatrichosiphum**
	Siphuncular hairs acute apices	**Paratrichosiphum**

Key to the species of the genus **Eutrichosiphum** Essig & Kuwana

Apterous viviparous female :

1.	Antennae 5 segmented	2
	Antennae 6 segmented	3
2.	Dorsum of abdomen entirely spinulose ; siphunculi 4.50-5.30 x its maximum width ; rostral segments 4+5 about 1.80-1.90 x h.t.2	**Pasaniae pseudopasaniae** Szelegiewicz
	Dorsum of abdomen smooth medially; siphunculi about 7.30-8.60 x its maximum width ; rostral segments 4+5 about 3.00-3.33 x h.t.2	**quercifoliae** Raychaudhuri, Ghosh, Banerjee & Ghosh.
3.	Some hairs near the base of Siphunculi with furcated apices ; siphunculi about 0.23-0.29 x length of the body ; processus terminalis about 1.10 x base of segments VI	**Khasyanum** Ghosh and Raychaudhuri
	Hair of the siphunculi with acute apices ; six siphunculi about 0.40-0.48 x length of the body ; processus terminalis about 1.60-2.82 x base of segment VI	4
4.	Processus terminalis about 1.90-2.20 x base of segment VI ; rostral segments 4+5 about 1.90-2.10 x h.t.2. siphunculi about 5.60-5.90 x its maximum width	**alnicola** (Basu)
	Processus terminalis about 2.70-2.82 x base of segment VI ; rostral segments 4+5 about 2.26-2.30 x h.t.2 ; siphunculi about 6.12-7.90 x its maximum width	**alnifoliae** sp. nov.

Eutrichosiphum (Paratrichosiphum) alnicola Basu

Paratrichosiphum alnicola Basu, 1967. *Bull. Ent.* **8** (2) : 14.

Paratrichosiphum alnicola Basu, Ghosh, Ghosh and Raychaudhuri, 1971. *Proc. Zool. Soc.*, Calcutta, **24** : 50.

Material examined : 4 apterae, Kirtipur, 9.x.76, 12 apterae, Nagarkot, 11.x.76 ; 3 apterae, Godavari 15.x.1976 on *Alnus nepalensis*.

Biological notes : Brown insects were collected from the tender shoots. Mild infestation.

Distribution : India and Nepal.

Eutrichosiphum (Paratrichosiphum) alnifoliae sp. nov.

Apterous viviparous female Body pale, about 3.18-3.48 mm long and 1.41-1.58 mm wide. Head smooth, frons convex, dorsal cephalic hairs long with subacute apices. Antennae 6-segmented, shorter than body ; flagellum imbricated ; flagellar hairs long with subacute apices, the longest one on segment III about 4.20-4.60 x b.d. III ; secondary rhinaria absent ; primary rhinaria ciliated ; p.t. about 2.70-2.82 x base of segment VI. Mesothoracic furca stalked. Rostrum reaching beyond hind coxae, segments 4+5 long, about 2.26-2.30 x h.t.2, segment 4 about 6.50-7.00 x segment 5, with 8 secondary hairs. Abdomial dorsum pale, smooth, except for some spinules on anterolateral margin of anterior abdominal segments ; hairs on dorsum long with subacute apices, a few with furcated apices, longest hairs on anterior tergites about 4.65-4.75 x b.d. III, 8th tergite with two long subacute hairs, these about 4.65-5.00 x b.d. III. Siphunculi long, cylindrical, spinulose, about 0.40-0.44 x body, slightly constricted at base and apex ; hairs on siphunculi long with acute apices, longest one about 2.30-3.00 x b.d. of siphunculi. Cauda semioval, with 7-8 hairs. Legs pale, femora and tibiae with spinular imbrications, tibiae with a few stout thorn like hairs arranged in longitudinal rows near the apices beside 4 similar hairs encircling the apex ; F·T.C. 7,7,7.

Material examined : Holotype. Apterous viviparous female, Kirtipur 9.x.1976 ; on *Alnus nepalensis* ; 10 paratypes with the data same as holotype.

Biological note : Greenish insects were collected from the under-surface of leaves and tender shoots. Infestation was heavy and the leaves appeared slightly curled.

Remark : This species comes close to *Eutrichosiphum* (*Paratrichosiphum*) *alnicola* (Basu) but differs in the following points ; presence of thorny spine like hairs near the apices of tibiae ; longest hair on anterior abdominal tergites about 4.62-4.76 x b.d. III (Vs. 4.00-4.40) ; antenna about 0.73-0.83 x body (Vs.0.51-0.57) ; p.t. about 2.70-2.82 x base of segment VI (Vs.1.90-2.20) ; rostral segments 4+5 about 2.26-2.30 x h.t.2 (Vs.1.90-2.10) ; siphunculi about 6.12-7.90x maximum width (vs.5.60-5.90) ; abdominal dorsum densely covered with thin and mostly non-furcated hairs (vs. dorsal hairs fewer and mostly with furcated apices).

Distribution : Nepal.

Eutrichosiphum (Neoparatrichosiphum) khasyanum (Ghosh and Raychaudhuri)

Paratrichosiphum (Neoparatrichosiphum) khasyanum Ghosh and Raychaudhuri, 1962. *J. Asiatic Soc.*, **4** (3 and 4) : 108.

Paratrichosiphum tattakanum Takahashi ; Chakrabarti and Raychaudhuri, 1972. *Curr. Sci.*, **41** (23) : 859.

Material examined : 2 apterae, Daman, 30.ix.1971. on *Quercus* sp., coll. *S. Chakrabarti.*

Biological notes : Not known.

Distribution : India and Nepal.

Eutrichosiphum (Eutrichosiphum) pasaniae pseudopasaniae Szelegiewicz

Eutrichosiphum pseudopasaniae Szelegiewicz, 1968. *Ann. Zool. (Poland)*, **25** : 466.
Eutrichosiphum pasaniae pseudopasaniae Szelegiewicz ; Raychaudhuri and Chatterjee, 1874. *Indian J. ent.* **36** (4) : 319.

Material examined: 7 apterae, 1 alata and 3 nymphs, Pokhara, 17.x.1976 on *Quercus* sp.

Biological notes : Reddish brown insects were collected from the undersurface of tender leaves of the host plant which showed mild infestation. Small red ants were seen in association with the insects.

Distribution : India ; Nepal and Vietnam.

Eutrichosiphum (Eutrichosiphum) *quercifoliae* Raychaudhuri, Ghosh, Banerjec and Ghosh

Eutrichosiphum quercifoliac Raychaudhuri, Ghosh, Banerjee, and Ghosh, 1973. *Kontyu*, **41** (1) : 57.

Material examined : Whitish insects were found aggregated near the mid rib on the undersurface of the leaves having mild colony ; small red ants were found with the insects.

Distribution : India and Nepal.

Genus **Greenidea** Schouteden

Greenidea Schouteden, 1905. *Spolia Zeylan*, **2** (8) : 181. [Type-species : *Siphonopora artocarpi* Westwood, 1890.]
Greenidea Schouteden ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 337.

Distribution : India ; Japan ; Nepal ; Sri lanka and Taiwan.

Key to the subgenera of the genus **Greenidea** Schouteden

Apterous viviparous female :

1. Siphunculi in apterae reticulated on one surface at least near base and densely spinulose throughout ... **Trichosiphum**
   Siphunculi in apterae distinctly reticulated on both surfaces though out the length and with spinules more dense near apex 2

2. Flagellum distinctly reticulated near base of segment III and imbricated ... ... **Neogreenidea**

   Flagellum not reticulated as above but with normal imbrication ... ... **Greenidea**

Key to the species of the genus **Greenidea** Schoutedon

Apterous viviparous female :

1. Siphunculi reticulated on one surface at least near the base ; processus terminalis about 0.73-0.81 x antennal segment III ; siphunculi about 7.71-9.00 x its maximum width ... ... **formosana** (Maki)

   Siphunculi distinctly reticulated on both surfaces ... 2

2. Flagellum distinctly reticulated at least near the base of segment III ; abdominal dorsum with a dark brown median patch posteriorly ; siphunculi about 0.41-0.42 x body ; segment 4 of rostrum about 7.00-8.00 x segment 5 ... ... **querciphaga** Raychaudhuri, Ghosh, Banerjee and Ghosh.

   Flagellum not reticulated as above but with normal imbrications 3

3. Siphunculi about 4.50-6.10 x its maximum width ; processus terminalis about 1.03-1.16 x antennal segment III ... ... **ficicola** Takahasi

   Siphunculi about 11-14 x its maximum width ; processus terminalis about 1.30-1.40 x antennal segment III 4

4. Hairs on 7th tergite about 1.30-2.90 x b.d.III ; rostral segments (4+5) about 2.00-2.40 x h.t.2 ... ... **longirostris** Basu

   Hairs on 7th tergite about 3.20-4.20 x b.d.III ; rostral segment (4+5) about 1.70 x h.t.2 ... ... **photiniphage** Raychaudhuri Ghosh, Banerjee and Ghosh.

Alate viviparous female :

Siphunculi about 2800 x its maximum width ; segment 4 of rostrum about 4.80-5.50 x segment 5 ; rostral segment 4+5 about 2.40-2.60 x h.t.2 ... ... **longirostris** Basu

Siphunculi about 15.00-17.00 x its maximum width ; segment 4 of rostrum about 7.5 x segment 5 ; rostral segments 4+5 about 2.12 x h.t.2 ... ... **photiniphaga** Raychaudhuri, Ghosh, Banerjee and Ghosh.

Greenidea (Greenidea) ficicola Takahashi

Greenidea ficicola Takahashi, 1921. *Aphididae of Formosa*, **1** : 66.
Greenidea ficicola Takahashi ; Basu, Ghosh and Raychaudhuri, 1973. *Proc. zool. Soc., Calcutta*, **26** : 96.

Measurements examined : 2 apterae, 3 nymphs, Barabisi, 20.x.1976 on *Ficus cannis*.

Biological notes : Brownish green insects were collected from the tender shoots where colony formation just started.

Distribution : Australia ; China ; Formosa ; India ; Indonesia ; Nepal ; Russia.

Greenidea (Trichosiphum) formosana (Maki)

Trichosiphum formosana Maki, 1917. *Coll. Essays for Nawa, Gifu*, **13**. (partim)
Greenidea formosana (Maki) ; Takahashi, 1921. *Aphididae of Formosa*, pt. **1** : 65.
Greenidea (Trichosiphum) formosana (Maki) ; Raychaudhuri 1956. *Zool. Verh*, **31** : 53.

Material examined : 5 apterae, 2 nymphs, Balaju, 14.iv.1975, 5 apterae, 3 nymphs, new Road, 16.iv.1975 ; 3 apterae, 4 nymphs, Pokhara. 17.x.1976 on *Psidium guyava*.

Biological notes : Brownish insects were found on the undersurface of leaves and on tender shoots. The colony was mild.

Distribution : China ; Japan ; Java ; India ; Indonesia ; Nepal ; Taiwan.

Greenidea (Greenidea) longirostris Basu

Greenidea longirostris Basu, 1969. *Orient. Insects.*, **3** (4) : 358.
Greenidea (Greenidea) longirostris Basu ; Ghosh, Ghosh and Raychaudhuri, 1971. *Proc. zool. Soc., Calcutta*, **24** : 166.

Material examined : 8 apterae, 2 alatae, 7 nymphs, Pokhara, 19.iv.1975 on *Quercus* sp.

Biological notes : Pale yellow insects were collected from the petiole and undersurface of leaves where colony was mild.

Distribution : India ; Nepal.

Greenidea (Greenidea) photiniphaga Raychaudhuri, Ghosh, Banerjee and Ghosh

Greenidea photiniphaga Raychaudhuri, Ghosh, Banerjee and Ghosh, 1973. *Kontyu*, **41** (1) : 61.

Material examined : 1 aptera, 2 alatae, Pokhara, 19.iv.1975 ; 6 apterae, 3 nymphs, Barabisu, 20.x.1976 on *Quercus* sp.

Biological notes : Pale greenish insects were collected from the leaves and the petioles of the host plants showing mild infestation.

Distribution : India and Nepal.

Greenidea (Neogreenidea) querciphaga Raychaudhuri, Ghosh, Banerjee and Ghosh

Greenidea (Neogreenidea) querciphaga Raychaudhuri, Ghosh, Banerjee, Ghosh, 1973. *Kontyu*, **41** (1) : 64.

Material examined : 4 apterae, Godavari, 15.x.1976 on *Quercus* sp.

Biological note : Light brown insects were collected from the under-surface of tender leaves ; mild infestation.

This species is a new record for Nepal.

Distribution : India and Nepal.

Genus **Mollitrichosiphum** Suenaga

Mollitrichosiphum Suenaga, 1934. *Bull. Kagoshima imp. Coll. Agric. For.*, **1** : 799. [Type-species : *Trichosiphum tenuicorpus* Okajima, 1908.]

Mollitrichosiphum Suenaga ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 353.

Distribution : China ; India ; Japan ; Nepal and Taiwan.

