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A First Survey of the Coccoidea of Iraq.

by

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*(To be obtained from the Agricultural Directorate, Baghdad)*

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## I.—Introduction.

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The present paper is the outcome of a trip through Iraq during the first two decades of October 1942. The trip was made by invitation of Mr. Mohammed El Radi, Director General of Agriculture, Iraq. It is to his kindness as well as to that of his coworkers Mr. Albert Meymeryan and Mr. Mumtaz El Arif, that a big amount of work could have been performed in such a limited time. The aim of the trip was to obtain a survey on the major problems of agricultural entomology of the country. Coccids were collected as far as the time permitted.

A few notes may be welcome on those localities, touched during the trip, which are less familiar to the common reader. Towns, such as Baghdad, Mosul, Erbil and Basra can easily be located in every atlas. Other localities are: Addaye: a village on the eastern corner of the Gezira steppe, about 50 km west of Mosul. Zakho, Sheranish, Sandur, Zawita are towns and villages in N.W. Kurdistan, close to the Turkish border. Ruwanduz gorge is the mountain valley of the Great Zab river, an eastern affluent of the Tigris. The village Shaklawa is on the road from Mosul to the Rawanduz gorge. Sulaimaniya, Chuarda, Penjween and Halabja are towns and villages in the North-eastern liwa (—province) of Iraq, along the Iran border. Zafraniye and Abu Gurcib are farms of the Department of Agriculture, close to Baghdad. Shiaibs and Zubeir are two oases close to Basra.

Without going into any details, it may be stated, that Southern Iraq, including Baghdad, belongs to the Sahara-Sindian region. But the humidity of the oases and of the marshes permits the penetration, respectively maintenance of Oriental tropical elements as far north as Baghdad (e.g. the establishment of *Chrysomphalus orientalis* Newst. or the far more conspicuous occurrence of the butterfly *Precis orythya* L., both up to Baghdad). From somewhere north of Baghdad until the Kurdish mountains in the north and in the east extend monotonous steppes, in which *Prosopis stephaniana*, *Alhagi maurorum*, *Artemisia* and *Teucrium* dominate. The Kurdish mountains are covered by oak forests (mainly *Quercus persica*), mixed with scattered groups of *Pistacia khinjuk*, *Acer cinerascens*, *Vitis orientalis* etc. In this area a narrow transversal tongue of Red Soil, most probably the continuation of that observed by the writer near Urfa and Mardin in S.E. Anatolia, was noted. Both, the steppes as well as the Kurdish mountains belong to the Irano-Turanian territory.

The taxonomic categories as well as the specific and generic nomenclature applied in this paper are those which will be used and exposed in the writer's monograph on the Coccoidea of the Middle East, which is nearing completion. They are in principal conformity with the principles and conceptions developed recently by leading American specialists, such as Morrison, Ferris & a.

It is obvious, that the following list is decidedly incomplete. But the knowledge of coccids of Iraq is lifted from 7 species, mentioned in the only available paper (Green, 1923) to about 60 species. To the specialist it will be

a very striking feature, that the percentage of cultural immigrants and of cosmopolitan ubiquitous in general is rather limited. This fact will be discussed in the zoogeographical analysis. Another feature which asks for comment is the relatively large number of new species in the family of *Pseudococcidae*. This group is much more difficult to collect and to preserve during excursions than the other families. In addition many species, especially in steppe and desert regions, live subterraneously. It is therefore not surprising, that our knowledge of these groups, especially in desert and steppe, are quite unsatisfactory. Also very little is known on the intraspecific variability of this group (especially in antennal joints, number of cerarian spines and pores, length of anal and of caudal setae etc.). It seems therefore preferable to describe forms, which show definite differences from the hitherto known species as new and to leave it to the future reviser of the group to decide on the definite synonymy. This procedure seems to cause the least of unnecessary trouble to a future generation, which has to decide, to which final species the earlier mentioned forms shall belong.

All measurements are given in mm (e.g. 0.04).

The writer wishes to express his thanks to Mrs. G. Wertheim, Jerusalem, for the preparations of the slides, to Dr. H. Bytinsky-Salz, Jerusalem, for the preparation of the illustrations, as well as to Mr. M. Fathey for preparing the paper for the press.

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## II.—List of species.

### Diaspididæ.

1. *Quadraspidotus populi* n. sp. (Fig. 1).

Female scale circular to short oval, flat, yellowish transparent to greyish, about 1.5 mm long. Exuviae raised, subcentric, relatively large, yellow-brown.

Body of adult female short and broad oval, broadly rounded on cephalic, broad triangular on caudal end, being broadest before the middle. Body segmentation usually obsolete, lateral abdominal margins not produced. Antennae flat tubercles with one long, strongly curved seta. Mouthparts well developed. Spiracles normal, inflated at inner end of atrium, without spiraceroses. Along margin and submargin of body about 46 short and slender setae (0.015). In submarginal area of prepygidial segments groups of slender tubular ducts.

Pygidium broad triangular, with 3 pairs of lobes and no distinct plates. Median lobes rather prominent, slightly convergent, longer than broad, with parallel sides and hindmargin deeply notched laterad. 2 slightly shorter setae in interval. The 7 to 8 median tubular ducts begin all far cephalad of the anus. Anus. 3 times its diameter distant from the pygidial margin. Thick densaria, 1 short seta. Second lobes narrow, smaller, also convergent and similar to median lobes. 1 seta as long as L., smaller densaria. Third lobes broad but short, usually longer on central margin and deeply notched on caudal margin. 1 long seta (0.02), 1 long seta. Anus about 3/4 the distance base/margin of pygidium. Dorso-tubular ducts elongate and slender, arranged in rows as follows: 5,3,4,7,4.

Vulva about 1/4 the distance base/margin of pygidium. With 4 transverse

and 4 longitudinal sclerotic bars on ventral surface. Genaceroses:  $\frac{3}{4 \quad 5}$   
 $\frac{2+2}{5 \quad 5}$ ,  $\frac{3}{5 \quad 4}$ ,  $\frac{3}{5 \quad 4}$ , average:  $\frac{3}{4}$

Baghdad, at various places on leaves of *Populus euphratica*.

2. *Quadraspidotus zonatus* Frauenfeld.

On stem of *Loranthus europæus*, parasitic on *Quercus persica*. Chnarta,

13.x.42. Genaceroses:  $\frac{0}{3(2-4)}$   
 $\frac{6(5-7)}{3(2-4)}$

3. *Chrysomphalus orientalis* Newstead. (Fig. 2 and 2a).

On leaves of *Dalbergia sissoo* at Zafraniye, 4.x.42. On leaves of *Populus euphratica* (together with *Quadraspidotus populi*) at Baghdad, 3.x.42. On leaves of *Olea europæa* at Baghdad, 4.x.42. On leaves of *Citrus aurantium* at Basra, 20.x.42.

The specimens from the Central Iraq differ from typical specimens by:

- (1) still more pronounced reduction of the prosomatic lobes, which are entirely

as in *Chrysomphalus*, (2) absence of any conspicuous sclerotization of the proso-ma. Our specimens should without any doubt be classified as *Chrysomphalus* (not as *Aonidiella*).

Female scale almost circular, fairly convex, pale yellow, 2.5 to 3. Omm. Ex-uviae subcentric, yellow.

Pygidial characters as given by McKenzie (1936 p. 11, 32): 3 well developed pairs of lobes, the first being the largest. Fourth lobe distinctly recognizable as sclerotic triangle. No plates laterad of fourth lobes. Plates between 3rd and 4th lobes with ensiform process. Dorso-pygidial tubular ducts in 3 rows, a single duct in the median interval beginning cephalad of anus, 3 prepygidial segments with 3 distinct clusters of sub-marginal ducts. Genacerores in 4 or 5

groups:  $\frac{1(0-3)}{7(5-9)}$ . Adult females full of eggs with embryos in an advanced stage

of development. Considering this identity of all microscopical structures, we do not hesitate to determine our specimens as *C. orientalis*, which in this case is obviously a species showing intermediate variation between *Aonidiella* and *Chrysomphalus*. We prefer to arrange it with the later genus, where it can easily be separated from all other species by the 3 pairs of prepygidial submarginal clusters of ducts.

The female scales as well the pygidial glands in specimens from Citrus at Basra very slightly, but definitely from those from C. Iraq. The genacerores

are:  $\frac{3(1-7)}{3(1-5)}$ . The ensiform processes in the 3 plates between 3rd and fourth

lobes are smaller and less pronounced. The median dorso-pygidial ducts are markedly more slender. The scale is more compact and less conical. It is quite possible, that the specimens from Basra do not belong to this variable species. Further material is awaited until a definite decision can be made.

4. *Diaspidiotus ephedrarum* Lindinger.

On stem of *Ephedra alte* at Chuarta, 11.x.42

5. *Diaspidiotus herzlianus* Bodenheimer.

Common on *Ephedra alte* at: Zakho road, 8.x.442., Chuarta, 11.x.42, Kirkuk/Sulaimanive, 12.x.42. In all specimens one plate occurs laterad of the third lobes. The species is easily separated from *D. ephedrarum*: the tubular ducts ending in the interval between the median lobes begin at the heig't of the centre of the anus (in *D. ephedrarum* caudad of anus) and from *D. trahuti* March. by the form of the plates, which are all slender and not dilated at their bases.

6. *Diaspidiotus lataniae* Signoret.

On leaves of *Morus alba* at Ramadi, 2.x.42.

7. *Melanaspis inopinata* Leonardi.

On stem, branches and twigs of *Celtis tournefortii* in Ruwanduz gorge, 10.x.42. On stem of *Pyrus communis* at Penjween, 12.x.42.

8. *Targionia vitis* Signoret.

On branches of *Quercus* sp. at Penjween, 14. x. 42. Rare.

9. *Diaspis calyptroides* Costa.

On *Opuntia* spp. in the cactus garden at Zafraniye farm, 4.x. 42.

10. *Chionaspis engeddensis* Bodenheimer.

Common on *Tamarix articulata* and on *T. sp.* everywhere. Our records include Sulaimaniye 16. x. 42., Halebje road 15. x. 42., Shiaba Oasis and Basra, 19. x. 42. The species differs from the closely related *C. etrusca* Leon. by: (1) the much reduced number of genae-rores, especially in the antero-lateral group (about 12 as against about 26), (2) the female scale being smooth and shining, (3) the duplex second lobes being distinctly pointed (in large majority of individuals), (4) marginal pygidial glandspines being arranged singly or in pairs (not in groups of 3).

11. *Mytilococcus bicuspis* Hall.

On branches and twigs of *Tamarix* at Shiaba, 18. x. 42.

12. *Mytilococcus intermittens* Hall.

On leaves of *Eragrostis* in date palm grove at Basra, 18. x. 42.

Instead of duplex second and third pygidial glandspines, one glandspine only in each group. Median lobes not always constricted at base. Laterad lobule of the duplex second lobes always narrower, but not always shorter than centrad lobules, which in some specimens are constricted at base. The genae-rores fluctuate more than in the Egyptian material:  $\frac{4(2-6)}{8(5-22)}$ . All other characters agree with the original description. Mesospirae-rores:  $1(0-2)$ .

13. *Mytilococcus juniperi* Lindinger.

Not common on leaves of *Juniperus oxycedra* at Sheranish, 8.x.42. Fairly common on fruits of *Juniperus oxycedra* in the pine forest near Zawita, 9.X.42.

Genae-rores:  $\frac{2-4}{4-6}$ . Mesospirae-rores: 1-2.  
 $\frac{3-4}{8-4}$

14. *Mytilococcus kurdicus* n. sp. (Fig. 3).

Female scale musselshaped, usually bent once or twice, rather flat. Broadest about middle, slightly tapering hindwards, pale yellowish green, conform with the colour of the substrate. Exuviae cephalic, second exuvia one third of scale length, yellowish. 1.3 x 0.5mm.

Body of adult female elongate ovate, clearly broadest in last third, broadly rounded behind, often constricted at base of mouthparts. Body segmentation indistinct, margin of abdominal segments distinctly rounded, but not produced

into distinct lobes. Prosoma very large, the metaspiracles well in posterior body half, more distant from mesospiracles than these from anterior body margin. 4 short and slender marginal setae between antennae. Antennae broad, flat tubercles with 2 short, stout, divergent spines. Rostral loop very short scarcely exceeding the mesospiracles. Spiracles dumb bell shaped, with 1 (0-2) meso- and no metaspiracere. The females have 3 to 7 fully developed larvae in their body. 1 larva seen in the birthact.

Pygidium narrow, with median lobes prominent. Median lobes rather distant, fused at base, from which 4 sclerotic bars extend cephalad. Median lobes with subparallel margins, with inner margins subparallel to slightly diverging, with 2 slight notches on each side of the caudal margin. 2 glandspines in median interval, essentially similar in shape to the forceps of the male earwig. Laterad follow: 1 glandspine, 1 large oval duct opening. All these glandspines slightly surpass the median lobes in length. The duplex second lobes are slightly shorter than the median ones, more narrower and slender.  $\frac{1}{2}$  is enlarged at the apex, tapering towards the base,  $\bar{Z}_{ob}$  toothlike. 1 long glandspine, 2 openings of macroducts with 1 short glandspine between them. Third lobes simple, short sclerotic projection, not always distinct. 1 short glandspine, 2 mouths of macroducts, 1 short glandspine.

Anus at  $\frac{1}{3}$  the distance base/margin of pygidium. Dorsopygidial tubular ducts few: about 4 in the centre, about 6 in the cephalic submargin of the intermediate pygidial area, besides a row of about 6 ducts along each caudal margin. Groups of similar ducts along the submargin of all abdominal segments combined with 2 to 5 short triangular to short conical glandspines, which decrease in size cephalad.

Vulva slightly caudad of anus. Genaeerores rather irregular in 4 to 5

	0	4	2	3	3	2	3	3								
groups:	$\frac{2}{9}$	$\frac{3}{11}$	$\frac{9}{4}$	$\frac{2}{4}$	$\frac{6}{8}$	$\frac{6}{4}$	$\frac{6}{4}$	$\frac{7}{4}$	$\frac{5}{4}$	$\frac{4}{4}$	$\frac{3}{3}$	$\frac{3}{4}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{5}{3}$	$\frac{6}{4}$

average (excl. first and second sample):  $\frac{3}{5}$  the total fluctuating between 19 and 25 glands.

Common on lower side of leaves of *Acer cinerascens* Boiss. in the Ruwanduz gorge, 11. x. 42. On the same host near Penjween, 14. x. 42.

15. *Mytilococcus minimus* Newstead. (Fig. 4).

Baghdad, on leaves and tender twigs of *Ficus carica*, 5.X.42.

