Boll. Zool. agr. Bachic.
Ser. II, 26 (2), 1994: 165-181

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Two new aphid species from Campanulaceae in Italy (Homoptera Aphididae)

Abstract - *Dysaphis (Pomaphis) henrystroyani* sp. n. and *Uroleucon (Uromelan) minosmartellii* sp. n. are described from Italy where they live on Campanulaceae of the genera *Trachelium* and *Campanula*, respectively. For each one of the two taxa accounts are given on both apterous and alate viviparous morphs, their host plants, ethology and taxonomy; a key to separate the two new taxa from the other similar species living on Campanulaceae in W-Europe is also included.

Riassunto - *Descrizione di due nuove specie di afidi delle Campanulacee in Italia.*

Fra gli afidi viventi sulle Campanulacee maggiore significato assumono alcuni rappresentanti dei generi *Dysaphis* Börner e *Uroleucon* Mordvilko, due taxa di Macrosifini filogeneticamente indipendenti tra loro e che sono fra i piú ricchi di specie nel contesto di tale gruppo di Aphididae. Nell'ambito dei due generi vengono, rispettivamente, descritti: *Dysaphis (Pomaphis) henrystroyani* sp. n., vivente in Sicilia su *Trachelium coeruleum*; *Uroleucon (Uromelan) minosmartellii* sp. n., associato a *Campanula versicolor* e *C. pyramidalis*, rispettivamente in Puglia e nella Venezia Giulia.

Per entrambe le specie sono illustrati la morfologia dell'attera e dell'alata virginopara, il comportamento etologico, i rapporti di affinità con le specie tassonomicamente vicine; ciascuna specie viene inserita in una chiave analitica per la discriminazione delle entità vincolate ai rispettivi gruppi di piante ospiti.

Key words: Homoptera Aphididae, *Dysaphis (Pomaphis) henrystroyani* sp. n., *Uroleucon (Uromelan) minosmartellii* sp. n., Campanulaceae-living aphids, Italy.

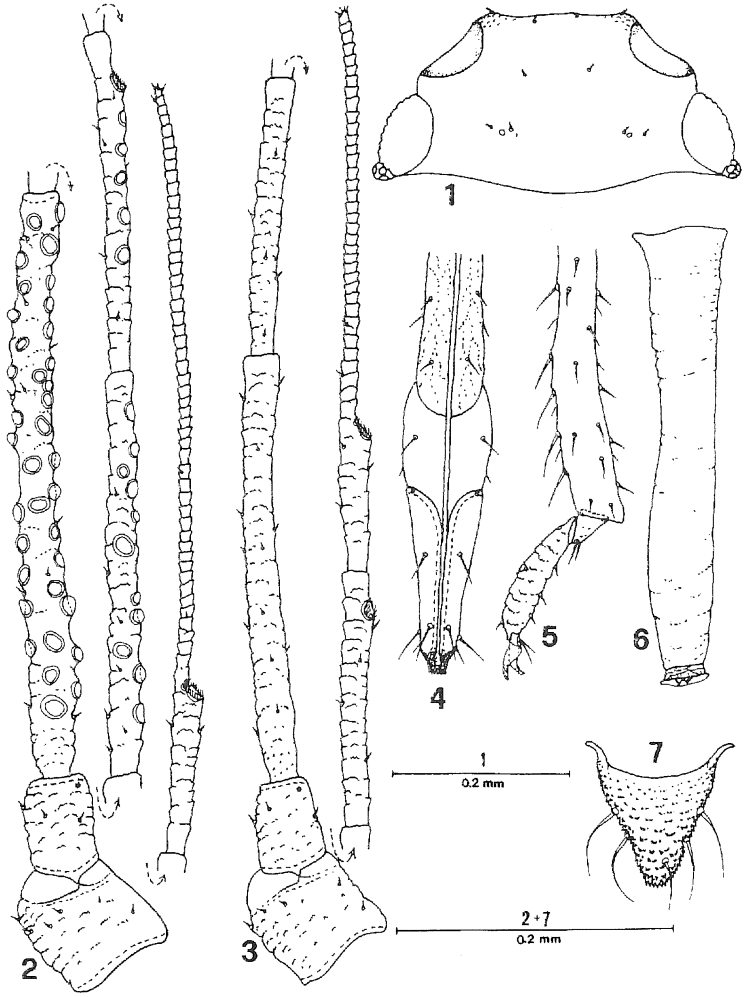
Two new aphid species collected on Campanulaceae in different Italian regions are here described. One was found in Sicily more than ten years ago,

and belongs to the genus *Dysaphis* Börner, 1931, subgenus *Pomaphis* Börner, 1939; it lives on *Trachelium coeruleum* L. and is a member of the *sorbi*-group. The other aphid, found more recently, is a typical component of the *Campanula*-infesting *Uroleucon* Mordvilko, 1914, subgenus *Uromelan* Mordvilko, 1914; it was collected on two *Campanula* species (*C. versicolor* and *C. pyramidalis*), mostly growing on rock-faces and walls in Apulia and Friuli-Venezia Giulia regions, respectively.

Dysaphis (Pomaphis) henrystroyani sp. n.

Apterous viviparous female (described from 14 specimens). Body oval, 1.38-1.77 mm in length; its cuticle rather uniformly pale (in mounted specimens) and without any evident sclerifications, together with the siphunculus shape, make this species a typical member of the *sorbi*-group of the subgenus *Pomaphis* Börn.. Head with rather straight frontal profile, neither the antennal tubercles nor the median frontal one being prominent. Frontal and dorsal head hairs all similar, very short and usually blunt at apex (sometimes rather cilindrical in shape); they are 5-7 μ long (up to 10 μ in early dated specimens) and 0.20-0.52 (mean 0.32) of the basal articular diameter of III antennal joint. Thoracic and abdominal dorsal hairs also very short and mostly blunt apically, except those on the 8th tergite, where they are longer and mostly abruptly pointed; those on 3rd urite (spinal hairs) measure 4-8 μ in length as most other dorsal hairs, reaching up to 16-30 μ on the 8th tergite, which bears 5-7 hairs. Spinal tubercles, usually paired, are only present on head and on 8th abdominal tergite; exceptionally they may be found (unpaired in only one specimen out of 14 examined) also on 7th tergite. The cephalic tubercles are always small, ranging from the size of the nearest hair papillae up to 10-12 μ in diameter, more or less equivalent to the length of the occipital hairs or a little larger; those on 8th tergite may be a little larger, reaching up to 12-14 μ in diameter. Lateral, flat tubercles are always present on prothorax (where they are the largest of all the body tubercles, reaching up to 12-24 μ) and usually also paired on 7th urite. Only exceptionally there are one or two additional, marginal thoracic tubercles (i.e. on meso- metathorax), whereas 4-10 (most frequently 7-9) small lateral tubercles (average size 6-10 μ; range 4-18 μ) are present on the 1st-5th urites. Tubercles are usually absent from the 6th urite. Antennae pale for about the basal two thirds, and then darkened from distal part of joint V onward. Antennal flagellum 0.61-0.85 of the body length; joint III without secondary rhinaria, well imbricated, 0.80-1.10 of the processus terminalis; the latter is 2.40-3.10 times as long as the base of joint VI. Hairs on the flagellar joints all very short and blunt apically; those on segment III are 5-8