Key to the subgenera of the genus **Mollitrichosiphum** Suenaga

Flagellar hairs more or less of similar lengths and pointing in all direction ; radial sector nearly straight ...	**Mollitrichosiphum**
Flagellar hairs long and short, longer hairs mostly directed inwards ; radial sector distinctly curved ...	**Metatrichosiphon**

Key to the species of the genus **Mollitrichosiphum** Suenaga

Apterous viviparous female :

1.	Flagellar hairs more or less of similar lengths and pointing in all directions ; rostral segments 4+5 about 2.12-2.25 x h.t.2 ; segment 4 of rostrum about 7.50-8.50 x segments 5	**godavariense** sp. nov.
	Flagellar hairs long and short, longer hairs mostly directed inwards	2
2.	Siphunculi about 0.77-0.95 x body ; rostral segments 4+5 about 1.75-2.00 x h.t.2 ; 4th rostral segment about 5-5.50 x segment 5 ; siphunculi about 20-25 x its maximum width	*alni* ghosh, Banerjee and Raychaudhuri

Siphunculi about 0.47-0.55 x body ; rostral segments 4+5 about 1.40-1.50 x h.t.2 ; 4th rostral segment about 9-10 x its maximum width ... ... **buddlejae** Ghosh, Banerjee and Raychaudhuri

Mollitrichosiphum (Metatrichosiphon) alni Ghosh, Ghosh and Raychaudhuri

Mollitrichosiphum (Metatrichosiphon) alni Ghosh, Ghosh and Raychaudhuri, 1970. *Orient. Insects*, **4** (2) : 200.

Material examined : 4 apterae, Godavari, 5.x.1976 on *Quercus* sp. ; 12 apterae, 8 alatae and 26 alate males, Nagarkot, 11.x.1976 ; 8 apterae, 9 alatae oviparae, 2 alate males ; Nagarjun, 14.x.1976 ; 8 apterae, 1 alata, Narayanthan, 19.x.1976 on *Alnus nepalensis*.

Biological notes : Pale or whitish insects were collected from the undersurface of tender leaves, moderate infestation, no damage of the host plants. This species is reported for the first time from Nepal.

Distribution : India and Nepal.

Mollitrichosiphum (Metatrichosiphon) buddlejae Ghosh, Banerjee and Raychaudhuri

Mollitrichosiphum (Metatrichosiphon) buddlejae Ghosh, Banerjee and Raychaudhuri, 1971, *Proc. zool. Soc. Calcutta*, **24** : 107.

Material examined : 9 apterae, Nagarkot, 12.x.1976 on *Alnus nepalensis*.

Biological notes : Light brown insects collected from tender shoots, moderate infestation, no damage to the host plant.

This species is a new record for Nepal.

Distribution : India and Nepal.

Mollitrichosiphum (Mollitrichosiphum) godavariense sp. nov.

Apterous viviparous female

Body elongate, pale, about 2.56-2.83 mm. long with 0.97-1.11 mm. as maximum width. Head smooth, frons slightly convex ; dorsal cephalic hairs long, about 3.66-3.84 x b.d. III and with fine apices. Antennae 6-segmented, shorter (about 0.69-0.76 than body , flagellum imbricated ; flagellar hairs long and fine and pointed in all directions, longest hair on segment III about 4.56-5.00 x basal diameter of segment III ; primary rhinaria ciliated ; p.t. 1.42-1.50 x base of segement VI. Mesothoracic

furca with a stalk. Rostrum extending beyond midcoxae, rostral segments 4+5 about 2.25 x h.t.2 ; segment 4 about 8.00-8.50 x segment 5 and with 15 secondary hairs. Abdomen pale and smooth, hairs on tergum like dorsal cephalic hairs, longest hair on anterior tergites about 3.43-3.86 x b.d. III, 8th tergite with two long acute hairs, these about 3.12-3.33 x b.d. III. Venter of abdomen spinulose. Siphunculi pale, cylindrical, spinulose, about 0.56-0.59 x body, hairs on siphunculi long with fine apices, longest hair about 1.40 x basal diameter of the siphunculi. Cauda semioval, with 8 hairs. Legs pale, femora imbricated and about 14-18 stridulatory ridges present on hind tibiae : F.T.C. 7,7,7.

Measurements of the Holotype : Length of body 2.56, Width 0.97 ; antenna 1.95, antennal segments III : IV V VI 0.83 : 0.20 , 0 27 : (0.19+0-29) ; rostral segment (4-5) 0.28 ; h.t. 2 0.72 ; Siphunculi 1.47.

Alate oviparous female :

Body elongate, about 3.10-3.12 long. Dorsal cephalic hairs about 3.66-3.84 x b.d. III. Antenna shorter than body ; semicircular protuberant secondary rhinaria present on segment III. Abdominal dorsum smooth, with a diffused pigmented patch medially and a pair of dark isolated marginal patches on each of segments 1-6, longest hair on anterior tergites about 2.00-2.70 x b.d. III : tergite 8 with 2 long hairs, these about 1.79-2.00 x b.d. III. Siphunculi dark, about 0.75-0.80 x body ; hairs on siphunculi long with fine apices, longest hair about 2.00 x basal diameter of siphunculi. Wing venation normal with the radial sector nearly sub-straight. Measurements of one alate oviparous female Length of body 3.11, width 1.15, antenna 2.66, antennal segments III : IV : V VI 1.04 : 0.27 : 0.30 : (0.22+0.30) ; rostral segments (4+5) 0.60 ; h.t.2, 0.11 ; siphunculi 2.50 ; Cauda 0.04.

Material examined : Holotype : One apterous viviparous female, Godavari, 15.x.76 on *Quercus* sp ; Paratypes ; 12 apterae and 15 alate oviparous females with the same collection data as is holotype.

Biological notes : Pale to dark brown insects were collected from the undersurface of tender leaves. Infestation moderate, no damage symptom to the host plant was noticed.

Remarks : This species comes close to *Mollitrichosiphum* (*Mollitrichoslphum*) *Shinji* Raychaudhuri, Ghosh, Banerjee and Ghosh but differs in the following characters. Segment 4 of rostrum about 7.50-8.00 x segment 5 vs. 4.20-4.50 ; hairs on 8th tergite about 3.12-3.33 vs. 2.60 x b.d. III ; anterior adbominal longest targal hair 4.56-5.00 x b.d. III. vs. 4,10 ; siphunculi about 10.6-11.10 x maximum width vs. 8.60.

Distribution : Nepal.

Subfamily HORMAPHIDINAE

Key to the genera

1. Siphunculi without any encircling hairs at base ... **Neoceratovacuna** Ghosh, Pal and Raychaudhuri

   Siphunculi with encircling hairs at base ... —2

2. Cephalothorax without wax pores. Wax gland cells oval, usually laterally compress ... ... **Astegopteryx** Karsch

   Cephalothorax with wax pores ; wax gland cells circular ... ... —3

3. One of the dorsoapical hairs on 2nd tarsal segment with swollen apex and the other with normal apex ... **Paraoregma** Ghosh, Pal and Raychaudhuri

   Both dorsoapical hair on 2nd tarsal segment in apterae with swollen apices ... ... **Ceratovacuna** Zehntner

Genus **Astegopteryx** Karsch

Astegopteryx Karsch, 1890. *Ber. dt. bot. Ges.*, **8** : 52. [Type-species : *Astegopteryx styracophila* Karsch, 1890.]

Astegopteryx Karsch ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 362.

Distribution : Java ; India ; Indonesia and Nepal.

Astegopteryx minuta (van der Goot).

Oregma minuta V.d.G., 1971. *Contrib. Faune Indes Neerl.*, **1** (3) : 201.

Astegopteryx minuta (V.d.G.) ; Ghosh, Pal and Raychaudhuri, 1974, *Proc. zool. Soc. Calcutta*, **27** : 85.

Material examined : 40 apterae, 10 nymphs, Balaju, 14.ix.1975 ; 26 apterae, 6 nymphs, Thapathali, 17.iv.75, on *Bambusa* sp.

Biological notes : Small yellowish insects were collected from under-surface of the the heavily infested leaves of the host plant. A few small black ants were associated with the aphids. No pronounced damage to the host plant.

Distribution India, Indonesia and Nepal.

Genus **Ceratovacuna** Zehntner

Ceratovacuna Zehntner, 1897. *Meded. Proef. Java n.s.*, **37** : 29. [Type-species : *Ceratovacuna lanigera* Zehntner, 1897.]

Ceratovacuna Zehntner ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 369.

Distribution : Africa ; China ; Far East Japan ; India ; Indonesia ; Korea ; Nepal ; The Philippines ; Sri Lanka ; Taiwan.

Key to the species of the genus **Ceratovacuna** Zehntner

Apterous viviparous female :

1. Abdominal dorsum with spinal, pleural and marginal wax gland cell groups ... ... **perglandulosa** Basu, Ghosh and Raychaudhuri

   Abdominal dorsum with only marginal wax gland cell groups ... ... —2

2. Large wax gland cell groups present from head to abdominal segments ... ... **indica** Ghosh, Pal & Raychaudhuri

   Wax gland cell groups discernable only on posterior abdominal segments ... ... **lanigera** Zehntner

Ceratovacuna indica Ghosh, Pal and Raychaudhuri

Ceratovacuna indica Ghosh, Pal and Raychaudhuri 1974. *Proc. zool. Soc. Calcutta*, **27** : 96.

Material examined 20 apterae and 6 nymphs, Gosala, 7.x.1976. on *Bambusa* sp.

Biological notes : Yellowish insects covered with powdered waxy granules were collected from undersurface of leaves of the host plant. Infestation was quite heavy but the damage to the plant was not appreciable.

This species is reported for the first time from Nepal.

Distribution : India and Nepal.

Ceratovacuna lanigera Zehntner

Ceratovacuna lanigera Zehntner, 1897, *Meded. Proefs Java*, **37** : 553.

Material examined : 22 apterae, 10 alatae and 6 nymphs, Ratna Park, 4.x.1976 on *Saccharum officinarum.*

Biological notes : Brown insects covered with waxy threads were collected from the undersurface specially the mid rib area of the leaves of the host plant where the insects formed thick colony. The infested leaves developed brownish patches. Coccinelid beetles and big black ants were seen in association with the insects.

Distribution : China ; India ; Indonesia ; Japan ; Java ; Nepal ; The Philippines ; Sri Lanka.

Ceratovacuna perglandulosa Basu, Ghosh and Raychaudhuri

Ceratovacuna perglandulosa Basu, Ghosh and Raychaudhuri, 1973. *Proc. zool. Soc. Calcutta*, **26** : 98.

Ceratovacuna perglandulosa Basu, Ghosh and Raychaudhuri ; Ghosh, Pal, and Raychaudhuri, 1974, *Proc. zool. Soc. Calcutta*, **27** : 100.

Material examined : 26 apterae and 8 nymphs, Gosala, 7.x.1976 on *Bambusa* sp.

Biological notes : Yellowish insects covered by whitish powder were collected from the undersurface of the densely infested leaves of the host plant which did not show any apparent symptom of damage.

Distribution : India and Nepal.

Genus **Neoceratovacuna** Ghosh, Pal and Raychaudhuri

Neoceratovacuna Ghosh, Pal and Raychaudhuri, 1974. *Proc. zool. Soc. Calcutta*, **27** : 81-116. [Type-species : *Oregma panicicola* (Takahashi), 1921.

Neoceratovacuna Ghosh, Pal and Raychaudhuri ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 380.

Remarks This genus was erected in 1974 by Ghosh, Pal and Raychaudhuri to accomodate the species *Oregma Panicicola* Takahashi and there they provided an elaborate discussion on the affinity of the genus.

Distribution : Africa ; Australia ; India ; Japan , Nepal ; New Zealand and Taiwan.

Neoceratovacuna panicicola (Takahashi)

Oregma panicicola Takahashi, 1921, *Aphididae of Formosa*, **1** : 90.

Neoceratovacuna panicicolo (Takahashi) ; Ghosh, Pal and Raychaudhuri, 1974, *Proc. zool. Soc. Calcutta*, **27** : 103.

Material examined : 6 apterae, Balaju, 4,x.76 ; 4 apterae, 5 nymphs, Godavari, 5.x.76 ; 8 apterae, 3 nymphs, Balaju, 18.x.74 on *Oplismanus Compositus.*

Biological notes : Powdery wax covered brown insects were collected from the inflorescence and leaves. Due to heavy infestation the growth of the plant appeared slightly stunted.

Distribution : Africa ; Australia ; Japan ; India ; Nepal ; New Zealand and Taiwan.

Genus **Paraoregma** Ghosh, Pal and Raychaudhuri

Paraoregma Ghosh, Pal and Raychaudhuri, 1974. *Proc. zool. Soc., Calcutta*, **27** : 81-116. [Type-species : *Oregma alexanderi* Takahashi, 1974.]

Paraoregma Ghosh, Pal and Raychaudhuri ; Raychaudhuri 1980. Aphids of North East India and Bhutan, p. 388.

Remarks : Ghosh, Pal and Raychaudhuri (1974) erected this genus with *Oregma alexanderi* Takahashi as the type specis and discussed its affinity with allied genera.

Distribution : China ; India ; Nepal and Taiwan.