The taxonomic status of this form has again and again been the subject of discussion. The writer has obtained nanic specimens on fig. leaves by breeding typical *M. conchyiformis* Gmel. from twigs of *Ficus* in Palestine. Lindinger (1912) and Balachowsky (1932) also have synonymized *M. minimus* Newst. with *M. conchyiformis* Gmel. Hall (1923, 49) protests vigorously against this opinion, which protest has been approved by E.E. Green. Careful search for *M. conchyiformis* on the infested fig. trees at Baghdad failed to reveal any specimens of this large form on the twigs and branches. Furthermore, the presence



of *M. conchyformis* Guel. is not yet recorded from the Iraq. But a few specimens, identical in size and structure with those on the leaves, were found on the tender twigs, thus showing a mode of hibernation of the form called here *M. minimus*. Looking over our slides from Palestine and the Iraq, we find, that 2 different forms are usually united under that name: (1) a form with widely distant median lobes (about width of these lobes) and with broadly rounded, scarcely notched lobes, (2) a form with closely approached median lobes, which are deeply notched, usually once on the inner, twice on the outer slope of the caudal margin. One of these forms may simply be the nanic form of *M. conchyformis*, whereas the other is possibly a good species. More breedings are needed in order to clarify the situation. Our specimens from the Iraq have the following

genacerores:  $\frac{5(4-5)}{6(5-8)}$ . The specimens approach most the form *destefanii* Leonardi

1903 (*M. conchyformis phillyreae* Koronéos 1934) with regard to genacerores and second lobes. But from this as well from all other forms of *M. conchyformis* it differs by a much higher number of marginal abdominal ducts. The specimens from Baghdad belong to the second group described above.

16. *Mytilococcus pistaciae* Archangelskaya.

On leaves of *Pistacia khinjuk* at Zakho, 8. X. 42., in the Ruwanduz gorge, 11. X. 42. and at Penjween, 14. X. 42.

These specimens differ at the first view much from those from Anatolia. Whereas the Anatolian specimens were not yet fully matured females, those from the Iraq were dead and after oviposition. The former were elongate ovate, the latter broad and short oval. Still more striking was the fact, that in almost all Kurdish specimens the genacerores were arranged in a flat arch, close to the caudal margin, probably due to body contraction after oviposition. In two specimens only, the normal position of the genacerores, which reach to cephalad

of anus, was retained. Their number was:  $\frac{4(2-6)}{11(11-12)}$ . The number of antennal

setae fluctuates between 2 to 4. In all essential characters the Kurdish specimens agree entirely with those from Anatolia.

17. *Mytilococcus sanduri* n. sp. (Fig. 5).

Female scale elongate mussel shaped, flat, broadest about middle, pale straw coloured. Exuviae cephalic, second exuvia about 1/3 of length of scale, of same colour. 2.2 x 0.6 mm.

Body of adult female very elongate elliptic to elongate oval, 1.1 x 0.5 mm. Body segmentation indistinct, except on margin, abdominal margins not produced. Antennae flat tubercles with 2 strong, curved or divergent setae. Mesospiracles close to rostrum, metaspiracles far caudad, in second body half. With about 5 (3,5,5,5,6,7) meso—and no metaspiracerores. Short microducts, less dense in intermediate area rather densely along the abdominal submargin. No short triangular glandspines, but 1 short seta on each abdominal margin and 1-3 small and short glandspines on 3 prepygidial segments.

Pygidium narrow, flatly rounded caudad. Median lobes broad, rounded or with one flat notch each side of posterior margin, slightly tapering towards base, rather distant (interval clearly wider than median lobes broad). With 2 distinctly longer glandspines and sometimes with a central marginal tooth in the median interval. Laterad of median lobes: 1 glandspine, 1 short seta, sometimes with marginal tooth between them, 1 oval opening of a macroduct. Second lobes duplex, the central lobule similar, but slightly shorter and much narrower than median lobe, the laterad lobule toothlike. 1 long glandspine, 1 seta, 2 openings of macroducts, 1 seta, 1 mouth of macroduct. Anus close to cephalic margin of pygidium. Short dorso-tubular ducts rather densely in intermediate and lateral areas and along the cephalic margin: 2,6,2,2,6, vulva nearer to caudal margin of

pygidium than to anus. Genaeerores:  $\frac{5(8-7)}{10(6-11)}$   
 $\frac{7(5-9)}$

Differs from *M. intermittens* Hall by: (1) the scale being broadest about middle, (2) the very large interval between the median lobes, (3) the higher number of spiraeerores.

A few specimens on blades of *Andropogon* sp. near Sandur, in Kurdistan, 9. X. 42. (type). On blades of grass near Zakho, 7. X. 42.

18. *Myllococcus ulmi* Linné.

Fairly common, but not seen in incrustations, on stem and branches of *Pyrus communis*, *Pyrus malus*, *Platanus orientalis* near Penjween, 13. X. 42. On twigs of *Daphne* sp. at Chuarta, 13. X. 42. On *Loranthus europaeus*, parasitic on *Quercus persica*, Chuarta, 13. X. 42. Apparently restricted to the Kurdish mountains.

19. *Coccomytilus halli* Green. (Fig. 6).

Common in N. and C. Iraq on stem, branches twigs and fruits of apricot— and peach-trees. No damage has been observed except of red spotting of peach fruit, such as is caused by *Perlatoria oleae* Colv. On wild cherry tree near Sulaimaniye, 16. X. 42. On peach, apricot and almond trees at Baghdad, Mosul and Sulaimaniye.

The enormous range of variability of the pygidial margin and the synonymy of the species with *C. zlaicistii* Bdhmr. has been pointed out by the writer before. This variability is again confirmed by the material from Iraq, in which specimens with median lobes only (broadly rounded or triuspidate) occur on the same tree with others which have duplex second and third lobes and simple toothlike fourth lobes. All other characters are identical. The occurrence on wild cherry trees at Sulaimaniye confirms again the view, that the species is an Irano-Turanian element.

Specimens on *Ephedra alte* near Zakho (7. X. 42.) are very close to *C. halli* except that the dorso-pygidial macroducts count 2 rows with 4,4 glands each side only. 2 (-3) meso-, 1 metaspiraeerores, 3 marginal openings of macroducts laterad of median lobes on pygidial margin only (not 4-5). Lateral microducts not reaching quite to antennae. We hesitate to separate these specimens from the variable *C. halli*, until more material is available, but name it provisionally *C. halli* "forma" *ephedrae nov.*

20. *Coccomytilus isis* Hall.

On twigs of *Tamarix articulata* at Basra, 19. X. 42.

The species is easily separated from the very similar *Mytilococcus bicuspis* Hall by its body shape: its very variable body shape does never markedly reach its greatest width in the last body third, but usually in the first body half or in the middle.

21. *Coccomytilus surcyanus* Bodenheimer.

On twigs and branches of *Astragalus* sp. and *Acantholimon* sp. at Zakho, 7. X. 42. and at Penjween, 14. X. 42.

Mesospiracerores: 3 (1-4), metaspiracerores: 1 (1-2), not 0 as erroneously in the original description.

22. *Koronaspis aegilopos* Koronós. (Fig. 7).

On twigs of *Quereus persica* on the Zakho road, rare, 7. X. 42. On branches of *Loranthus europaeus* on *Quereus* at Chuarta, 13.X.42.

*Koronaspis* nov. gen. is erected on the base of the two long macroducts, which extend to about twice the length of the median lobes from the median pygidial interval. Other pygidial characters as in *Mytilococcus* An, from which it differs also in body shape. The genus is called after the monographer of the Coccidae of Greece, Mr. J. Koronós, who gave the first description of the species in 1934. A few notes may be welcome, as the species has not been mentioned since its discovery.

Female scale short mytiliform, moderately convex, black-brown, with exuviae cephalic, red-brown, 1.5 x 0.5 mm.

Body short oval, broadest in last third, with clear segmentation. Free margins of abdominal segments smooth or flatly rounded, not produced, with 1 or 2 short and broad glandspines. Antennae flat tubercles with 2 short, stout and strongly curved setae. Rostral loop rather long. With 2 meso-, no metaspiracerores. Pygidium broadly rounded, with median lobes very broad and prominent, with parallel lateral margins and with caudal margin broadly rounded or with 1 or 2 broad, but flat notches. 2 very short glandspines in median interval in addition to the just mentioned 2 openings of macroducts, which characterize the genus. Laterad: 1 duct opening, 1 short glandspine, the duplex second lobe. Both lobules much shorter than the median lobes, the central one very broad, often with one broad notch, the laterad one toothlike. Follow: 2 duct openings, 2 long glandspines, 2 duct openings, 2 long glandspines. The number of genacerores is slightly less than indicated by Koronós:

	3		4	
4	4	5	5	5
4	3	4	5	

Anus close to cephalad pygidial margin. Dorso-tubular ducts narrow, mainly arranged in one row in the second pygidial furrow (7 to 8 ducts), 4 more ducts along the anterior margin of the pygidium.

23. *Paratortoria blanchardii* Targioni.

Common from Basra to Baghdad. Wherever the date palm is grown.

24. *Parlatoria oleae Colvée*.

Rather common and polyphagous in the Iraq. On wild cherry trees near Sulaimaniye, 16. X. 42. On *Crataegus monogyna* at Shaklawa, 11. X. 42. On almond-trees at Chuarta, 19. X. 42. On *Prunus domestica* at Halebeje, 15. X. 42. On *Pyrus malus* at Sandur, 8. X. 42. The occurrence on wild cherry-trees at Sulaimaniye confirms the Irano-Turanian character of the species.

25. *Parlatoria ? pergandii Comstock*. (Fig. 8).

A few specimens on olive leaves (together with *Chrysomphalus orientalis*) at Baghdad, 4. X. 42. On leaves of mulberry tree at Ashar, 19. X. 42. On leaves of *Nerium oleander* at Basra, 19. X. 42. and at Ramadi, 2. X. 42.

This occurrence is remarkable. But the presence of 3 (instead of 4) plates between third and fourth lobes, the median of which very broad, permits an easy differentiation from the preceding species. In almost all specimens one dorso-pygidial macroduct lies central of the antero-lateral group of genaeocrores on each side.

26. *Leucaspis pusilla Löw*.

On needles of *Pinus brutia* in medium numbers in one of the two small relic forests of pines, still existant in the Iraq. (Zawita, 9. X. 42). All our specimens are nanic, the scales not exceeding 1 mm in length. Microscopical characters identical with typical specimens.

27. *Suturaspis pistaciae Lindinger*.

Common on twigs and branches of *Pistacia khinjuk* all over Kurdistan: Mosul, 6. X. 42., Zakho gorge and Zakho, 8. X. 42, Penjween, 14. X. 42.

28. *Salicicola kermanensis Lindinger*.

Common on stem and branches of *Salix acmophila*: Baghdad 4. X. 42., Sheranish, 8. X. 42., Basra, 20. X. 42.

The species is easily separated from the closely related *S. africana* Newst. (= *Cryptemichionaspis africana* Newst.) by the much restricted number of pseudolobes (10 to 16 instead of 30 to 40).

29. *Leucaspilopsis crataegi* n. sp. (Fig. 9 and 10).

Female scale irregular oval, white, 0.8 x 0.5 mm. Exuvia cephalic, pale yellow.

Body of adult female oval, but variable: narrowing cephalad, usually broadest in the last body third, then narrowing suddenly, with the much narrower pygidium broadly rounded, produced. In some specimens the cephalic margin is broadly rounded and broadest in the first body third. Body segmentation obsolete. Lateral margins smooth, not produced, eventually slightly rounded. Margins of prepygidial segments finely toothed, with a few short marginal setae.

Antennae flat to distinctly convex tubercles with 3 (4) strong and short setae, the largest and strongest seta usually strongly curved. Mouth parts well developed, with restral loop surpassing the metaspiracles. Spiracles dumb bell shaped with inner end broadly dilated, mesospiracles very close to mouthparts with 1—(2) mesospiracerores, no metaspiracerores. No group of microducts laterad of mesospiracles. In dorso-median area of abdomen two bands of 3 to 6 dense dorso-transversal rows of very small toothlike processes on each segment about 12 such rows on meso—and on metanotum.

Pygidium narrow, broadly rounded at end, with very marked radiation from the vulva, caudad of anus, ending in a dense margin crenulation, which often resembles pseudolobes. The 10 median crenulations, are embraced by 2 strong marginal setae (0.02mm). A second slightly smaller marginal seta follows after about 15 more crenulations, a third after again approximately 15 crenulations, followed by about 15 more crenulations.

Anus close to base of pygidium, surrounded by one broad, irregular sclerotic band. Four longitudinal sclerotic bars are situated between anus and margin. About six submarginal openings of microducts each side. Vulva very broad, at 2/5 distance base/margin of pygidium. Genacerores wanting. With a series of submarginal setae.

The species differs from *L. vaysierei* Balachowsky (1) by the entirely different structure of the female scale (*Salicicola*-like in the new species *Leucaspis*-like in *L. vaysierei*), (2) by the general body outline being broader, with body segmentation obsolete, (3) The dorso-pygidial sclerotic bars always arranged in 4 unbroken or broken longitudinal bars between anus and pygidial margin, (4) the vulva distinctly some times the anus' diameter situated caudad of anus' (5) no mention has been made neither by Balachowsky nor by Ferris for *L. vaysierei* of the dorso-transversal rows of dense minute tooth-like processes reaching from the pygidium to the mesonotum.

A very closely related species must be *L. archangolskayae* Idgr. from Central Asia. The species has been described from the second stage larva only and very incompletely, by Lindinger and Archangelskya. No comparison is therefore possible. But in our species the pygidium is always broadly rounded and not triangular. We had no second stage females in our slides and no material was available for comparison. It is, hence, not entirely excluded that the species may prove synonymous. Only actual material of all female stages from both species can decide this question. On twigs of *Crataegus monogyna* at Shaklawa, 11.X.42.

Specimens from *Fraxinus excelsior* at Penjween, 14.X.42 differ in the following points from the description given above: The pygidial margin has two pairs of marked lobes, which are broadly rounded and the median of which are fairly distant. The lateral bars of the dorso-pygidial longitudinal sclerotic bars are always broken into two small bars each. The number of mesospiracerores is slightly higher: 3 (2—4). As no second stage females were available, we do not describe this form as a new species, until complete material of both forms is available, but call it *L. crataegi forma frazinicola* n. form.

## Coccidæ.

30. *Coccus hesperidum* Linné.

On leaves of *Citrus aurantium* 70 km south of Baghdad (X.42) a fairly dense infestation.

31. *Eulecanium ciliatum* Douglas.

On twigs of *Crataegus monogyna* one mature female near Shaklawa, 11.X.42.

32. *Pulvinaria artemisiae* Lichtenstein.

On subterranean stem of *Teucrium polium* near Erbil, 10.X.42. green immature females. Not common.

33. *Pulvinaria dianthi* n. sp. (Fig. 11x).

Body of young female elongate ovate, broadest in last third, rather flat. 2.5 x 0.8 mm. Body segmentation obsolete, except in median ventro-abdominal area.

Antennae 8-jointed, rather long, inserted as far distant from lateral body margin as distant from one other. Formula: (IV, I, II, III), VIII, (V, VI, VII). I: 0.05, II: 0.05, III: 0.05, IV: 0.06, V: 0.03, VI: 0.03, VII: 0.03, VIII: 0.04. All joints with one or a few long setae (excepted joints III and IV): up to 0.1 on II, 0.04 on V, with 6 apical setae (ranging from 0.02 to 0.04). Rostral loop reaching to 2d coxae. Spiracles normal.