μ or 0.24-0.38 of the basal articular diameter of the joint. Rostrum 0.42-0.55 mm of total length and nearly reaching the 3rd coxae; its apical segment rather long and acute-conical in shape, 1.27-1.40 (mean 1.35 in 14 specimens) of the second segment of hind tarsus (measured without its distal articular sclerite or unguiferous) and with 2-4 supplementary hairs.



Figs. 1-7 - *Dysaphis (Pomaphis) henrystroyani* sp. n. - Apterous viviparous female: 1. Head; 3. Antenna; 4. Distal part of rostrum; 5. Distal part of hind tibia and tarsus; 6. Siphunculus; 7. Cauda. - Alate viviparous female: 2. Antenna.

Legs normal and mostly pale, except the distal part of tibiae and tarsi; hind tibiae 0.42-0.55 of body length. Femoral hairs very short and blunt; those on upper side are maximally 6-11 μ long or 0.12-0.24 of the diameter of trochantro-femoral suture; ventro-trochanteral hair pointed and rather short, being 15-20 μ long or 0.32-0.47 of the last named suture. Tibial hairs also mostly short on average; those at the median part on the outer side are blunt and about 10-15 μ (or 0.28-0.52 of the tibial width at the same point), the last two or three pointed hairs at tibial apex reaching up to 22-30 μ. First tarsal chaetotaxy 3:3:2.

Siphunculi 0.16-0.22 of body length and 1.98-2.44 of apical rostral joint; they are moderately but distinctly swollen at one third distal part (maximum diameter 1.10-1.25 of the minimum at one third basal part about), as typical in the *sorbi*-group, and faintly imbricated, with few transverse striae at the subapical constriction and distinctive apical flange. Cauda helmet shaped, as long as wide at base, about 1/3 (range 0.31-0.40) of the siphuncular length and bearing 4-5 setae (usually two lateral pairs and a dorso-apical single one). Genital plate constantly with 2 main setae (in all the specimens observed) on the anterior half and 9-17 along the posterior margin, where they tend to form roughly a double series when exceeding the about 10.

Colour in life greenish pale, with cremeous basal part of antennae, most parts of legs (except the brown tarsi), siphunculi (except the dark apical flange) and cauda; in early dated specimens all such appendices may be a little more extensively pigmented. Nymphs, by contrast, are pink-salmon in colour.

For main biometric data see Table 1.

Alate viviparous female (described from 12 specimens). Body length 1.40-1.86 mm, with the typical aspect of a *Pomaphis* species of the *sorbi*-group. All body hairs similar to those of apterous morph, or a little more slender and acute; length as follows: frontals and occipitals, 8-12 μ; 3rd abdominal tergite, 8-11 μ; 8th tergite, 18-28 μ. Abdominal spinal sclerifications consisting of: a small pair of sclerites on 1st urite; a larger bar (sometimes broken medially) on the 2nd; a large dorsal macula on tergites 3rd-6th, always more or less transversally broken at each intersegmental line and with irregular margins; a single transverse bar on 7th (sometimes extended to include the marginal areas of the same segment) and also on 8th tergite. Marginal roundish sclerifications are present on 2nd-4th and on 6th urites, in the latter forming the post-siphuncular sclerites. Number and distribution of spinal and marginal tubercles very much as in the apterous morph; perhaps with a higher frequency of marginal tubercles on 5th urite and in a somewhat higher average diameter (up to 15-18 μ, but never larger than the nearest stigmal pore maximum diameter) of some marginal tubercles on 1st-5th abdominal tergites.

Table 1 - Dysaphis (Pomaphis) henrystroyani *sp. n.* - *Apterous viviparous female. Measurements in mm of some type specimens.*

N.	Body	Antenn.	Antennal segments III	IV	V	VI	Apical rostral joint	Hind tibiae	II hind tarsom.	Siphunc.	Cauda length	Cauda hairs
1	1.68	1.26	0.25	0.22	0.21	0.12+0.32	0.142	0.80	0.103	0.30	0.12	5
2	1.66	1.17	0.25	0.18	0.19	0.11+0.30	0.141	0.78	0.102	0.28	0.10	5
3	1.68	1.24	0.28	0.22	0.19	0.12+0.31	0.142	0.78	0.104	0.29	0.11	5
4	1.76	1.22	0.30	0.20	0.18	0.11+0.29	0.132	0.73	0.094	0.31	0.11	5
5	1.60	1.23	0.30	0.20	0.19	0.11+0.30	0.128	0.74	0.097	0.29	0.10	4
6	1.38	1.29	0.30	0.21	0.20	0.11+0.34	0.125	0.72	0.098	0.30	0.09	4
7	1.68	1.30	0.32	0.24	0.20	0.11+0.29	0.135	0.78	0.100	0.33	0.12	5
8	1.42	1.23	0.31	0.18	0.20	0.11+0.30	0.133	0.78	0.098	0.32	0.11	5
9	1.47	1.17	0.29	0.17	0.19	0.12+0.28	0.127	0.72	0.094	0.28	0.09	5
10	1.46	1.11	0.27	0.17	0.17	0.11+0.27	0.119	0.65	0.090	0.27	0.10	5

Holotype (no. 1) and paratypes. Ns. 1-3, Noto, loc. S. Corrado di Fuori (Syracuse), 22.IV.1981, on *Trachelium coeruleum*; ns. 4-10, same host plant and locality, but date 3.VI.1981.