Paraoregma alexanderi (Takahashi)

Oregma alexanderi Takahashi, 1924. Aphididae of Formosa **3** : 8.
Paraoregma alexanderi (Takahashi) ; Ghosh, Pal and Raychaudhuri, 1974, *Proc. zool. Soc. Calcutta*, **27** : 106.

Material examined: 24 apterae, 5 nymphs, Balaju, 24.iv.75 ; 3 apterae, Sayambhu, 16.iv.1975 ; on *Bambusa* sp.

Biological notes : Dark brown wax covered insects were collected from the tender shoots and undersurface of leaves of the host plant. Infestation was heavy but no pronounced damage symptom was noticed. Black ants were found in assoication with the insect.

Subfamily LACHNINAE

The subfamily LACHNINAE has been divided into two tribes.

Key to the tribes

Ultimate rostral segment pointed ; media of forewing faint ... ... CINARINI
Ultimate rostral segment blunt ; media of forewing distinct ... ... LACHNINI

Genus **Cinara** Curtis

Cinara Curtis, 1835. *British Entomology*, **12** : 576. [Type-species : *Aphis pini* Linn. 1758.]
Cinara Curtis ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 395.

Distribution : Cosmopolitan.

Cinara saraswatae sp. nov.

Apterous viviparous female : Body elongated oval, about 2.83-3·27 mm long and about 1.36-1.55 mm wide. Head pale brown and smooth ; frons convex, without lateral frontal tubercles and with a median longitudinal suture ; dorsal cephalic hairs long with fine apices, about 4.35-4.58 x b.d. III. Antennae 6-segmented, segment I brown and segment II pale ; flagellum pale except pale brown apices of segments III-V and segment VI. Each of segment III-V with a secondary rhinarium near apex ; of segment VI faintly imbricated, rest of flagellum nearly smooth ; primary rhinaria circular and non-ciliated ; flagellar hairs long and fine,

about 5.00-5.50 x b.d. III ; p.t. about 0.33-0.40 x base of segment VI. Rostrum long, reaching siphunculi, u.r.s. pointed, about 1.18-1.24 x h.t.2 and segment 4 with 6 secondary hairs. Mesothoracic furca with a short stalk. Dorsum of abdomen somewhat wrinkled with irregularly scattered brownish patches at hair bases ; each of segments 7 and 8 each with a pair of transverse brownish patches laterally leaving a median free area ; dorsal hairs long with fine apices, longest hair on anterior tergites about 5.00-5.80 x b.d. III, 8th tergite with about 12 long and fine hairs, these about 6.00-6.50 x b.d. III. Siphunculi brown, conical, with chitinised rims encircled by hairs at base. Cauda semioval, brown, with many long hairs. Legs smooth, apices of femora, bases and distal 0.70 portion of tibiae dark brown, rest pale, first tarsal segments with about 15 hairs.

Measurement of the holotype : Length of body 3.27, width 1.55, antenna 1.20, antennal segments III : IV : V : VI : 0.51 : 0.16 : 0.22 : (0.13+0.05) ; u.r.s. 0.28 ; h.t.2 0.22 ; siphuncular pore 0.08 ; cauda 0.09.

Material examined : Holotype ; one apterous viviparous female, Nagarkot, 12.x 1976 ; on *Pinus* sp. Paratypes : 7 apterae viviparae, 3 nymphs with the collection data same as holotype.

Biological notes : Dark brown insects were collected from the bases of the needles occurring on the tender stems. Infestation was mild.

Remarks : This species comes close to *Cinara* (*cupressobium*) *juniperina* (*Mordvilko*) but differs in the following points ; hind tibiae dark at both base and apex leaving a paler central area (vs. dark only at the apex), antennal segment III shorter than diametre of siphuncular cone (Vs. segment III longer than diameter of siphuncular cone), base of segment VI about 2 x p.t. (vs. 2.50-3.50), host plant *Pinus*. sp. (vs. *cupressus* sp. or *juniperus* sp.), ratio of antennae/length of body 0.33-0.36 (vs.0.40).

Genus **Nippolachnus** Matsumura

Nippolachnus Matsumura, 1917. *J. Coll. Agric. Hokkaido imp. Univ.*, 7 (6) 382. [Type-species *Nippolachnus piri* Matsumura, 1917.]

Nippolachnus Matsumura ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 402.

Distribution : India ; Japan ; Korea ; Nepal and Taiwan.

Nippolachnus piri Matsumura

Nippolachnus piri Matsumura, 1917. *J. Coll. Agric. Hokkaido Imp. Univ.*, 7 (6) : 382.

Nippolachnus piri Matsumura ; Takahashi, 1931. *Aphididae of Formosa*, Part 6 : 25.

Nippolachnus piri Matsumura ; Ghosh, and Raychaudhuri, 1962. *J. Asiatic Soc.*, 3 & 4 : 107.

Material examined: 8 apterae, 4 alatae, Kirtipur, 9.x.1976 on *pyrus melo.*

Biological notes: Greenish insects were collected from underside of leaves specially from midrib region. Infestation was mild.

This species is a new record from Nepal.

Distribution : India ; Japan ; Korea ; Nepal and Taiwan.

Subfamily PEMPHIGINAE

Key to the genera

1. Siphunculi absent ... ... **Prociphilus** Koch
   Siphunculi present 2
2. Apterae with one segmented tarsi, wax-plates on abdomen with a hair ... ... **Tetraneura** Harting
   Apterae with two segmented tarsi, wax-plales on abdomen without any hair ... ... **Eriosoma** Leach

Genus **Eriosoma** Leach

Eriosoma Leach, 1818. *Trans. R. Hort. Soc. London*, **3** : 60. [Type-species : *Eriosaom mali* Leach, 1818. (Syn. *Aphis lanigera* Hausmann, 1802.]

Eriosoma Leach ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 414.

Distribution : Cosmopolitan.

Eriosoma lanigerum (Hausmann)

Aphis lanigera Hausmann, 1802. *Mag. Insektenk*, **1** : 440.

Eriosoma lanigerum (Hausmann) ; Leach, 1818. *Trans. R. Hort. Soc. London*, **6** : 60.

Eriosoma lanigerum (Hausmann) ; Cottier, 1953. *Aphids of New Zealand*, p. 332.

Material examined: 30 apterae, 2 alatae and 6 nymphs. Kirtipur, 9.x.1976 on *Prunus* sp.

Biological notes: Brown insects covered with powdery waxy secretion were collected from the undersurface of tender leaves.

Distribution : Cosmopolitan.

Genus **Prociphilus** Koch

Prociphilus Koch, 1857. *Die Pflanzen Aphiden*, **3** : 279. [Type-species : *Aphis bumeliae* Schrank, 1801.]

Prociphilus Koch ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 423.

Distribution : Europe ; Far East : India ; Nepal ; North America ; Taiwan and U.S.S.R.

Prociphilus cornifoliae Singh, Das and Raychaudhuri

Prociphilus cornifoliae Singh, Das and Raychaudhuri 1977, *Entomon*, **2** (2) : 221-223.

Material examined : 5 alatae viviparous females and 6 nymphs, Balaju, 14.iv.1973 on an unidentified plant.

Biological notes : Brown insects coverd with waxy powder granules were collected from the under surface of curled leaves. Small red ants were seen in association with the insects.

Distribution : India and Nepal.

Genus **Tetraneura** Hartig

Tetraneura Hartig, 1841 *Germar's Z. Entomol.*, **3** : 366. [Type-species : *Aphis ulmi* Linn. 1758.]

Tetraneura Hartig ; Raychaudhuri, 1980. Aphids of North East India and Bhutan, p. 426.

Distribution Cosmopolitan.

Tetraneura nigriabdominalis (Sasaki)

Schizoneura nigriabdominalis Sasaki, 1899. Manual of Insect pests of Crops in Japan, p. 435.

Tetraneura nigriabdominalis (Sasaki) ; Eastop, 1966. *Aust. J. Zool.*, **14** : 541.

Tetraneura nigriabdominalis (Sasaki) ; Chakraborti, Ghosh and Raychaudhuri, 1971. *Sci. Cult.*, **37** ; 247.

Material examined : 2 alatae, New Road, 20.x.1974 on *Lycopersicum esculantum* ; 1 alata, Balambu, 13.x.76 on unidentified plants of Magnoliaceae,

Biological notes : Dark brown solitary alate viviparous females were collected from the undersurface of leaves of the plants.

Distribution : Africa ; Australia , India ; Japan ; Malayasia ; Nepal ; Pakistan and Taiwan.

SUMMARY and CONCLUSION

This work is the first consolidated account of aphids of Nepal where 116 species are known to occur till now. Of these 82 species have been collected by the first author during the period 1974-1976 and rest of the species have been reviewed from literature.

The 116 species of aphids are distributed over 64 genera under 7 subfamilies. Of these 5 species have been considered here as new to science and 11 other species are recorded for the first time from Nepal. Among these 85 species have been recorded from Kathmandu Valley.

Subfamily wise break up of 116 species shows that Anoeciinae contains 2 species under 1 genus, Aphidinae 75 species under 39 genera, Drepanosiphinae 6 species under 6 genera, Greenideinae 17 species under 5 genera, Hormaphidinae 7 species under 5 genera, Lachninae 5 species under 4 genera, Pemphiginae 5 species under 4 genera. The foregoing account reveals that members of the subfamily Aphidinae are much more abundant. Again in this snbfamily the aphids belonging to the tribe Macrosiphini are more frequently found.

The distribution pattern of aphid species in Nepal in relation to Indian territory shows that 75% of the species are common with those found in north eastern Himalaya and about 81% with north western Himalaya, 20% with peninsular India. On the basis of zoogeographical realm, 30% of the species are common with Palearctic region and 40% with the Oriental region. Similarly a genus wise consideration shows that 12% of the genus have Palearctic distribution and rest Oriental.

The present work brings out the fact that 70% of the species prefer restricted host plants. The aphids which are found in Nepal also show preference to members of the plant family Compositae and Graminae among the herbs and Fagaceae and Rosaceae among the trees.

Increase in the number of aphids in the colony occurs heavily during the post monsoon (Sept.-Oct.) period as also incidence of occurance of different species (65% of the total aphid species); this increase in the number of species in the postmensoon period may be attributed to the luxuriant growth of vegetation during the monsoon period. In the spring time (March-April) the colony becomes thin and the number of aphid species is also less (25% of the total aphid specics). The alate morphs are also more abundant in number (31% of the total species) during the post monsoon period. High density of aphid population during the post monsoon period and consequent shortage of space and food within the colony probably leads to the production of more alate morphs for dispersal. So far sexual morphs of only 3 species are known from Nepal and that even during the onset of winter when day length is rather short and temperature is quite low. So it has been assumed that aphids of Nepal, so far known, perpetuate by anholocyclic life cycle.

From the foregoing discussion it may be concluded that the aphid fauna of Nepal bear close resemblance to that of Indian subregion not only in respect of aphid species occurring there but also with regard to the mode of life cycle exhibited by the majority of aphids.

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List of species reviewed from Literature

The following species were reported by the other workers but the authors could not collect nor could procure the material from the persons concerned. So no comments could be made regarding these species.

Aiceona pervicornis Miyazaki

Aiceona pervicornis Miyazaki, 1977. *Kontyu*, **45** (2) : 199-213.

Collection data : 3 apterous and 1 alate viviparous female, Ulleri (12.v.68) on *Sindera pulcherrima*, Coll. T Kumata.

Comments : Miyazaki (1977) while describing this new species did not mention about its nearest ally. He only pointed out a few characters, viz. Siphuncular cone small, u.r.s. shorther than h.t. 2., with 2 or 3 secondary hairs, head of apterae with sutures as the distinctive features of the species.

Aphis euphorbiae Thomas

Aphis euphorbiae Thomas ; Chakrabarti and Raychaudhuri, 1972. *Curr. Sci.*, **41** : 858-859.

Collection data : Apterous viviparous females and nymphs, Aghore (30.ix.1971) on *Euphorbia herecta*, Coll, S. Chakrabarti.

Comments : Chakrabarti and Raychaudhuri (1972) named Entomology Laboratory, Calcutta University as its repository but it seems to be misplaced and could not be examined.

Aphis glycinae Matsumura

Aphis glicine Matsumura ; Sharma, 1968. *Nep. J. Agri.* **3** : 108.

Collection data : Material were collected at Meen Bhawan (9.viii.1966) from *Glycine max* but alatae or apterae were not mentioned, coll, K.C. Sharma.

Aphis hardyi

Aphis hardyi Eastop ; Miyazaki, 1977. *Kontyu*, **45** (2) : 200.

Collection data : Some apterous and alate viviparous females, Balaju, (1.vii.1968), host undertermined, Coll. T Kumata.

Adhis kurosawai Takahashi

Aphis kurosawai Takahashi ; Miyazaki, 1977, *Kontyu*, **45** (2) : 200.

Collection data ; Some alata and apterous vividarous females, Balaju (1.vii.1968) on *Artmisia indica*, Coll. T Kumata.

Aphis nerii B.d.F.

Aphis nerii B.d.F. ; Sharma, 1968. *Nep. J. Agri.*, **3** : 109.

