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SOME PREDATORY MITES FROM IRAN, WITH DESCRIPTIONS OF ONE NEW GENUS AND SIX NEW SPECIES[1] (ACARI: PHYTOSEIIDAE,ASCIDAE)

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ABSTRACT

Eighteen species of phytoseiid and ascid mites from Iran are treated in this paper. One new genus *Indraseius* is delineated. The following six species are described as new : *Neoseiulus kermanicus*, *N. oryzacolus*, *Amblydromella dalfardica*, *Paraseiulus jirofticus*, *Phytoseius* (*Pennaseius*) *tropicalis* and *Indraseius extremus*. The males of *Proprioseiopsis levis* (Wainstein) and *Amblydromella iranensis* Denmark and Daneshvar are first described. Seven species are recorded from Iran for the first time : *Neoseiulus umbraticus* (Chant), *Eharius chergui* (Athias -Henriot), *Typhlodromips rademacheri* (Dosse), *Amblydromella kerkirae* (Swirski and Ragusa), *Typhloctonus tiliarum* (Oudemans), *Paraseiulus incognitus* Wainstein &Arutunjan, and *Paraseiulus kuzini* Wainstein. Other new locality and distribution records are: *Neoseiulus zwoelferi* (Dosse), Esfahan, Shiraz ; *Bawus talbii* (Athias - Henriot), Golpaigan, Gomsheh (Shahreza), Rafsanjan; *Phytoseius* (*Phytoseius*) *corniger* Wainstein, Jiroft, Rafsanjan, Eyvankey.

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INTRODUCTION

Mites of the family Phytoseiidae are of considerable importance as predators of phytophagous mites and other small arthropods . It has been observed to feed also on pollen, honeydew and mildew (Chant and Fleschner, 1960 ; Dosse, 1961; Ragusa and Swirski, 1977). In recent years, several workers have devised experiments specifically to determine the roles of phytoseiids in biological control and integrated pest management (IPM).

This paper deals with one new genus, 6 new species and 12 known species; of the latter 8 are recorded for first time from Iran. The treated mites belong to families Phytoseiidae and Ascidae.

MATERIALS AND METHODS

Taxonomic nomenclature used for the new species of Phytoseiidae follows the system of Muma, et al. (1970). All measurements are in microns.

Mites were stored in 70%ethyl alcohol, cleared in Nesbitt's fluid and mounted in Hoyer's medium.

The collections listed in this paper, unless other wise stated, were made by the author.

The type material was deposited in the collection of Plant Pests and Diseases Research Institute, Evin, Tehran.

Phytoseiidae

Genus **Neoseiulus** Hughes

Neoseiulus Hughes, 1948 : 141; De Leon, 1965 : 23; Muma and Denmark, 1968 : 235; Type of the genus : *Neoseiulus barkeri* Hughes, 1948, by original designation .

Typhlodromus (*Typhlodromopsis*) De Leon, 1959 : 133 (in part).

Cydnodromus Muma, 1961 : 290; Muma, 1967 : 273.

Neoseiulus kermanicus n. sp.

(Figs. 1 - 8)

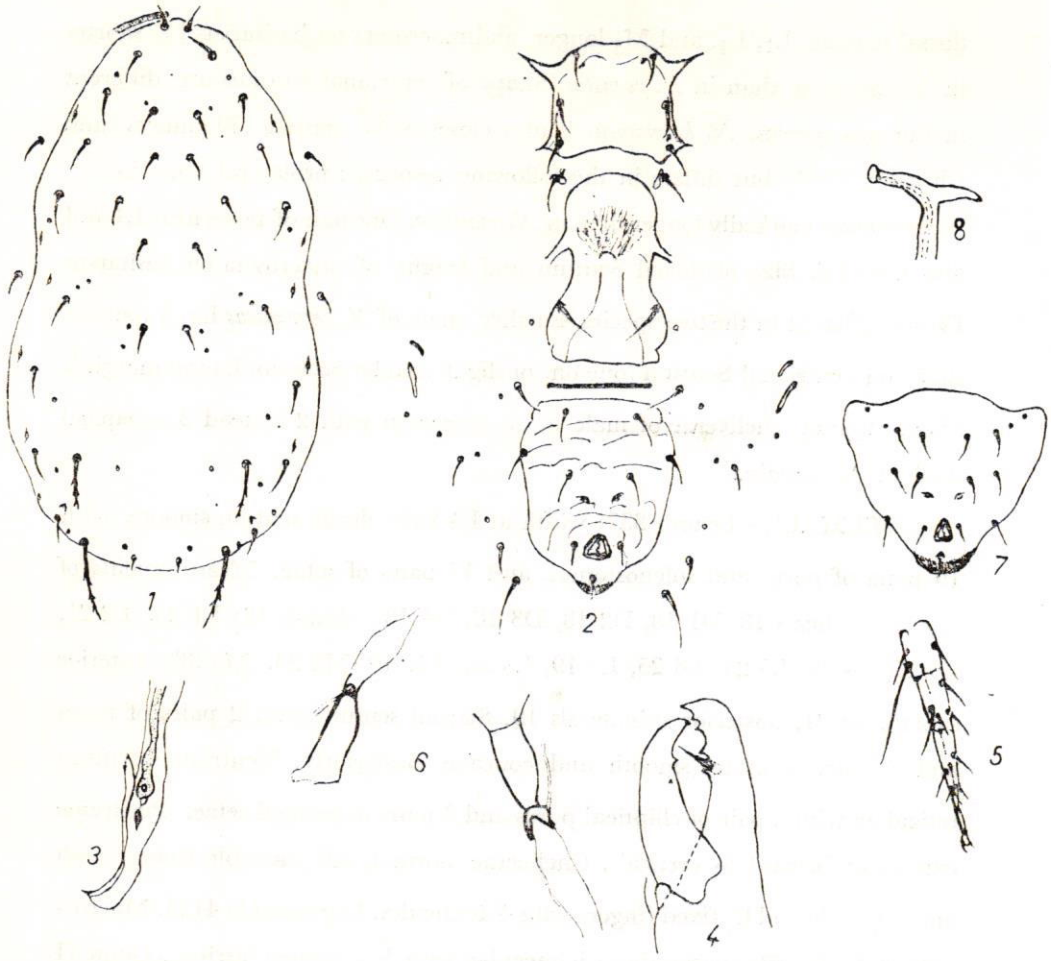
DIAGNOSIS - *Neoseiulus kermanicus* is near *N. venustus* (Chaudhri, 1968) from Pakistan, but differs in having many instead of 3 pairs of pores on

dorsal scutum. L_1, L_4, and M_3 longer, and macroseta on basitarsus IV shorter in *N. kermanicus* than in *N. venustus*. Shape of ventrianal scutums are different in the two species. *N. kermanicus* is also close to *N. masiaka* (Blommers and Chazeau, 1974) but differs in the following respects : prolateral setae in *N. kermanicus* markedly longer than in *N. masiaka*. One pair of pores near L4 and also near L6. Size of dorsal Scutum and lenght of macroseta on basitarsus IV are different in the two species. Further, male of *N. kermanicus* has 5 pairs of stetae on ventrianal Scutum (one on, or slightly under posterior lateral margin). Fixed digit of chelicerae of male in *N. kermanicus* with 2 instead 3 subapical teeth in *N. masiaka*.

