

G. MINEO

New data regarding Palaearctic *Telenomus* spp. and descriptions of new taxa in Telenominae (Hymenoptera Scelionidae) (*)

Abstract - The paper deals mostly with Palaearctic Telenomini material collected all over Sicily by the author. Among this material there are some species new to Island or to Italy (*Telenomus acrobates* Giard., *T. angustatus* Thomson, *T. antennalis* Kozlov, *T. danubialis* (Szelenyi), *T. dissolcus* Kozl., *T. lopicida* Silvestri, *T. macroceps* Szabò, *T. regius* Kononova, *T. tauricus* Konon., as well as the new genera *Rachelia* n. gen., (type species *Rachelia robertae* n. sp.), and *Televiggiianus* n. gen., (type species *Televiggiianus rachelinae* n. sp.). Furthermore, a new species from Zimbabwe, *Telenomus rachelae* Mineo, is described; *Telenomus paraothus* Szabò & Mineo has also been re-defined; *Telenomus* sp., bred from *Liorhyssus hyalinus* F. (Rhopalidae), is recognized as a new parasitoid of this bug in the Palaearctic region.

Riassunto - Su alcune specie di *Telenomus* Haliday nuove per l'Italia e descrizione di due nuovi generi di Telenomini e tre nuove specie di *Telenomus*.

Sono stati studiati dei materiali di Telenomini (Scelionidae) raccolti per lo più in alcune località della Sicilia. Tra essi sono stati identificati alcune specie già note, sebbene quasi tutte nuove per l'Italia, cioè: *Telenomus acrobates* Giard., *T. angustatus* Thomson, *T. antennalis* Kozlov, *T. danubialis* (Szelenyi), *T. dissolcus* Kozl., *T. lopicida* Silvestri, *T. macroceps* Szabò, *T. regius* Kononova, *T. tauricus* Konon.; inoltre vengono proposti i seguenti due nuovi generi di Telenomini: *Rachelia* gen. n. e *Televiggiianus* gen. n., i cui genotipi sono rispettivamente, *Rachelia robertae* sp. n. e *Televiggiianus rachelinae* sp. n.; inoltre viene ridescritto *Telenomus paraothus* Szabò & Mineo. Viene descritta una nuova specie raccolta nel Zimbabwe: *Telenomus rachelae* Mineo e viene segnalata una specie di *Telenomus* nuovo parassitoide del Rhopalidae *Liorhyssus hyalinus* F. nella regione paleartica.

Key words: Scelionid wasps, new genera, new species.

INTRODUCTION

The material discussed in this paper was collected, mostly by myself, from all over Sicily, except for a batch from Zimbabwe that was taken out of alcohol and sent

(*) Research funded by M.U.R.S.T. 60%.

to the author some time ago by Dr Lubomir Masner. The holotype and allotype of the new species described here *i. e.* *Telenomus rachelae* Mineo, will be returned to the above-mentioned specialist, to be preserved in the Canadian National Collection (Ottawa); the remaining material will be kept in my collection, except for *Telenomus paraothus* Szabò & Mineo, which will be returned to the National Museum of Natural History (Budapest).

MORPHOLOGICAL TERMS AND ABBREVIATIONS

They are the same as those used by Masner (1980), Mineo & Villa (1982), Mineo (1983), Johnson (1984).

A1, A2	antennomeres 1, 2,
A1	scape
A2	pedicel
A3	1 st flagellomere
C1, C2,	clavomere 1, 2,
DCI	dorsal cephalic index (= head W/ dorsal head L)
FCI	frontal cephalic index (= head W/ frontal head L)
<i>eh</i>	eye height
<i>f.a.</i>	from above
<i>hoc</i>	hyperoccipital carina
<i>ios</i>	interorbital space
L	length
<i>ms</i>	malar space
Netrion	region side of pronotum adjacent to suture connecting tegula and fore coxa
S1, S2	sternite 1, 2
Skaphion (<i>sk</i>)	anteromedian region of mesoscutum margined posteriorly by transverse keel generally smooth, cup-like
T1, T2	tergite 1, 2,
TF	tarsal formula: number of tarsomeres per each leg of any pair of legs, counting from the fore one
TSF	tibial spur formula: number of spurs per each tibia of any pair of legs, counting from the fore one
W	width