Collection data : Material were collected at Kavilashi (3.ii.1936) from *Callotropis indica* ; at Kathmandu (5.iv.1966) from *Hoa bella* but no morphs was mentioned, Coll. K.C. Sharma.

Aphls rubifoliae Thomas

Aphis rubifoliae Thomas ; Sharma, 1968. *Nep. J. Agri.*, **3** : 110.

Collection data : Material were collected at Shreemahal (16.iii.1966) from *Rubus elliptica* but no indication of morphs. Coll. K C. Sharma.

Acutosiphon obliquoris Basu, Ghosh and Raychaudhuri

Acutosiphon obliquoris Basu, Ghosh and Raychaudhuri ; *Miyazaki*, 1977. *Kontyu*, **45** (2) : 201.

Collection data : A few alate viviparous females and nymphs, Ulleri (12.v.1968) on *Lyonia ovalifolia*, Coll. T Kumata.

Comments : Miyazaki (1977) while describing the alate viviparae of this species from Nepal probably through oversight stated that it was the first description of the said morph but actually the alate viviparae were described by Ghosh, M.R., Ghosh, A.K. and Raychaudhuri, D.N. (1977) from Sikkim.

Brachysiphoniella montana V.d.G.

Brachysiphoniella moatana V.d.G. ; Sharma, 1968. *Nep. J. Agri.* **3** : 112.

Collection data : Material were collected at Karipati (?. x.1964) and Maharajaung (3.ix.1966) from *cynodon* sp. but no morphs was mentioned. Coll. K.C. Sharma.

Callaphis nepalensis Quednau

Callaphis nepalensis Quednau. 1973. *Can. Ent.*, **105** : 221.

Collection data : A few alate viviparous females, Godavari (?. vii.1967) from *juglans regia*, Coll. K.C. Sharma,

Capitophorus elaeagni del Guercio

Capitophorus elaeagni del Guercio ; Sharma, 1968. *Nep. J. Agri* ; **3** : 112.

Collection data : One alate viviparous female, shree Mahal (?. vii. 1965) Y.P.T., Coll. K.C. Sharma.

Cavariella salicicola Matsumura

Cavariella salicicola Matsumura ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 207.

Collection data : Alate vividarous female, shree Mahal (?. xi.1965), Y.P.T. Coll. K.C. Sharma.

Cinara (Cupressobium) tujafilina del Guercio

Cinara (Cupressobium) tujafilina del Guercio ; Sharma, 1968. *Nep. J. Agri.* **3** : 114.

Collection data : No mention of morphs, Meenbhawan (?. xii.1965) from *Tuja* sp., Coll. K.C. Sharma.

Coloradoa artimisae del Guercio

Coloradoa artimisae del Guercio ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 209.

Collection data : The material was collected from *Artemisia* sp., except nothing was mentioned, Coll, K,C. Sharma.

Coloradoa (Lidaja) heinzei Borner

Coloradoa (Lidaja) heinzei Borner ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 209.

Collection data : Except the host plant *Artemisia* sp. nothing was mentioned, Coll. K.C. Sharma.

Diuraphis noxuis Mordvilko

Diuraphis noxuis Mordvilko ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 210.

Collection data : Except the name of the host plant *Hordeum vulgarae* nothing was mentioned.

Eutrichosiphum vandergooti Raychaudhuri

Eutrichosiphum vandergooti Raychaudhuri ; Sharma, 1968. *Nep. J. Agric.* **3** : 116.

Collection data : Alate viviparous females, Shree Mahal (?.vii.1965), Y.P.T. Coll. K. C. Sharma.

Hyalopterous atriplices (Linn.)

Hyalopterous atriplices (Linn.) ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 212.

Collection data : No mention of morphs, Kakani (1.viii.1966) from *Chenopodium album*, Coll. K. C. Sharma.

Lachnus tropicalis (V.d.G.)

Lachnus tropicalis (V.d.G.) ; Miyazaki, 1977. *Kontyu*, **45** (2) : 204.

Collection data Some apterous viviparous females, Balaju (3.vii.1968) from *Quercus semicarpifolia*, Coll. T Kumata.

Mocrosiphum (S) avanae (Fabricius)

Macroisphum (S) avanae (Fabricius) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 119.

Collection data : No mention of morphs, Kathmandu (7.v.1965), Shree Mahal (14.1.1965) on *Triticum vulgaris*, Dhunibesi (18.ii.1965) on *Eleusine coracana*, one alata, Shree Mahal (?.xii.1966), Y.P.T., Coll. K. C. Sharma.

Macrosiphum (S) fragariae (Walker)

Macrosiphum (S) fragariae (Walker) ; Sharma, 1968. *Nep. J. Agri.*, **3** : 119.

Collection data : No morphs mentioned, Kathmandu (6.x.1963) on Graminae, Coll. K. C. Sharma.

Macrosiphum (S) ibarae Matsumura

Macrosiphum (S) ibarae Matsumura ; Ghosh, 1974, *J. Bombay nat. Hist. Soc.*, **71** (2) : 214.

Collection data : Except the name of host plant *Rosa* sp. nothing was mentioned.

Macrosiphoniella oblonga Mordilko

Macrosiphoniella oblonga Mordvilko ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 213.

Collection data Except the name of host plant *Chrysanthemum* sp. nothing was given.

Myzus dycei Cerver

Myzus dycei Cerver ; Eastop, 1966. *Augt. J. zool.*, **14** : 464.

Collection data : No morphs, place and data mentioned, host *Urtica platyphylla*, Coll. R. L. Coe.

Myzus formosana Takahashi

Myzus formosana Takahashi ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 217.

Collection data : Except the name of host plant *Polygonum* sp. nothing was mentioned.

Nipponaphis querciphaga Ghosh and Raychaudhuri.

Nipponaphis querciphaga Ghosh and Raychaudhuri ; Miyazaki 1977. *Kontyu*, **45** (2) : 211.

Collection data : Some apterous viviparous female and nymphs, Godavari (20.iv.1968) on *Castanopsis* sp., Coll. T Kumata.

Paratrichosiphum javanicum Raychaudhuri

Paratrichosiphum javanicum Raychaudhuri ; Miyazaki, 1977. *Kontyu*, **45** (2) : 204.

Collection data : Some alate viviparous female, Ulleri (12.v.68) host unknown, Coll. T Kumata.

Comments : *Paratrichosiphum javanicum* Raychaudhuri (1956) has been transferred to genus *Mollitrichosiphum* due to the presence of stridulatory ridges on hind tibiae by Raychaudhuri et al (1980).

Pemphigus mordvilkoi Cholodvosky

Pemphigus mordvilkoi Chol. ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 218.

Collection data : Except the name of host plant *Populus ciliata* nothing was given.

Pentalonia nigronervosa Coquerel

Pentalonia nigronervosa Coquerel, Sharma, 1968. *Nep. J. Agric.*, 3 : 124.

Collection data : No morph was mentioned. Dhunibesi (18.vii.65) *Musa Paradisica*, Coll. K. C. Sharma.

Pleotrichophorus chrysanthemi (Theobald)

Pleotrichophorus chrysanthemi (Theobald) ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 218.

Collection data : Nothing was given.

Pyrolachnus pyri (Buckton)

Pyrolachnus pyri (Buckton) ; Miyazaki, 1977. *Kontyu*, **45** (2) : 204.

Collection data : An alate viviparous female, Kathmundu, (14.iv.1968), host unknown, Coll. T Kumata.

Schoutedenia emblica (Patel and Kulkarny)

Schoutedenia emblica (Patel and Kulkarny) ; Sharma, 1968. *Nep. J. Agric.*, 3 : 127.

Collection data : No morphs mentioned, Janakpur (5.vi.1966) on *Emblica officinalis*, Coll. K. C. Sharma.

Comments : *Schoutedenia emblica* is now a synonym of *Schoutedenia lutea* (van der Goot).

Tinocalloides montanus Basu

Tinocalloides montanus Basu ; Quednau, 1973. *Can. Ent.*, **105** : 223.

Collection data : Two oviparae and nymphs, Sundarijal (12.ii.1962), host unknown, Coll. P. N. Rana.

Comment : From the excellent description given by Quednau (1973) it is evident that the oviparae belong to this species.

Vesiculaphis caricis (Fullaway)

Vesiculaphis caricis (Fullaway) ; Ghosh, 1974. *J. Bombay nat. Hist. Soc.*, **71** (2) : 222.

Callection data : One alata, Shree Mahal (?. xi.1965), Y.P.T. Coll. K. C. Sharma.

Aphid pests on cereals and grains

Aphid species	Host plants
1. *Ceratovacuana lanigera* Zehntner	*Sorghum vulgare* (Sorghum)
2. *Diuraphis noxuis* Mordvilka	*Hordeum vulgare* (Barley)
3. *Hysteroneura setariae* (Thomas)	*Eleusine coracana* (Millet)
	Oryza sativa (Paddy)
	Zea mays (Maize)
	Sorgum Vulgare (Sorghum)
4. *Macrosiphum avenae* Fabricius	*Triticum vulgare* (Wheat)
	Eleusine coracana (Millet)
5. *Macrosiphum (Sitobion) miscanthi* (Takahashi)	*Oryza sativa* (Paddy)
	Zea mays (Maize)
	Eleusine coracana (Millet)
6. *Rhopalosiphum maidis* (Fitch)	*Oryza sativa* (Paddy)
	Sorghum vulgare (Sorghum)
	Hordeum vulgare (Barley)
	Triticum vulgare (Wheat)
	Zea mays (Maize)
7. *Rhopalosiphum padi* (Linn.)	*Avena sativa* (Oat)
	Oryza sativa (Paddy)
	Triticum vulgare (Wheat)
	Zea mays (Maize)
8. *Rhopalosiphum rufiabdominalis* (Sasaki)	*Avena sativa* (Oat)
	Hordeum vulgare (Barley)
	Oryza sativa (Paddy)
	Triticum vulgare (Wheat)
9. *Schizaphis gramminum* (Rondoni)	*Avena sativa* (Oat)
	Hordeum vulgare (Barley)
	Sorghum vulgare (Sorghum)
	Triticum vulgare (Wheat)
	Eleusine coracana (Millet)
10. *Tetraneura nigriabdominalis* (Sasaki)	*Eleusine coracana* (Millet)
	Oryza sativa (Paddy)
	Sorghum vulgare (Sorghum)

B. *Aphid pests on vegetable crops*

1. *Acyrthosiphon pisum* (Harris)	*Lathyrus Odoratus*
	Pisum sativum
	Pisum arvense
2. *Aphis craceivora* Koch	*Cajanus cajan*
	Dolichos lablab
	Vicia fava
3. *Aphis fabae salanella* Theobald	*Brassica oleracca*
4. *Aphis gossypii* Glover	*Capsicum* sp.
	Citrullus vulgaris
	Cucumis sativus
	Solanum melongena
	Solanum tuberosum
	Cucurbita maxima
5. *Aphis spiraecola* Patch	*Capsicum annum*
	Cucumis sativus
6. *Lipaphis erysimi* Kaltenbach	*Brassica compestris*
	Raphanus sativus
	Brassica oleracea
7. *Myzus persicae* Sulzer	on many vegetables
8. *Toxoptera aurantii* (B.d.F.)	*Solanum* sp.