FEMALE - Length 337; width at L4 187; doral scutum smooth, with 19 pairs of pores and solenostomes, and 17 pairs of setae. Measurements of setae : verticals 18; D1 18, D2 18, D3 18, D4 18; clunals 12; L1 25, L2 21, L3 25, L4 29, L5 25, L6 25, L7 19, L8 56; M1 19, M2 23, M3 38; anterior sublaterals 21, posterior sublaterals 19. Sternal scutum with 2 pairs of pores and 3 pairs of setae, smooth and concave posteriorly. Ventrianal scutum reticulate with a pair of elliptical pores and 3 pairs of preanal setae. Peritreme extending forward to verticals. Chelicerae normal, mf (movable finger) with one denticule and ff (fixed finger) with 4 denticules. Leg formula 4123. Macro - seta on St IV 68; spermatheca is saccular with V - shaped atrium. Genu II $2-\frac{2-2}{0}-1$, Genu III $1-\frac{2}{1}-\frac{2}{0}-1$

MALE - Similar to but smaller than female. Ventrianal scutum lightly creased, with one pairs of elliptical pores, 5 pairs of preanal setae and 2 pairs of pores anterior to first preanal setae; mf of chelicerae with one denticule and ff with 2 denticules. Spermatodactyl T shaped.

TYPES - Female holotype, collected at Jiroft (Hishin), 12 - V - 1983, on *Verbascum* sp. grown under citrus - trees. Paratypes : 11 females and 2 males, data same as for holotype. 1 female, Ahwaz (Ways), 30 - X - 1984, on okra (*Hibiscus esculentus*).



Figs. 1 - 8. *Neoseiulus kermanicus* n. sp.: 1. Dorsal structure ($\frac{O}{+}$), 2. Ventral scuta and setation ($\frac{O}{+}$) 3. Posterior peritremal and stigmatal development ($\frac{O}{+}$), 4. Cheliceral structure ($\frac{O}{+}$), 5. Tarsus of leg IV ($\frac{O}{+}$), 6. Spermathecal structures ($\frac{O}{+}$), 7. Ventrianal scutum ($\frac{\uparrow}{O}$), 8. Spermatodactyl structure ($\frac{\uparrow}{O}$).

Neoseiulus umbraticus (Chant)

Typhlodromus umbraticus Chant, 1956 : 26.

Typhlodromus (*Amblyseius*) *umbraticus* Chant, Chant, 1959 : 75.

Amblyseius (*Typhlodromopsis*) *umbraticus* (Chant), Muma. 1961 : 287.

Neoseiulus umbraticus (Chant) new combination, Muma, Denmark

and De Leon, 1970 : 101; Denmark and Muma, 1978 : 12.

Amblyseius umbraticus (Chant), Livshitz & Kuznetsov, 1972 : 26.

DIAGNOSIS - *Neoseiulus umbraticus* is related *N. cucumeris* (Oud.) but *N. umbraticus* has the preanal pores closer together than distance to posterior pair of preanal setae. L8 is less than half as long as M2 and 3 long macrosetae on leg IV.

TYPE - Newgate Shaw, East Malling Research Station, Kent, England, X - 1956, D. A. Chant, on leaves of *Rubus fruticosus*, in British Museum (Natural History), London.

IRANIAN RECORDS - 2 females, Lahijan, 11 - VII - 1982, on fig, *Ficus* sp. . 2 females, Shanderman, 12 - VII - 1982, on fern. 11 females and 3 males, Astara, 14 - VII - 1982, on raspberry, *Rubus* sp. .

Neoseiulus zwoelferi (Dosse)

Typhlodromus zwoelferi Dosse, 1957 : 301.

Typhlodromus (Amblyseius) zwoelferi Dosse, Chant, 1960 : 78.

Cydnodromus zwoelferi (Dosse), Muma, 1961 : 290.

Amblyseius zwoelferi (Dosse), new combination, Schuster and Pritchard, 1963 : 268; Athias - Henriot, 1966 : 207; Wainstein, 1975 : 920.

Neoseiulus zwoelferi (Dosse), Tuttle and Muma, 1973 : 26.

DIAGNOSIS - The slender neck - like development of the spermathecal cervix mesad of the elongate - nodular atrium distinguishes this species from all other members of the *fallacis* species group; mf of chelicera apparently smooth.

TYPE - Grossenkneten bei Oldenburg, Germany, VI - 1956, G. Dosse, on leaves of apple, *Malus* sp., in Institute of Phytomedicine, Univ. of Hohenheim, Stuttgart.

NEW RECORDS-1 female, Esfahan (Dorche), 7 - VI - 1981, on cherry, *Prunus* sp. 2females, Shiraz, 24 - XI - 1985, Sh. Barooti, in ground surface litter of alfalfa, associated with nematodes, *Ditylenchus dipsaci* Kühn.

REMARKS - *Neoseiulus zwoelferi* was previously known only from Miandoab, 15 females and 3 males, 25 - VII-1978, on apple, Malus sp,.

Neoseiulus oryzacolus n. sp.

(Figs. 9 - 16)

DIAGNOSIS - *Neoseiulus oryzacolus* is similar to *N. imbricatus* (Corpuz & Rimando, 1966), but distinguishes from the latter by having 10 pairs of pores on dorsal scutum, ff of chelicera with 10, and mf with 3 instead 2 denticules in *N. imbricatus*. D1 to D4 in *N. oryzacolus* shorter, but D1, D2, M1, M3 much shorter than distances between their bases. Moreover, *N. oryzacolus* resemble *N. lamticus* (Athias - Henriot, 1977), but differs in the relative lengths of dorsal setae, and in the number of denticules on chelicera : so that has 3 den - ticules as opposed to one on mf and 10 denticules as opposed to 7 on ff of *lamticus*.

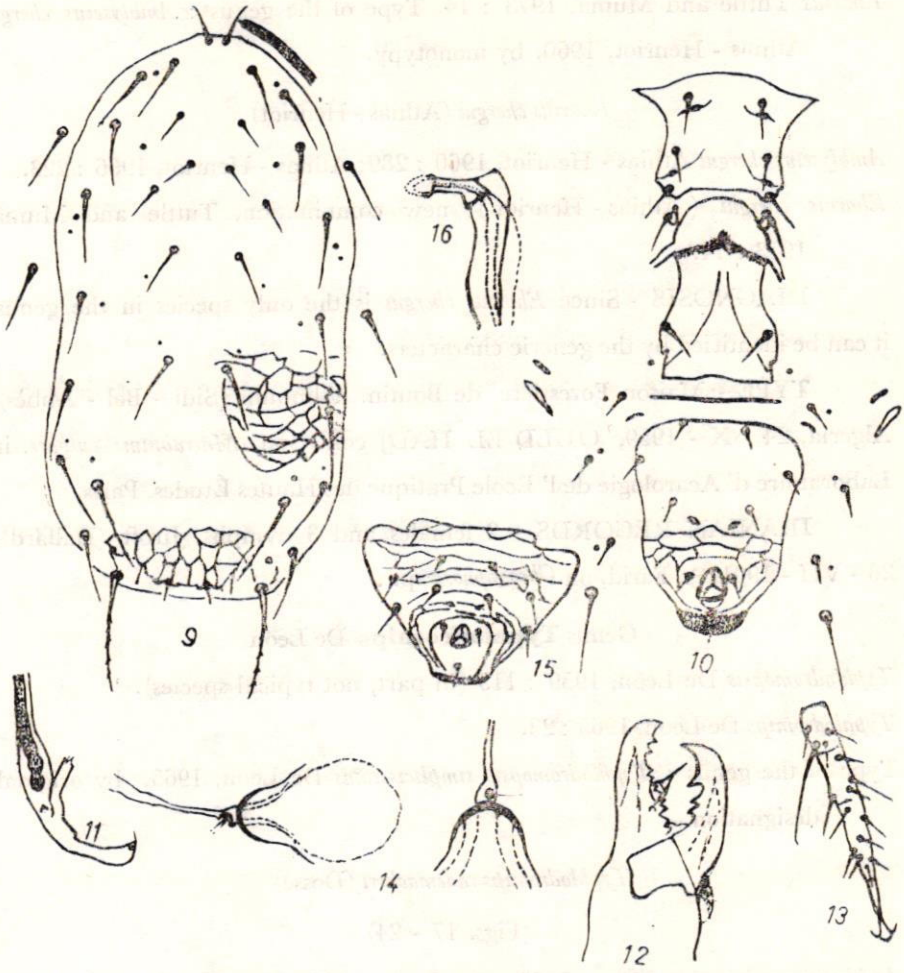
FEMALE - Length 379; width at L4 195 ; dorsal scutum reticulate with 10 pairs of pores and 17 pairs of setae. Measurements of setae : verticals 27; D1 22, D2 24, D3 33, D4 47; clunanls 14; L1 45, L2 44, L3 47, L4 55, L5 55, L6 57, L7 53, L8 79; M1 25, M2 46, M3 68; anterior sublaterals 49, posterior sublaterals 57. Sternal scutum with 2 pairs of pores and 3 pairs of setae, smooth and the posterior margin truncate. Ventrianal scutum creased posteriorly, with 3 pairs of preanal setae, a pair of conspicuous crescentic pores and lateral margins very slightly concave. Peritreme not extending beyond verticals. Chelicerae normal, mf with 3 denticules and ff with 10 denticules. Leg formula 4123. Leg IV macrosetae are as follows: Sge IV 36, Sti IV 39, St IV 73. Spermatheca poculiform cervix and nodular atrium. GenuII $2-\frac{2-2}{0}-1$;