MEASUREMENTS AND METHODS

The words length (L) and width (W) express an index that usually refers to the maximum value obtainable by measuring the interspaces of a region, or of an organ, between two established points (e.g. the *ios* is the measurement between the midpoints

of inner orbits of the eyes); with regard to T2 and subsequent tergites, their length, taken as the medial one, is measured from the front edge of the basal costae, excluding the acrotergite. The width of T1 is taken as the distance between the two apical points; the width of T2 includes the flexion of laterotergites, and this is also the widest point of the metasoma; since the position of the tergites is after T2 telescoping, the ratio L/W of the metasoma is obviously variable. All measurements were made at 40 x 20 Wild M20 stereo-microscope. The specimens, before being mounted on triangular card points, were first processed at critical point dryer. For the study using the scanning electron microscope, the specimens placed on the stubs were sputter-coated for 4 minutes with gold. Drawings of antennae, wings, and copulatory organs were made after mounting the structures on slides in Faure's liquid, and using camera lucida mounted on a microscope.

Rachelia n. gen. (Telenominae) (Figs 1-2)

DIAGNOSIS: *female*. Head and mesosoma dark brown; metasoma brown, except stripes of apical margins, both of tergites and sternites, which are dark brown; antennae and legs also brown, except radicles, tegulae, tibiae and final tarsomere - less coloured; knees, bases and apices of tibiae, mandibles and wing venations, rust-coloured; marginal and basal sector of submarginal veins of both wings brownish; fore and hind wing slightly fumose, surface under marginal stigmal on hind wing barely cloudy.

Body elongated, its total length about 3 times the maximum width (43:14); head semiglobose, transverse; frons convex with moderate depression above and beside antennal insertions, whose central keel is well defined and does not reach much beyond the mesad of depression; cheeks fan-like striated; clypeus narrow, protruding; mandibles seem to be markedly bidentate, with the teeth more or less equal; eyes with only a few sparse, extremely minute hairs (180x); lateral ocelli almost contiguous with inner orbits of eyes; vertex slightly elevated in the middle, sparsely setose; occipital carina not very strong, crenulate, complete; radicle short; antennae, if seen in dorsal aspect, apparently 12-segmented, distinctly clavate, with club more or less subcompact, 4-5 segmented.

Mesosoma slightly wider than high (13:11); netrion well developed and wide open above fore coxa; skaphion absent; notaulices weak, divergent frontally, abbreviated, with a length that is 1/3 less than mesoscutum length; scutellum markedly transverse, unarmed; dorsellum also transverse, overlapping the unarmed propodeum, which has a broad incision medially; mesopleural depression very deep; both meso- and metapleural carinae absent; acetabular carina feeble; intercoxal space much longer than fore coxae; fore wing with submarginal vein not "broken"; marginal vein not more than 1/3 the stigmal one; postmarginal vein much longer than stigmal one; fringe very short; submarginal vein in hind wing complete; length of marginal cilia less than the maximum width of plan at that point; TSF: 1, 1, 1; TF: 5,5,5.

Metasoma slender, spindle-like, with 7 visible tergites; ovopositor briefly extruded; T1 slightly humped between lateral carinae; costae, on median sector strong, dense and percurrent; T2 the longest tergite; T3 and T4, at the relative apical margin, incised.

TYPE SPECIES: *Rachelia robertae* n. sp. (described below).

INCLUDED SPECIES: *Rachelia robertae* Mineo.

DISCUSSION. Unfortunately I cannot give a complete diagnosis of this genus, since the male is unknown. Nevertheless, in my opinion, the characteristics of *Rachelia* run into Telenominae, with which it shares certain features also found in other genera of the sub-family: cheeks striate like, e.g., in *Psix* Kozlov & Lê; mesoscutum with abbreviated notaulices, also found in *Telenomus* Haliday, *Psix*, *Trissolcus* Ashmead; the apical margin of tergites, excepting T1, are incised to a greater or lesser degree, as in some species of *Telenomus* (e. g. *T. incisus* Huggert). However, the main distinctive feature for selecting *Rachelia* among Telenominae is that, when the antenna is viewed from behind, it appears 12-merous rather than 11-merous. This condition is due to a sort of second false pedicel, derived from the distal sector of the scape, and this resembles the real one, not only in shape, but also in colouration, except for its base, which though it is well pronounced, with a convenient incision at the sides, is rather wide, because it lacks an articulation. In addition, its lamella is extraordinarily deep, and modelled precisely for housing the entire pedicel during its flexions. This type of lamella, though not so deeply excavated as in *Rachelia*, can also be seen in Scelioninae, e.g. *Synoditiella* Muesebeck, *Scelio* Latreille, although in these cases it houses many antennomeres, due to their consistent development along the ventral surface of the respective scape. Apart from the afore-mentioned considerations, the morphological evidence that might best support the proposal of *Rachelia* as a new genus, refers, as previously described, to its "open" netrion, i.e. different to that on all the other genera of Telenomini, where, when developed, it is "closed" (Masner, 1979). As for the pleural characteristics used for higher classification among Scelionidae, students may also refer to the above-cited paper by Masner.