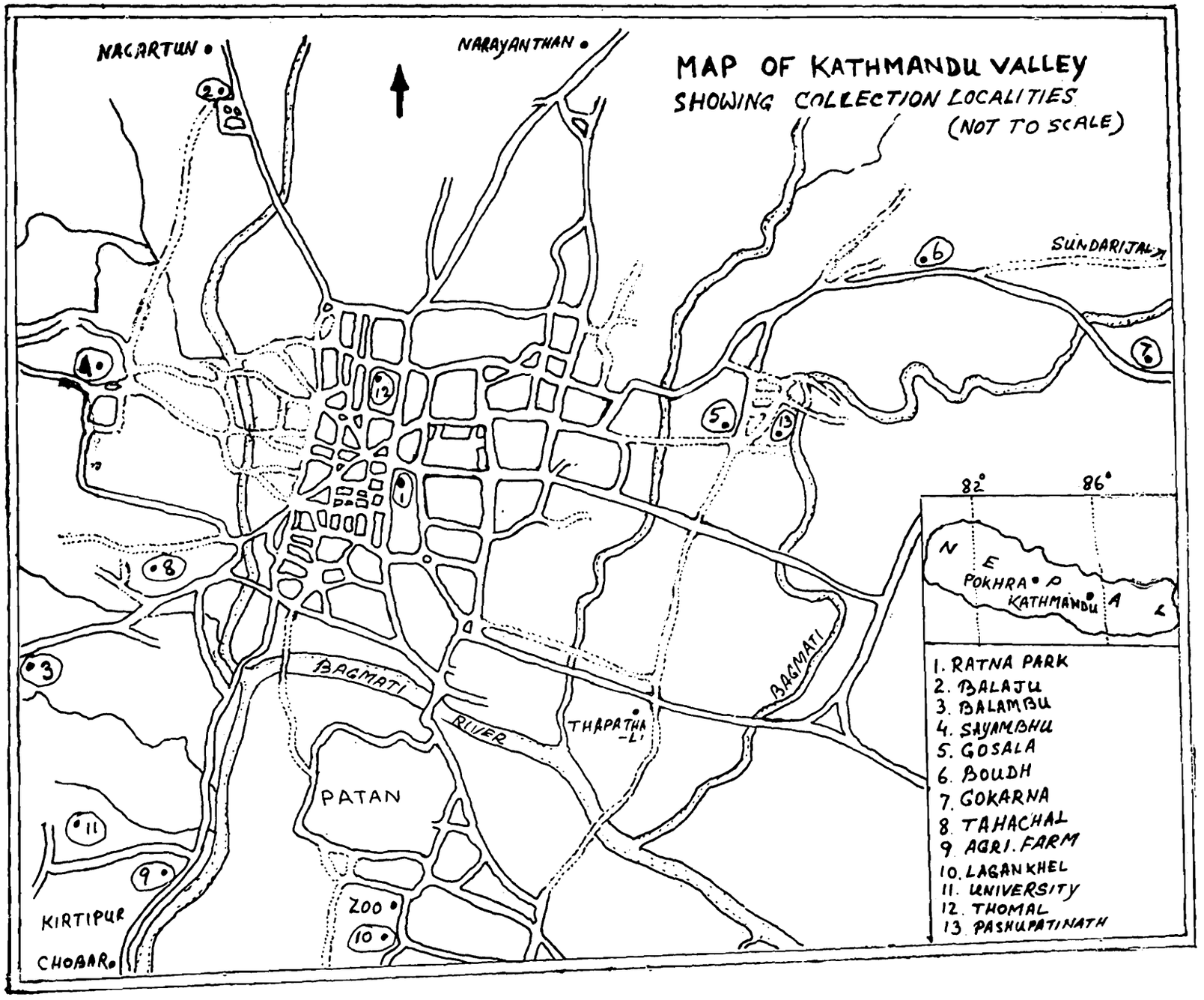
C. *Aphid pests on fruit trees*

1. *Aphis spiraecola* Patch	*Pyrus malus* (Apple)
2. *Brachycaudus helicrysi* (Kaltenbach)	*Prunus* sp.
3. *Callaphis nepalensis* Quednau	*Juglans regia* (Walnut)
4. *Chromaphis hirsutustibis* Kumar and Lavigne	*Juglans regia* (Walnut)
5. *Eriosoma lanigerum* (Hausmann)	*Prunus* sp.
	Pyrus malus (Apple)
6. *Greenidea (Trichosiphum) formosana* (Maki)	*Psidium guyava* (Guava)
7. *Nippolachnus piri* Matsumura	*Pyrus melo*
8. *Pentalonia nigronervosa* Coquerel	*Musa paradiciaca* (Banana)
9. *Rhopalosiphum nymphaeae* (Linn.)	*Prunus domestica* (Plum)
	Prunus persica (Peach)
10. *Schizaphis rotundiventris* (Signoret)	*Prunus* sp.
11. *Tinocalloides montanus* Basu	*Prunus* sp.
12. *Toxoptera aurantii* (B.d.F.)	*Citrus* sp.
13. *Toxoptera citricidus* (Kirkaldy)	*citrus* sp.
14. *Toxoptera odinae* V.d.G.	*Mangifera indica* (Mango)

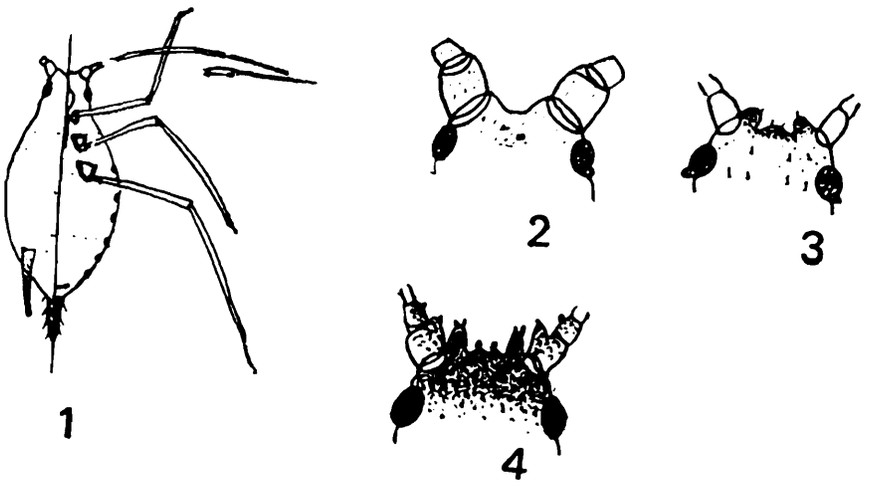
D. *Aphid pests on forest trees*

1. *Aiceona himalaica* Miyazaki	*Litsea polyantha*
2. *Cinara saraswatae* sp. nov.	*Pinus* sp.
3. *Cinara (Cupressobium) tujafilina* Del guercio	*Tuja* sp.
4. *Eutrichosiphum (paratrichosiphum) alnicola* (Basu)	*Alnus nepalensis*
5. *Eutrichosiphum (paratrichosiphum) alnifoliae* sp. nov.	*Alnus nepalensis*

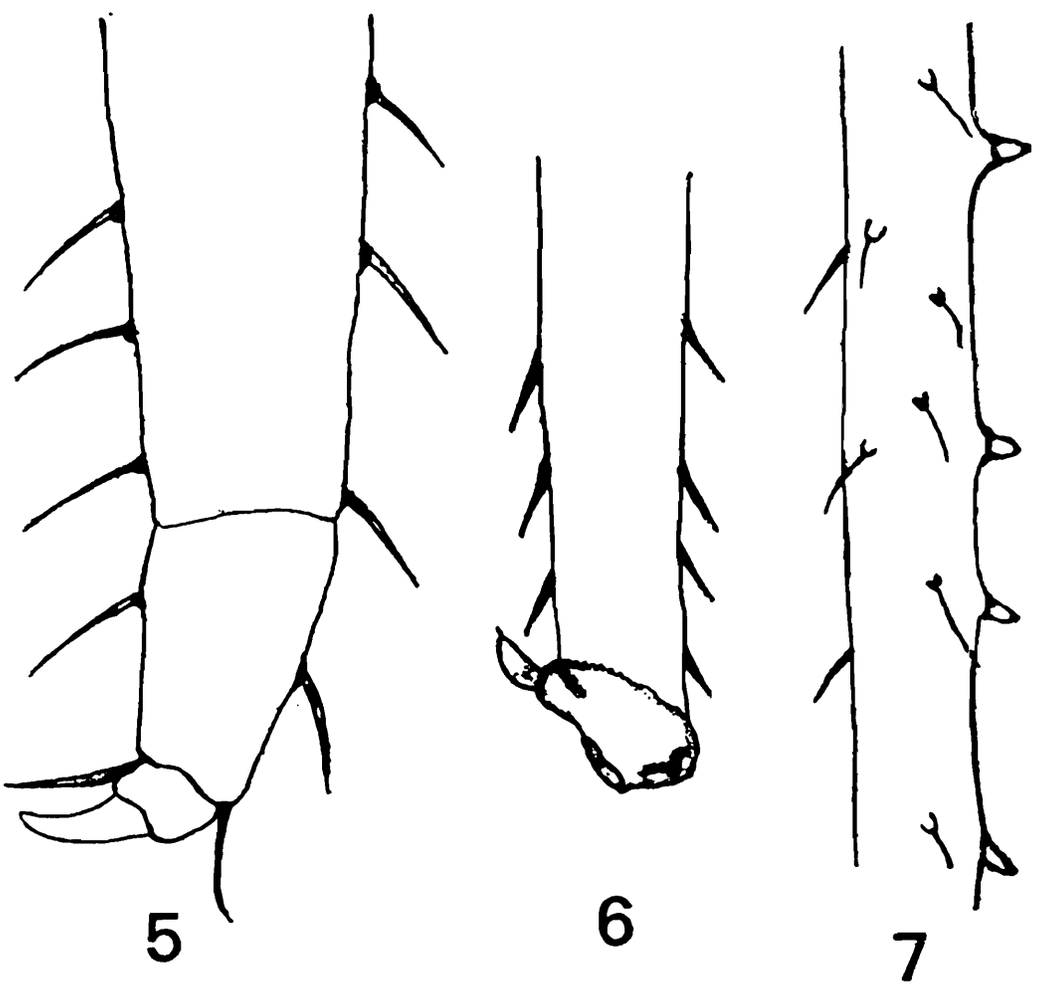
6.	*Eutrichosiphum (Neoparatrichosiphum) khasyanum* (Ghosh and Raychaudhuri)	*Quercus* sp.
7.	*Eutrichosiphum pasaniae pseudopasaniae* Szelegiewicz	*Quercus* sp.
8.	*Eutrichosiphum (Eutrichosiphum) quercifoliae* Raychaudhuri, Ghosh, Banerjee and Ghosh	*Quercus* sp.
9.	*Greenidea (Greenidea) ficicola* Takahashi	*Ficus cannis*
10.	*Greenidea (Greenidea) longirostris* Basu	*Quercus* sp.
11.	*Greenidea (Greeninea) Photiniphaga* Raychaudhuri, Ghosh, Banerjee and Ghosh	*Quercus* sp.
12.	*Greenidea (Neogreenidea) quercifoliae* Raychaudhuri, Ghosh, Banerjee and Ghosh	*Quercus* sp.
13.	*Lachnus tropicalis* (V.d.G.)	*Quercus* sp.
14.	*Mesocallis obtusirostris* Ghosh	*Alnus nepalensis*
15.	*Mollitrichosiphum (Metatrichosiphon) alni* Ghosh, Ghosh and Raychaudhuri	*Alnus nepalansis*, *Quercus* sp.
16.	*Mollitrichosiphum (Metatrichosiphon) buddlejae* Ghosh, Banerjee and Raychaudhuri	*Alnus nepalensis*
17.	*Mollitrichosiphum (Mollitrichosiphum) godavariense* sp. nov.	*Quercus* sp.
18.	*Pemphigus mordvilkoi* Cholodkovsky	*Populus ciliata*
19.	*Sivaphis Celti* Das	*Celtis* sp.
20.	*Sumatraphis celti* Das	*Celtis* sp.
21.	*Taoia indica* (Ghosh and Raychaudhuri)	*Alnus nepalensis*



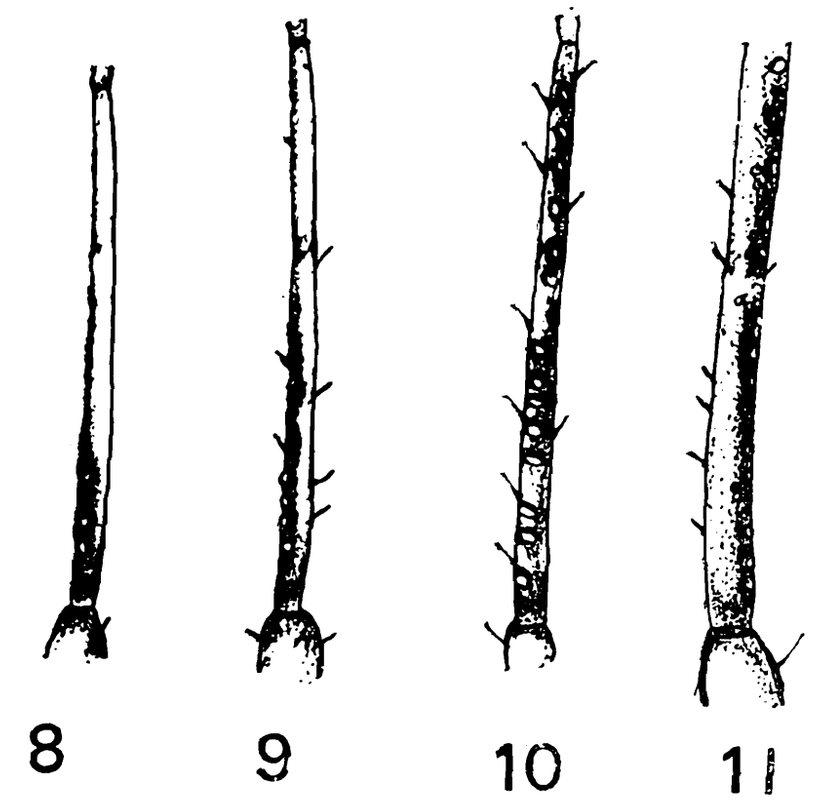
Map of Kathmundu Valley showing collection localities



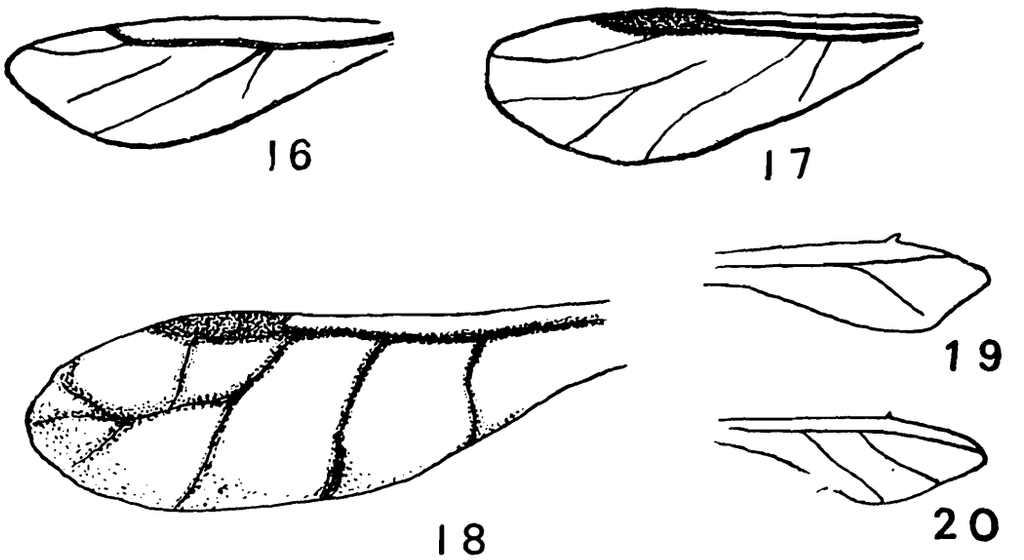
Figs. 1-4. 1. *Macrosiphum (Sitobion) rosaeiformis* Das Aptera 2. *Acyrthosiphon pisum* (Harris) Aptera 3. *Myzus persicae* (Sulzer) Aptera 4. *Diphorodon cannabis* (Passerini) Aptera.