Genu III $1-\frac{2-2}{1}-1$.

MALE - Similar to but smaller than female, ventrianal scutum slightly creased with 4 pairs of preanal setae and one pair of crescentic pores between and slightly behind third preanal setae; mf with 1 denticule, ff with 6 denticules. Spermatodactyl as illustrated.

TYPES - Female holotype : Rasht, 13 - VI - 1982, on rice, *Oryza sativa*. Paratypes - 7 females, 1 male and 2 nymphs, data same as for holotype. 10 fe -

males, 2 males and 2 nympns, Tonekabon, 9 - VIII - 1982, on rice. 11 females, 1 male and 2 nymphs, Sari, 10 - VIII - 1982, on rice. 11 females and 1 nymph, Freydoonkenar, 10 - VIII - 1982, on rice.



Figs. 9 - 16. *Neosiulus oryzacolus* n. sp.: 9. Dorsal structure ($\frac{O}{+}$), 10. Ventral scuta and setation ($\frac{O}{+}$), 11. Posterior peritremal and stigmatal development ($\frac{O}{+}$), 12. Cheliceral structure ($\frac{O}{+}$), 13. Tarsus of leg IV ($\frac{O}{+}$), 14. Spermathecal structures ($\frac{O}{+}$),15. Ventrianal scutum ($\frac{\uparrow}{O}$), 16. Spermatodactyl structure ($\frac{\uparrow}{O}$).

Genus **Eharius** Tuttle and Muma

Amblyseius, Athias - Henriot, 1960 : 239; Wainstein, 1962 : 14; Chant, 1965 : 371; Athias - Henriot, 1966 : 223; van der Merwe, 1968 : 109 (in part) .

Eharius Tuttle and Muma, 1973 : 14. Type of the genus : *Amblyseius chergui* Athias - Henriot, 1960, by monotypy.

Eharius chergui (Athias - Henriot)

Amblyseius chergui Athias - Henriot, 1960 : 289; Athias - Henriot, 1966 : 223.

Eharius chergui (Athias - Henriot), new combination, Tuttle and Muma, 1973 : 14.

DIAGNOSIS - Since *Eharius chergui* is the only species in the genus, it can be identified by the generic characters.

TYPE - Maison Forestière de Boutin, Tilmouni (Sidi - Bel - Abbès), Algeria, 24 - X - 1959, OULD EL HADJ coll., on *Marrubium vulgare*, in Laboratoire d' Acarologie de l' Ecole Pratique des Hautes Études, Paris.

IRANIAN RECORDS - 2 females and 3 nymphs, Jiroft (Dalfard), 28 - VII - 1981, A. Farid, on *Chrozophora* sp. .

Genus **Typhlodromips** De Leon

Typhlodromopsis De Leon, 1959 : 113 (in part, not typical species).

Typhlodromips De Leon, 1965 : 23.

Type of the genus : *Typhlodromopsis simplicissimus* De Leon, 1965, by original designation.

Typhlodromips rademacheri (Dosse)

(Figs. 17 - 24)

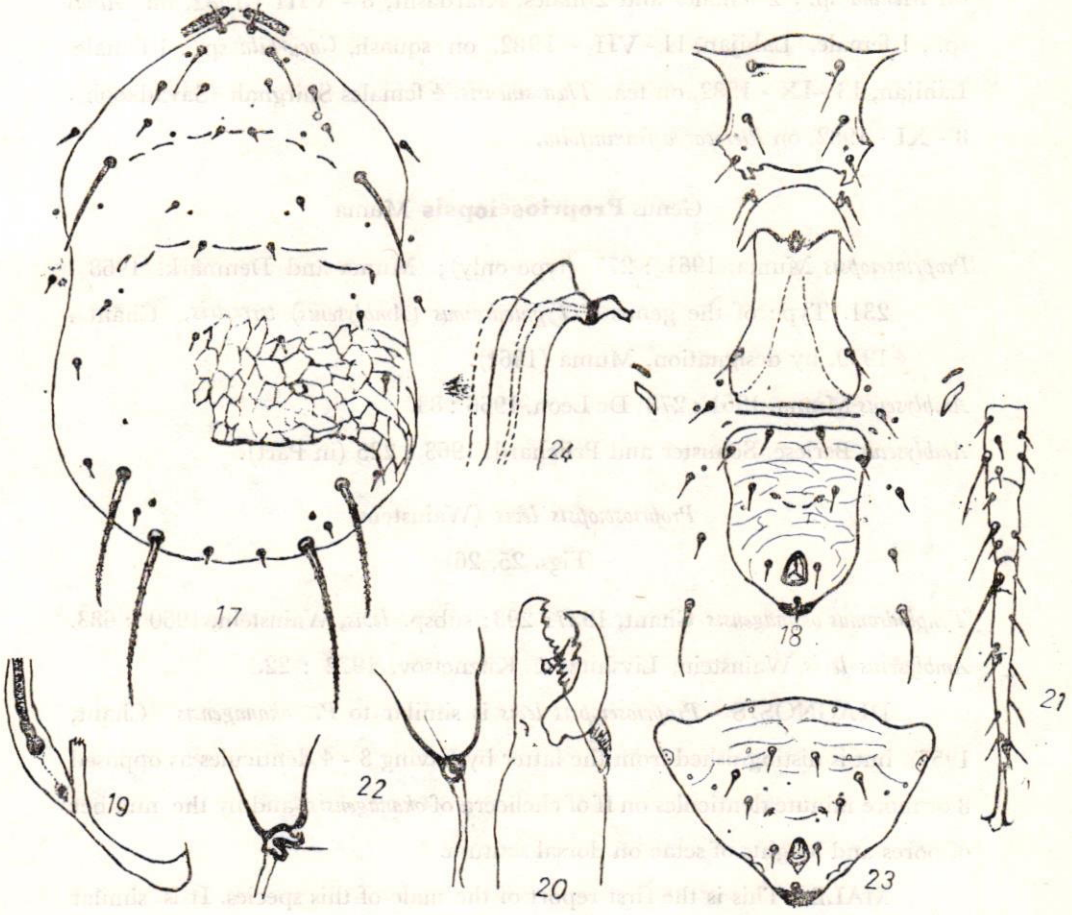
Amblyseius rademacheri Dosse, 1958 : 44; Dosse, 1958 : 9; Ehara, 1959 : 288; Wainstein, 1975 : 920.