Legs well developed, long. Hindlegs: femur: 0.22, tibia: 0.20, tarsus: 0.13, claw: 0.025. Coxae rather elongate. Femur fusiform, tibia and tarsus both narrowing in distal half, with clearly free tibia-tarsal articulation and articular process. 1 interno-marginal seta of trochanter 0.06, the few tibial and tarsal setae do not exceed 0.02. Claw broadly inflated at base, continued short, stout claw-like. Tarsal digitules very slender, long and knobbed, unguis digitules still surpassing apex of claw, but much shorter, stout and heavily knobbed.

Marginal setae strong (0.02-0.03), usually at most their own length distant, in alternating rows. Paraspinae usually subequal (if not: the median spine not being the longest), about as long as the marginal spines. These are distinctly thicker than the marginal setae: usually 3 (2-4) meso-, 2 metaparspinae.

Anal plates obtuse triangular, with base and outer edge subequal, all edges broadly rounded, with 3 setae (1 apical, 2 marginal setae each 0.03). 2 (or 3) pairs of ventro-abdominal setae (0.05) cephalad of anus, 1 similar pair of setae centro-caudad of antennal bases. Many small setae (0.01) scattered everywhere. Dorsum with quincloocular pores in at least triple rows in the spiracular pore bands, multiple pores ventral in transverse abdominal bands, dense in anal region. In none of the specimens slender tubular ducts have been observed.

On roots of *Dianthus*.

Ruwanduz gorge. 11.X.42.

The species differs from *Pulvinaria artemisiae* Licht., to which it is undoubtedly closely affiliated (1) by the general formula of the antennae, especially by joint VIII being shorter than I to IV, (2) by the much longer legs, the less slender claw, which is strongly inflated at its base, (3) by the 3 setae on the caudal edge of the anal plate (instead of 4) the paraspiracular spines (3 anterior, 2 posterior ones) being as long as marginal setae, stouter, and subequal among themselves (5) the apparently complete absence of dermal microducts. These differences and others being constant, the writer does not hesitate, to describe the species as new.

34. *Pulvinaria pistaciae* Bodenheimer.

Fairly common, mainly on lower side of leaves of *Pistacia vera* (cult.) and of *Pistacia khinjuk* at Mosul and Zakho, 6.X.42. and at Sheranish, 8.X.42.

35. *Eriopeltis festucae* Fonscolombe.

On *Phalaris tuberosum* at Zakho, 8.X.52.

36. *Bodenheimeria rachelis* Bodenheimer.

Common on leaves and stem of *Vitex negundo* along all watercourses in Kurdistan. Especially abundant in the neighbourhood of red soils, e.g. on the Zakho road, 7.X.42, but also near Mosul, Zawita, Ruwanduz gorge, Penjween, Halebje. The southern border of its area remains to be determined. *Rachelis* is the grammatically correct genitive, which has to supplant the originally used incorrect form "*rachelii*". A detailed discussion of this aberrant form will appear elsewhere.

37. *Coccid larva* sp.

Abounding on twigs of *Ephedra alte* at Zakho, 7.X.42. The same larva was met on twigs of *Ephedra* near Mardin, II. 39. The larva is dark red, short elliptic, 0.80 x 0.45 mm.

Antennae 7—jointed, tapering towards apex, large: III, VII, (I, II, IV), (V, VI). Rostral loop exceeding third coxae. Legs robust. Both digitules strong, surpassing apex of claw. Anal ring with 6 strong anal setae (0.08).

Anal plates short triangular with apical setae short (0.02) and with 3 more setae on dorsal surface. Body margin with groups of 3 to 5 strong spines (about 0.02), accompanied on head and thorax by a row of large ducts and by another one of slender short setae. Spiracles extremely elongate and slender dumb bell shaped, with an irregular narrow band of multilocular paraspiracular pores to the marginal row setae. No marginal paraspiracular spines, no paraspiracular cleft. 4 to 6 copula-shaped glandopenings each side of thorax between legs and body-margin.

## Pseudococcidæ.

38. *Pseudococcus citri* Risso.

On leaves of *Morus alba* at Baghdad, 3.X.42. On leaves of fig trees at Aloka bridge (Mosul/Zakho road), 4.X.42.

39. *Pseudococcus parietaricola* n. sp. (Fig. 12).

Body of adult female elongate elliptic, truncate between the antennae, yellowish, covered with white mealy secretions, 1.5 x 0.8 mm.

Antennae marginal, 8-jointed: VIII, (I/II), (III, V), (IV, VI, VII). I: 0.06, II: 0.06, III: 0.05, IV: 0.04, V: 0.05, VI: 0.04, VII: 0.04, VIII: 0.08. Basal joint broad conical, last joint rounded fusiform fairly hairy with slender setae, not longer than diameter of joints, with 7 stronger apical setae (up to 0.02). Eyes small, convex, marginal, caudad of antennal bases. Rostral loop extending to 2d coxae. Spiracles conspicuous, trumpet shaped. Legs long and slender. Hindlegs: femur 0.25, tibia 0.30, tarsus: 0.10, claw: 0.03. Femur fusiform, tibia and tarsus hairy (0.02), tarsus narrower than tibia. Claw slender, slightly inflated at base, pointed, sharply curved just before apex. Both pairs of digitules slender, simple and shorter than claw.

Anal ring large, but narrow and with band of pores not very conspicuous, with 6 strong anal setae (0.08). Caudal lobes short, broadly rounded. Caudal setae rather short (0.07). Anal cerarius: 2 short and stout conical spines (0.02), 4 slender setae (up to 0.03), about 24 obscurely trilobular pores on slightly sclerotic round plate. Preanal cerarius: 2 slightly less stout spines, about 2 setae and about 8 pores. No other cerarii present. Both pairs of dorsal ostioles present, circulus apparently wanting. Derm fairly densely crowded with large ring shaped pores (mainly dorsal), with many smaller trilobular pores (mainly ventral) and with many slender setae (0.01) on both surfaces.

This small species is apparently different from all species known to the writer. It is characterized by: (1) the presence of 2 pairs of cerarii only (2) the hairyness of the body, including antennae and legs, (3) the absence of translucent pores on the hindlegs, (4) the caudal setae being slightly shorter than the anal setae, (5) the density of dermal glands.

Aerial on *Parietaria judaica* in the Ruwanduz gorge, II.X.42.

40. *Trionymus yaelae* n. sp. (Fig. 13).

Body ovate, to very elongate ovate, broader in the posterior half, 4.0x1.5mm. Head often constricted, just behind antennal bases, with 4 long fronto-marginal setae (0.04), two more laterad of antennal bases. Labium slightly longer than broad, rostral loop reaching to 1/3 to 1/2 to 2d coxae. Metaspiracles larger than mesospiracles.

Antennae: slender, long: 8-jointed: VIII, II, I, (III, VI, VII), (V, IV). I: 0.04, II: 0.05, III: 0.03, IV: 0.017, V: 0.02, VI: 0.03, VII: 0.03, VIII: 0.075. Each joint with 1 to 2 setae (up to 0.05) and 6 apical setae on VIII (0.03),



Legs long and slender. Hindlegs: femur: 0.20, tibia: 0.20, tarsus: 0.085, claw: 0.03. A few translucent pores along the upper margin of the hindcoxae, a very few larger ones on trochanter, with a few rather strong setae (0.02) on all joints, including the tibial spurs. Claw inflated at base, slender, curved and pointed in apical half, without denticle. Tarsal digitules much longer than claw, simple faintly knobbed. Ungual digitules not conspicuous, similar, but shorter.

Anal ring with double pore band: the inner one with elongate elliptic, the loose outer one with small circular pores, with 6 anal setae (0.06). Caudal lobes obsolete. Caudal setae: 0.17. Anal cerarii: 2 short stout spines (0.02), 2 or 3 auxiliary setae (up to 0.06), 7 pores. Preanal cerarii: 2 short spines (0.01), 1 seta (0.04), 3 pores. No other cerarii, no dorsal ostioles, no circulus present.

Derm with large ring shaped and many obscurely trilocular pores, the former prevalently dorsal, the later ventral, both massed in anal region. Slender setae scattered all over the derm (0.03 to 0.05).

Closely allied to *T. indecisus* Hall, from which it differs by: (1) the ratio tibia: tarsus (less than 1/2) (2) caudal setae being more than twice as anal setae, (3) antennal joint VI longer than V. From *T. phalaridis* Green it differs by longer caudal setae, antennal formula (III to VII not equal), legs and antennae not with many long setae, from *T. californicus* Ehrh. by caudal setae being much longer than anal setae, circulus wanting, from *T. dactylis* Green and *T. tomlini* Green by antennae, presence of 2 pairs of cerarii only, of tubular ducts and ratio caudal to anal setae, from *T. polyporus* Hall by absence of circumanal pore clusters.

Between stem and leaf sheaths of *Phalaris tuberosus*, Zakho, 8.X.42.

41. *Ripersia impovatae* Hall. (Fig. 14).

On stem of *Phragmites vulgaris* at Sandur, 9.X.42.

Body elongate ovate, slightly narrower in posterior half, 3.3 x 1.5 mm. Antennae short and robust, 6-jointed: VI, (I, II, III), V, IV with bases far distant from one another and with 4 fronto-marginal setae (0.01). I: 0.03, II: 0.03, III: 0.03, IV: 0.02, V: 0.025, VI: 0.07. Joint III cylindrical or slightly tapering distad, joints IV and V distinctly tapering basad. All joints bear 1 or 2 setae (0.01), the apical joint 7 apical setae (up to 0.02) in addition to some setae on the basal half. Rostral loop reaching halfway to 2nd coxae.

Legs small. Hindlegs: femur: 0.11, tibia: 0.08, tarsus: 0.058, claw: 0.02. Hindcoxae with pores along the basal margin. 1 long seta on trochanter (0.04), a few other setae (0.01) on the other joints, including the tibial spurs. Claw slender, tapering, pointed, slightly curved. Both digitules surpassing apex of claw, slender, faintly knobbed.

Anal ring broad with double band of short elliptic pores, with 6 anal setae (0.09). Caudal lobes obsolete, caudal setae missing in our specimens, but only very slightly longer than anal setae, following the original description of Hall (1923 p.8). Anal cerarii with 3 spines (up to 0.02), a few setae of same length, no pores. No other cerarii, no marginal setae present. Dorsal ostioles indistinct but the 2 circular ventral circuli between abdominal segments I/II resp. II/III

are quite marked. Derm with few glands and setae only, except on the last abdominal segments and the frontal area. Large ring shaped pores predominate on both surfaces, with a few smaller circular pores. Setae not exceeding 0.018. Our specimens differ from Hall's original description by: (1) the spines of the anal cerarii counting 3 (instead of 2) and being much more slender, (2) the outer pore band of the anal ring being not as loose as in the Egyptian specimens, (3) the legs being relatively smaller, but the body size is slightly larger. These differences are thought to be insufficient for separating our specimens specifically from *R. imperatae*.

42. *Rhizococcus cynodontis* n. sp. (Fig. 15).

Body elliptic with subparallel lateral margins, 3.2 x 1.8 mm. Body segmentation distinct, margins not protruding. Eyes usually present on margin, caudad of antennal bases. Labium about as broad as long. Rostral loop very short, scarcely exceeding first coxae.

Antennae geniculate, 6—jointed: VI, I, (III, II, V), IV. Twice as distant from one another than from lateral margin. Joints II to V tapering towards base. I: 0.03, II: 0.02, III: 0.025, IV: 0.01, V: 0.02, VI: 0.05. Joints II to V with a curved seta each (0.01 to 0.02), VI with 3 or 4 strong, distinctly falcate setae of the same length and a few smaller simple setae.

Legs small, robust. Hindleg: femur: 0.12, tibia: 0.09, tarsus: 0.055, claw: 0.02. Femur distinctly swollen, tarsus 3/5 of tibia, tarsus tapering apicad, claw slender. Tarsal digitules short, setiform, unguinal digitules wanting. All joints with a few setae (0.01), including the 2 tibial spurs. Anal ring marginal, with double lateral band of circular pores, the outer band not contiguous. 6 anal setae (0.06). Caudal lobes obsolete. Caudal setae: 0.10, 2 axillary setae (0.04, 0.02) and 2 spines (0.01). On the two preanal segments one marginal seta (up to 0.03).

Derm almost bare, with ring shaped pores on both surfaces, massed at end of abdomen and on head. Mes spiracles with about 4, metaspiracles with about 6 smaller ring shaped pores in addition to quinquelocular pores. Loosely scattered are spinules (up to 0.01) and setae (0.01 to 0.03). Neither dorsal ostioles nor a ventral circulus could be observed. The body of the females was full of larvae.

Between stem and leafsheats of *Cynodon dactylon* at Basra, 20.X.42.

43. *Phenacoccus aceris* Signoret.

Body elongate elliptic, 1.4 x 0.6 mm. Antennae 6—jointed: VI, III, (II, V), (I, IV), I: 0.02, II: 0.03, III: 0.05, IV: 0.02, V: 0.03, VI: 0.08. Hind-legs: femur: 0.085, tibia: 0.08, tarsus: 0.07, claw: 0.02. Claw with distinct denticle. Anal ring broad, with single pore band and with 6 anal setae (0.07). Caudal lobes clearly protruding as flat cones. Caudal setae: 0.14. Anal cerarius with 2 spines (0.02), 2 setae about as long. Preanal and all anterior 16 pairs of cerarii with 2 spines (0.01) and 3 (2—4) pores. No dorsal ostioles observed, circulus transverse, distinct. Derm exactly as figured by Marchal (1908 p. 241).

The denticles of the claw and the cerarii characterize the species as *Phenacoccus*, the 6-jointed antennae as a larva. The main differences with the adult female of *P. aceris* are, besides the size (5 x 3mm), are: (1) the antennae, (2) the legs, especially the ratio between hind-tibia and tarsus (almost equal against 3:1), (3) the number of pores on the cerarii. The first and last of these differences are clearly larval characters. More important is the difference in the legs. And it is only this difference, which maintains a certain amount of doubt with regard to the correct determination of the specimens.

Not common on leaves of *Platanus orientalis* at Shakkawa, 10.X.42. and at Penjween, 15.X.42. The life cycle agrees with what is known about *P. aceris*, which hibernates as immature female.

44. *Phenacoccus basorae* n. sp. (Fig. 16).

Body elongate elliptic, slightly broader in last third, 3.0 x 1.0mm. Eyes caudo-lateral of antennal bases on margin. Rostral loop very short, scarcely surpassing first coxae. Spiracles normal, short dumb bell shaped. Antennae long, robust, 9-jointed: (II, IX), III, (VII, VIII), VI, (I, IV, V). I: 0.02, II: 0.04, III: 0.035, IV: 0.02, V: 0.02, VI: 0.025, VII: 0.03, VIII: 0.03, IX: 0.04. Joints III to VIII tapering basad, each bearing 1 seta (about 0.02), with about 5 apical setae on IX, about as long, but slightly stronger.