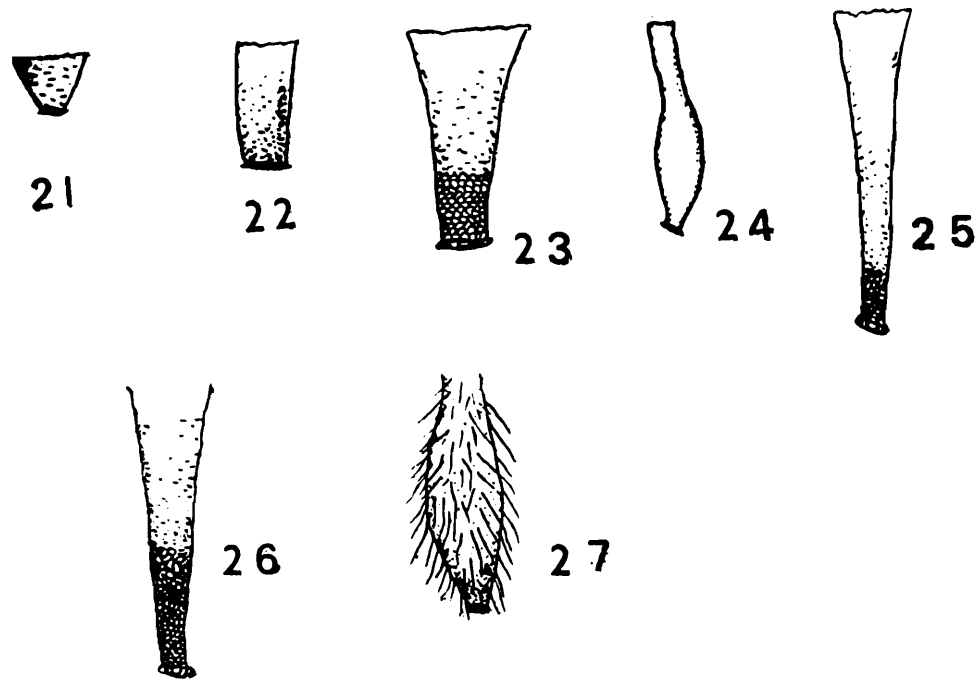
Figs. 5-7. 5. *Tetraneura nigriabdominalis* (Sasaki) Aptera : Hind tarsus with parts of tibia 6. *Shinjia pteridifoliae* (Shinji) Aptera : Hind tarsus with parts of tibia. 7. *Toxoptera citricidus* (Kirkaldy) Aptera : Portion of hind tibia.



Figs. 8-11. 8. *Aulacorthum solani* (Kaltenbach) : Aptera. 9. *Hyperomyzus carduellinus* (Theobald) : Aptera. 10. *Taoia indica* (Ghosh and Raychaudhuri) : Alate. 11. *Macrosiphum rosae* (Linn.) : Alate.



Figs. 12-20. 12. *Ceratovacuna lanigera* Zehntner : Aptera. 13. *Macrosiphum (Sitobion) miscanthi* Takahshi : Aptera. 14. *Liosomaphis himalayensis* Basu : Aptera 15. *Macrosiphoniella sanborni* (Gillette) : Aptera. 16. *Tetraneura nigriabdominalis* (Sasaki) : Fore wing. 17. *Eriosoma lanigerum* (Hansmann) : Fore wing. 18. *Pentalonia nigronervosa* coquerel : Fore wing. 19. *Hysteroneura setariae* (Thomas) : Hind wing. 20. *Melanaphis donacis* (Passerini) : Hind wing.



Figs. 21-27. 21. *Brachycaudus helicrysi* (Kaltenbach) : Aptera. 22. *Oedisiphum soureni* Basu : Aptera. 23. *Macrosiphoniella sanborni* Gillette : Aptera. 24. *Liosomaphis himalayensis* Basu : Aptera. 25. *Macrosiphum rosae* (Linn.) : Aptera 26. *Dactynotus sonchi* (Gillette) : Aptera. 27. *Greenidea (Trichosiphum) formosana* (Maki) : Aptera

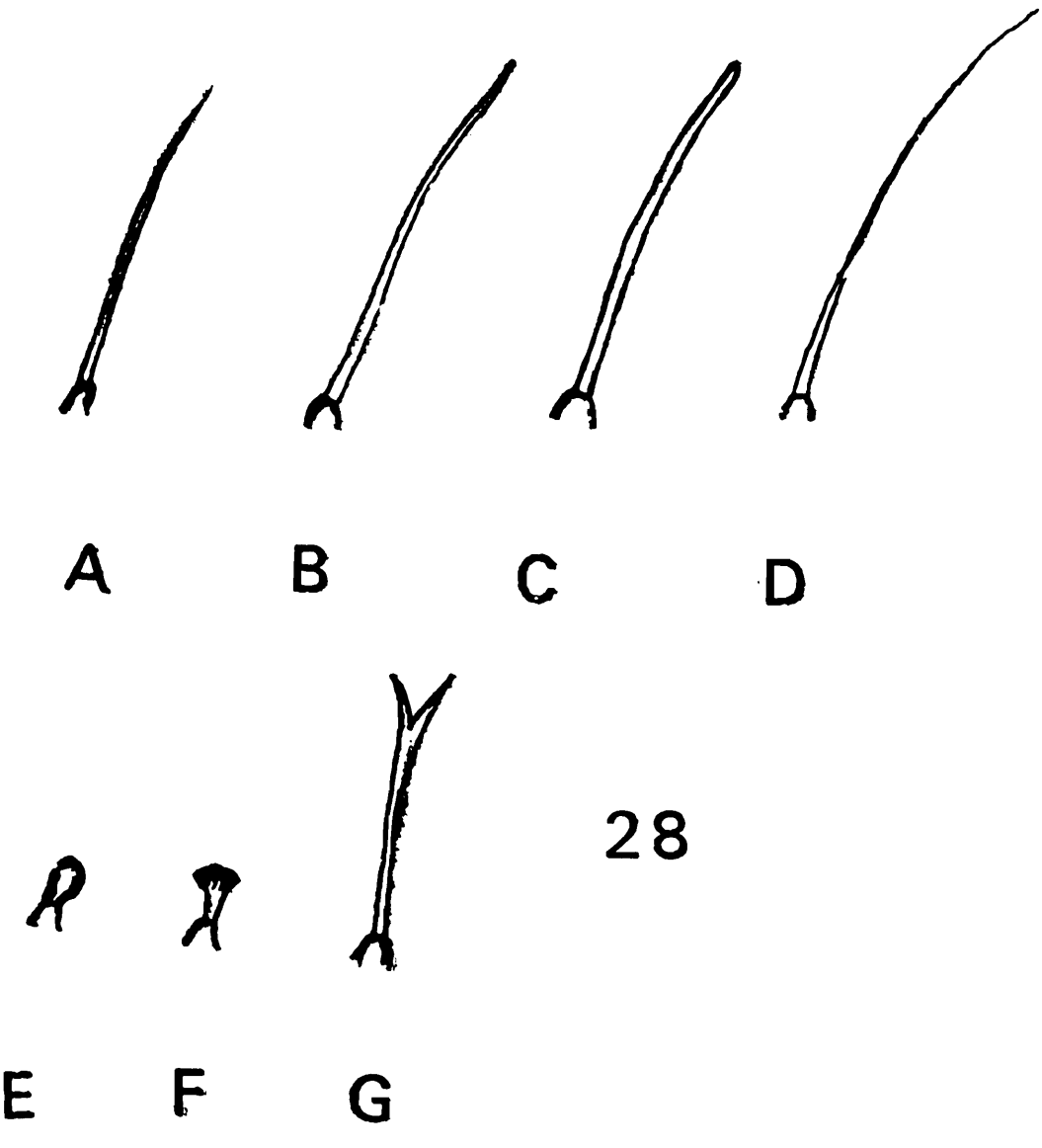
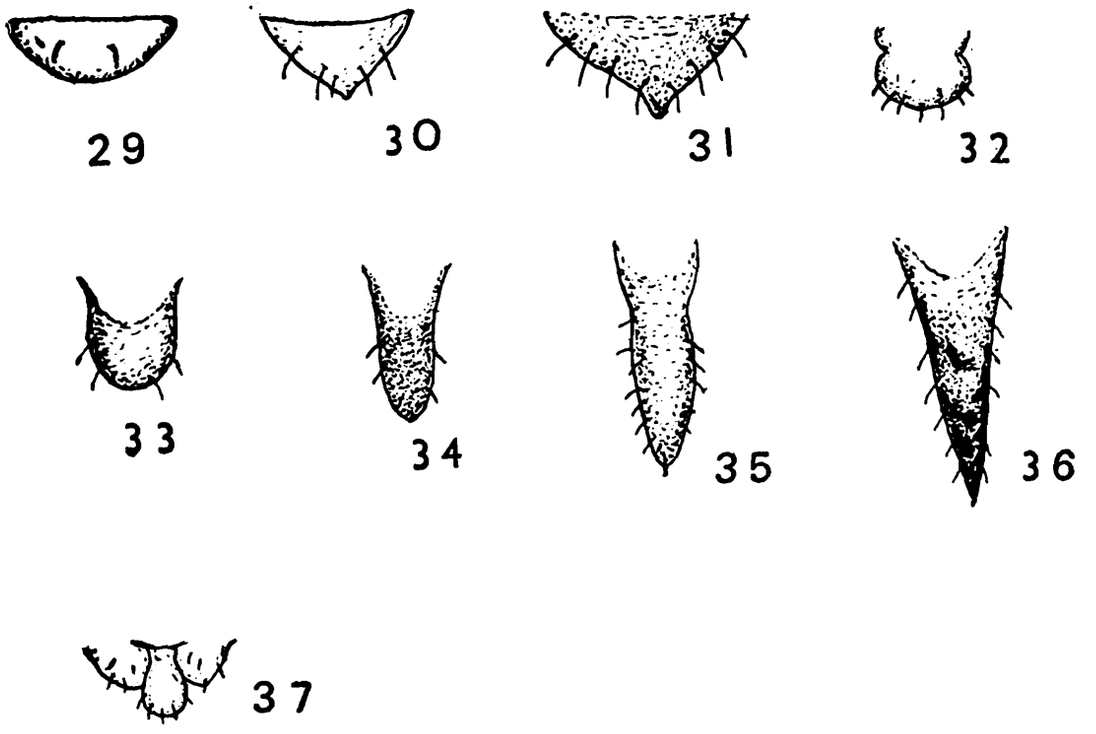


Fig. 28. A. Bluntish apex, B. Acuminate apex, C. Spatulate apex, D. Acute apex E. Capitate apex, F. Fan-shaped apex, G. Farcated apex.



Figs. 29-37. 29. *Eriosoma lanigerum* (Hausmann) : Aptera 30. *Tetraneura nigriabdominalis* (Sasaki) : Aptera. 31. *Greenidea (Trichosiphum) formosana* (Maki) : Aptera. 32. *Ceratovacuna lanigera* Zehntner : Aptera. 33. *Oedisiphum soureni* Basu : Aptera. 34. *Rhopalosiphum maidis* (Fitch) : Aptera. 35. *Macrosiphum rosae* (Linn.) : Aptera. 36. *Dactynotus sonchi* (Linn.) : Aptera. 37. *Astegopteryx minuta* (V.d.G.) : Aptera.