DIAGNOSIS - Judging from Oudemans' drawings (Nesbitt, 1951) of the male of *Typhlodromips hevearum* (Oudemans, 1930), the female of which is unknown, *T. rademacheri* is probably allied to *T. hevearum*. in the maale of - *T. rademacheri* L4 is shorter than M3, while, in the *hevearum* L4 is similar to M3.

FEMALE - Dorsal scutum reticulated with 17 pairs of setae. Setae

L4, L8, and M3 long (61, 106 and 84 respectively), remaining setae short or minute. Ventrianal scutum longer than wide and slightly wider than genital scutum, with 3 pairs of preanal setae and one pair of pores. Chelicera with 2 denticules on mf and 9 denticules on ff.

MALE - Similar to female but smaller. Chelicera with spermatodactyl



Figs. 17 - 24. *Typhlodromips rademacheri* (Dosse) : 17. Dorsal structure ($\frac{O}{+}$), 18. Ventral scuta and setation ($\frac{O}{+}$), 19. Posterior peritremal and stigmatal development ($\frac{O}{+}$), 20. Cheliceral structure ($\frac{O}{+}$), 21. Genu, tibia and tarsus of leg IV ($\frac{O}{+}$), 22. Spermathecal structures ($\frac{O}{+}$), 23. Ventrianal scutum ($\frac{\uparrow}{O}$), 24. Spermatodactyl structure ($\frac{\uparrow}{O}$).

as illustrated. Ventrianal scutum broadly triangular, reticulate with one pair of pores and 3 pairs of preanal setae.

TYPE - Stuttgart - Hohenheim, Germany, 1958, G. Dosse, on apple , *Malus* sp., in Institute of Phytomedicine, Univ. of Hohenheim, Stuttgart.

IRANIAN RECORDS - 4 females and 1 male, Klardasht, 8 - VIII -1982, on *Mentha* sp. . 2 females and 2 males, Klardasht, 8 - VIII - 1982, on *Alnus* sp. , 1 female, Lahijan, 11 - VII - 1982, on squash, *Cucurbita* sp. . 1 female, Lahijan, 13 - IX - 1982, on tea, *Thea sinensis*. 4 females Shirghah (Savadkooh). 8 - XI - 1982, on *Pterocarya fraxinifolia*.

Genus **Proprioseiopsis** Muma

Proprioseiopsis Muma, 1961 : 277 (type only); Muma and Denmark, 1968 : 231. Type of the genus : *Typhlodromus (Amblyseius) terrestris*, Chant , 1959, by designation, Muma (1961).

Amblyseius Muma, 1961 : 278; De Leon, 1966 : 83.

Amblyseius Berlese, Schuster and Pritchard, 1963 : 225 (in Part).

Proprioseiopsis levis (Wainstein)

(Figs. 25, 26)

Tyhplodromus okanagensis Chant, 1957: 293; subsp. *levis*, Wainstein, 1960 : 683.

Amblyseius levis Wainstein, Livshitz & Kuznetsov, 1972 : 22.

DIAGNOSIS - *Proprioseiopsis levis* is similar to *P. okanagensis* (Chant, 1957), but is distinguished from the latter by having 3 - 4 denticules as opposed 8 or more minute denticules on ff of chelicera of *okanagensis*, and by the number of pores and lenghts of setae on dorsal scutum.

MALE - This is the first report of the male of this species. It is similar to but smaller than female. Setae S1 and S2 on dorsal scutum. Ventrianal scutum with 3 pairs of preanal setae and one pairs of pores between and slightly behind posterior preanals and 5 pairs of pores outside of these setae. Spermato - dactyl process of chelicera T shaped, as figured (mf with 1 denticule and ff with 4 denticules. Measurements : length 319; width at L4 219; verticals 18; D1 4, D2 4, D3 4; clunals 8; L1 44, L2 29, L3 40, L4 58, L5 29, L6 15, L7 -

16, L8 55; M1 4, M2 18, M3 51; anterior sublaterals 22, posterior sublaterals 16. Leg formula 4123. Leg IV macrosetae are as follows : Sge IV 40. Sti IV 33, St IV 66. Genu II $2-\frac{2}{0}-\frac{2}{1}-1$;Genu III $1-\frac{2}{0}-\frac{2}{1}-1$.

TYPES - Female holotype : Southern Kazakhstan (Alatay), 1400 - 1500 m height, USSR, B. A. Wainstein, under herbs, in Institute of Water Reservoir Biology, USSR Academy of Sciences (Borok). Male allotype: Bandar-e - Gaz (N. Iran), 7 - XI - 1982, on cotton, *Gossypium* sp. .

Genus **Amblydromella** Muma

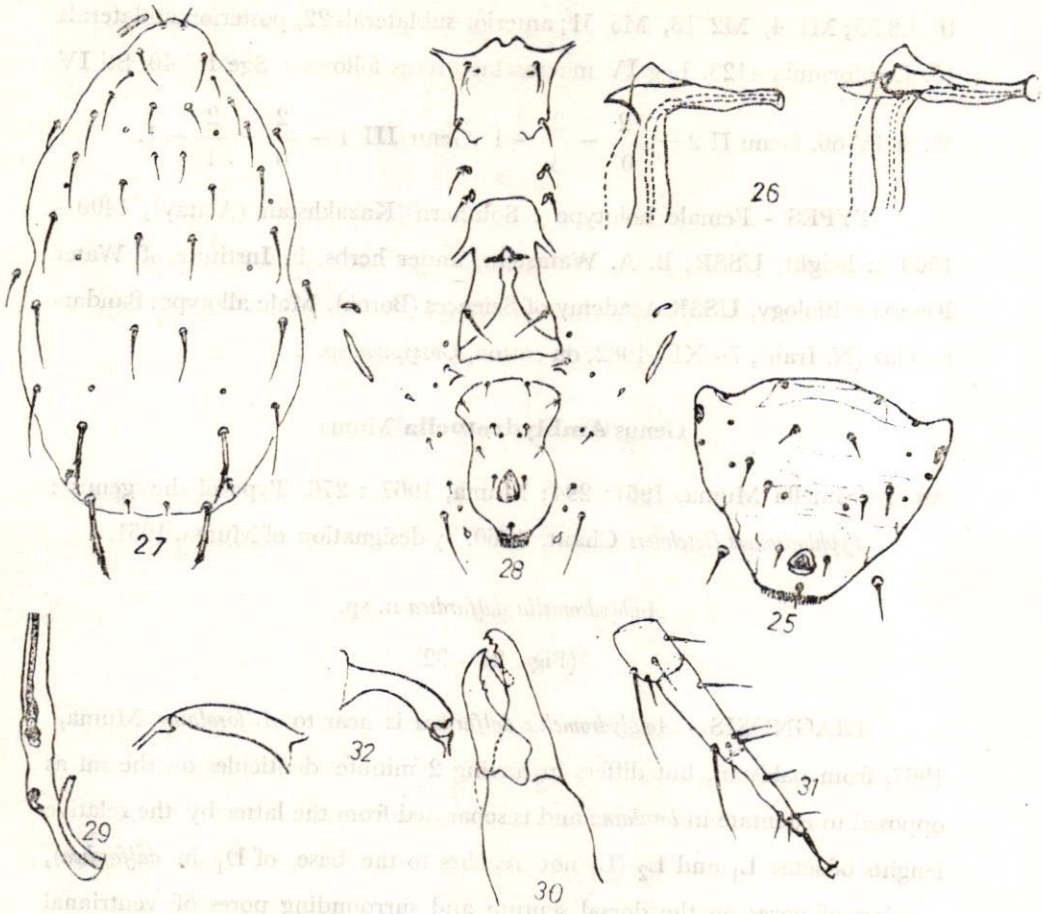
Amblydromella Muma, 1961: 294; Muma, 1967 : 276. Type of the genus : *Typhlodromus fleschneri* Chant, 1960, by designation of Muma, 1961.