Legs well developed, slender. Hindlegs: femur: 0.014, tibia: 0.17, tarsus: 0.085, claw: 0.02. Coxa and trochanter elongate, femur fusiform, tibia tapering basad, tarsus tapering distad, all joints bearing a few strong setae (0.02), including 2 tibial spurs. Claw with denticle. Both digitules not reaching apex of claw, setiform, the unguinal ones thicker than the tarsal ones. Anal ring with single pore band and 6 anal setae, up to 0.06. Caudal lobes obtuse and flat. Caudal setae: 0.16, with 1 auxiliary seta (0.06), 2 spines (0.015) and 3 or 4 basal pores.

Derm with many large ring shaped pores (mainly ventral and on last segments), mixed with micropores (mainly dorsal) and with many slender setae (up to 0.05). Neither dorsal ostioles nor ventral circulus have been observed. Differs from *P. linoniastris* P. and H. and from *P. radii* Bdhr. by: (1) absence of preanal cerarius, (2) the anal setae being more than twice shorter than the caudal setae (3) the antennae.

Between stem and leafsheaths of *Cynodon dactylon* (1 specimen together with *Rhizococcus cynodontis* n. sp.), Basra, 20.X.42.

45. *Phenacoccus euphorbiaefolius* n. sp. (Fig. 17).

Body broad elliptic, 2.8—3.5 x 1.5—2.0 mm. red, with broad, triangular lateral waxfilaments, with distinctly mealy wax cover on back.

Antennae long and slender, 8-jointed: VIII, III, II, (I, V), IV, (VI, VII). I: 0.06, II: 0.07, III: 0.08, IV: 0.05, V: 0.06, VI: 0.04, VII: 0.04, VIII: 0.11. With 4 apical setae (up to 0.03) and with 1 seta of about the same size on each joint. Eyes caudad of antennal bases on margin. Rostral loop very short, scarcely surpassing first coxae. Spiracles dumbbell shaped, at inner end narrower than at mouth.

Legs short and robust. Hindlegs: femur: 0.28, tibia: 0.30, tarsus: 0.12, claw: 0.03. Coxae rather elongate, femora slightly curved, tibiae elongate cylindrical, tarsi constricted on inner margin close to base and tapering towards apex. Claws inflated in basal half, strong and curved in apical half, with distinct denticle. Tarsal digitules setiform, simple, long, no unguinal digitules observed. All joints moderately beset with strong setae (0.02), distal apex of trochanter with 1 long, slender seta (0.06).

Anal ring broad, with double lateral bands of pores, with 6 strong anal setae (0.10, the two cephalad setae shorter: 0.06). Caudal lobes short conical, clearly surpassing body margin. Caudal setae long (0.24).

18 pairs of cerarii are arranged on irregular oval, strongly sclerotized areas. The anal cerarius is the largest, followed by the preanal, praecellarian and frontal cerarii, all others smaller. The cerarian spines stout, sharp and moderately constricted at base, of two sizes: most are about 0.025, others 0.017 on the posterior but up to 0.010 on the anterior cerarii. They are connected with the usual trilocular pores in the same number as the spines or slightly less. The typical arrangement from the anal to the frontal cerarii is:

Cerarius	:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
No. of spines	:	10	9	6	8	7	6	6	7	5	5	6	4	6	4	4	10	8	6
No. of pores	:	11	9	6	6	7	5	5	6	4	5	5	5	5	5	4	10	8	6

Derm with one dorso-transverse row of spinules (0.01) along cephalad margin of each segment. A group of longer setae (0.04) between antennal bases. Ring shaped pores are arranged in transverse bands ventrally on the last abdominal segments and on head, massed on the anal segment. Trilocular pores scattered over derm. No tubular ducts observed.

Both pairs of dorsal ostioles (relatively large) and circulus (transverse, with antero-laterad lobes) present, both beset with pores and spinules, as in *P. ferrisi*.

The species is closely related to *Phenacoccus ferrisi* Kiritshenko, described from leaves of unknown plant at Ferghana. It differs from it mainly by: (1) the anal setae being 2/5 (not 2/3) of the caudal setae and auxiliary caudal setae being absent, the antennal joint IV being distinctly shorter than VI, (3) the frontal and antennal cerarii with much more spines (6 and 8:3 and 5), praecellarian cerarii smaller (10:16), (4) hind-tarsus longer than 1/3 of hind-tibia, (5) tubular ducts apparently absent, (6) circulus not elongate ovate, but with well developed cephalo-laterad lobes.

The species was locally abundant on the upperside of the leaves of *Euphorbia* sp. on the road from Sulaimaniye to Chuarta, 14.X.42.

46. *Phenacoccus meymeryani* n. sp. (Fig. 18).

Adult female broad ovate, narrower in anterior body half. Length to width 2:3. 2.6 x 1.8mm. Colour yellow brown. Without wax filaments, but sparsely covered with white secretory matter.

Antennae slender, inserted at slight distance from margin, 9—jointed: IX, (I, II), III, (IV, VI, VII, VIII).

I: 0.04, II: 0.04, III: 0.03, IV: 0.02, V: 0.01, VI: 0.02, VII: 0.02, VIII: 0.02, IX: 0.05. Joint I broad conical, joints IV to VIII tapering towards their base. All joints bearing a few setae, as long as diameter of joint. Last joint with 6 apical setae (up to 0.03). Rostral loop at most reaching halfway to 2d coxae. Eyes caudad of antennal bases on margin. Spiracles slender, trumpet-shaped.

Legs well developed, slender. Hindlegs slightly, but clearly longer than the anterior pairs. Hindlegs: femur: 0.14, tibia: 0.13, tarsus: 0.08, claw: 0.02. Distal half of femur and tibia with 20—25 small, circular and 1—2 larger ones, Trochanter with 2—3 large translucent pores. Femur thick, often with a tendency to be slightly swollen on the distal half. Tibia and tarsus slender, the later narrower than the former. All joints with a few fairly strong setae (0.02) and with 2 slightly stronger ones on the interno-distal apex of the tibia. Claw slender, tapering towards apex, slightly curved, pointed, with minute denticle on apical half. Tarsal digitules simple, very short. Ungual digitules simple, apparently shorter than claw.

Anal ring with 6 setae (0.06) and with double poreband, the outer one not continuous. Caudal lobes obsolete. Caudal seta 0.12 mm, associated with one auxiliary seta of half that length, with 2 or 3 short setae and a group of about 15 pores. On preanal segment: 1 short spine and 1 short seta (both 0.01), 3 pores. On preceding segment: 1 spine and 1 seta of same length and one pore. No other cerarii present.

Derm with large ring shaped pores (mainly ventral), with obscurely trilobular pores (mainly dorsal) and a few scattered minute pores. Also with a few scattered slender setae.

Both pairs of dorsal ostioles present, but small and undistinct. Also with a small, transverse circulus.

The species obviously belongs into the *Phenacoccus incermis*-group. It differs from *Ph. incermis* among others by the following characters: The hind-tibiae are not swollen, the anal cerarius has one long auxiliary seta only and a distinct group of basal pores, the last antennal joint is more than twice as long as the preceding joint (subequal in *incermis*). No long auxiliary setae present on preanal segment, but 2 abortive cerarii on the 2 preanal segments (absent in *incermis*). From *Ph. cyperi* the new species differs by the caudal seta being twice as long as the anal setae (instead of being subequal), by the presence of an outer pore band on the anal ring, the relative density of dermal pores (which are very scattered in *P. cyperi*) and by the presence of preanal cerarii.

Collected at Addaye on the rootstem of *Teucrium orientalis*, 10.X.42. The species is dedicated to Mr. Albert Meymeryan, the head of the Entomology department of the Department of Agriculture, Iraq, who accompanied the writer on the trips to Kurdistan and Basra and who contributed much to the success of these trips.

47. *Phenacoccus prosopidis* n. sp. (Fig. 19).

Body short to elongate oval, narrowing cephalad, 2.8 to 3.5 x 2.0 mm.

Antennae long and slender, 9-jointed: IX, (III, II), (I, V), IV, (VI, VII, VIII). I: 0.04, II: 0.055, III: 0.05, IV: 0.035, V: 0.04, VI: 0.03, VII: 0.03, VIII: 0.03, IX: 0.06. Each joint with 1 or 2 short setae (0.01), the apical joint with 4 apical setae (up to 0.04). Eyes caudo-laterad of antennal bases. Labium elongate triangular, rostral loop almost to midway between 1st and 2d coxae. Spiracles trumpet shaped.

Legs short, slender, hindlegs distinctly longer than other legs. Hindlegs: femur: 0.22, tibia: 0.24, tarsus: 0.10, claw 0.02. No translucent pores. Femur fusiform, tibia tapering basad, tarsus markedly narrower than tibia and tapering distad. All joints with a few strong setae (0.02), including the tibial spurs. Claw inflated at base, moderately curved, with clear denticle. Tarsal digitules short, slender, setiform, unguis digitules slightly stronger, faintly knobbed, little surpassing apex of claw.

Anal ring broad with double pore band and with 6 anal setae (0.10). Caudal lobes almost obsolete. Caudal setae: 0.16, auxiliary seta 0.09. Anal cerarii: 3 spines (0.02), which are slightly constricted at base, and 10 pores. The other 17 pairs of cerarii with 2 spines (0.01 to 0.02) each, decreasing cephalad in size, and 3 to 5 pores.

Derm with ring shaped pores and large multilocular pores (mainly ventral), also trilocular pores, a few short tubular pores and minute spinules. Slender setae (up to 0.04) scattered (mainly ventral). Transverse circulus conspicuous, no dorsal ostioles observed. Closely related to *P. gypsophilae* Hall, from which it differs by: (1) the antennal formula (cf. joints V and VIII), (2) absence of distinct dorsal ostioles, (3) shorter rostral loop, (4) caudal auxiliary seta being much longer than 2/5 of caudal seta, (5) cerarii always with 2 normal (not weakly) developed spines and with always more than 1 pore (3 to 5).

On *Prosopis stephaniana* in irrigation ditch near Basra, 20.X.42. Always visited by ants, and living in the interior part of the host, visible only when the branches are raised. The writer's attention was first provoked by the visiting ants.

48. *Phenacoccus radii* n. sp. (Fig. 20).

Body elongate elliptic, anterior end narrower than posterior one, 2.2 x 1.1 mm.

Antennae slender, 9-jointed: IX, (I, II, III), (V, VII, VIII), (IV, VI). Bases close to margin. I: 0.04, II: 0.04, III: 0.04, IV: 0.02, V: 0.03, VI: 0.02, VII: 0.03, VIII: 0.03, IX: 0.05. Basal joint narrow conical, joints IV to VIII slightly tapering towards base (but not as strongly as in *P. meymeyriani*). All joints bearing a few setae as long as diameter of joint, last joint with 7 apical setae (up to 0.02). Eyes marginal, caudad of antennal bases. Rostral loop reaching or surpassing the 2d coxae. Spiracles rather conspicuous, trumpet shaped.

Legs well developed, slender. Hind-legs clearly longer than other legs. Hindlegs: femur: 0.16, tibia: 0.16, tarsus: 0.08, claw: 0.02. No translucent pores. Femora thick and usually swollen in distal half, tibiae and tarsi slender, the later narrower than the former. All joints with fairly strong setae (up to 0.02) and 2 slightly stronger setae on interno-distal apex of tibia. Claw slender, tapering towards apex, with minute denticle towards apex, slightly curved, with both pairs of digitules simple, not reaching to apex of claw.

Anal ring with double pore band, the outer one very pale, and with 6 anal setae (0.04). Caudal lobes very flat, broadly rounded, not or scarcely surpassing margin. Caudal setae 0.011, with 2 auxiliary setae (0.04), 1 short spine and about 12 pores. Preanal cerarius: 2 spines (0.01) and 5 trilobular pores. Further cephalad no more true cerarii, but 14 pairs of 1 seta each (0.01) with 4 to 6 pores, an antennal group of 2 setae each (0.01) and 6 to 9 pores and a frontal group of 2 setae (1: 0.01) with 6 pores.

Derm sparsely scattered with pores as in *P. incermis* Hall and with very few short setae.

Dorsal ostioles obsolete. A short elliptic, transverse circulus present.

The species is closely allied to *P. imoniastri* P. and H. from Egypt. But the last antennal joint is distinctly the largest. Legs and antennae are sparsely with setae only. The anal setae are about 1/3 of the caudal setae with 2 (instead of 3) auxiliary setae and spines each. Except the last two pairs all cerarii are without spines, with 1 or 2 short setae only. From *P. meymeryani* Bdlmr. the species is easily separated by the antennal joint V being longer than IV and VI (not half as long only).

Aerial on Albahi maurorum at Basra, 20.X.42.

The species is dedicated to Mohammed er-Radi Bey, the Director General of Agriculture, Iraq, on whose invitation the trip was undertaken.

49. *Eviococcus aceris* Signoret forma *kurdica* nov. (Fig. 21).

Our specimens from Northern Kurdistan agree in general well with the description given in literature, but they vary in certain details. Of these the antennal formula seems to be most important. This is given by Marchal as well as by Lindinger as: IV, III, (I, II), VII, V, VI. In all our specimens from both localities the antennal joint III is much longer than IV. The microscopic dermal structures are identical with those described and illustrated by P. Marchal (1908 p. 252). The antennal structure would be sufficient, if constant, to justify the erection of a separate subspecies. We delay any definite statement on the taxonomic position of *E. a. kurdica*, until the antennal variation of *E. aceris* throughout its geographical range is known. A few measurements of our specimens are given.

Body oval, broadest in anterior third, 1.7 x 1.2 mm. Rostral loop slightly surpassing the 2d coxae. Antennal bases close together, distant from one another about 1/3 of their lateral distance from body margin. Antennae short and stout, 7-jointed: III, I, (II, VII), (IV, VI), V, also: I, (II, VII), IV, (V, VI). I: 0.035, II: 0.03, III: 0.04, IV: 0.02, V: 0.01, VI: 0.02, VII: 0.03.

Hindlegs: femur: 0.11, tibia: 0.08, tarsus: 0.11, claw: 0.03. Femur and tarsus tapering towards apex, tibia towards base. Claw inflated at base, strongly curved apicad. Both digitules longer than apex of claw, faintly knobbed. Marginal spines 0.05, dorsal spines from 0.02 to 0.03. Anal ring with simple pore band and 8 setae (0.06). Caudal lobes very short conical, protruding. Caudal setae: 0.14.

The white cocoons were fairly common on the leaves and tender twigs of *Acer cinereus* in the Ruwanduz gorge, 11.X.42. Mature mobile females were taken from the leaves of *Platanus orientalis* at Shaklawa, 11.X.42.

50. *Eriococcus insignis* Newstead (?)

Ovisac closely felty, elongate oval, greyish, 4.0 x 1.5 mm.

Body of adult female elongate ovate to short ovate (2.0 x 1.5), being broadest about the middle.