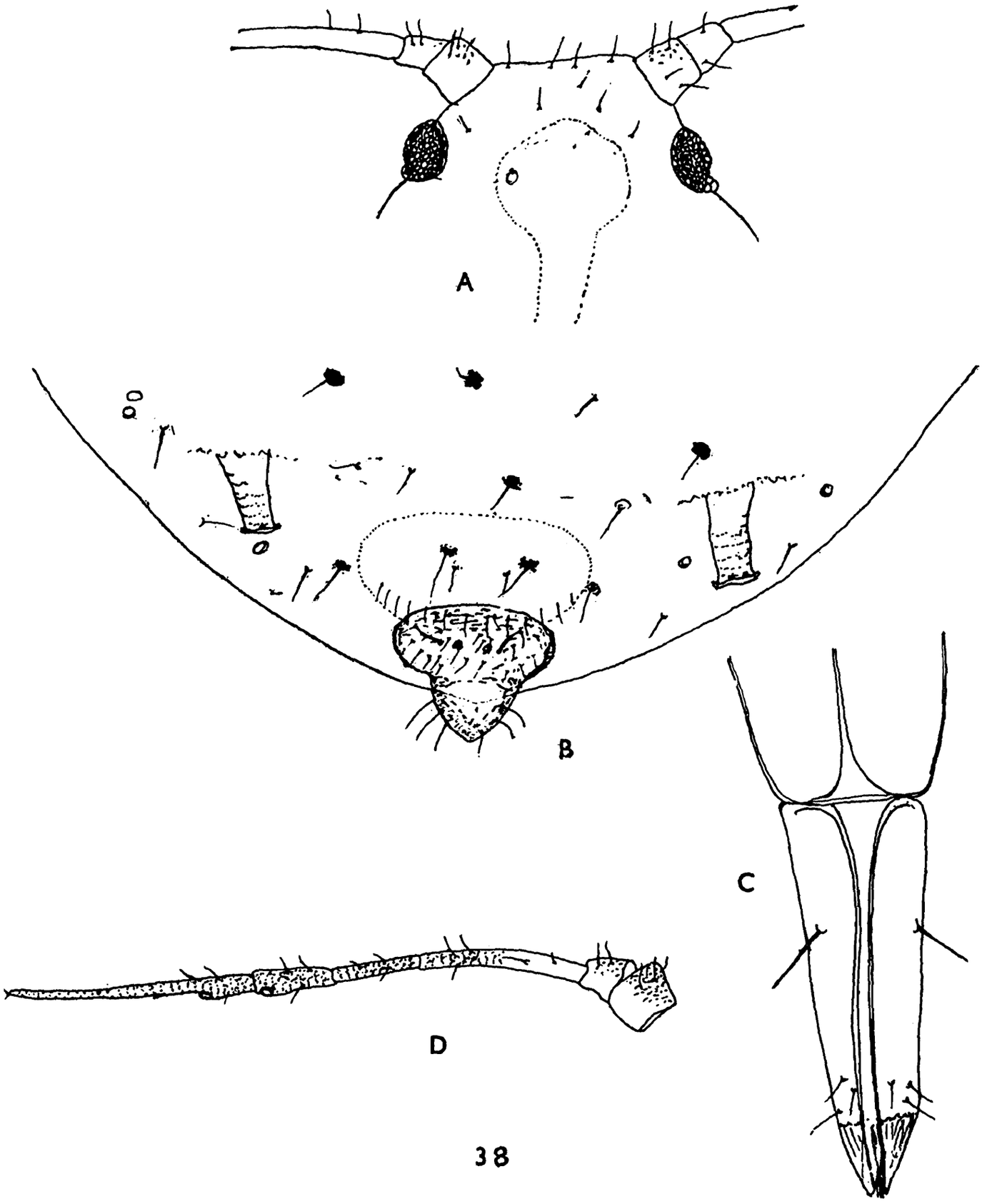


Fig. 38. *Dysaphis ramanii* sp. nov. Apterous viviparous female. A. Head, B. Posterior part of abdomen, C. Ultimate rostral segment, D. Antenna.

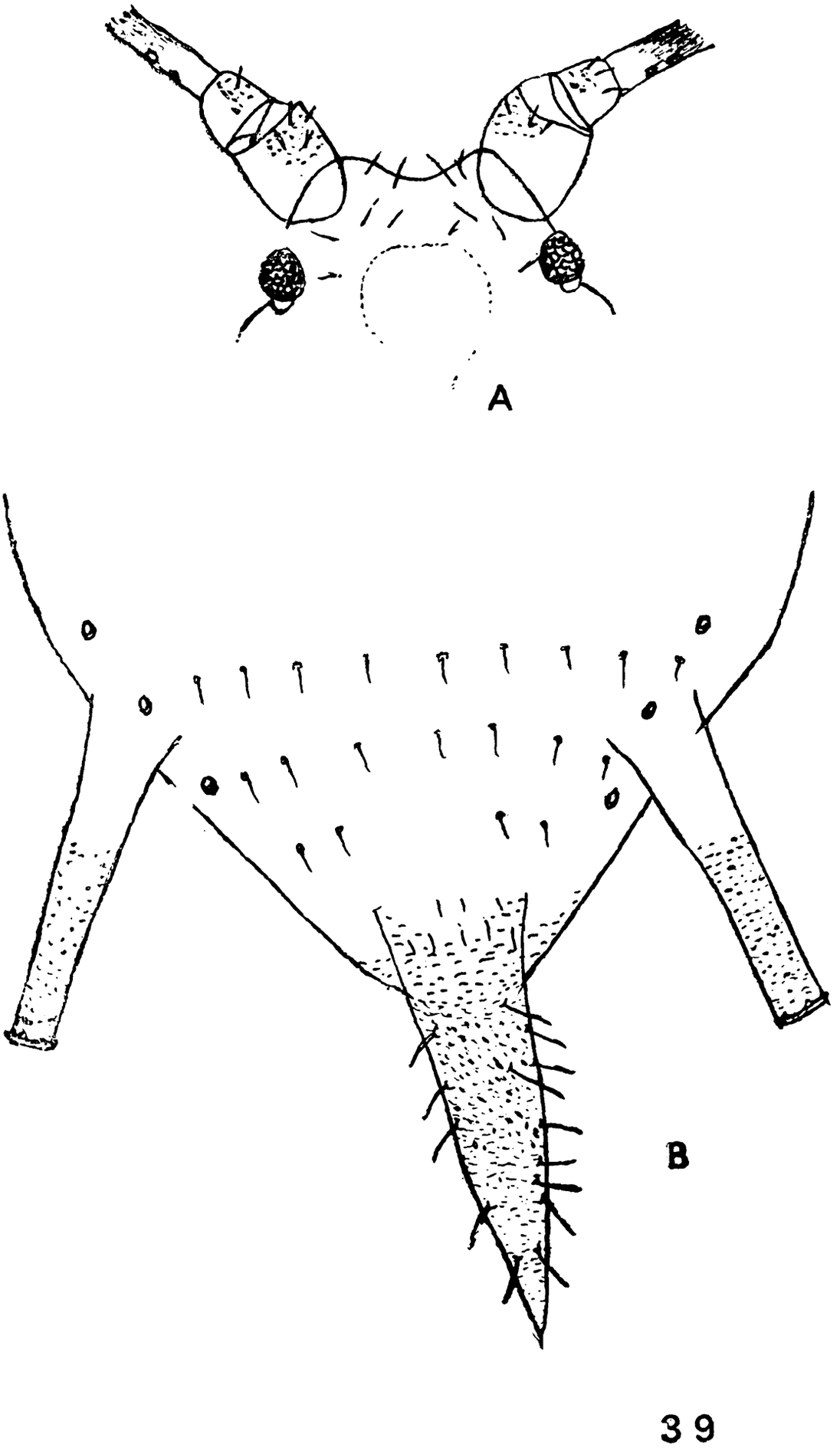


Fig. 39. *Sinomegoura nepalensis* sp. nov. Apterous viviparous female A. Head, B. Posterior part of abdomen.

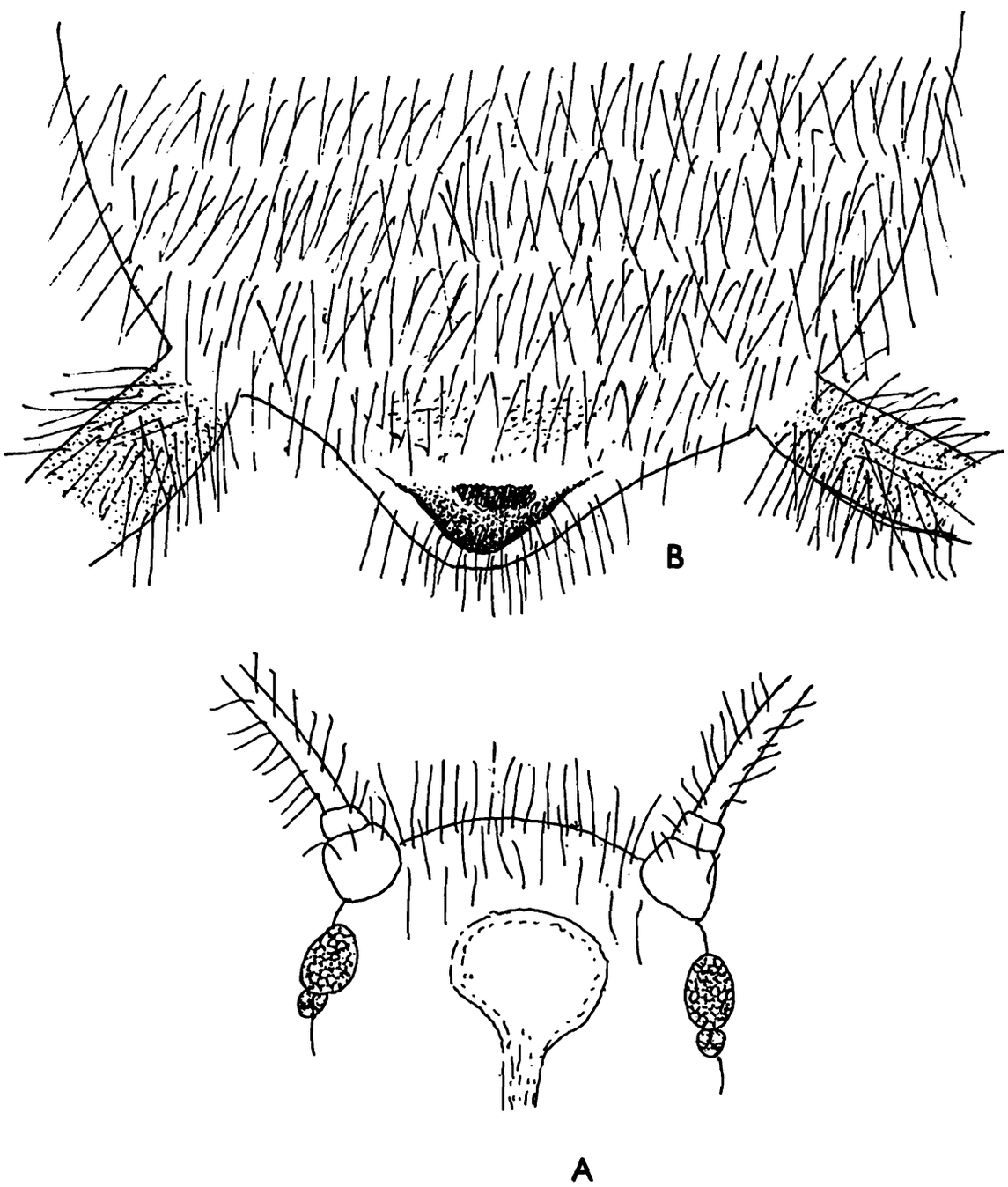


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Fig. 40. *Eutrichosiphum (Paratrichosiphum) alnifoliae* Sp. nov. Apterous viviparous female A. Head, B. Posterior part of abdomen.