Amblydromella dalfardica n. sp.

(Figs. 27 - 32)

DIAGNOSIS - *Amblydromella dalfardica* is near to *A. loralaina* Muma, 1967, from pakistan, but differs in having 2 minute denticules on the mf as opposed to edentate in *loralaina* and is separated from the latter by the relative lenghts of setae L_1 and L_2 (L_1 not reaches to the base of D_1 in *dalfardica*), number of pores on the dorsal scutum and surrounding pores of ventrianal scutum.

FEMALE - Length 332; width at L_5 172; dorsal scutum weakly reticulate with 5 pairs of pores and 18 pairs of setae. Measurements of setae : verticals 22; D_1 19, D_2 19, D_3 29, D_4 37; clunals 11; L_1 26, L_2 18, L_3 29, L_4 30, L_5 37, L_6 40, L_7 48, L_8 51, L_9 9, L_{10} 55; M_1 25, M_2 55; anterior sublaterals 22, posterior sublaterals 26. Sternal scutum with 1 pair of pores and 2 pairs of setae, smooth and indistinct posteriorly. Ventrianal scutum with 4 pairs of preanal setae and a pair of round pore behind and slightly mesad of posterior pair of preanals. Peritreme not reaching to verticals. Chelicera with 2 small denticules on mf and 3 denticules on ff. Leg formula 4123. Leg IV macrosetae are as follows : Sbat IV 33, St IV 33. Spermatheca as illustrated. Genu II



Figs. 25 - 26. *Propriseiopsis levis* (Wainstein) : 25. Ventrianal scutum ($\frac{\uparrow}{O}$), 26. Spermatodactyl structures ($\frac{\uparrow}{O}$), Figs. 27 - 32. *Amblydromella dalfarduca* n. sp. 27. Dorsal structure ($\frac{O}{+}$), 28.: Ventral scuta and setation ($\frac{O}{+}$), 29. Posterior peritremal and stigmatal development ($\frac{O}{+}$), 30. Cheliceral structure ($\frac{O}{+}$), 31. Basitarsus and tarsus of leg IV ($\frac{O}{+}$), 32. Spermathecal structures ($\frac{O}{+}$).

$1-\frac{2}{0}-\frac{2}{1}-1$; Genu $III1-\frac{2}{1}-\frac{2}{0}-1$.

MALE - Unknown.

TYPE - Female holotype : Jiroft (Dalfard), 10 - V - 1983, on orange, *Citrus* sp. .

Amblydromella kerkirea (Swirski and Ragusa)

Typhlodromus kerkirae Swirski and Ragusa, 1976 : 101; Swirski and Ragusa, 1977 : 79.

DIAGNOSIS - Females of *Amblydromella kerkirae* resemble those of *A. halinae* (Wainstein and Kolodochka, 1974) and those of *A. spiralis* (Wainstein and Kolodochka, 1974); males, however, can be easily distinguished by the shape of the spermatodactyl.

TYPES - Messongi and Perama (Corfu), Greece, 19 - VI - 1975, on *Pyrus malus* ; in Division of Entomolgy, Agricultural Research Organization, Bet Dagan (Israel); and Istituto di Entomologia Agraria, Universita di Palermo, Italia.

IRANIAN RECORDS - 2 females, Chalus, 26 - X - 1980, on fig , *Ficus* sp. .

Amblydromella iranensis Denmark and Daneshvar

(Figs. 33 , 34)

Amblydromella iranensis Denmark and Daneshvar, 1982 : 8.

DIAGNOSIS - Similar to *Amblydromella recki* (Wainstein, 1958), but differs in having only 2 subapical denticules on ff as opposed to 4 in *recki*. M2 reaches of L9 but does not in *recki*. Spermatheca bas a constriction in the cervix; not constricted in *recki*.

MALE - This is the first report of the male of this species. It is similar to but smaller than female. Setae S_1 and S_2 on interscutal membrane. Ventrianal scutum with 4 pairs of preanal setae, without pore. Spermatodactyl as figured. Measurements: length 265; width at L_5 143; verticals 21; D_1 16, D_2 16, D_3 18, D_4 18; clunals 7; L_1 22, L_2 18, L_3 25, L_4 25, L_5 29, L_6 27, L_7 29, L_8 25, L_9 20, L_{10} 50; M_1 16, M_2 44; anterior sublaterals 22, posterior sublaterals 20; Leg formula 4123. Leg IV macroseta on St IV 40.

Genu II $1-\frac{2}{1}-\frac{2}{0}-1$; Genu III $1-\frac{2-2}{1}-1$.

TYPE - Female holotype; Songhor, Iran, 30 - VIII - 1978, on apple, *Malus* sp. .

MATERIAL EXAMINED - 2 females, Ahar, 1978, on apple, *Malus* sp., 5 females and 1 male, Oroomyeh (Karabagh), 1978, on apple. 1 female, 2 males and 2 nymphs, Ab - Ali (Mobarak - Abad), 6 - IX - 1981, on cherry, *Prunus* sp. . 1 female and 1 male Ab - Ali (Mobarak - Abad), 6 - IX - 1981, on apple. 1 male, Varamin (Pishva), 29 - IX - 1981, on apple. 3 females, Golpaigan (Koocheri), 4 - X - 1981, on apple. 9 females, Kashan (Ghamsar), 8 - X - 1981, on apple.

Genus **Typhloctonus** Muma

Typhloctonus Muma 1961, 1963 ; type of the genus : *Typhlodromus tiliarum* Oudemans 1930, by original designation.

Typhloctonus tiliarum (Oudemans)

Typhlodromus tiliarum Oudemans, 1930 : 51; Nesbitt, 1951 : 31; Chant, 1955 : 600; Chant, 1956 : 26; Collyer, 1956 : 206; Chant, 1958 : 622; Swirski & Ragusa, 1976 : 116; Livshitz & Kuznetsov, 1972 : 21.

Typhlodromus formosus Wainstein, 1958 : 206.

DIAGNOSIS - Dorsal scutum with 3 pairs of distinct pores and 19 Pairs of setae, 11 in the lateral rows . Sternal scutum with only 2 pairs of setae. Ventrianal scutum much longer than wide, oblong, with 4 pairs of preanal setae. Apex of peritreme reaches the L3 - L4 . Legs without macro - setae.

TYPE - Dahlem, Germany, on *Tilia* sp., in Oudemans' collection, Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands.

IRANIAN RECORDS - 2 females, Sari, 10 - VIII - 1982, on siberian elm tree (planer tree), *Zelkova carpinifolia* .

Genus **Paraseiulus** Muma

Paraseiulus Muma, 1961 : 299. Type of the genus : *Seiulus soleiger* Ribaga, 1902, by designation of Muma, 1961.

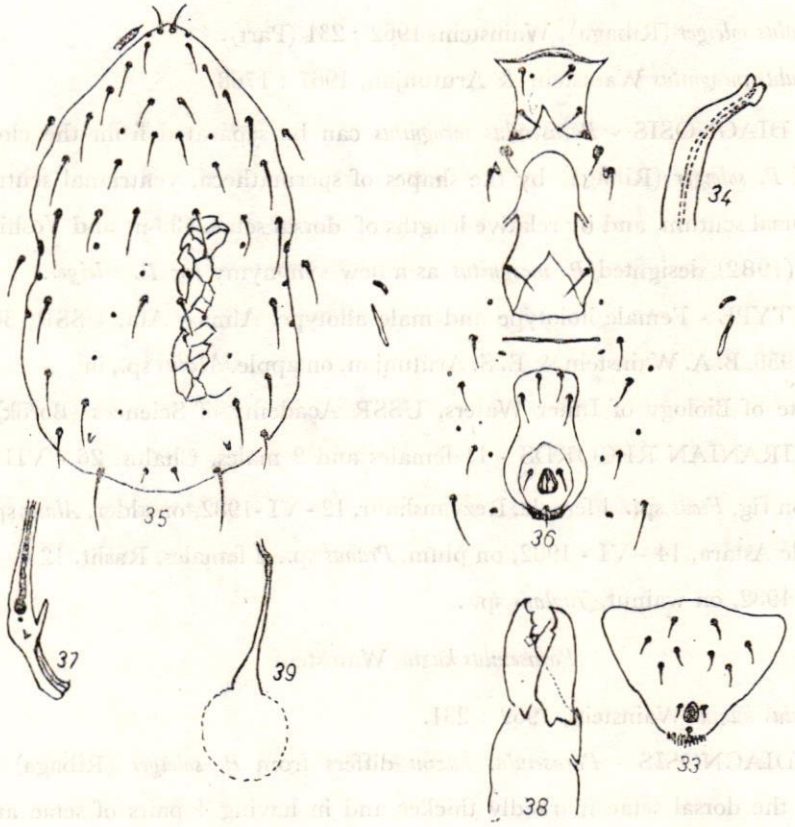
Paraseiulus jrofticus n. sp.