Table 2 - Dysaphis (Pomaphis) henrystroyani *sp. n.* - *Alate viviparous female. Measurements in mm of some type specimens.*

N.	Body	Antenn.	Antennal segments III	IV	V	VI	No. secondary rhinaria III	IV	V	Apical rostral joint	III hind tarsom.	Siph.	Cauda
1	1.68	1.64	0.42	0.28	0.24	0.14+0.41	36/40	12/14	7/7	0.141	0.105	0.27	0.10
2	1.60	1.62	0.41	0.28	0.24	0.12+0.42	39/36	13/11	7/5	1.141	0.108	0.28	0.11
3	1.67	1.63	0.44	0.29	0.26	0.14+0.39	32/34	11/12	7/7	0.146	0.109	0.28	0.11
4	1.45	1.38	0.36	0.22	0.21	0.12+0.34	32/27	11/8	6/4	0.133	0.097	0.23	0.09
5	1.68	1.73	0.46	0.29	0.26	0.14+0.43	41/38	12/14	8/7	0.142	0.113	0.28	0.11
6	1.59	1.56	0.41	0.28	0.22	0.14+0.38	30/30	11/10	4/5	0.147	0.109	0.25	0.10
7	1.78	1.68	0.42	0.26	0.26	0.14+0.45	33/31	11/11	5/6	0.142	0.109	0.28	0.11
8	1.55	1.58	0.40	0.27	0.24	0.13+0.41	36/31	10/11	6/6	0.147	0.105	0.27	0.10
9	1.86	1.56	0.41	0.28	0.23	0.14+0.35	36/36	10/11	4/5	0.132	0.107	0.31	0.11
10	1.65	1.40	0.39	0.22	0.20	0.12+0.34	29/29	8/10	5/4	0.134	0.097	0.27	0.09

All paratypes. Ns. 1-8, Noto, loc. S. Corrado di Fuori (Syracuse), 22.IV.1981, on *Trachelium coeruleum*; ns. 9-10, same host plant and locality, but date 3.VI.1981.

Antennae pigmented all over their whole length; flagellum (III-VI joints) 0.76-0.97 of the body length; processus terminalis 2.50-3.40 longer than base of VI joint. The barely protuberant secondary rhinaria extend over the whole length of antennal joints III-V (see Table 2 for their numbers). Rostrum reaching behind the middle coxae, 0.40-0.50 mm long; its apical segment even more slender than in apterous morph, 1.23-1.40 (but usually not less than 1.3) of the hind tarsomer II and with (2)3-6 supplementary hairs. Wings hyaline with brown veins. Hind tibiae 0.55-0.67 of body length. Siphunculi entirely dark, 0.16-0.19 of body length, sometimes a little more swollen than in apterae; cauda also pigmented and similar in shape to that of apterae, with 5-6 hairs. Eighth abdominal tergite with 4-6 hairs of 18-28 μ maximal length. Other morphological features similar to those of apterous viviparae.

Colour pinkish salmon on abdomen, with olive brown dorsal sclerifications; sclerified structures (head, thorax, antennae, legs, siphunculi and cauda) brown to blackish.

For biometric data see Table 2.

TYPES. *Holotype* is apterous viviparous female no. 1 of the biometric Table 1, collected on *Trachelium coeruleum* L. at S. Corrado di Fuori, Noto (Syracuse) - Italy, 22.IV.1981, in the collection of the Institute of Agricultural Entomology, University of Catania (Italy). *Paratypes*: ns. 6 apterae and ns. 10 alate viviparae from the same collection of holotype; ns. 7 apterae and ns. 2 alate viviparae, which come from a second sample on the same host plant and locality, but dated 3.VI.1981; they are in the authors' collection, at the Natural History Museum of London (England) and the Museum National d'Histoire Naturelle, Paris (France).

TAXONOMY. The new aphid species belongs to the *D. (P.) sorbi*-group, among which species (Stroyan, 1985) it most resembles *D. (P.) brevirostris* (Börn.), to which it was firstly attributed by us, until Dr. H.L.G. Stroyan has pointed out the main morphological differences, allowing us to describe it as a new one taxon. *D. (P.) henrystroyani* differs morphologically in several respect from the other two well known Western European species of *Dysaphis*, subgenus *Pomaphis*, living on Campanulaceae, *D. (P.) sorbi* (Kalt.) and *D. (P.) brevirostris* (Börn.). The former being a holocyclic dioecious species alternating between *Sorbus aucuparia* and *Campanula* or *Jasione* (Stroyan, 1957, 1963); the second being a monoecious either holocyclic or anholocyclic on the same Campanulaceae genera. Morphological differences are as follows (most of them are after Stroyan, *in litteris*, Nov. 1982).

The ultimate rostral segment of the new species is relatively much longer compared with the other two species; therefore the ratio siphuncular

length/apical rostral joint is significantly discriminant for both *D. (P.) sorbi* (alienicolae on Campanulaceae) and *D. (P.) brevirostris*; the ratio apical rostral joint/II hind tarsomer is discriminant for *brevirostris*, but not for *sorbi*. The hairs on abdominal tergite 8th are on average a little longer than those of *brevirostris*, but quite largely overlap with *sorbi*. Marginal tubercles are much better developed than those of *brevirostris*, but are more like those of *sorbi*. Finally the number of secondary rhinaria in alate viviparae of the new species, *D. (P.) henrystroyani*, is in the range of *brevirostris* but much smaller than in *sorbi* (gynoparae born on Campanulaceae).

The three aphids on Campanulaceae may be keyed as follow (see also Stroyan, 1966, for supplementary morphological distinction between *sorbi* and *brevirostris*):

1. Apical rostral segment 0.119-0.142 mm in apterae and 0.132-0.147 mm long in alatae, not less than 0.4 (range 0.41-0.58) of the siphuncular length. Hairs on 8th abdominal tergite up to 16-30 μ long in apterous and 18-28 μ in alate viviparae. Ratio apical rostral segment/II hind tarsomer (measured without its unguiferous sclerite) 1.23-1.40. Third antennal joint with 27-41 secondary rhinaria in alate viviparae. On *Trachelium coeruleum*; at present known only from Sicily (Italy) ..... ***D. (P.) henrystroyani*** sp. n.