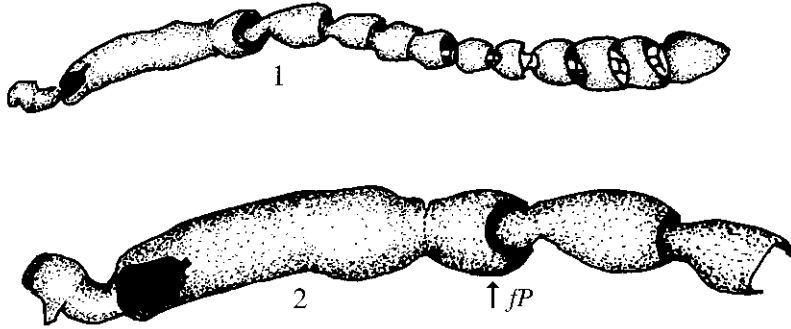
DERIVATIO NOMINIS. The gender is feminine and is named after my grand-daughter Rachele.

Rachelia robertae n. sp. (Figs 1-4)

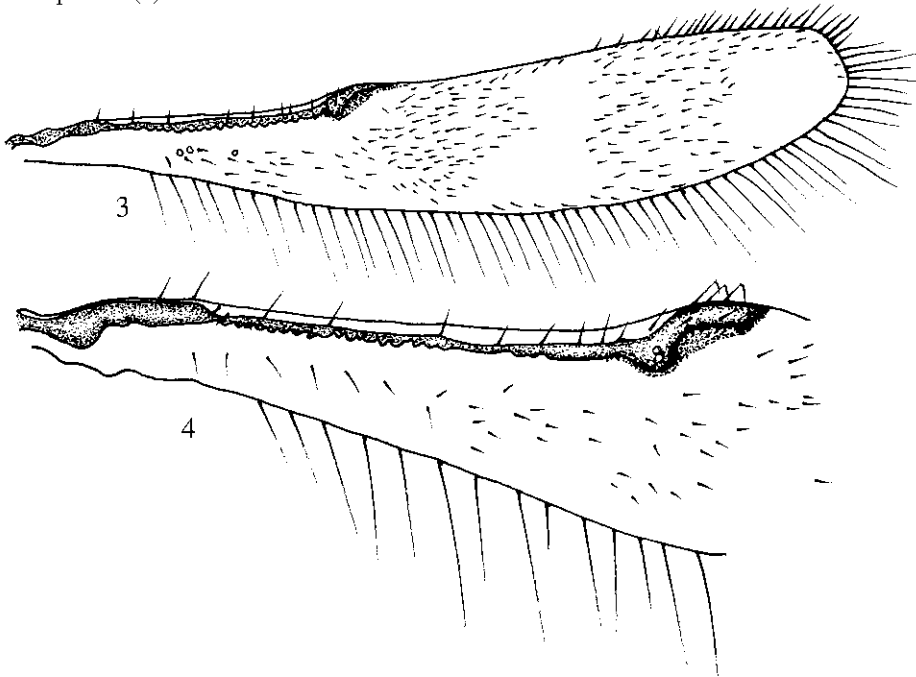
FEMALE. TL= 1.07 mm.

Head. Fa.= 14Wx5L, its maximum height= 11.2; ios= 6.8; eh= 8x4.8; ms= 4.6; vertex very slightly vaulted in the middle, without hyperoccipital carina (*hoc*); ocelli in a low triangle; surface overall coriaceous, with minute scattered setae; mandibles rather large, apparently bidentate; temples much less developed than genae; temporal-genal sulcus absent; antenna see Figs1-2.