(Figs. 35 - 39)

DIAGNOSIS - *Paraseiulus jrofticus* is similar to *P. erevanicus* Wainstein &

Arutunjan, 1967, but differs in having dorsal setae much shorter and many pores on dorsal scutum.

FEMALE - Length 350; width at L_5 193. Dorsal scutum reticulated with 11 pairs of pores and solenostomes, and 19 pairs of setae. Measurements of setae: verticals 20; D_1 20, D_2 23, D_3 32, D_4 36; clunals 11; L_1 27, L_2 29, L_3 33, L_4 37, L_5 39, L_6 43, L_7 39, L_8 30, L_9 47; M_1 24, M_2 26, M_3 37; anterior sub-laterals 19, posterior sublaterals 26. Sternal scutum slightly creased anteriorly,



Figs. 33 - 34. *Amblydromella iranensis* Denmark and Daneshvar : 33. Ventrianal scutum ($\overset{\uparrow}{O}$), 34. Spermatodactyl structure ($\overset{\uparrow}{O}$),. Figs. 35 - 39. *Paraseiulus jrofticus* n. sp.: 35. Dorsal structure ($\overset{O}{+}$) , 36. Ventral scuta and setation ($\overset{O}{+}$), 37. Posterior peritremal and stigmatal development ($\overset{O}{+}$) , 38 Cheliceral structure ($\overset{O}{+}$), 39. Spermathecal structure ($\overset{O}{+}$).

with 2 pairs of pores and 2 paire of setae. Ventrianal scutum without pore, with. 2 pairs of preanal setae. Peritreme extending forward to L_1. Chelicera with 1 denticule on mf and 2 subapical denticules on ff. Cervix 37.

MALE - Unknown.

TYPE - Female holotype, Jiroft (Dalfard), 10 - V - 1983, on orange, *Citrus* sp..

Paraseiulus incognitus Wainstein & Arutunjan

Paraseiulus soleiger (Ribaga), Wainstein, 1962 : 231 (Part).

Paraseiulus incognitus Wainstein & Arutunjan, 1967 : 1768.

DIAGNOSIS - *Paraseiulus incognitus* can be separated from the closly related *P. soleiger* (Ribaga) by the shapes of spermatheca, ventrianal scutum and dorsal scutum, and by relative lengths of dorsal setae. Chant and Yoshida Shaul (1982) designted *P. incognitus* as a new synonymy for *P. soleiger.*

TYPE - Female holotype and male allotype, Alma - Ata, USSR, 30 - VII - 1956, B. A. Wainstein & E. S. Arutunjan, on apple, *Malus* sp., in Institute of Biology of Inner Waters, USSR Academy of Sciences (Borok)?.

IRANIAN RECORDS - 11 females and 2 males, Chalus, 26 - VIII - 1980, on fig, *Ficus* sp.. 1 female, Rezvanshahr, 12 - VI -1982, on alder, *Alnus* sp.. 1 female Astara, 14 - VI - 1982, on plum, *Prunus* sp.. 2 females, Rasht, 12 - VIII - 1982, on walnut, *Juglans* sp..

Paraseiulus kuzini Wainstein

Paraseiulus kuzini Wainstein, 1962 : 231.

DIAGNOSIS - *Paraseiulus kuzini* differs from *P. soleiger* (Ribaga) in having the dorsal setae markedly thicker and in having 4 pairs of setae and 1 pair of pores on ventrianal scutum. Furthermore, the chelicerae have 2 denticules on mf in *P. kuzini* and the shape of spermatheca is also different in the two species.

TYPE - Female holotype and male allotype, Dzhalal - Abad, Kirghiz - istan, USSR, 15 - IX - 1958, K. E. Romanenko, on leaves of grecian walnut, in Institute of Water Reservoir Biology, USSR Academy of Sciences (Borok).

IRANIAN RECORDS - 2 females and 1 male, Jiroft (Dalfard), 28 - VII - 1981, A. Farid, on walnut, *Juglans* sp. .

Genus **Bawus** Denmark

Paraseiulus Muma, 1961 : 299 (in part).

Bawus Denmark, 1985 : personal communication, not published. Type of the genus : *Typhlodromus talbu* Athias - Henriot, 1960.

Bawus talbii (Athias - Henriot)

Typhlodromus talbii Athias - Henriot, 1960: 75; Porath & Swirski, 1965: 95; El Badry, 1967: 183; Mc Murtry, 1977: 22, 24. ; Chant and Yosbid Shaul, 1982 : 3024. *Paraseiulus subsoleiger* Wainstein, 1962: 231.

Typhlodromus subsoleiger (Wainstein), Hirschmann, 1962: 12; Schruft, 1967; 189; Livshits & Kuznetsov, 1972: 17.

Typhlodromus (Neoseiulus) talbii Athias - Henriot, Ehara, 1966: 17.

Typhlodromus (Bawus) subsoleiger (Wainstein), van der Merwe, 1968: 62, Daneshvar, 1980: 90.

Paraseiulus (Bawus) talbii (Athias - Henriot), Wainstein, 1976: 699.

Paraseiulus (Bawus) subsoleiger Wainstein, Wainstein, 1976 : 699; Daneshvar, 1978: 127; Kolodochka, 1980: 43.

DIAGNOSIS- *Bawus talbii* is distinct in having two pairs of median setae on the proscutum and two pairs of median setae on the postscutum. It is very similar to *B. subsoleiger* (Wainstein, 1962) from USSR, so Chant and Yoshida Shaul (1982) designted *B. subsoleiger* as a new synonymy for *B. talbii*. I consider them also synonymous.

TYPES - Female holotype, male allotype: Algeria, Dec. 13, 1955, on *Vitis vinifera*, in L' Ecole Nationale d' Agriculture d' Alger.

NEW RECONRDS - 3 females, Colpaigan (Koocheri), 4 - X - 1981, on apple, *Malus* sp.. 2 female, Gomsheh (Shahreza), 5 - X - 1981, on vine, *Vitis* sp.. 3 females, Rafsanjan (Khenaman), 6 - X - 1983, on walnut, *Juglans* sp..

REMARKS-*B. talbii* (=*subsoleiger*) was previously known from Marand, Oroomiyeh and Karaj.

Genus **Phytoseius** Ribaga

Phytoseius Ribaga, 1904 : 177; Muma and Denmark, 1968 : 229. Type of the genus : *Phytoseius plumifer* (C. and F.), 1876, by subsequent designation of Vitzthum, 1914, based on Ribaga's description.

Dubininellus Wainstein, 1959 : 1365.

Pennaseius Pritchard and Baker, 1962 : 223.

Phytoseius (Pennaseius) tropicalis n. sp.