Antennae robust, 6—or 7—jointed: III, (II, VI), (I, IV), V. In 7—jointed antennae the third joint is about equally divided, both halves still being the largest joints. I: 0.03, II: 0.04, III: 0.11, IV: 0.03, V: 0.02, VI: 0.04. One seta on each joint, not longer than diameter of joint, about 7 to 9 apical setae of unequal length (0.02 to 0.04). Labium short triangular, being distinctly longer than broad at base (5:4). Rostral loop not reaching to 2nd coxae. Eyes small, caudad of antennal bases on margin. Spiracles short, stout tubes.

Legs robust. Hindlegs: femur: 0.18, tibia: 0.16, tarsus: 0.14, claw: 0.03. With about 10 translucent pores on external half of hindcoxa. Femur thick, but not swollen, tibia suddenly dilating at apex, where much broader than tarsus, tarsus very slightly tapering apicad. All joints with a very few setae (up to 0.04), including tibial spur. Claws slender, pointed, slightly curved towards apex. Both pairs of digitules slightly surpassing apex of claw, both clearly knobbed.

Anal ring with simple pore band, with 8 strong anal setae (0.01). Caudal lobes small, narrow conical, produced with caudal seta 0.30, with 2 blunt and one pointed spines and with 1 auxiliary seta (0.07).

Dorsal derm with marginal setae, up to 0.05 long, not very dense. No dorsal spines, but scattered large, heavily chitinized circular openings of large tubular ducts with very few slender setae (0.02). Ventral derm with many much smaller sclerotic openings of shorter and smaller ducts, but with at least one transversal row of slender setae (0.04) on each segment.

These notes are given, as the determination may be wrong. No material for comparison was available and the availing descriptions are not very complete. It is certainly closely related to the species.

On stem of *Eragrostis* at Basra, in date grove, 18.X.42.

51. *Eriococcus munrozi* n. sp. (Fig. 22).

Ovisac white and felty, similar to that of *Eriopeltis festucae*, but much smaller and relatively more convex, with caudal opening and with erect filaments.



Body of adult female elongate ovate, broader cephalad, 2.0 x 0.8 mm. Antennae robust, 6-jointed: III, VI, II, IV, I, V. I: 0.02, II: 0.035, III: 0.11, IV: 0.025, V: 0.02, VI: 0.04. The length of the basal joint is difficult to evaluate. Usually with 1 seta on each joint (up to 0.03), about 8 apical setae (up to 0.04). Eyes rather large and very flat, slightly caudad of antennal bases on lateral margin. Labium short triangular, only slightly longer than wide at base. Rostral loop reaching up to halfway to 2nd coxae. Spiracles short and stout, not dilated at inner end.

Legs robust. Hindlegs: femur: 0.18, tibia: 0.15, tarsus: 0.16, claw: 0.03. No translucent pores. Coxae elongate, femur distinctly swollen in basal half, but narrow at base, tibia slender, slightly dilating apicad where it is much broader than the tarsus. Tarsus tapering apicad. Setae: 1 long on trochanter (0.06), some on the other joints, including tibial spurs, all relatively long and moderately stout (0.035). Claw slender, tapering from base to apex, moderately curved towards apex. Both pairs of digitules longer than apex of claw, the tarsal ones thickly, the ungual digitules faintly knobbed.

Anal ring narrow, with single pore band and with 8 strong anal setae (about 0.10). Caudal lobes narrow conical, slightly protracted. Caudal seta: 0.34, with 2 or 3 long and robust spines (0.04 to 0.06) and with 3 auxiliary setae (0.10, 0.06, 0.05).

Dorsal derm with rather thickly set row of marginal spines, which are stout and long (0.06) and about 2 transversal rows of shorter dorsal spines on each segment (0.03 to 0.04). All spines are pointed. Scattered among these spines are rare, heavily chitinized, circular openings of long tubular ducts. Ventral derm with 1 or 2 transversal rows of very slender setae (0.02 to 0.04) and with oval openings of short ducts, much smaller than the openings of the dorsal ducts. Between the antennae begins a caudo-laterad diverging series of 4 long setae (0.03 to 0.06).

*E. mumtazi* is clearly related to *E. greeni* Newstead (1903 p. 200). Lindinger's opinion (1912 p. 367), that this is synonym to *E. insignis* Newst. is untenable. The differences in antennal structure and the presence of definite dorsal spines should have prevented any such opinion (among other arguments). But Newstead's description is decidedly incomplete. Our specimens differ from Newstead's description by: (1) the presence of definite marginal spines, which are easily recognized by their larger size, (2) the caudal lobes bearing auxiliary setae, (3) the apical antennal joint being heavily constricted in its mid in all our specimens, (4) the tarsal setae are as long as the tibial setae, (5) the caudal setae are setae only). The differences under (1), (3) and (5) are regarded as sufficient to separate our specimens specifically from *E. greeni* Newst. From *E. socialis* Goux it differs: (1) by the presence of strong dorsal spines in large number, (2) by the hind femur being narrow, not very broad, at base. From other species of *Eriococcus* on grasses, such as *E. incensis* Green, *E. insignis* Newst. and others it is separated by the complete set of dorsal spines.

On leaves of grasses near Shaklawa, 11.X.42. and near Zakho, 8.X.42.

The species is named after M. Mumtaz el Arif, the head of the plant protection service of Iraq.

52. *Eriococcus teueriicolus* n. sp. (Fig. 23).

Ovisae ovoid, thick felty, whitish, about  $6 \times 4$  mm.

Body of adult female ovoid, broader on cephalic margin, produced at caudal end, broadest about the middle.  $4.0 \times 2.5$  mm.

Antennae robust, 7-jointed: III, (I, II, IV, VII), (V, VI). I: 0.04, II: 0.04, III: 0.06, IV: 0.04, V: 0.02, VI: 0.02, VII: 0.04. A few short setae on joints I, II and VI, about 5 apical setae on VII (0.02). Eyes on margin laterad of antennal bases. Labium elongate triangular, markedly longer than wide at base, 2-jointed. Rostral setae not surpassing apex of labium. Spiracles small, slender, dumb bell shaped.

Legs normal. Hindlegs: femur: 0.18, tibia: 0.16, tarsus: 0.16, claw 0.02. No translucent pores on hindecoxa, but a few large ones (2 to 4) on trochanter. Femur distinctly swollen, tibia slowly dilating from base to apex, tarsus slightly tapering distad. Claw slender, slightly curved only, with subapical denticle. Both pairs of digitules surpassing apex of claw, strong, faintly knobbed.

Anal ring almost circular pore band, which is loosely doubled laterad, with 8 strong anal setae (0.06 to 0.10), in marginal position. Caudal lobes short conical, produced. Caudal setae 0.32, with 3 dorsal spines (0.03, 0.06) and with 2 slender ventral auxiliary setae (0.08).

Derm structures almost identical with those of *E. tucurinceae* Lg. Dorsal derm with 4 to 8 irregularly inserted strong marginal spines, which on the head are not different from the other dorsal spines. The dorsal spines of the other segments variable in size and number, growing longer and more abundant cephalad. All spines stout and pointed, marginal spines: 0.05, dorsal ones 0.04. Tubular ducts with well chitinized, large mouths are equally spread over the dorsal derm. Ventral derm with 1 or 2 transversal rows of long slender setae (0.04 to 0.07) and with many micropores, which are the openings of microducts, these increasing in number caudad.

Neither dorsal ostioles nor ventral circulus present.

*E. teueriicolus* is closely related to *E. tucurinceae* Laing (*E. polyphagus* Goux, *E. henryi* Balachowsky), from which it differs: (1) by its larger size, (2) by the elongate labium and the extreme shortness of its rostral loop, (3) by the caudal and median dorsal spines never as much reduced as in *E. tucurinceae* (cf. Balachowsky 1929 fig. G.), (4) by the absence of translucent pores on the hindecoxae, but the presence of a few large pores on the trochanter, (5) by the claw not being inflated at base and much less curved at apex.

The writer will not be surprised, when further research reveals, that our specimens also belong to the variable and apparently widespread *E. tucurinceae* Lg. which is known so far from S. France and from Columbia (S. America). Considering the differences just enumerated, it seems safer, for the time being, to treat them as different.

On twigs and branches of *Teucrium polium* at Addaye, rather common, 10.X.42.

53. *Antonina phragmitis* Marchal.

On stem of *Phragmites communis* at Erbil, 14.X.42.

The series of specimens at our disposal from Palestine (Hedera, Dan) and from Iraq permits to establish the synonymy of *A. waterstoni* Newstead from Macedonia with *A. phragmitis* March. The two most important separating characters are: (1) width and shape of anal and pranal segments. Both these characters are of such high variability, that all transitions from the narrow anal segment and the caudad produced preanal marginal lobes to the normal form from well rounded forms to the angular forms figured by Newstead are observed in material from the same locality, (2). Newstead (1920 p. 183) describes on the dorsal surface just caudad of the metaspiracles "a large group of minute, spines, occupying the whole width of the 1st proximal segment of the abdomen". Dense groups of many small circular pores are caudad of the measpiracles on the dorsal derm present in all our specimens, but wanting in the median area. These pores have in insufficiently stained specimens the appearance of short spines, such as illustrated by Newstead (fig. 6b). In well stained specimens these pores are easily recognized as the "small glandular pores, which represent the distal end of narrow tubular ducts" in *A. phragmitis* (La Face 1922 p. 261). We see, therefore, no reason to maintain *A. waterstoni* as a separate species. The antennae vary considerably: from rugose flat tubercles with setae and pores (in the Iraq specimens) to short, 2-jointed antennae with very narrow basal ring in some of the Palestine specimens. The small tubercles bearing each a stiff seta caudad of the mentum (Newstead), are present in all our specimens.

### Asterolecaniidae.

54. *Asterolecanium bellum* Russell.

On branches and twigs of *Quercus persica* at Penjween, 14.X.42., causing pits.

55. *Asterolecanium minus* Lindinger.

On branches and twigs of *Quercus* sp. at Zakho, 7.X.42. and on Salahaddin Dagh, 10.X.42.

56. *Asterolecanium phoenicis* Rao.

This species, which is so far known from the Iraq only, has first been described by E.E. Green. It occurs from Basra to Baghdad, on leaves and fruits of date palms, but seems not to have been reported hitherto as a real pest (Literature see: L.M. Russell 1941 p. 154.).

### Conchaspidae.

*Archaspis* gen. nov.

Differs from *Conchaspis* Ckll. by the presence of true pygidial lobes, by the absence of clear body segmentation, by the marginal position of the eyes, by the claws being very long and slender, not knobbed.

The features which characterize the species as belonging to the *Conchaspididae* are: the structure of the female scale with exuviae wanting, the presence of 3 pairs of spiracles in typical position, legs with tibiae/tarsi fused and inserted fairly marginad (but not as much as in *Conchaspis*), the antennae and the character of the last abdominal segments.

57. *Archospis ephedrae* n. sp. (Fig. 24).

Female scale elongate, bluntly excentric conical, greyish, without ridges or exuviae, with margins irregular and corrugate, 1.4 x 1.0mm.

Body of adult female flat, short ovate, broadly rounded on cephalic, broad triangular on caudad margin, broadest before middle.

Antennae long and slender, 5-jointed: V: II, (I, III); IV. I: 0.007, II: 0.01, III: 0.007, IV: 0.005, V: 0.05. Basal joint broad, other joints tapering apicad. The last joint longer than the rest of the antenna. Joints IV with 2, joint V with 3 setae up to 0.013mm long, among them one apical seta. Eyes well marked, laterad of antennal bases on margin. Labium 2-jointed, rostral setae in 2 large spiracles on each side of the labium. Spiracles slender trumpet shaped, 0.01 mm long. Mesospiracles latero-caudad of forelegs, metaspiracles caudad of second pair of legs, first abdominal spiracles caudad of hindlegs.

Legs normal, not very long, inserted closer to margin than to the other leg of the same pair. Hindlegs: femur: 0.038, tibio-tarsus: 0.038, claw: 0.02. Coxa very broad, short truncate conical, trochanter about 1/4 of femur, femur swollen at base, tapering apicad, tibio-tarsus fused, distinctly swollen in apical half. Claw very long and slender, pointed, curved in distal third. With 2 setae on tibio-tarsus, 1 on trochanter (up to 0.01). Abdominal margins with 3 short setae (less than 0.01).

Pygidial margin with prominent, convergent, toothlike median lobes with 2 short setae and one bifurcated plate, each end bifurcated again, in the median interval. Laterad follow: a plate similar to the median one, but much shorter, second lobes, convergent, toothlike, but smaller than median lobes, 2 more short setae (less than 0.01). Anus of the usual Disspidid-type, elongate, less than twice its own diameter from pygidial margin. Vulva apparently much cephalad from anus.

Derm without tubular ducts. No pores have been observed, but obviously those must be present in connection with the scale secretion.

On twigs of *Ephedra alba* at Chuarta, 11.X.42.

This living missing link between the archaic *Neococcidae* and the *Diospididae* is the first Palaearctic representative of this family.

### Phoenicococcidae

58. *Phoenicococcus marlatti* Comstock.

On date palms at Basra. Probably all over the date producing areas of Iraq.

**Margarodidae.**

The presence of true groundpearls (*Margarodes*) is almost certain, as several species have been recorded, some as pests of cereals, from practically all neighbouring countries.

59. (*Icerya purchasi* Maskell).

This species was introduced with Citrus from Italy to the Zafraniye farm in early 1939. A rather heavy infestation developed, which was checked by fumigation with fairly heavy dosages (fide Mr. Meymeryan). No other records of this species from Iraq are available.

**Ortheziidae.**60. *Orthezia urticae* Linné.

Two individuals of the last female larval stage with wax plates in 6 rows, which cover the entire back, on shrubs of *Astragalus* at Penjwæn, 15.X.42.

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### III.—Zoogeographical analysis.

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The most surprising fact arising from the zoogeographical analysis is the extremely small percentage of Cultural Immigrants. This group, which usually abounds in injurious species, is richly represented in all circum-mediterranean countries as well as in India, Ceylon etc. This scarcity can be explained: (1) by the scarcity of importations of agricultural, ornamental etc. plants. This certainly has not been the case, as since the times of old Babylonia many cultivated plants have been introduced into Central and South Iraq. It is the probable explanation, however, for the same situation in Iraqi Kurdistan. (2) by the unsuitability of the climate. This explanation also is unsatisfactory, as this group develops abundantly in the similar climates of Egypt or India. It seems that the isolated position of the Iraq has led to importation of new plants by seeds mainly and not by seedlings or other living parts of plants. The Cultural Immigrants are:—

- Chrysonphalus orientalis
- Diaspidiotus lataniae
- Diaspis calyptroides
- Parlatoria pergandei
- Coccus hesperidum
- Pseudococcus citri
- (Icerya purchasi).

The Palaearctic element contains those species, which have a wide distribution (3 or more regions) within the Palaearctic kingdom. It is restricted in number as well as in distribution. With one still doubtful exception (*Eriococcus insignis*), all species are restricted to the Kurdish mountains.