Mesosoma. Fa. 14Lx13W; "skaphion" (*sensu* Kozlov & Lê, 1976) absent; scutellum 8Wx2L; dorsellum large but short, longer medially, directed upwards; meso-

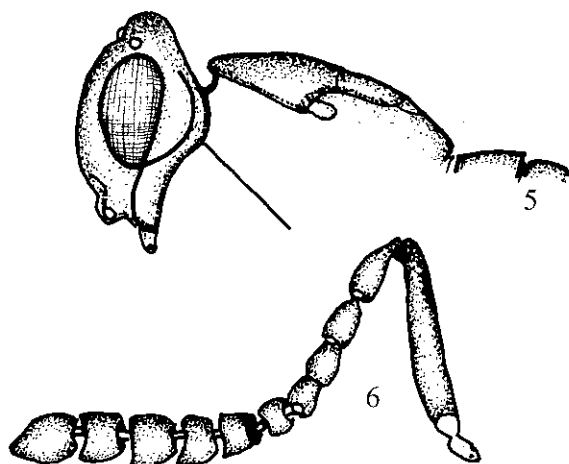


Figs 1-2 - *Rachelia robertae* n. sp. (Holotype ♀). Antenna (1); magnification of A1-A3; fp= false pedicel (2).



Figs 3-4 - *Rachelia robertae* n. sp. (Holotype ♀). Hind-wing and (3); detail at higher magnification (4).

scutum coriaceous with short sparse setae; scutellum smooth with scattered setae, its submarginal foveae very minute; margin of dorsellum scratched; fore wing just surpassing tip of metasoma, amygdaliform; length to width ratio of fringe as: 35:12:2.5; length ratio of marginal, postmarginal and stigmal vein as 2:9:3.5; hind wing see Figs 3-4.



Figs 5-6 - *Televiggianus rachelinae* n. sp. (Holotype ♀). Sketch of the head and of mesosoma in lateral view (5); *Telenomus acrobates* (♀): antenna (6).

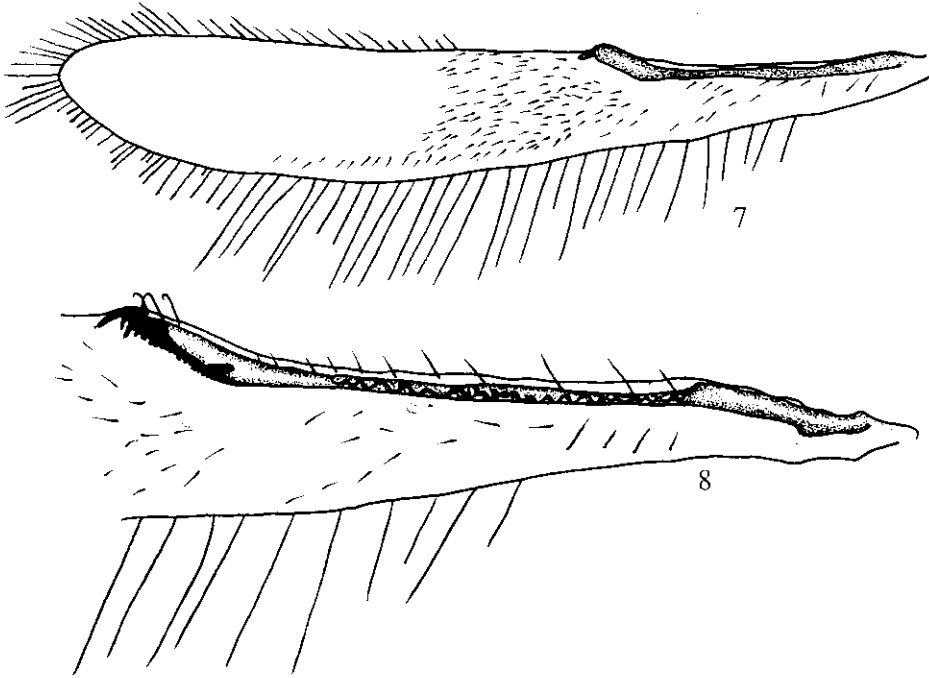
Metasoma. F.a. 12wx24L; T1 8wx2L, T2 12wx11L, T3 10.5wx3L; the costae of T2 not longer than those of T1, slightly wrinkled over a little less than $\frac{1}{2}$ of its length; no other sculpture is present in any of the tergites.

MATERIAL EXAMINED: 1 ♀ (Castrofilippo, countryside "Pietrotiso" on white trap, baited with "grapamone" located in vineyard, 27-29/VI/1978); right antenna and hind wing, tarsomeres of right mid legs on slide; antennomeres after 5th of left antenna and tarsomeres after 1st of left hind legs missing.