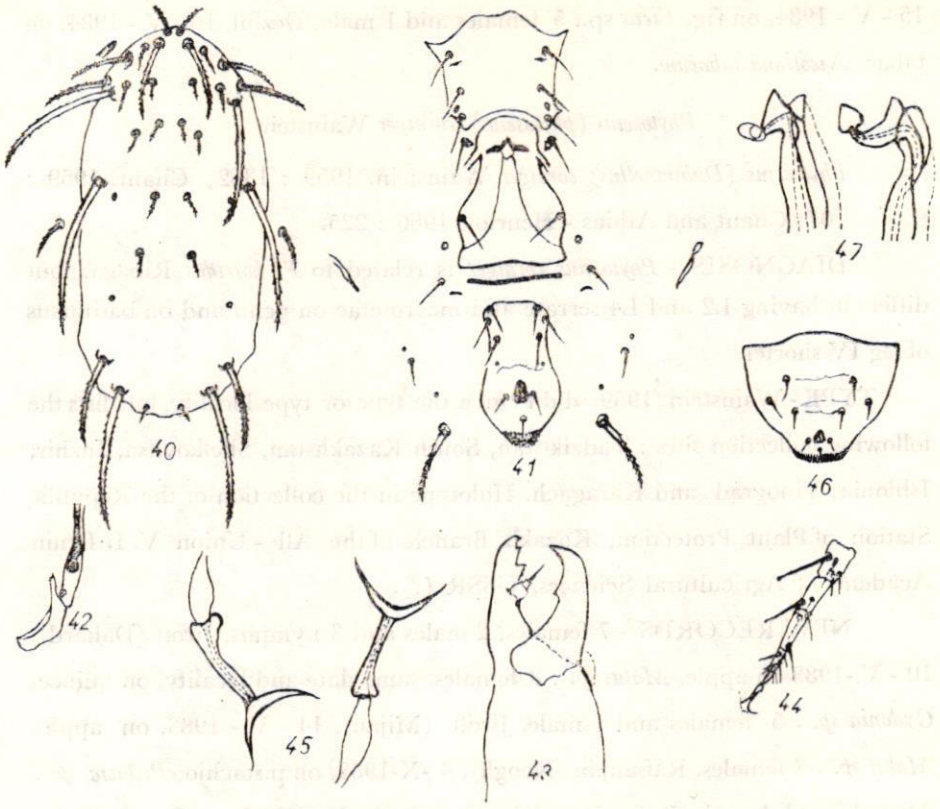
(Figs. 40 -47)

DIAGNOSIS - *Phytoseius tropicalis* is near *P. plumifer*, but differs from the latter by having all the dorsal setae serrate. L_6 longer than L_8 (110 : 98) in *P. tropicalis* as opposed to L_6 shorter than L_8 (79 : 106) in *P. plumifer*. Further, *P. tropicalis* are characterized by having L_1, L_3, L_5, L_6 and L_7 much longer than in *P. plumifer*, and with 1 pair of minute pores behind posterior pair of preanals on ventrianal scutum.

FEMALE - Length 280; width at L_5 144; dorsal scutum smooth, with 4 pairs of pores and 16 pairs of setae. Measurements of setae : verticals 25; D_1 18, D_2 18, D_3 18, D_4 22; clunals 11; L_1 64, L_2 18, L_3 43, L_4 22, L_5 92, L_6 110, L_7 66, L_8 98; M_1 15; anterior sublaterals 51, posterior sublaterals 23. Sternal scutum smooth, with 2 pairs of pores and 3 pairs of setae. Ventrianal scutum longer than wide, smooth, with 3 pairs of preanal setae and 1 pair of minute pores. Peritreme extending forward to L3. Chelicerae with 1 denticule on mf and 2 denticules on ff. Leg formula 4123. Leg IV macrosetae on basitarsus 36 and knobbed. Spermatheca as illustrated. Genu II $2-\frac{2-2}{0}-1$; Genu III $1-\frac{2-2}{0}-1$.

MALE - Similar to but smaller than female. Ventrianal scutum slightly creased, with 3 pairs of preanal setae. Spermatodactyl as figuerd.

TYPES - Female holotype : Jiroft (Bijanabad), 9-V-1983, on *Verbascum* sp. . Paratypes : 1 female and 1 male, data same as for holotype.5 females, Jiroft (Bijanabad), 9 - V - 1983, on *Euphorbia pulcherrima*. 3 females and 2 males,



Fige. 40 - 47. *Phytoseius (Pennaseius) tropicalis* n. sp : 40. Dorsal structure ($\overset{O}{+}$), 41. Ventral scuta and setation ($\overset{O}{+}$), 42. Posterior peritremal and stigmatal development ($\overset{O}{+}$) ,43. Cheliceral structure ($\overset{O}{+}$), 44. Basitarsus and tarsus of leg IV ($\overset{O}{+}$), 45. Spermathecal structures ($\overset{O}{+}$), 46. Ventrianal scutum ($\overset{\uparrow}{O}$), 47. Spermatodactyl structures ($\overset{\uparrow}{O}$).

Jiroft (Bijanabad). 9 - V - 1983, on raspberry, *Rubus* sp.. 8 females, 2 males and 1 nymph, Jiroft (Bagh - e - Alishir), 10 - V - 1983, on *Verbascum* sp.. 6 females, 5 males and 2 nymphs, Jiroft (Bagh - e - Alishir), 10 - V - 1983, on a plant of Labiatae. 11 females, 5 males and 2 nymphs, Jiroft (Narab), 11 - V - 1983, on raspberry, *Rubus* sp.. 5 females, Jiroft (Mijan), 14 - V - 1983, on apple, *Malus* sp.. 8 females, Jiroft (Mijan), 14 - V - 1983, on raspberry, *Rubus* sp.. 2 females, Ahwaz (Ways), 15 - V - 1984, on raspberry. 1 female, Ahwaz (Ways),

15 - V - 1984, on fig, *Ficus* sp.. 5 females and 1 male, Dezful, 16 - V - 1984, on tabac, *Nicotiana tabacum*.

Phytoseius (*phytoseius*) *corniger* Wainstein

Phytoseius (*Dubininellus*) *corniger* Wainstein, 1959 : 1362; Chant, 1959 : 107; Chant and Athias - Henriot, 1960 : 225.

DIAGNOSIS - *Phytoseius corniger* is related to *P. horridus* Ribaga, but differs in having L2 and L4 serrate and macrosetae on genu and on basitarsus of leg IV shorter.

TYPE - Wainstein (1959) didn't give the type or type locality, but lists the following collection sites : Tadzikistan, South Kazakhstan, Shelkovitsa, Inzhir, Isblonia, Vinograd and Karagach. Holotype in the collection of the Republic Station of Plant Protection, Kazakh Branch of the All - Union V. I. Lenin Academy of Agricultural Sciences, USSR (?).

NEW RECORDS - 7 females, 2 males and 3 nymphs, Jiroft (Dalfard), 10 - V -1983 on apple, *Malus sp.* . 8 females, same date and locality, on quince, *Cydonia sp.* . 5 females and 1 male, Jiroft (Mijan), 14 - V - 1983, on apple, *Malus sp.* . 2 females, Rafsanjan (Noogh), 4 -X-1983, on pistachio, *Pistacia sp.* . 3 females and 1 male, Rafsanjan (Khenaman), 6 - X - 1983, on fig , *Ficus sp.*. 1 female and 3 males, Eyvankey, 1 - VII - 1986, on fig.

REMARKS-It may be a predator of *Eotetranychus hirsti* Pritchard and Baker. This tetranychid mite has been collected from infested leaves of fig and it is widley distributed in southeast region of Tehran (from Varamin to Garmsar). *P. corniger* was previously known only from Torbat - e - Jam; 19 females and 3 males, 3 - VI - 1978, on apple, *Malus sp.* .