—. Apical rostral segment 0.094-0.110 mm in apterae and 0.097-0.116 mm long in alatae(*), not more than 0.4 (range 0.29-0.38) of the siphuncular length 2

2. Ratio apical rostral segment/II hind tarsomer (as above measured) less than 1.2 (range 1.04-1.19). Maximal length of hairs on eighth abdominal tergite 10-15 μ in apterous and 19-20 μ in alate viviparae. Third antennal joint in alate viviparae bearing 30-40 secondary rhinaria. Monoecious on *Campanula* spp. and *Jasione montana*; Western Europe .... *D. (P.) brevirostris* (Börn.)

—. Ratio apical rostral segment/II hind tarsomer more than 1.2 (range 1.23-1.38). Maximal length of hairs on eighth abdominal tergite 15-22 μ in apterous and 24-48 μ in alate viviparae. On *Campanula* spp. and *J. montana*, as secondary host plants (primary host being *Sorbus aucuparia*).

(*) Alate migrants of *D. sorbi* coming from primary host (*Sorbus*) have a much longer (up to 0.16-0.18 mm) last rostral joint and therefore cannot be separated as indicated in the key; nevertheless they can be easily separated from those of *henrystroyani* (as well as from those of *brevirostris*) by their much higher number of rhinaria on the antennal joints; only exceptionally, in small migrants of *D. sorbi*, the number of rhinaria are less than 40 on III and less than 10 on IV ant. joints (Stroyan, 1985) so overlapping the range of variation in the other two species.

Third antennal joint in alate viviparae (gynoparae born on Campanulaceae) with 45-76 secondary rhinaria; Western Europe ..... *D. (P.) sorbi* (Kalt.)

Derivatio nominis. The new aphid species is dedicated to Dr. Henry L.G. Stroyan, who has devoted many years to the study of the genus *Dysaphis* Börn., and to whom the authors are deeply indebted for invaluable help in their aphidological studies.

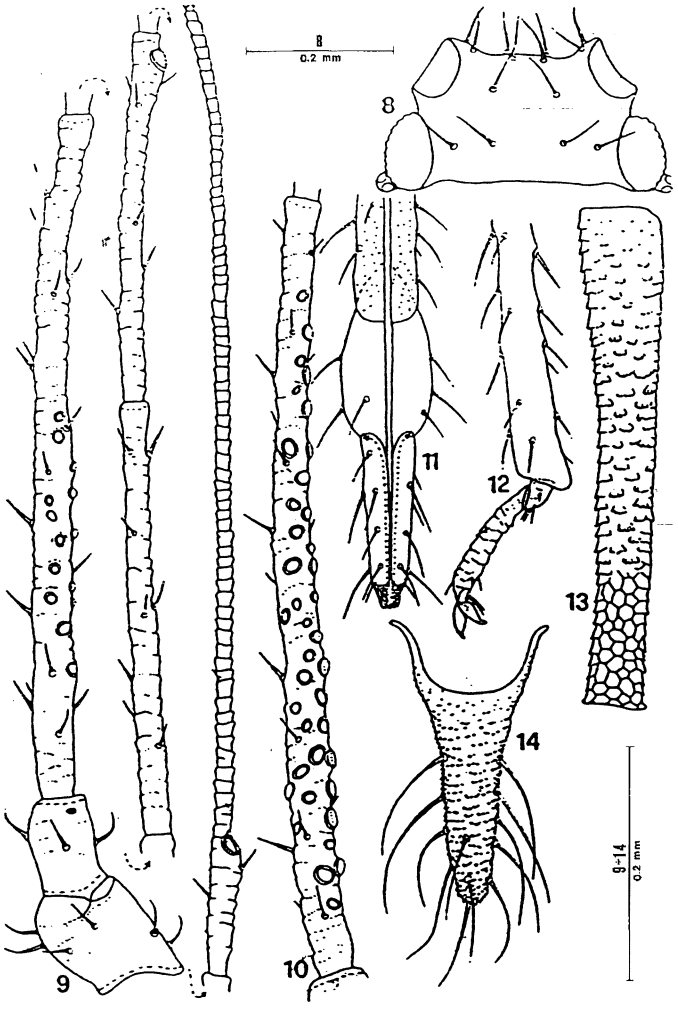
ECOLOGY AND DISTRIBUTION. The two small samples of the new aphid species come both from *Trachelium coeruleum* L. a delicate Campanulaceous plant which grew in a shade of an old wall, and which appears to be an extremely localized species. It is distributed in some Western Mediterranean areas, including Sicily, the W. side of Italian peninsula, Spain and Portugal (Tutin et al., 1976; Pignatti, 1982). If the aphid species is proved to be monophagous, it may occur throughout this area.

The aphid life cycle remain obscure at moment, as several attempts to find it after the first two collections of 1981 completely failed. Nevertheless, as this plant louse is a clear offshoot of the *D. sorbi*-group (see Taxonomy) it is likely that its biology also resembles that of the similar species. Dr. H.L.G. Stroyan (*in litt.*) suggested that, because the alate viviparae show a rather reduced number of secondary sensoria, a monoecious habit should be involved within the species, like that already known for the very similar *D. (P.) brevirostris* (Börn.). Such a type of life cycle is furthermore suggested by the early date of collections (April and beginning of June) for the two available samples of the new aphid species. *D. (P.) henrystroyani*, as is known for *D. (P.) brevirostris* (see Stroyan, 1985), may very probably have a mostly anholocyclic behaviour in the warm climatic conditions where its host plant usually grows. The aphid lives mainly on its host's leaves (on both sides, but apparently colonies start on the underside), which soon become curled and then twisted; tender stems, even from their basal part and the inflorescens, appear to be also suitable for infestation. The aphid is not attended by ants.

Uroleucon (Uromelan) minosmartellii sp. n.

Apterous viviparous female. Body rather small, oval in shape, 1.30-2.25 mm in length. Dorso-lateral sclerifications consisting of distinct thoracic and abdominal scleroites placed at the base of each one dorsal hair. Such roundish scleroites are 2-4 times larger than the hair papilla, and usually coalesce into a sclerotic large median area on pro- and mesothorax, and sometimes also on the 7th urotergite; a narrow transverse bar is present on the 8th tergite.