DERIVATIO NOMINIS. The species is named after my daughter Roberta.

Televiggianus n. gen. (Telenominae) (Figs 7-8)

DIAGNOSIS: *female* and *male*. Body moderately depressed, markedly elongated (in female); vertex from strongly arched (in female) to vaulted (in male); frons slightly convex, with antennal scrobe reduced to two abbreviated and shallow declivities just above antennal insertions, unsculptured, smooth and shiny; eyes bare (120 x), not small and, therefore, the malar space is abbreviated; subocular sulcus not straight, not directed towards the insertion of the bidentate mandibles; temporal-genal sulcus present but incomplete; posterior ocelli not angled with inner orbits, from which they are at a distance of less than their own diameter; no hyperoccipital carina, no occipital carina; antenna 11- and 12- segmented, on female and on male respectively; A2 short, A3-A12 longer than wide, slightly flattened on male; on female A2 barely longer than each of subsequent segments of funicle; clava 5- segmented, rather compact; A8-A11 slightly squashed, last clavomere with pointed apex.



Figs 7-8 - *Televiggianus rachelinae* n. sp. (Allotype ♂). Hind wing (7) and detail of the same at higher magnification (8).

Mesoscutum depressed; on its anteromedian declivous portion it has a sort of "skaphion" (*sensu* Kozlov & Lê, 1976), more developed and delimited on the male, consisting of a rather wide, concave, almost semi-circular, surface, smooth and shiny, the anterior margin of which, close to the posterior one of the pronotum, appears raised, as if it were carinate, on the male; scutellum also depressed, smooth and shiny; dorsellum enlarged laterally, also smooth and shiny; fore-wing abundantly surpassing tip of metasoma; marginalis length more or less that of stigmal length, whereas post-marginalis several times longer than stigmal vein; longest marginal cilia several times the maximum width of plan at that point; hind-wing narrow, with complete submarginal vein and with longest fringe a little less than the maximum width of the plan at that point; TSF= 1-1-1; TF= 5-5-5; metapleural carina short, while mesopleural carina and episternal foveolae absent.

Metasoma longer than wide, flat, lustrous, almost glabrous; T1 moderately humped throughout the whole of its width; T2 the longest, with apical margin distinctly bilobate, due to an incision that is deeper on female; in this sex T3, T4 and T5 are also strongly bilobate on the relative hind margin.

TYPE SPECIES: *Televiggianus rachelinae* n. sp. (described below).

INCLUDED SPECIES: *Televiggianus rachelinae* Mineo, *Televiggianus incisus* (from *Telenomus incisus*) (Huggert) n. comb.

DISCUSSION. *Televiggianus* n. gen. is unusually rich in peculiar characteristics for a Telenomine. In fact, as previously described, it combines certain features that are already known in the subfamily, such as: a) a groove, which appears deeper on the part cutting across the gena, becoming less so over the rest, and which I have called "temporal-genal sulcus". A similar feature had already been noticed on *Telenomus nysivorus* (= *ovivorus* Ashmead) Huggert, on *T. sulculus* Johnson, on *T. stenoceps* Szabò and on *Televiggianus incisus* to which I add *T. antennalis* Kozlov and *T. regius* Kononova; b) a sort of "skaphion" (*sensu* Kozlov & Lê, 1976; Lê, 1982) present in the anteromedian, a declivous region of the mesoscutum, and which was, up to then, only known on *Psix abnormis* Kozlov & Lê; a subtly distinctive metasoma, *i.e.* the bilobate, apical margin of tergites from T2 to T5: among *Telenomus* Hal. there are only a few, rare cases where the shape of the apical tergites distinguishes itself from the uniformity common to nearly all genera of Telenominae, with the exception of *Eumicrosoma* Gahan, *Nirupama* Nixon, and a few other species. I would here like to mention *Telenomus gowdei* Crawford, whose characteristics comprise the conspicuously emarginated hind margin of T2, whereas T3, T4 and T5 each have a short lateral incision, as well as *T. promachivorus* (Gahan), where only the apical half of T2 is somewhat swollen; then there is *T. arcanus* Kozlov & Kononova, where T2-T5 are also slightly swollen at the same point, and also *T. paraothus* Szabò & Mineo. Owing some of the previously mentioned morphological characteristics *Televiggianus* could be incorporated within a species-group of *Telenomus* Hal., as had already happened for *Televiggianus incisus*. However, I believe that *Televiggianus* may be proposed as a new genus of Telenomini, mainly because of the type of "open" netrion, and that, apart from *Rachelia* n. gen. (see above), it is different from other genera where the netrion is "closed". With regard to the importance of pleural morphology, also as regards the higher classification of Scelionidae, see the previously-mentioned paper by Masner (1979).