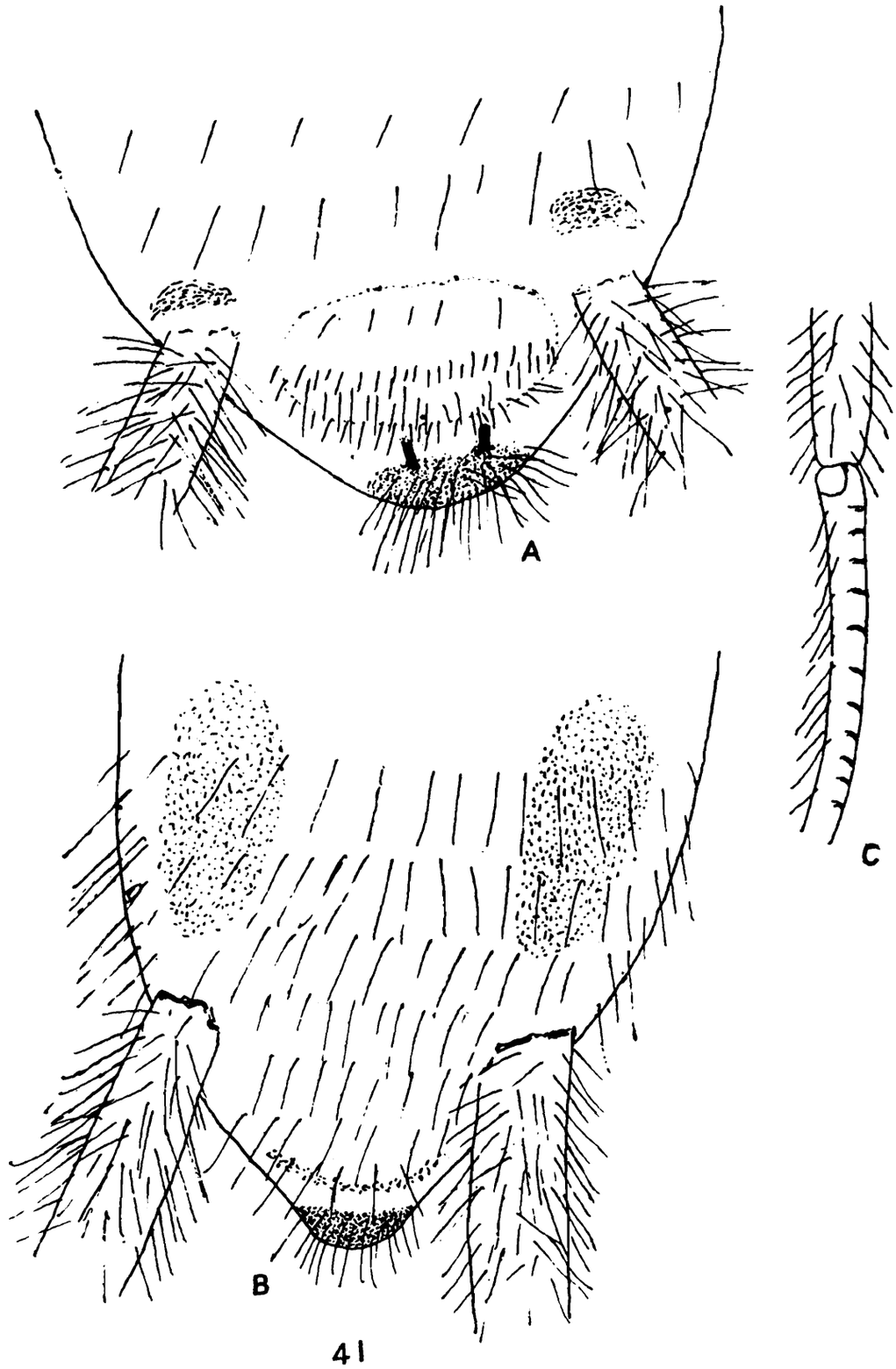

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Fig. 41. *Mollitrichosiphum* (*Mollitrichosiphum*) *godavariense* Sp. nov. B. Posterior part of Apterous viviparous female. A. Posterior part of alate oviparous female, C. Hind tibia.

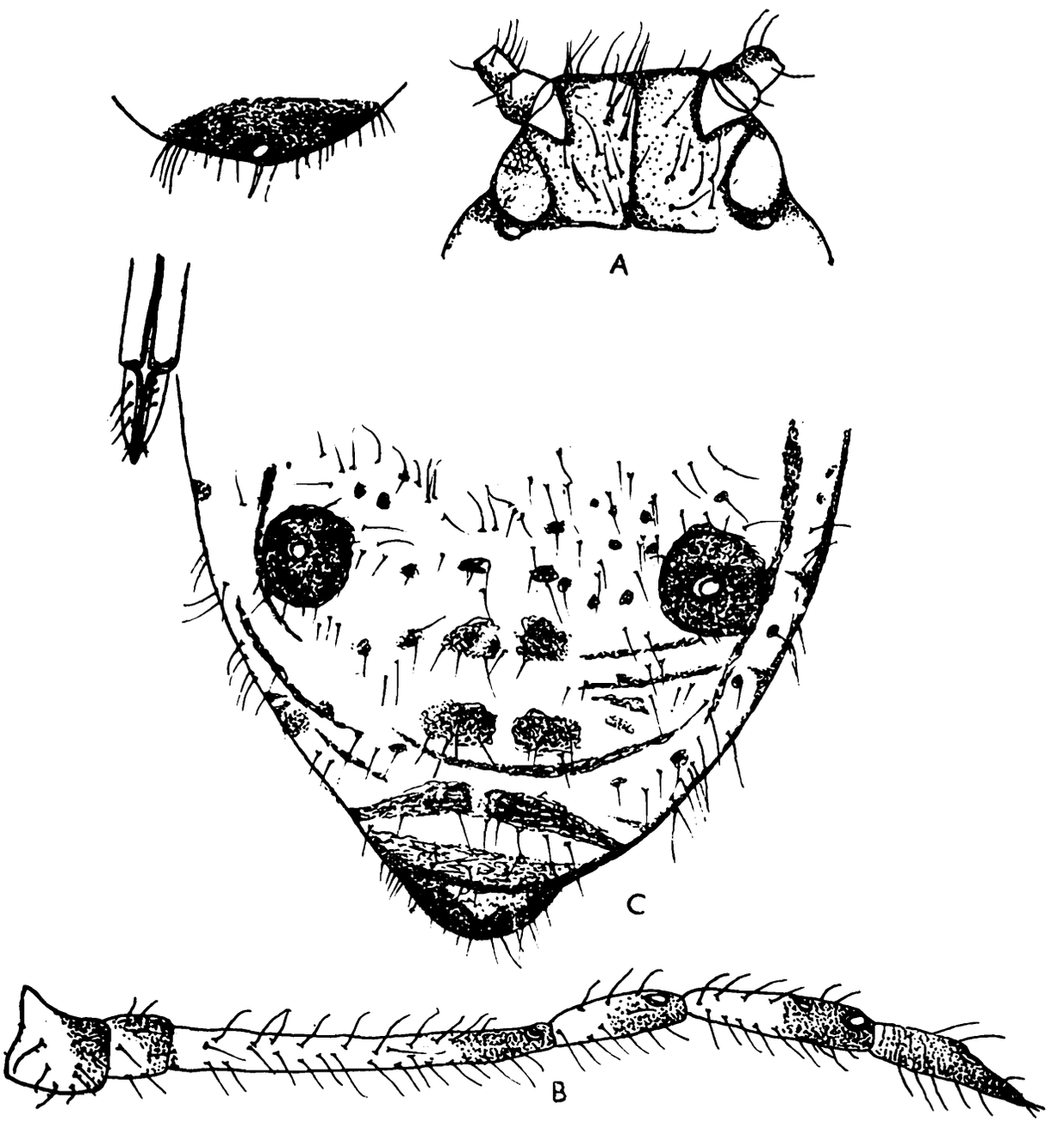

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Fig. 42. *Cinara saraswatae* Sp. nov. Apterous viviparous female A. Head, B. Antenna, C. Posterior part of abdomen.

REFERENCES

BASU, A. N. 1957. One new genus and seven new species of Aphids from Darjeeling District, West Bengal (Homoptera : Aphididae). *Bull. Ent.*, **8** (2) : 143-157.

BASU, R. C., A. K. GHOSH and D. N. RAYCHAUDHURI, 1973. Studies on the Aphids (Homoptera : Aphididae) from Eastern India. Five new species and thirty new records from Assam. *Proc. zool. Soc., Calcutta,* **26** : 89-101.

BASU, R. C. and D. N. RAYCHAUDHURI, 1976. Studies on the Aphids (Homoptera : Aphididae) from Eastern India. *Orient. Insects.* **10** (2) : 295-306.

CHAKRABARTI, S., GHOSH, A. K. and RAYCHAUDHURI, D. N. 1971. New records of aphids (Insect : Homoptera) from Uttar Pradesh, India. *Sci. Cult.*, **37** : 247.

CHAKRABARTI, S. and RAYCHAUDHURI, D. N. 1972. New records of aphids (Homoptera : Aphididae) from Nepal. *Curr. Sci.*, **41** (23), 858-859.

COTTIER, U. 1953. Aphids of New Zealand. *Bull. N. Z. Dep. Scient. Ind. Res.* Wellington, 1-382.

DAS, B. 1918. The Aphididae of Lahore, *Mem. Indian Mus.*, **6** (4) : 135-274.

DAS, B. C. and RAYCHAUDHURI, D. N. 1776. New records of aphids (Homoptera : Aphididae) from Nepal. *Sci. Cult.*, **42** : 438.

DAS, B. C. and RAYCHAUDHURI, D. N., 1977. New records of aphids (Homoptera : Aphididae) from Nepal. *Sci. Cult.*, **43** : 172.

EASTOP, V F. 1958. *A study of Aphididae (Homoptera) of East Africa.* 1-122.

EASTOP, V F. 1966. A taxonomic study of Australian Aphidoidea (Homoptera). *Aust. J. Zool.*, **14** 399-592.

GHOSH, A. K., BASU, R. C. and RAYCHAUDHURI, D. N. 1973. A new species of *Neoacyrthosiphon* Tao and records of five genera and seven other species of aphids (Homoptera : Aphididae) from Nepal. *Sci. & Cult.*, **39** : 199-201.

GHOSH, A. K. and RAYCHAUDHURI, D. N. 1972. Studies on the Aphids (Homoptera : Aphididae) from Eastern India. *Orient. Insects,* **6** (3) : 371-386.

GHOSH, A. K. 1974. A list of Aphids (Homoptera : Aphididae) from India and adjacent countries. *J. Bombay nat. Hist.*, **71** (2) : 201-225.

GHOSH, M. R., PAL., P. K. and RAYCHAUDHURI, D. N. 1977 (1974). Studies on the Aphids (Homoptera : Aphididae) from Eastern India. The Genus *Astegopteryx* Karsch and other related genera (Horma-

phidinae) with description of three new genera and two new species. *Proc. zool. Soc. Calcutta*, **27** (2) : 81-116.

HILLE RIS LAMBERS, D. 1938-53. Contribution to a monograph of the Aphididae of Europe, *Temminckia*, **3** : 1-44 (1938) ; **7** : 179-319 (1947) ; **8** : 182-323 (1949) ; **9** : 1-176 (1953). .

HILLE RIS LAMBERS, and BASU, A. N. 1966. Some new or little known genera, subgenera, species and subspecies of Aphididae from India (Homoptera : Aphididae). *Ent. Ber.*, **26** : 12-36.

MAKI, M. 1917. Three new species of *Trichosiphum* in Formosa. Coll. Essays For Mr. Y Nawa, gifu, 9-20.

MATSUMURA, S. 1917. A list of Aphididae of Japan with description of new species and genera. *J. Coll. Agric. Hokkaido imp. Univ. Soppro.*, **7** (6) : 351-414.

MIYAZAKI, M. 1977. A list of Aphids (Homoptera : Aphididae) collected by the Hokkaido University Expedition to Nepal Himalaya, 1968, with description of two new species. *Kontyu*, **45** (2) : 199-215.

QUEDNAU, F. W 1973. Taxonomic notes on aphids from Nepal and India with description of a new genus and two new species (Homoptera : Aphididae), *can. Ent.* **105** : 217-230.

RANA, P. N. and SHARMA, K. C. 1965. FAO technical Document, 49.

RAYCHAUDHURI, D. N. 1956. Revision of *Greenidea* and related genera (Homoptera : Aphididae). *Zool. Verh.*, **31** : 1-106.

RAYCHAUDHURI, D. N., GHOSH, M. R., BANERJEE, M. and GHOSH, A. K. 1973. Studies on the Aphids (Homoptera : Aphididae) from eastern India XIV one new genus, two new subgenera and fifteen new species of Greenideinae. *Kontyu*, **41** (1) : 53-73.

RAYCHAUDHURI, D. N. and BANERJEE, M. 1974. Studies on the Aphids (Homoptera, Aphididae) from eastern India. *Orient Insects*, 8 (3) : 122-126.

RAYCHAUDHURI, D. N. 1980 (ed.). Aphids of North East India and Bhutan. The Zoological Society, Calcutta. 1-521.

SHARMA, K. C. 1968. Biological notes on the Aphids of Nepal, *Nep. J. Agri.*, **3** : 105-132,

SHINJI, O. 1929. Four new genera of Aphididae from Morioka, Japan. *Lansania*, **1** (3) : 39-48.

SINGH, T K., DAS, B. C. and RAYCHAUDHURI, D. N. 1977. A new species, *Prociphilus cornifoliae* (Homoptera : Aphididae) from Nepal and Manipur (India). *Entomon*, **2** (2) : 221-223.

TAKAHASHI, R. 1921. Aphidiae of Formosa, Part I. p. 1-97.

TAKAHASHI, R. 1924. Aphididae of Formosa, **3** : 1-121

TAKAHASHI, R. 1936. Some Aphididae from south China and Hainan. *I, Lingnan Sci. J.* **15** (4) : 595-606.

TAKAHASHI, R. 1936. List of the Aphid genera proposed in recent Years (Hemiptera). *Tenthredo,* **2** (1) : 1-18.

TAKAHASHI, R. 1950. List of the Aphididae of Malaya Peninsula with description of new species. *Ann. ent. Soc. Am.*, **43** : 587-607.

TAKAHASHI, R. 1960. Four new genera of Aphididae from Japan. *Kontyu,* **28** (4) : 223-229.

VANDER GOOT, P. 1917. Zur Kenntnis der Blattlause Java's, *Contib. Faune Indes Neerl.*, **1** (3) : 1-301.