Antesiphuncular sclerite absent and postsiphuncular sclerite well developed. Dorsal thoracic and abdominal hairs rather stiff and pointed apically; their maximum length (spinal hairs on 3rd tergite) are 42-64 μ or 1.75-2.30 of the



Figs. 8-14 - *Uroleucon (Uromelan) minosmartellii* sp. n. - Apterous viviparous female: 8. Head; 9. Antenna; 11. Distal part of rostrum; 12. Distal part of hind tibia and tarsus; 13. Siphunculus; 14. Cauda. - Alate viviparous female: 10. Third antennal joint.

basal articular diameter of antennal joint III. There are (spinals + marginals): 11-22 (but usually 14-18 on medium-size specimens) on 2nd-4th tergites, 4-7 (more frequently 5 or 6) on 6th urite, between the siphunculi, and usually 4 (rarely 3 or 5) hairs on 8th tergite. Ventral body hairs thinner and even longer than the dorsal ones. Marginal tubercles usually absent from abdominal segments. Head capsula well sclerified, with diverging and rather low frontal tubercles; dorsal cephalic hairs (including the frontal ones) rather acute apically and about 2.0-2.5 in length of the basal diameter of antennal segment III. Antennae longer than body, completely pigmented, darker than head with rather stiff hairs on the flagellar joints; hairs on joint III are maximally 28-40 μ or 1.1-1.5 the basal articular diameter of the same segment. Antennal flagellum (III-VI segments) varying from 0.98 to 1.20 of the body length; joint III always shorter (0.67-0.88) than IV + V altogether. Processus terminalis usually 5-6 times longer than base of VI segment (rarely only 4.85 or up to 7.30 in few alatoid specimens) as well as longer (1.10-1.65) than III antennal joint. Secondary rhinaria only present on antennal segment III, rather few (range 2-18; mean of 30 antennae 10.5) in number and confined to 0.35-0.55 basal part of that joint; in alatoid specimens there are up to 20-25 rhinaria on the 0.60-0.75 basal part.

Rostrum reaching to behind the hind coxae; its apical segment 1.10-1.33 of the hind tarsal joint II (including the unguiferous) and bearing 5-9 (most frequently 7-8) supplementary hairs. Legs as usual in the genus; hind tibiae 0.60-0.75 of body length; second joint of hind tarsus about equal in length (0.91-1.08; exceptionally up to 1.20) to the basal part of VI antennal joint. Femoral hairs rather stout and pointed apically; those on dorsal side maximally 0.50-0.88 the diameter of the trochantro-femoral suture. Ventral trochanteral hair of hind legs subequal in length or just longer (up to 1.25) of that diameter. Tibial hairs also rather stiff like the femoral ones and maximally (those on outer side) 35-55 μ long or 1.00-1.40 (usually 1.2-1.3) of the median tibial diameter. First tarsal segments as rule with 5:5:5 hairs, very rarely with 4 or even 3 hairs on one or more legs. Siphunculi very dark and strongly imbricated, sub-cylindrical in shape or slightly tapering, 0.17-0.27 of body length and reticulated over their 0.24-0.34 distal part. Cauda finger-like, well pigmented (sometimes just less sclerotized than siphunculi), blunt apically, and indistinctly constricted at one third basal part; it is in average about half (0.46-0.62) of the siphuncular length, and 1.48-1.94 of its basal width. Caudal hairs 8-12 in number and very long (up to 120-130 μ or nearly as long as the basal caudal width). Genital plate with 2-3 hairs on its anterior half and 6-11 (usually 7-9) along the posterior margin.

Colour in life dark brown, shiny on dorsum. Antennae entirely black; legs mostly black, with about basal one third part of femora ochreous and middle

Table 3 - Uroleucon (Uromelan) minosmartellii *sp. n.* - *Apterous viviparous female. Measurements in mm of some type specimens.*

N.	Body	Antenn.	Antennal segments III	IV	V	VI	Rhin. III	Apical rostral joint	II hind tarsom.	Siphunc.	Cauda length	hairs
1	1.68	2.06	0.52	0.33	0.30	0.12+0.72	10/9	0.144	0.112	0.42	0.22	12
2	1.39	1.74	0.38	0.25	0.25	0.11+0.60	3/3	0.130	0.100	0.29	0.17	8
3	1.84	2.18	0.56	0.37	0.30	0.12+0.66	11/12	0.144	0.120	0.43	0.24	10
4	1.96	2.33	0.60	0.40	0.30	0.13+0.69	8/13	0.148	0.120	0.48	0.27	11
5	1.95	2.43	0.59	0.39	0.35	0.13+0.77	11/12	0.142	0.128	0.46	0.22	10
6	1.70	2.18	0.53	0.37	0.33	0.12+0.64	13/12	0.135	0.124	0.42	0.22	9
7	2.00	2.15	0.54	0.35	0.31	0.12+0.62	16/11	0.148	0.128	0.45	0.28	11
8	2.06	2.26	0.48	0.38	0.33	0.12+0.75	12/12	0.135	0.122	0.49	0.24	9
9	2.06	2.51	0.53	0.43	0.35	0.12+0.88	20/18	0.160	0.122	0.49	0.26	11
10	2.12	2.34	0.54	0.39	0.34	0.12+0.78	13/13	0.158	0.130	0.50	0.23	9

Holotype (no. 1) and paratypes. Ns. 1-3, Massafra (Taranto), 27.X.1993, on *Campanula versicolor*; no. 4, Castellaneta (Taranto), 28.X.1993, same host plant; ns. 5-7, ibidem, 14.V.1994; ns. 8-10, Bagnoli della Rosandra (Trieste), 15.VI.1994, on *C. pyramidalis.*

Table 4 - Uroleucon (Uromelan) minosmartellii *sp. n.* - *Alate viviparous female. Measurements in mm of some type specimens.*

N.	Body	Antenn.	Antennal segments III	IV	V	VI	Rhin. III	Apical rostral joint	II hind tarsom.	Siphunc.	Cauda length	hairs
1	2.12	2.31	0.60	0.37	0.31	0.12+0.72	27/33	0.152	0.120	0.44	0.23	11
2	1.92	2.35	0.60	0.39	0.33	0.12+0.73	46/41	0.140	0.120	0.42	0.21	10
3	2.06	2.41	0.59	0.42	0.35	0.12+0.74	46/45	0.156	0.120	0.45	0.21	11
4	1.90	2.42	0.65	0.40	0.37	0.12+0.70	37/38	0.152	0.128	0.50	0.22	10
5	1.88	2.45	0.64	0.42	0.38	0.13+0.71	40/46	0.152	0.126	0.44	0.19	10
6	1.82	2.24	0.56	0.35	0.34	0.12+0.68	43/42	0.126	0.120	0.40	0.21	10
7	2.04	2.54	0.64	0.40	0.42	0.12+0.78	50/47	0.140	0.124	0.48	0.21	10
8	2.22	2.49	0.53	0.44	0.36	0.12+0.83	29/34	0.146	0.128	0.49	0.24	11
9	2.04	2.44	0.51	0.40	0.32	0.12+0.88	34/35	0.148	0.128	0.48	0.21	10
10	1.96	2.37	0.52	0.41	0.33	0.12+0.79	32/34	0.144	0.120	0.44	0.20	11