Ascidae[1]

Genus **Indiraseius** n. gen.

DIAGNOSIS - Dorsal scutum reticulated, entire, with 22 pairs of thickened setae. The most characteristic feature of the chaetotaxy of the dorsal scutum is the presence of only 5 pairs of setae in dorsocentral series (without

1 - See Lindquist and Evans, 1965.

verticals and clunals) and 4 pairs of setae in mediolateral series. Marginal series (r - R) with 4 - 5 pairs of setae, r1 on dorsal scutum. Paravertical setae (z1) always absent. Presternal region reticulated. Genital scutum truncate posteriorly, with 1 pair of setae. Ventrianal scutum creased, with 6 pairs of preanal setae. Anteriormediolateralventral (Zv1) setae always absent. Spermatheca well developed and sclerotized. Tritosternum with a basal part and a pair of pilose laciniae. Fixed finger (ff) of chelicera multidentate. Leg IV with macrosetae. There are usually each one macroseta on basitarsus IV and tarsus IV.

TYPE SPECIES - *Lasioseius parberlesei* Bhattacharyya, 1968.

DISCUSSION - This genus is related to *Lasioseius* Berlese, from which it differs by the number of setae on dorsal scutum (22 pairs as opposed to 25 - 51 pairs in *Lasioseius*), absence of paravertical setae, number of setae in mediolateral series (presence of only 4 pairs of z - Z setae in *Indiraseius*). Because of some similarity also with mites of family Phytoseiidae (Muma, Denmark and De Leon, 1970), *Indiraseius* can be accepted as a intermediate genus between *Lasioseius* and phytoseiid mites.

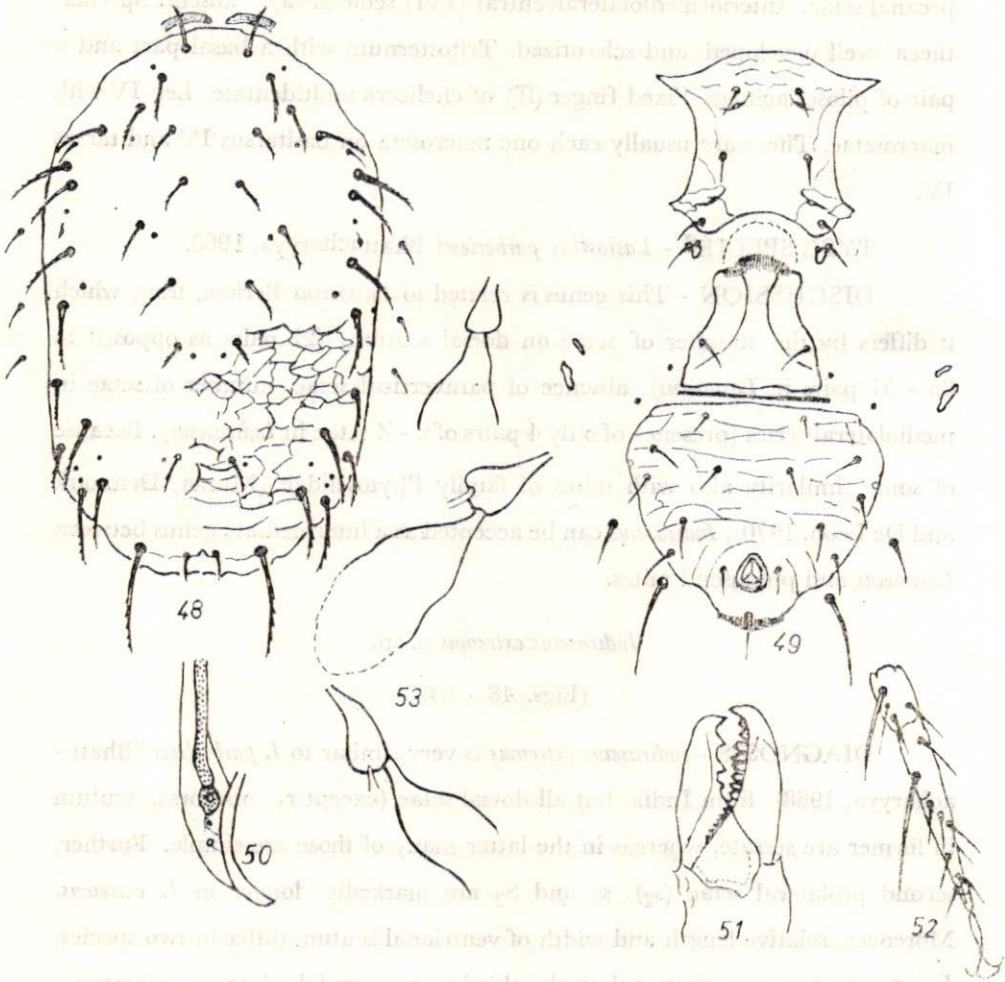
Indiraseius extremus n. sp.

(Figs. 48 - 53)

DIAGNOSIS - *Indiraseius extremus* is very similar to *I. parberlesei* (Bhatt - acharyya, 1968) from India, but all dorsal setae (except r_1) on dorsal scutum in former are serrate, whereas in the latter many of those are simple. Further, second prolateral setae (s_2), s_6 and S_2 are markedly longer in *I. extremus*. Moreover, relative length and width of ventrianal scutum differ in two species. *I. extremus* has two pairs relatively slender metapodal platelets, whereas , existe only one pair broad platelet in *I. parberlesei*. In addition, *I. extremus* dis - tinguished from the latter by having only 3 pairs of setae on the interscutal membrane (4pairs in *I. parberlesei*) and at least 10 pairs of pores on dorsal scutum.

FEMALE - Length 376; width 217; dorsal scutum reticulated, with 12 pairs of pores and 22 serrated setae (except r_1). Measurements of setae :

dorsocentral series (j - J) : verticals 37 - 18 - 18 - 27 - 17 - 18, clunals 11 ; lateral series (s - S) : 36 - 36 - 36 - 48 - 40 - 47 - 47 - 38 - 46 - 51 ; mediolateral series (z - Z) : 29 - 59 - 59 - Z5 68; marginal series (r - R) :



Figs. 48 - 53. *Indraesius extremus* n. sp: 48. Dorsal structure ($\frac{O}{+}$), 49. Ventral scuta and setation ($\frac{O}{+}$), 50. Posterior peritremal and stigmatal development ($\frac{O}{+}$), 51. Cheliceral structure ($\frac{O}{+}$), 52. Basitarsus and tarsus of leg IV ($\frac{O}{+}$), 53. Spermathecal structures ($\frac{O}{+}$).

18 - 18 - 18 - 18. Sternal scutum concave posteriorly with 2 pairs of pores and 3 pairs of setae; fourth pairs of sternal setae on separate platelets. Ventrianal scutum 142 long, 168 wide, reticulated with 6 pairs of setae. Peritreme extending forward to vertical seta. Chelicerae normal, mf with 3 denticules and ff with 15 denticules. Leg formula 4123. Leg IV macrosetae are as follows : Sge IV 47, Sti IV 36, macroseta on basitarsus IV 62 and on tarsus IV 73. Spermatheca as illustrated. Cervix 20. Cenu II $2-\frac{3}{1}-\frac{2}{1}-2$; Genu III $2-\frac{2}{1}-\frac{2}{1}-1$.

MALE - Unknown.

TYPES-Female holotype : Lahijan, 13-X - 1982, on mulberry, *Morus sp.* . Paratypes : 1 female, Lahijan, 13 - X - 1982, on tea, *Thea sinensis*. 2 females, Rasht, 13 - X - 1982, on rice (stubble), *Oryza sp.* . 1 female, Rasht, 13 - X - 1982, on raspberry, *Rubus sp.* . 1 female, Behshahr, 7 - XI - 1982, on fig, *Ficus sp.* .

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