- Mytilococcus ulmi
- Leucaspis pusilla
- Eriopeltis festucae
- Asterolecanium minus
- Eriococcus insignis
- Orthezia urticae

Relatively large in numbers of species is the Mediterranean element. It is entirely restricted to the Kurdish mountains, to the neighbourhood of the stripe of red soil, which has been mentioned in the introduction. Some of the species (*Melanaspis inopinata*, *Diaspidiotus ephedracum*, *Targionia vitis*) are relatively rare. Here, further, belong:

- Koroneaspis aegilopos
- Saturaspis pistaciae
- Asterolecanium felinum

Small, but significant is the presence of a small Euro Siberian group in the Kurdish mountains, which includes:

- Quadraspidiotus zonatus  
Eulecanium ciliatum.

Both species are rare.

The following species are still unsatisfactorily analyzed:

- Diaspidiotus herzlianus (Saharo-Sindian/Irano-Turanian)  
Mytiloococcus minimus (cf. text)  
Mytiloococcus intermittens (Egypt, Palestine, Basra)  
Ripersia imperatae (Heliopolis, Sandur)  
Antonina phragmitis (Mediterranean/Irano-Turanian)  
Bodenheimera rachelis (Mediterranean/Irano-Turanian)

The remaining 31 species are distributed over the two main zoogeographical elements of the Iraq, as follows:

Saharo-Sindian:

*Species of wide distribution:*

- Mytiloococcus bicuspis  
Coccomytilus isis  
Chionaspis engeddensis  
Parlatoria blanchardi  
Asterolecanium phoenicis  
Phoenicoecoccus marlatti

*Endemic species:*

- Quadraspidiotus populi  
Rhoizococcus cynodontis  
Phoenacoecus bassorae  
Phoenacoecus prosopidis  
Phoenacoecus radii

*Quadraspidiotus* as well as *Ph. prosopidis* and *Ph. radii* are only provisionally placed here, until further localities will enable us to give a more based decision.

Irano-Turanian:

*Species of wide distribution:*

- Mytiloococcus juniperae  
Mytiloococcus pistaciae  
Coccomytilus halli  
Coccomytilus sureyanus  
Salicicola kermanensis  
Parlatoria oleae  
Pulvinaria artemisiae  
Pulvinaria pistaciae

*Endemic species:*

- Mytiloococcus kurdicus  
Mytiloococcus sanduri  
Leucaspisopsis crataegi  
Arelaspis ephedrae  
Pulvinaria dianthi  
Pseudococcus parietaricola  
Trioxymus yaelae  
Phenacoecus euphorbiaefolius  
Phenacoecus meymeryani  
Eriococcus aceris kurdicus  
Eriococcus muntazi  
Eriococcus teucriicolus

The spectrum of the Coccoidea of the Iraq is, therefore:—

Element	No of species	No. of species	(dto Palaeartic species excluded)	
Palaeartic ...	6	12.8%	—	—
Irano-Turanian ...	21	44.6	51.2%	—
Mediterranean ...	6.5	13.5	15.9	—
Saharo-Sindian ...	11.5	24.5	28.1	—
Eurosiberian ...	2	4.3	4.9	—
	47	100	41	100



## IV.—Appendix: Three new Mealybugs from Palestine and Iran.

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### 1. *Rhizoecus dactyloni* n. sp. (Fig. 25).

Adult female oval, broadest about middle, caudal margin broadly rounded with caudal lobes obsolete, 1.9 x 1.2 mm.

Antennae long and robust, distinctly geniculate, 6—jointed: VI, II (I, III), (IV, V).

I: 0.04, II: 0.05, III: 0.04, IV: 0.02, V: 0.02, VI: 0.09. Apical joint longer than III to V together, IV and V being equal and shortest. Bare, excepted about 7 apical setae, without definitely falcate setae amongst them. Labium elongate, about 1 1/2 times as long as wide at base.

Legs well developed, not hairy, not surpassing body margin. Hindlegs: coxa: 0.16, trochanter: 0.07, femur: 0.21, tibia: 0.16, tarsus: 0.06, claw: 0.04. Femur thick, but not swollen, claw elongate, pointed.

Anal ring distinctly retracted up to height of caudal ostioles, with 2 loose bands of pores and, with, probably 6, slender anal setae (0.04). Caudal lobes obsolete, caudal setae long and slender (0.20). Both pairs of dorsal ostioles conspicuous, with distinctly thickened rims (0.08), circulus transverse elliptic (0.06 x 0.03), with feebly thickened rims only. Derm with small micropores in moderate number, as well as with scattered short setae (less than 0.01, only on caudal margin 3 to 6 hairs 0.02). Fairly closely related to *R. dianthi* Green, 1926, from which it differs in many details. It is more than doubtful, if our species—and probably also *R. dianthi* will remain in the genus *Rhizoecus*, if this is revised. On roots of *Cynodon dactylon*, together with *Micrococcus silvestrii* Leon, at Jerusalem, II. 1929. (Mentioned incorrectly as *R. falcifer* in Bodenheimer 1935 p. 250).

### 2. *Phenacoccus poterii* n. sp. (Fig. 26).

Body short elliptic, 1.75 x 1.45 mm. Eyes almost laterad of antennal bases on margin. Labium elongate triangular, rostral loop not longer than labium. Spiracles short dumb bell shaped.

Antennae long, robust, 8—or more rarely 9—jointed: VIII, II, III; (IV, V), VII, (VI, I) resp. (IX, II), III, (IV, V), (VII, VIII), (VI, I). I: 0.018, II: 0.055, III: 0.045, IV: 0.035, V: 0.035, VI: 0.02, VII: 0.03, VIII: 0.085, resp. VIII: 0.03, IX: 0.055. This means that the eventual ninth antennal joint originates by fissure of the last joint. Joints VI to VII slightly tapering basad. All joints with a few setae (0.02), last joint with 6 apical setae (up to 0.03), some of these stronger.

Legs short, robust. Hindlegs: femur: 0.18, tibia: 0.20, tarsus: 0.08, claw: 0.03. No translucent pores. Femur fusiform, tibia tapering basad, tarsus distad. All joints bearing a few strong setae (0.02), including tibial spurs, seta on apex of trochanter very long (0.08). Claw with distinct denticle, slender, markedly curved towards apex. Tarsal digitules slender, setiform, not surpassing apex of claw, unguis digitules stronger, setiform surpassing apex of claw.

Anal ring broad with 3 times curved lateral band of circular pores and with two outer bands of smaller circular pores. Anal setae strong, 6 in number, 0.13. Caudal lobes markedly protruding, broad, short, rounded cones. Caudal setae: 0.21, with 2 auxiliary setae (0.10 and 0.04). Anal cerarii consisting of 10 spines (0.02 to 0.015), which are not constricted at base, and 11 distinctly trilocular pores. The other cerarii have (counted from caudal end cephalad):

Cerarius	:	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pores	:	6	11	9	4	3	2	4	4	4	4	5	5	4	4	6	4	3
Spines	:	8	7	5	4	4	2	3	3	4	4	4	4	3	3	6	4	4
Setae	:	2	2	2	2	2	2	2	2	—	—	—	2	—	—	—	—	—

Preanal setae: 0.06 and 0.04, of 9th pair: 0.03 and 0.02. The spines show a general tendency to decrease cephalad (0.005 to 0.01).

The broad, transverse circulus is conspicuous, dorsal ostioles apparently absent.

Derm with few scattered trilocular pores. Ringshaped pores wanting. With spinules (0.01) scattered ventrally and long setae dorsally (0.04). All dermal structures massed in frontal area.

Closely allied to *P. zillae* Hall, especially by community of triple band of circumanal pores. *P. poterii* differs, however, by: (1) the antennal formula, (2) the very short rostral loop, (3) the apparent absence of dorsal ostioles, (4) the much higher number of cerarian spines, (5) the absence of ring shaped pores and the trilocular pores being large and triangular, (6) the presence of auxiliary setae on at least 9 pairs of cerarii.

On *Poterium spinosum* on Mount Scopus, Jerusalem, 2.IX.42. (coll. Dr. Hareubeni).

### 3. *Phenacoccus sherbinovskiy* n. sp. (Fig. 27).

Body elongate ovate, narrower on anterior end, 2.0-2.3 x 1.1-1.6 mm.

Antennae long and slender, 9-jointed: IX, (II, III), (I, VIII), (IV, V, VI, VII). I: 0.04, II: 0.05, III: 0.05, IV: 0.03, V: 0.03, VI: 0.03, VII: 0.03, VIII: 0.04, IX: 0.07. Almost bare, with 2 to 3 apical setae only (0.02) and 1 slightly longer seta on apex of joint VIII. Rostral loop reaching to 2d coxae. Eyes submarginal behind antennal bases. Spiracles trumpet shaped.

Legs well developed. Hindlegs: femur: 0.2, tibia: 0.2, tarsus: 0.1, claw: 0.03. No translucent pores. Coxa elongate, femur convex on outer margin, tibia cylindric, tarsus tapering distad. Almost bare, with (2) strong setae on internodal apex of tibia. Claw with minute denticle, inflated at base, moderately curved. Tarsal and ungual digitules both short and simple. Anal ring with simple pore band and with 6 anal setae (0.06). Caudal lobes short conical, not surpassing body margin. Caudal setae 0.16, one auxiliary seta 0.06, another 0.03.

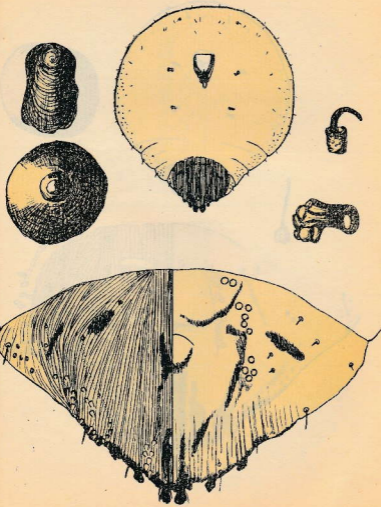
18 pairs of cerarii. Anal cerarii with 2 stout spines (0.02), 2 slender, short setae and about 10 trilocular pores. All other cerarii with 2 (1 or 3 occasionally) short spines (0.015) and 3 (2 to 4) pores.

Groups of 1 or 2 short setae with 2 or 3 pores are scattered all over the ventral derm.

Neither ostioles nor circulus have been observed.

The species is closely related to *P. caucasicus* Borch., from which it differs by antennal formula, by the relatively shorter anal setae, the presence of auxiliary caudal setae etc. The species is dedicated to its collector, Prof. N.S. Sherbinovsky, who collected it at Chosh (Iran Baluchistan) from unidentified grass, 8. VII. 42.

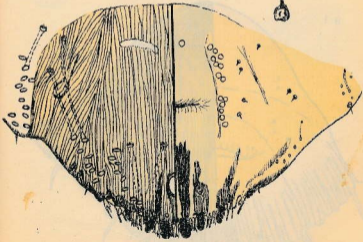
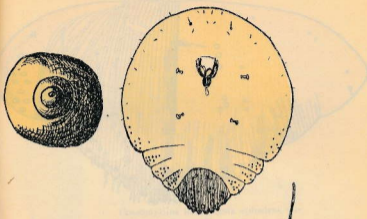
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F.1

*Quatrespartibotus populi* n. sp.

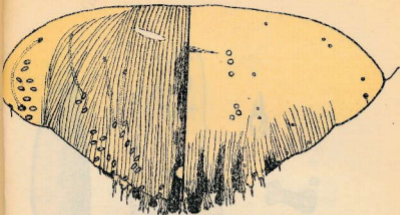
F.2A



F.2

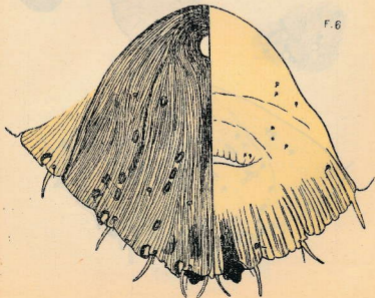
*Chrysomphalus orientalis* from Citrus at Basra.

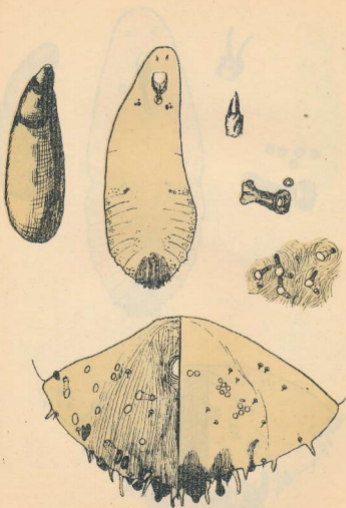
F.2.A



*Coesanytilus hali* forma *ephedrae* nov.

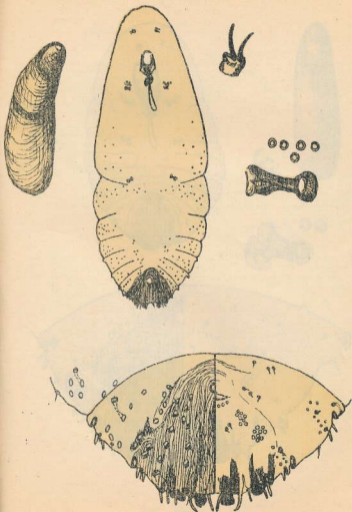
F.6





F.3

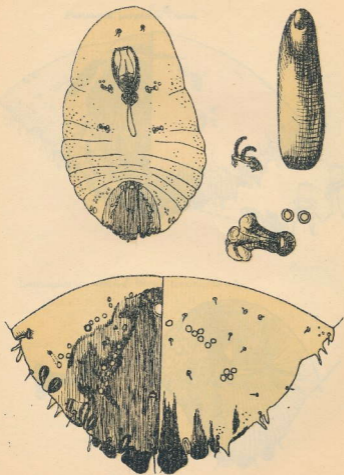
*Mytiloecus kurdicus* n. sp.



F.5

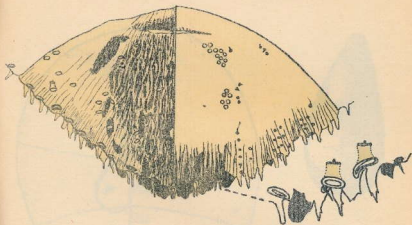
*Mytiloecus sanduri* n. sp.



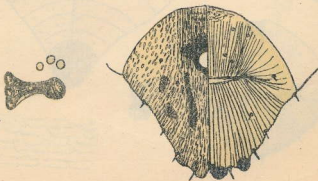


F.7  
*Koroneaspis aegilopis* Kor.

*Pariatoria pergandii* <sup>F. 8</sup> Comst.

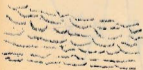
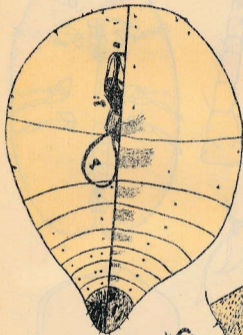


*Leueaspidopsis crataegi* <sup>F. 10</sup> *Orma fraxinicola* n.f.