All paratypes. No. 1, Massafra (Taranto), 14.X.1992, on *Campanula versicolor*; ns. 2-3, ibidem, 27.X.1993; ns. 4-7, Castellaneta (Taranto), 14.V.1994, same host plant; ns. 8-10, Bagnoli della Rosandra (Trieste), 15.VI.1994, on *C. pyramidalis.*

part of tibiae dark brown. Siphunculi and cauda black. Nymphs brown, the youngest palest.

Alate viviparous female (described from 11 specimens). Body length 1.80-2.25 mm. Abdominal sclerifications consisting of dorsal spinal and submarginal scleroites as in the apterous morph; those on 7th tergite frequently coalesce to form a spinal bar, smaller than that always present on 8th tergite. Marginal sclerified areas are developed on 2nd-4th urites (each one including 4-7 hairs) as well as on 7th urite; the marginal scleroites of 5th urite sometimes partially coalesce, but never form a true antesiphuncular sclerite. Postsiphuncular sclerite larger than in apterae. Dorsal abdominal hairs on an average a little shorter (maximally 45-60 μ long on the 3rd tergite) but more finely produced apically than in viviparous apterae, with (spinals plus marginals) up to 20-26 on the second-fourth urites. Marginal tubercles absent. Antennae 1.10-1.30 longer than body; joint III shorter (0.58-0.90) than distal part of joint VI and bearing 27-50 secondary rhinaria; the latter are scattered along nearly its whole length (0.82-0.94) and mostly placed on outer side of the same joint. Processus terminalis 5.50-7.60 longer than base of antennal joint VI. Wings normal and hyaline. Hind tibiae 0.60-0.75 of body length. Siphunculi and cauda similar, but a little slenderer than in apterous morph. Genital plate with 2-4(5) setae on anterior half and 6-12 along the posterior margin. Other morphological features very much like the corresponding ones of the apterous viviparous morph.

Colour as in apterae, with head and thorax completely black.

TYPES. *Holotype*: apterous viviparous female no. 1 in Tab. 3 collected on *Campanula versicolor* Andrews, Massafra (Taranto), Italy, 27.X.1993, in the collection of the Institute of Agricultural Entomology, University of Catania (Italy). *Paratypes*: n. 24 apterae and n. 2 alatae, same data as holotype; n. 1 alate, same host plant and locality, 14.X.1992; n. 6 apterae same host plant, Castellaneta (Taranto), 28.X.1993; n. 43 apterae and n. 4 alatae same host plant and locality, 14.V.1994; n. 29 apterae and n. 4 alatae, *Campanula pyramidalis* L., Bagnoli della Rosandra (Trieste), Italy, 15.VI.1994. Paratypes are in the authors'collection and also deposited in the collections of: The Natural History Museum, London; Museum National d'Histoire Naturelle, Paris; Prof. O. Heie (Skive, Seminarium, Skive, Denmark); Dr. J. Holman (Institute of Entomology, Czech Academy of Sciences, Ceské-Budejovice, Czech Republic); Prof. J.M. Nieto Nafria (Departamento de Biologia, University of León, Spain).

TAXONOMY. Characteristic features of the new *Uromelan* species are: the oval-shaped and rather small body size, the few secondary rhinaria, the rather short III antennal joint, the shape of cauda with its few and long hairs.

Compared with the other three well-known European species of the same subgenus living on *Campanula* spp. (Hille Ris Lambers, 1939; Eastop, 1985), *U. (U.) minosmartellii*, resembles *U. (U.) campanulae* in general aspect, by its dorsal scleroites, the shape of the siphunculi and their strong imbrications. Nevertheless, *U. (U.) campanulae* may be easily distinguished from the new species, as both apterous and alate viviparous morphs, have: first tarsal joints with three hairs; rostrum short, only reaching the middle coxae; its apical joint not longer (0.80-1.00) than the II hind tarsus joint; more numerous secondary rhinaria on III antennal segment (15-30 in the apterae and 30-45 in the alate viviparous morphs); siphunculus subequal in length to the cauda (ratio siph./cauda 1.00-1.25); antesiphuncular sclerites frequently quite well developed.

U. (U.) nigrocampanulae (Theobald) and *U. (U.) rapunculoidis* (Börner) (the latter being similar to the former and differing mostly by the fewer number of secondary rhinaria on III ant. joint and perhaps the little shorter dorsal body setae) differ from *U. (U.) minosmartellii* at least for: their larger body size; more secondary rhinaria on III ant. joint in both apterae and alatae (respectively, 50-110 and 75-120 in *nigrocampanulae*; (18)20-45 and 45-70 in *rapunculoidis*); the very long antennal joint III (see key for its ratio with the ultimate rostral joint); the different shape (slightly curved outwards) and the lighter imbrications of the longer siphunculi (ratio siph./II hind tarsus about 7 in average in such two species, against 3-4 times in *minosmartellii*).

Therefore the known Western European species of *Uromelan* associated with Campanulaceae may be keyed as follow (both apterous and alate viviparous morphs):

1. Siphunculi 1.00-1.25 as long as cauda; last rostral joint not longer than II joint of hind tarsus; first tarsal joints with 3 hairs. On several *Campanula* species (*C. rotundifolia, C. scheuchzeri, C. rapunculus, C. trachelium, C. cespitosa*, etc.) and *Jasione montana* ..... *U. (U.) campanulae* (Kalt.)(1)
—. Siphunculi 1.50-2.35 as long as cauda; last rostral joint 1.10-1.80 of the II joint of hind tarsus; first tarsal joints usually with 5 hairs (although only 4 or 3 hairs may be occasionally present in some legs) 2
2. Third antennal joint 2.89-4.32 in apterae and 3.42-4.57 in alatae of the ultimate rostral joint. Secondary rhinaria on III antennal joint 2-18 in apterae (up to about 25 in alatoid specimens) and 27-50 in alatae. Siphunculi 0.27-0.52 mm long, usually straight and strongly imbricated;

(1) Very probably a complex of species.

their ratio with hind tarsus joint II range 2.90-4.20. Smaller aphid with oval body shape; length 1.30-2.25 mm in apterous and 1.80-2.25 mm in alate viviparae. On *Campanula versicolor* and *C. pyramidalis* (probably also on other similar rocky *Campanula* species) ..... ***U. (U.) minosmartellii*** sp. n.