DERIVATIO NOMINIS. The name *viggianus* is masculine, and is in honour of prof. Gennaro Viggiani, Dipartimento di Entomologia e Zoologia agraria Portici (Naples).

Televiggianus rachelinae n. sp. (Figs 5,7-8)

FEMALE. Head and mesosoma blackish; mandible fire-coloured, except brownish tip of teeth; metasoma dark brown; legs brown, excluding 1st- 3rd tarsomeres, bases and apices, both of femora and tibiae, rust-coloured; tegulae light brown; wing venations brownish, whereas plans clear-water coloured. TL= 1.5 mm; DCI= 2.8; FCI= 1.64; frons w/eye height= 0.83; W/L T1= 3.25; L/W T2= 1.1; L/W metasoma= 2.44.

Head. Vertex vaulted and falling roundly into occiput, and all over the latter, including the space extending from behind the anterior ocellus as far as a point above the foramen, with umbelicate punctulae randomly distributed; the occipital carina is

then absent; posterior ocelli very close to inner orbits; surface around anterior ocellus barely depressed, and with no frontal pit; interocellar space has coriaceous sculpturing, with extremely minute elements, vaguely raised; frons beside antennal insertions depressed, bulging slightly at sides, with respect to the level of inner orbits, which are unsculptured, smooth and shiny; no sculpturing band along inner orbits, where 4-6 setigerous punctulae may be seen at regular distances from each other, and with the last one located at mid-point of the orbit; on the remaining surface of the frons scattered setigerous punctulae can be seen, the ocellar setae of which are distributed as follows: 2-3 on each side of the anterior ocellus, and the other 4-5 below it; frontal depression very shallow and short, only extending as far as the close surface above, and at the sides of insertions of the antennae; from the beginning of the malar sulcus an upwardly directed oblique sulcus passing across the gena, following a curved upward path towards the temple (see Fig. 5); the small area of temple above this sulcus is strigose sculptured; hyperoccipital carina, as well as the occipital one, absent; mandibles with extremely pointed teeth, bidentate and with longer inner teeth; radicle and scape curved; all antennomeres longer than wide; L A10 barely less than L A11 (1.8:2.2); L A10 \pm L A9 > L A8 (1.8:1.3); L A2 > L A3; the intermediate clavomere (between funicle and clava) about $\frac{1}{2}$ the length of C2, almost square.

Mesosoma. Mesoscutum on posterior half flattened, covered by umbelicate setae, though not densely or uniformly distributed, coriaceous sculpturing, whose polygonal elements appear more raised on anteromesad portion; its antero-declivous region has been transformed into a rather wide, concave, polished and shiny area, the anterior margin of which borders the hind margin of the pronotum; scutellum flattened in such a way that the surface is under the level of the apical border of the mesoscutum; along its hind margin there is a row of very minute and dense setigerous punctulae; dorsellum more or less on the same level as the posterior rim of scutellum, also smooth and shiny, expanding laterally, but not overlapping the propodeum medially; intercoxal space markedly subequal to the length of fore coxa; netrion open, smooth and shiny; metapleural carina very abbreviated, while the mesopleural one, as well as the episternal foveolae, absent; fore-wing abundantly surpassing tip of metasoma; longest marginal cilia not more than $\frac{1}{4}$ its greatest width at that point; the greatest width of hind-wing a little more than the fringe at that point; marginalis long; postmarginalis - the longest vein, several times longer than stigmalis.

Metasoma. Lustrous; T1 without costae or wrinkles, slightly humped throughout its width; T2 with extremely abbreviated costae and with apical margin distinctly bilobate, due to a very deep incision; its length more than that of the remaining tergites together, and thus, greater than its own width; T2-T5 also with relative apical margin deeply incised at meson, but only T2 uniform posterolaterally; 4th-6th tergite crossed each on its own relative apical sector by extremely fine and dense, percurrent striations.