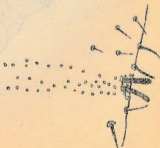
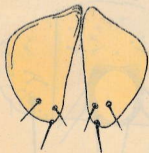
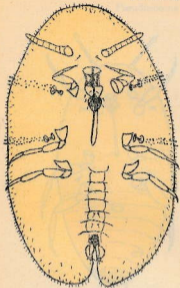


F.9

*Leucospidopsis crataegi* n. sp.

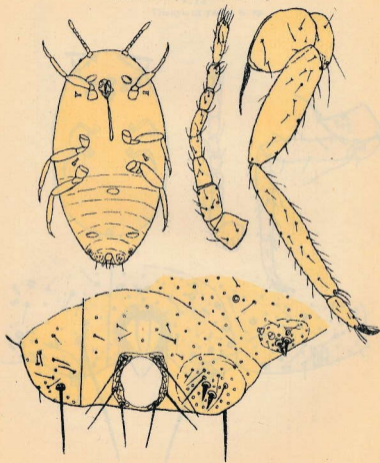


*Pulvinaria dfaikhi* n. sp.

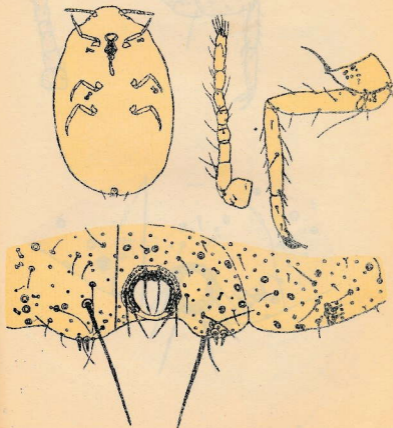


F.12

*Pseudococcus parietariocolus* n. sp.

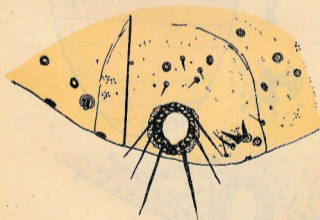
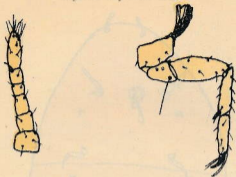


F. 13  
*Trionymus yaelae* n. sp.



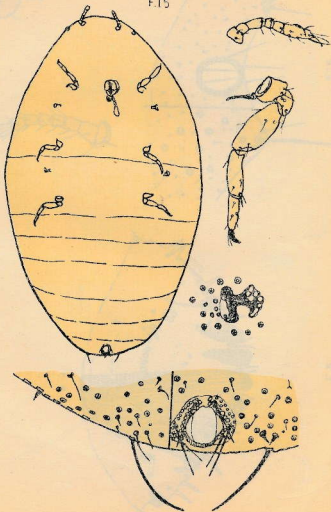
F.14

*Ripersia imperatae* Hall



*Rhizoecus cynodontis* n. sp.

F.15





F. 4

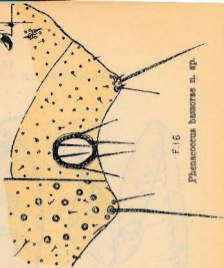


F. 4

*Mytilococcus minimus* Newm.

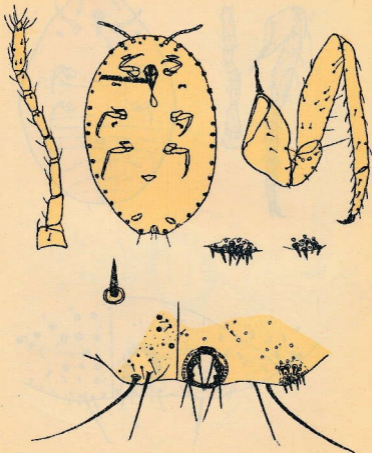
F. 16

*Phenacoccus basorse* n. sp.



F.17

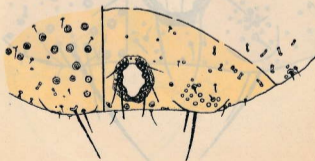
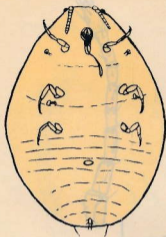
*Phenacoccus euphorbiaefolius* n. sp. (cerarius 2 and 15).



*Phenacoccus meymeryani* n. sp.

F.15

*Phenacoccus praeopalis* n. sp. (various views)

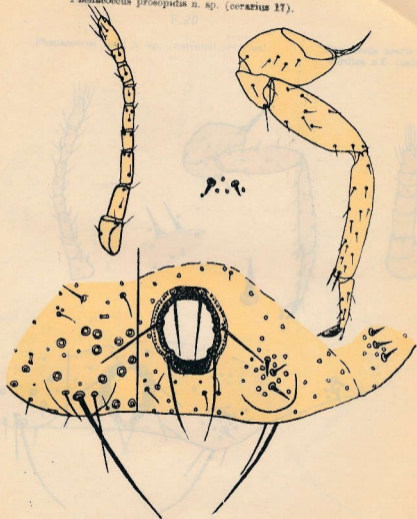


F.18

*Phenacoccus meymeryani* n. sp.

F.19

*Phenacoccus prosopidis* n. sp. (cerarius 17).



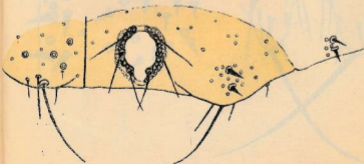
F.20

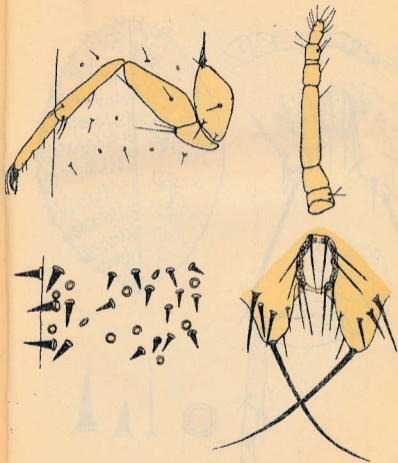
*Phenacoccus radii* n. sp. (antennal cerarius).



F.21

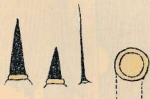
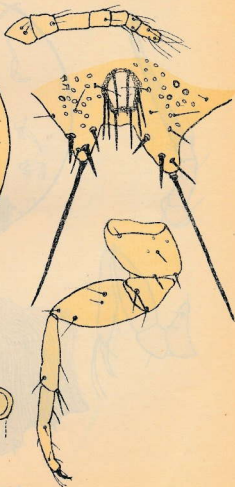
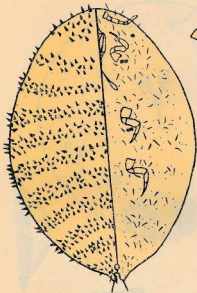
*Eriococcus aceris* forma  
*kurdica* n.f. (antenna).



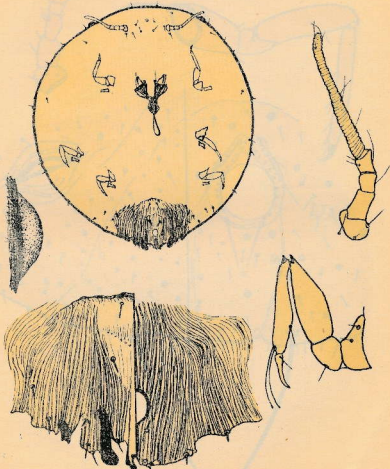


F.22

*Eriococcus mumtazi* n. sp. (hindleg, antenna, dorsal spines, anal region).



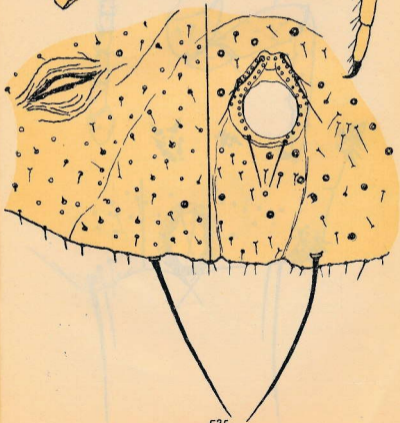
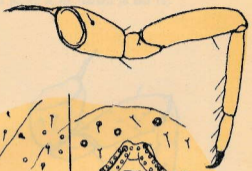
F.23  
*Briococcus tenericollis* n. sp.



F.24

*Arehaspis ephedrae* n. gen. n. sp.



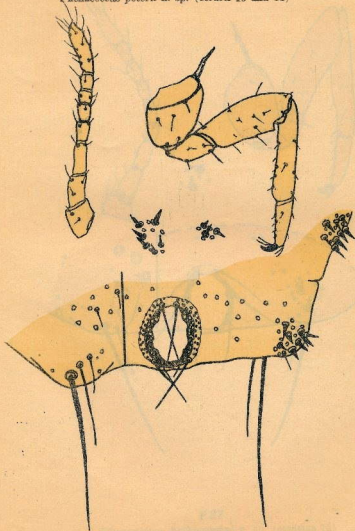


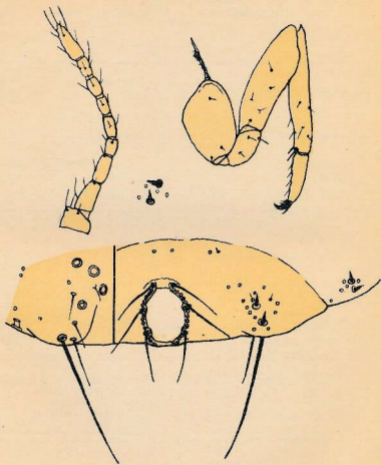
F25

*Bathrococcus daetyloni* n. sp.

F26

*Phenacoccus poterii* n. sp. (cerarii 16 and 14)





F.27

*Phaeococcus sherbinowskyi* n. sp. (aeerarius 15)

# كبار موظفي الزراعة العامة

—: 0:—

وزير الاقتصاد

حضرة صاحب المعالي السيد سلمان

البراك

مدير الزراعة العام

السيد محمد سليم الراضي

مدير شعبة مزرعة أبي غريب

السيد درويش الجديري

مدير شعبة المحاصيل الحقلية والقطن

السيد خليل فهدو

مدير شعبة البساتين

السيد عبدالجبار البكر

مدير شعبة وقاية النبات

السيد ممتاز عارف

مدير شعبة الحشرات والأمراض النباتية

السيد الير ميريان

اخصائي بالحشرات (متدرب من فلسطين)

البروفسور ف . س . بودنهايمر

مدير شعبة المناطق الزراعية

السيد خليل الاورفالي

مدير مزرعة بكرة جو (السليمانية)

السيد احمد رفيق

الملاحظ الفني لشعبة الامور الفنية

السيد محمد فتحي

## مجمّل تحليل التوزيع الجغرافي للحشرات

ان اهم ما يلفت النظر فيما وصلت اليه نتيجة تحليل التوزيع الجغرافي للحشرات هو ضالة النسبة المئوية لما يتقل من الانواع الزراعية : فهذه الطائفة التي يغلب فيها عادة الانواع الضارة تسئل في وجودها بكثرة في جميع البلدان المحيطة بالبحر المتوسط وكذلك في الهند وجزيرة سيلان ( Ceylon ) وغيرها . ويمكن تحليل سبب هذه الضالة الى (١) ندرة استيراد نباتات اقتصادية ونباتات الزينة وغيرها . على ان هذا التحليل لا يقره الواقع حيث انه قد ادخلت في ايام بايل القديمة نباتات اقتصادية مختلفة الى العراق الاوسط وهذا ايضا ينطبق على كردستان العراقية و(٢) عدم ملائمة الطقس . وهذا التحليل غير كاف ذلك لان هذه الطائفة تكشف بكثرة في اجواء مصر والهند المشابهة لبحر العراق بل ويبدو ان اتعزال العراق قد ادى الى ادخال نباتات جديدة بواسطة البذور على الاغلب وليس بواسطة بارضات او اقسام حية من النبات . هذا وان الانواع الزراعية النازحة هي :-

- كريبزومفالس او ريتاليس
- دياسيد يونس لاتانيي
- دياسيس كاليترويدي
- بارلا توربا بيرگا نديي
- كوكس عيسبريدم
- سودو كوكس سستري
- (اسيريا بورتشيزي)

اما عناصر التوزيع الاخرى للحشرات القشرية (كوكسويدي) الموجودة في العراق فهي :-

العصر	عدد النوع	٪ للنوع
الناطق النجمدة التديعة (توزع واسع)	٦	١٢٫٨
المنطقة الايرانية - الطورانية	٢١	٤٤٫٦
منطقة البحر المتوسط	١٫٥	١٣٫٥
المنطقة السندية - الصحراوية	١١٫٥	٢٤٫٥
المنطقة السيرية - الأوروية	٢	٤٫٣

واحد فقط وهذا الجنس الجديد هو اول ما وجد من هذه العائلة في المنطقة المتجددة القديمة وهي الحلة العية المفقودة التي توصل بين الجنس ديا سيديدي واسلافها من الـ بوكوكويدي السطلي .

### عائلة فينكوكوكسيدي

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٥٨ - فينكوكوكس مالاني في البصرة على نخيل التمر .

### عائلة مارگاروديدي

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٥٩ - آيسيريا پورتشيزي عشت من السيد ميمريان ان هذه الافة كانت قد جاءت حديثا من ايطاليا الى الرعفرانية ولكنها ايست .

### عائلة اورنيزيدي

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٦٠ - اورنيزيا اورتيكي في بنجوين على نبات الاستراغالوس ( Astragalus ) .