—. Third antennal joint 5.00-6.60 in apterae and 5.10-7.15 in alatae longer than the ultimate rostral joint. Secondary rhinaria on antennal joint III more numerous than above. Siphunculi 0.63-1.10 mm long, slightly curved outwards and with normal imbrications; ratio siphunculous/hind tarsus joint II 5.20-7.85. Larger species with spindle-shaped body; average length 2.60-3.90 mm in apterae and 2.40-3.75 mm in alatae 3

3. Third antennal joint in apterae with 20-45 sec. rhinaria confined to its 0.40-0.70 basal part; in alatae 45-70 rhinaria are present over 0.75-1.00 of its length. On *Campanula rapunculoides* .... *U. (U.) rapunculoidis* (Börn.)

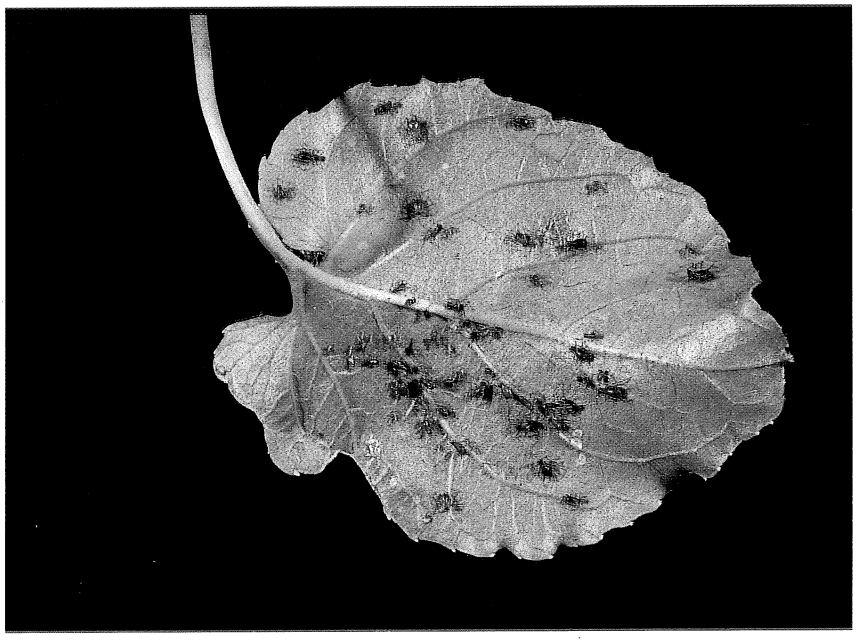
—. Third antennal joint in apterae with 50-110 sec. rhinaria nearly extending over its whole length; alatae with 75-120 sec. rhinaria. On many *Campanula* species, including *C. rapunculoides* and *C. pyramidalis* .... *U. (U.) nigrocampanulae* (Theob.)

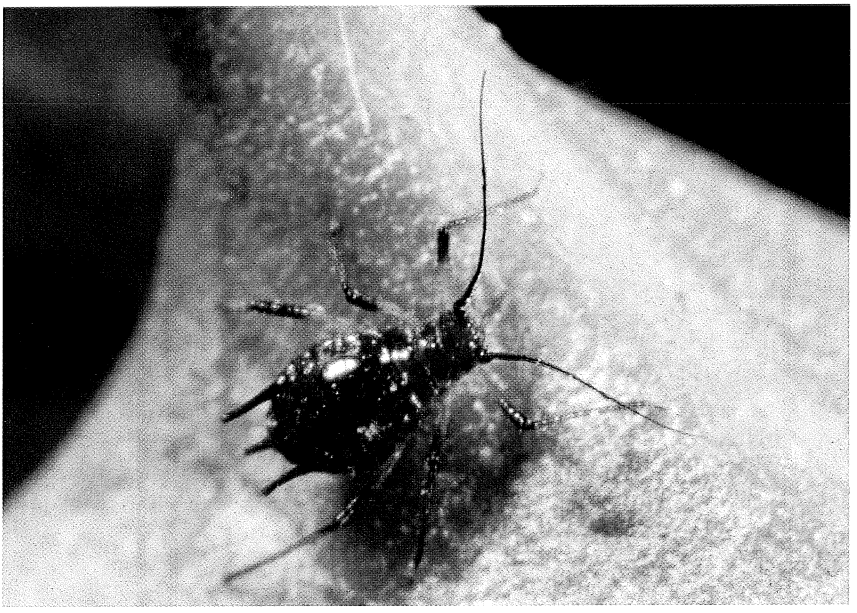
In Eastern Asia there are other two species of *Uromelan* (not incluted in the key) associated with Campanulaceae; they are *U. (U.) adenophorae* (Matsumura) and *U. (U.) adenophoricola* Holman, both living on *Adenophora* spp.. The former looks similar to *U. (U.) campanulae*, with which shares short siphunculi and a rather short last rostral joint, but has 5 setae on the first tarsal joints. The latter species is similar to *U. (U.) rapunculoidis*, from which it can be separated by the shorter last rostral joint and few other differences (Holman, 1975).

Other known species of *Uroleucon* living on Campanulaceae are *U. narzikulovi* Holman and *U. torajicola* Paik (Holman, 1974); both species belong to the subgenus *Uroleucon* s. str. and differ from *U. (U.) minosmartellii* in many respects.

Derivatio nominis. The new *Uromelan* species is named in honour of Prof. Minos Martelli, Italian aphidologist, to whom the authors express their best compliments.

ECOLOGY AND DISTRIBUTION. The first collection of *U. (U.) minosmartellii* was made from *Campanula versicolor* Andr., on which large colonies develop; subsequently the aphid was detected also on *C. pyramidalis* L.. The two *Campanula* species live on rocks and walls, having a rather narrow biogeographical distribution. The aphid appears to be, therefore, not strictly monophagous and it is not excluded that it may also live on other similar





Figs. 15-16 - 15. Colony of *Uroleucon (Uromelan) minosmartellii*, infesting a leaf of *Campanula versicolor*; 16. Aptera of the same aphid species.

Campanula species. Its distribution may be limited by the range of such host plant species. *C. versicolor* has a South-Eastern European distribution, being present from S.E. Italy to the Balkan peninsula (Tutin et al., 1976); in Italy this plant is only restricted to a few areas of the Apulia and Lucania regions (Bianco et al., 1981). *C. pyramidalis* also has a limited distribution, ranging from North-Eastern Italy to the North-Western part of the Balkan peninsula (Tutin et al., 1976; Pignatti, 1982).

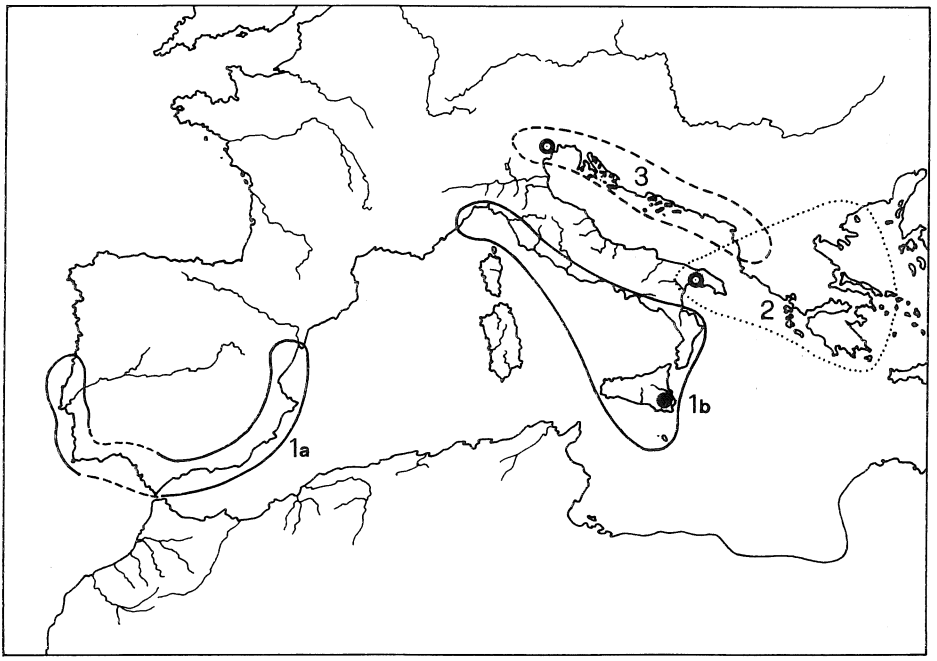


Fig. 17 - Collecting localities of *Dysaphis (Pomaphis) henrystroyani* sp.n. (●) and *Uroleucon (Uromelan) minosmartellii* sp.n. (◉). Diagramatic distribution of their host plants (1a and 1b: *Trachelium coeruleum*; 2: *Campanula versicolor*; 3: *C. pyramidalis*) derived from data given by Tutin et al. (1976).

The aphid life cycle is not yet known. Very likely it has an anholocyclic behaviour at least in the Southern territories, where no sexuales appeared (in Apulia) until the end of October, when still large colonies of viviparous morphs are present on the host plant leaves. The aphid develops on flowering stems as well as on leaves; both surfaces of the latter are colonized, but mainly the basal part and along the mid rib of the upper-side; leaf petioles may also be colonized. The aphid, as it is usual in the genus *Uroleucon*, is not attended by ants.

U. (U.) minosmartellii is the only *Uromelan* species at present known to live on *C. versicolor*, which may represent its main host plant species. On the other hand *C. pyramidalis*, also found to be infested by the new aphid, appears to be more heavily colonized (in North-Eastern Italy) by the more common European species, *U. (U.) nigrocampanulae* (Theob.).

ACKNOWLEDGMENTS

The authors express their grateful thanks to Drs. Victor F. Eastop and Roger L. Blackman for the critical comments on the manuscript for this paper and the invaluable assistance during their visit to the Natural History Museum, London.

REFERENCES

Bianco P., Castellano M.A., Piro G., Schirone B., 1981 - Note sulle Campanule rupicole italiane: III. Revisione della distribuzione geografica pugliese di *Campanula versicolor* Andrews. - Ann. Fac. Agr. Univ. Bari 32: 225-246.

Eastop V.F., 1985 - Key to the Middle Eastern species of *Uroleucon* Mordvilko (Aphididae: Homoptera). - Systematic Ent. 10: 395-404.

Hille Ris Lambers D., 1939 - Contributions to a monograph of the Aphididae of Europe - II. - Temminckia 4: 1-134.

Holman J., 1974 - Two new *Uroleucon* species (Homoptera, Aphididae) from the URSS. - Acta ent. bohemoslov. 71: 20-26.

Holman J., 1975 - Aphids of the genus *Uroleucon* from Mongolia (Homoptera, Aphididae). - Acta ent. bohemoslov. 72: 171-183.

Pignatti S., 1982 - Flora d'Italia. - Edagricole, Bologna, vol. 2: 1-732.

Stroyan H.L.G., 1957 - The British species of *Sappaphis* Matsumura. Part I - Introduction and subgenus *Sappaphis* sensu stricto. - Her Majesty's Stat. Office, London, 1-59.

Stroyan H.L.G., 1963 - The British species of *Dysaphis* Börner. Part II - The subgenus *Dysaphis* sensu stricto. - Her Majesty's Stat. Office, London, 1-119.

Stroyan H.L.G., 1966 - Notes on aphid species new to the British fauna. - Proc. R. ent. Soc. Lond. (B) 35: 111-118.

Stroyan H.L.G., 1985 - Recent developments in the taxonomic study of the genus *Dysaphis* Börner. - Proc. Int. Aphidological Symposium at Jablonna (Poland), 5-11 April 1981, Ossolineum, Warsaw: 347-391.

Tutin T.G. et al. (Eds.), 1976 - Flora Europaea. Plantaginaceae to Compositae (and Rubiaceae). - Cambridge University Press, Cambridge, vol. 4: 1-505.

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Ricevuto il 20 settembre 1994; pubblicato il 30 dicembre 1994.