رقم	اسم	رقم	اسم
١	اورنيزيا اورتيكي	٣	اورنيزيا اورتيكي
٢	اورنيزيا اورتيكي	٤	اورنيزيا اورتيكي
٣	اورنيزيا اورتيكي	٥	اورنيزيا اورتيكي
٤	اورنيزيا اورتيكي	٦	اورنيزيا اورتيكي
٥	اورنيزيا اورتيكي	٧	اورنيزيا اورتيكي
٦	اورنيزيا اورتيكي	٨	اورنيزيا اورتيكي
٧	اورنيزيا اورتيكي	٩	اورنيزيا اورتيكي
٨	اورنيزيا اورتيكي	١٠	اورنيزيا اورتيكي

- ٤٤ - فينسا كوكس بصوري (سوع) في البصرة على نبات سينودون دكتيلون *Cynodon dactylon* (جديد)
- ٤٥ - فينسا كوكس يوفوريبيا فوليس في الطريق بين السليمانية وجوارتا وجدت بكثرة على اوراق نبات يوفوريبيا ( *Euphorbia* ) (نوع جديد)
- ٤٦ - فينسا كوكس ميرياني (سوع) في عداية على الساق الرئيسي لنبات توكريوم ( *Teucrium* ) (جديد) وقد سميت بهذا الاسم اهداءا الى السيد الير ميعريان مدير قسم الحشرات بمديرية الزراعة العامة في العراق .
- ٤٧ - فينسا كوكس بروسيبيدي (سوع) في البصرة على نبات الشوك . (جديد)
- ٤٨ - فينسا كوكس راضي (سوع) في البصرة على نبات العاقول وقد سميت بهذا الاسم اهداءا الى السيد محمد الراضي مدير الزراعة العام في العراق . (جديد)
- ٤٩ - اريوكوكس اسيرس تشيكل في شقلاوة وممر رواندوز على اوراق الاسفندان والشمار الشرقي وقد لوحظ ان المفصل الثالث في فروع الاستشعار لهذه النماذج اطول بكثير من المفصل الرابع . (جديد)
- ٥٠ - اريوكوكس انيكنس (?) في البصرة على الحلفا .
- ٥١ - اريوكوكس متازي (سوع) في شقلاوة وزاخو على اوراق الحشيش وقد سميت بهذا الاسم اهداءا الى السيد ممتاز عارف مدير شعبة وقاية النبات في مديرية الزراعة العامة بالعراق . (جديد)
- ٥٢ - اريوكوكس توكريبي كولا في عداية على الفرح نبات توكريوم . (نوع جديد)
- ٥٣ - اتونينا فراغتيس في اربيل على نبات فراغتيس كومبوس وبهذه قد تاكدت التسمية المرادفة وهي اتونينا وترستوني .

### عائلة استيرو ليكانيدي

- ٥٤ - استيرو ليكانيوم بيلم في بنجوين تسبب ابعاجات في الفرح واقصان نبات البلوط .
- ٥٥ - استيرو ليكانيوم ميتوس في زاخو وجبل صلاح الدين على البلوط .
- ٥٦ - استيرو ليكانيوم فينيسس من بغداد الى البصرة على خوص وتمر نخيل التم .

### عائلة كونشا سيديدي

- ٥٧ - اركاميس اندري (نوع جديد) في جوارتا على افرع نبات اهدرا ( *Ephedra* ) وجد النموذج

## عائلة كوكسيدي

- ٣٠ - كوكس هسبيريدم في جنوب بغداد على اوراق الحمضيات .
- ٣١ - يوليكانيوم سيلياتم في شقلاوة على افرع الزعرور .
- ٣٢ - بولفيناريا ارتيميزي في اربيل على نبات توكريم ( *Tenerium* ) .
- ٣٣ - بولفيناريا دياثشي (نوع جديد) في ممر رواندوز على جذور نبات الـ ( *Dianthus* ) .
- ٣٤ - بولفيناريا بيستامي منتشرة على اوراق الانواع الفستقية البرية والمزروعة في الموصل وزاخو وشراتش .
- ٣٥ - اريوبلنيس فسيتوكي في زاخو على سيقان النبات فلارس تيوروسم ( *Phalaris tuberosum* ) .
- ٣٦ - بودين هايبرا راشيلي منتشرة على نبات فاتيكس ( *Vitex* ) على تجاري المياه في اعاء كرادستان .
- ٣٧ - كوكسيد لارفا كثيرة الوجود على نبات ( *Ephedra* ) افدرا ولم يعثر على واحدة بالغة منها .

## عائلة سودو كوكسيدي

- ٣٨ - سودو كوكس ستري في بغداد على اوراق التوت وفي عالوكا شمالي الموصل على اوراق التين .
- ٣٩ - سودو كوكس باريتسا ريغولا في ممر رواندوز على جذور نبات باريتاريا ( *Parietaria* ) (نوع جديد)
- ٤٠ - تريوناميس يلي (نوع جديد) في زاخو على نبات فلارس تيوروسم *Phalaris Tuberosum*
- ٤١ - ريبيرسيا امبراني في مندور على سيقان نبات فراكمتيس فولكاري ( *Phragmites Vulgaris* ) وتختلف هذه النماذج عن الوصف الاصلي قليلا .
- ٤٢ - ريسز وكس سمسينود وتيس في البصرة على نبات سينودون دكتيلون *Cynodon dactylon* (نوع جديد)
- ٤٣ - فينا كوكس (؟) امبرس في شقلاوة وبنجوين على نبات الجنار وقد وجدت اليرقات منها فقط على ان تبقى هذه التسمية غير ثابتة الى ان يعثر على الاناث البالغة .



- وجدت في زاخو وبنجوين ومسر رواندوز حيث تكثر على ورق  
الانواع الفستقية البرية .
- وجدت بالقرب من سدور و زاخو على نصل نبات اندروپوغي  
( Andropogon ) وغيره من الابدغال .
- وجدت في بنجوين وجوارنا فقط على كثير من الاشجار .
- وجدت في وسط وشمال العراق على شجر الخوخ والشمش  
والموز ولوحظ مرة وجود بقع حمراء على ثمر الخوخ  
سببها هذه الحشرة وقد وصف شكل مابالم لهذه الحشرة  
وجد على نبات افدرا بانه شكل افيدري الجديد .
- وجدت في البصرة على اقصان الابل .
- وجدت في زاخو وبنجوين على نباتي استراكالوس واكانتوليمون .
- وجدت في زاخو وبنجوين وجوارنا على البلووط وقد فصل هذا  
الجنس الجديد عن الجنس ميتلو كوكس .
- وجدت على التخليل من بغداد حتى البصرة .
- كثيرة الوجود وتغذي على اسواع عديدة في شمال واواسط  
العراق .
- وجدت في بغداد والبصرة والعشار والرمادي حيث تغذي على  
انواع متعددة من النبات ويمكن تمييزها من ب . اولى  
نعت الميكروسكوب بثلاث زجاجات (بدلا من اربع) بين  
القنطين الثالث والرابع .
- وجدت على اوراق الصنوبر نماذج حجمها اصغر كثيرا من الحجم  
الطبيعي المألوف لهذه الحشرة .
- وجدت بكثرة على اقصان والفرخ الانواع الفستقية في انحاء  
کردستان .
- وجدت منتشرة على اقصان وسبقان الصفصاف في بغداد  
وشراش والبصرة .
- ان هذا النوع الذي بلغت النظر قد وجد على الزعرور في شقلاوة  
كما قد وجد شكل آخر يختلف عنه قليلا على نبات فراكنسنس  
( Fraxins ) بالقرب من بنجوين وقد وصف بانه ل .
- كرا تيكي شكل فراكنسكولا .
- ١٦ - مايتلو كوكس بيستاني
- ١٧ - مايتلو كوكس ساندوري
- ١٨ - مايتلو كوكس المي
- ١٩ - كوكو ميتلس هانلي
- ٢٠ - كوكو ميتلس ايسس
- ٢١ - كوكو ميتلس سورياس
- ٢٢ - كورو نيسيس اغيلوپوس
- ٢٣ - يولا توريا بلانكارديي
- ٢٤ - يولا توريا اوليي
- ٢٥ - يولا توريا (؟) برگانديي
- ٢٦ - لوكايسس سبلا
- ٢٧ - سوتورابيس بيستاني
- ٢٨ - ساليسيكولا كرمانييس
- ٢٩ - لوكا سيدوپيس كراتيكي  
(نوع جديد)

٣  
قائمة

الحشرات الفسرية التي وجدت في العراق

- ١ - كوادراسيد يوتس بوبولسي (نوع جديد)
- ٢ - كوادراسيد يوتس زوناسي الذي يتطفل على شجر البلوط .
- ٣ - كيريزومفالس اورينثالس وجدت في بغداد على شجر القوق والزيتون وفي الزعفرانية على اوراق الشيشم وتختلف النماذج التي وجدت من عسلده الحشرة على ورق الحمضيات في البصرة عن تلك التي عثر عليها في العراق الاوسط ولذا فيحتاج الى دلائل اوفى للتأكد من انها تنتمي حقيقة الى هذا النوع .
- ٤ - دياسيد يوتس افدراروم
- ٥ - دياسيد يوتس هرزلياس شوهدت بالقرب من زاخو وجوارتا والسليمانية حيث توجد بكثرة على نبات افدرا .
- ٦ - دياسيد يوتس لاتانيي
- ٧ - ميلاناسيس انوييتانا وجدت في الرمادي على اوراق شجر التوت .
- ٨ - تاركيونيا فيتس
- ٩ - ديايسيس كاليثويدس وجدت في مسر راوسدور على نباتات اليبس ( Celtis ) وفي بنجوين على شجر الكثرى .
- ١٠ - كيوناسيس انكديتسس وجدت في بنجوين على افرع شجر البلوط .
- ١١ - مايتلو كوكس بكس وجدت في الزعفرانية على شجر الثن الشوكي (الصبار المثمر) بحديقة الصبار .
- ١٢ - مايتلو كوكس انكديتسس وجدت في جميع الاماكن على الابل . ولقد وضعت الفروق بين هذه الحشرة وبين الحشرة كيوناسيس اتروسكا .
- ١٣ - مايتلو كوكس جويسري
- ١٤ - مايتلو كوكس كورديكس (نوع جديد)
- ١٥ - مايتلو كوكس مينسس وجدت في بغداد على اغصان وورق شجر التين ويحتمل ان تكون هذه هي م . مينسس الحقيقية وانها ليست كما يزعم بعض المصادر خطأً انها نوع صغيرة للحشرة م . كوشى فورميس .

والتوكريم اكثر من غيرها من النباتات الاخرى . كما ان جبال كردستان مغطاة بغابات من شجر البلوط مخلطة بمجموعات منتشرة من اشجار البتاسيا خنجوك . والاسفندان . والفيس اورتاليس وغيرها وفي هذه المنطقة قد شاهد كاتب هذه النشرة لسانا عرضيا من التربة الحمراء يرجح انه قسم لما شاهده بالقرب من اورفه وماردن جنوبي شرق الاناضول وكلا هذين المنحدرين وجبال كردستان ضمن المنطقة الايرانية - الطورانية .

ان التصنيف النباتي وكذلك التسمية الذاتية والجنسية التي استعملت في هذه النشرة سجل بها ايضا في الرسالة التي يضعها المؤلف عن الحشرات القشرية في الشرق الأوسط مع العلم بان هذا التصنيف وغيره يتفق مع الاسس التي كشفها البارزون من الاخصائيين الاميركيين امثال موريسون ( Morrison ) وفيريس ( Ferris ) وغيرها . وانه لمن الواضح ان الجدول التالي لا يعتبر كاملا الا ان المكتشف من الحشرات القشرية في العراق والتي بحث عنها في مذكرة واحدة حتى الآن (وضعها كرين Green عام ١٩٢٣) قد ارتفع من ٧ انواع الى ٦٠ نوعا . ومما بلغت اثناء ابحاثه الاخصائيين هو ان النسبة المئوية للحشرات الزراعية خاصة وتلك ذات المواطن المتعددة عامة هي نسبة محدودة . وسوف يبحث عن هذه النقطة في تحليل التوزيع الجغرافي للحشرات .

وهناك نقطة اخرى تتطلب التعليق الا وهي وجود طائفة كبيرة نسيما من انواع جديدة ضمن العائلة سودوكوكيدي وهذه الطائفة يعذر جمعها وتحنيطها اثناء التحول بخلاف العائلات الاخرى . زد على ذلك ان انواعا كثيرة لا سيما في البطاح والاقام الصحراوية تعيش تحت الثرى ولذا فليس مما يستغرب له كون معلوماتنا عن هذه الطائفة لا تزال ناقصة لا سيما عن تلك الموجودة في الصحراء والبطاح كما انه لا يعرف الا القليل عن مدى قابلية التحول الذاتي لهذه الطائفة (لا سيما في مفاصل قرون الاستسعار وعدد الفقرات الشمعية والمسام وطول الشرج والهلب الذنبية الخ .) ولذلك ففضل الاكتفاء بوصف الاشكال التي تبدو فيها فروق حاسمة عن تلك الانواع المعروفة بانها جديدة وان ترك وضع المرادف النهائي لها لمن يقوم في المستقبل بتفقيح هذه الطائفة . ولا شك في ان هذه الطريقة سوف لا تترك الا عتاء قليلا للجيل القادم الذي عليه ان يقرر نهائيا لأي نوع تنسب الاشكال المتقدمة الذكر .

## مقدمة

بناء على دعوة السيد محمد الراضي مدير الزراعة العسام في العراق قد قمت بجولة في العراق استغرقت العشرين يوما من شهر تشرين الاول سنة ١٩٤٢ وبفضل مساعدته وما ابداه التي معاوناه السيدان البير ميمريان وممتاز عارف استطعت انجاز عمل كبير في هذه المدة القصيرة . وكانت الغاية من تجوالي درس الاحوال الرئيسية للحشرات الزراعية فجمعت من الحشرات القشرية ما سمح به الوقت وتضمن هذه المذكرة ما قد انجزته من العمل خلال جولتي .

ولا بأس من ايراد بعض الملاحظات عن الاماكن التي زرتها في تجوالي . تلك الاماكن التي قد لا تكون معروفة لكثير من القراء . فمدن بغداد والموصل واربيل والسمره مثلا يمكن الاهتداء اليها بسهولة في اي اطلس جغرافي . اما سائر الاماكن فهي : عداية وهي قرية تقع في الزاوية الشرقية من الجزيرة وعلى مسافة ٥٠ كيلومترا غربي الموصل . وزاخو وشرانية وساندور وزوبته وهي قرى وبلدان تقع في شمال غربي كردستان ومتاخمة للحدود التركية . وممر راوندوز وهو وادي نهر الزاب الكبير . اما قرية شقلاوة فتقع على الطريق الكائن بين الموصل وممر راوندوز . والسليمانية وجوارتا وبنجوين وحلبجة بلدان او قرى في اللواء الشمالي الشرقي المتاخم للحدود الايرانية . والزعفرانية وابو غريب مزرعتان تابعتان لمديرية الزراعة وتقعان بالقرب من مدينة بغداد . اما النعبيه والزبير فواحدان قربستان من البصرة .

ويمكن الاقتصار على القول بان العراق الجنوبي بما فيه بغداد يقع ضمن المنطقة الصحراوية - السندية الا ان الندوة الطقسية في الواحات والمستنقعات تساعد على نفوذ وتثبيت العناصر الاستوائية الشرقية حتى شمال بغداد (اي ترسيخ كرزومفالس اورينتالس وتواجد الفراشة برسيس اوريشا التي يقبل ظهورها على الدوام حتى في بغداد) ومن منطقة ما شمالي بغداد لغاية جبال كردستان في الشمال . وفي الشرق حيث تمتد منحدرات وعرة تتواجد نباتات بروسيويس شيفانانا . والهاكي مورورم . والارتميزيا .



وزارة الاقتصاد  
مركز البحوث الزراعية

بحث اولي عن الحشرات القشرية  
في العراق

وضع

المهندس ف. س. بويرهايمر

الخاصي بالحشرات لمديرية الزراعة العامة بغداد

(استاذ علم الحيوان بالجامعة العبرية في القدس)

(تطلب مباشرة من مديرية الزراعة العامة في بغداد - العراق)

مطبعة الحكومة - بغداد

١٩٤٣