MALE. TL= 0.825 mm. In colouration of body and appendages, the same as the female, and also, similar, in many other respects, except for sexual characteristics, to the shape of "skaphion", as well as in both the progression and development of the temporal-

genal sulcus originating from the malar one; the "skaphion" is concave, circular in shape, cup-like, only curving near the apex; antennomeres A3-A12 slightly squashed, LA1 not more than LA3-A5 together; LA2<1.4 times LA3; LA3<LA4 but a little wider; L/W A6=L/W A7-10; LA11<LA10; A12 longest of A2ÆA11, slightly tapered. MATERIAL EXAMINED: Female holotype (Sicily, Bagheria (PA) "Bellacera" 15/07/79); 1 ♂ allotype (Sicily, Bagheria (PA) "Bellacera" 15/07/79); 1 ♂ paratype (18/08/79), other data as before, metasoma lost; the 3 specimens were collected by sweeping net across grass, through the "Quarara" stream valley, crossing *Citrus lemon* orchards. The allotype is preserved in Faure's liquid in a concave glass covered by a glass lid. HOST AND BIOLOGY. Not known.

REMARKS. *Televiggianus rachelinae* runs into the same species group as *Televiggianus incisus*, the type material of which I was unable to examine. Since it is easily recognizable from the original description, I think that the main features distinguishing Huggert's species from *T. rachelinae* are the absence of coriaceous sculpturing and the sort of "skaphion" on the mesoscutum; both features are absent in the former species.

DERIVATIO NOMINIS. The species is named after my grand-daughter Rachele.

Telenomus acrobates Giard. (Fig. 6)

Telenomus acrobates Giard 1859. Bull. Soc. ent. Fr., 64: 77.

Telenomus acrobates, Kieffer 1912 in: Andrè, Spec. Hym. Eur, 11:25.

Phanurus acrobates: Kieffer 1926, Das Tierreich, 48: 52, 53.

Telenomus acrobates, Kozlov, 1967. Ent. Obzr., 46: 375.

MATERIAL EXAMINED: 3 ♀♀ (Sicilia, Palermo, 26-9-86, ex egg cluster probably belonging to *Chrysopa flava* Scop.; 3 ♀♀ ex egg cluster of *Chrysopa* sp. laid on *Citrus lemon* infested by *Aleurothrixus floccosus*, Trapani, XI-1984; 1 ♀ (All. Antibes, Dic. 12/9/78, 237 - 3 - Pralavorio).

REMARKS. Johnson & Bin (1982) when dealing with *Telenomus chrysopae* Ashm. Considered *T. acrobates* as probably synonymous with the former species. By comparing the Sicilian material with that obtained from the Antibes, the only difference observed is the colouration of the body in the French specimen, which is brownish all over; nevertheless, the latter is also in line with the Sicilian specimens, as regards the relative proportions of the antennomeres (see Fig. 6), which are different from those illustrated by the afore-mentioned authors (see Fig. II, 1 p. 194), but are also in accordance with those figuring in the paper by Kozlov & Kononova (1983). Because of these observations I now prefer to separate the Sicilian specimens from *T. chrysopae*. It may be of interest to notice that the egg chorions of the host, from which the Sicilian Scelionid wasps emerged, are the same as those illustrated for *T. chrysopae*, by Johnson & Bin (*l.c.*).

Telenomus angustatus (Thomson)

Phanurus angustatus Thomson 1860. Öfvers.. K. Vetén. Förh., 17: 172-173.

Telenomus tabani Mayr 1879. Verh. Zool. Bot. Ges. Wien, 29:

Telenomus praetabani Szabò 1978. Folia entomol. hung., 31: 232.

MATERIAL EXAMINED: 15 ♂♂ /66 ♀♀ ("Torretta" river – countryside "Torretta" Bolognetta (PA)., VII – VIII/1979 ex (?) Tabanid egg batches laid on leaves of *Digitaria* sp.

BIOLOGY. Before and after collection, the egg-shells from which the above-mentioned adults had emerged, all had meconium at the base of the relative chorion, and a rather large irregular hole emerging at the opposite pole, almost always a little way away from it and to one side. *T. angustatus*, was already known as a parasite of Tabanid eggs (Huggert, 1983).

REMARKS. Our specimens were identified following the description in the previously mentioned paper by Huggert (1983). The findings agrees with those of this author, also in the colouration of the males, all xanthic and with reduced basitarsus. *T. angustatus* had never been previously recorded in Sicily.

Telenomus antennalis (Kozlov) (Figs 9-16, 29)

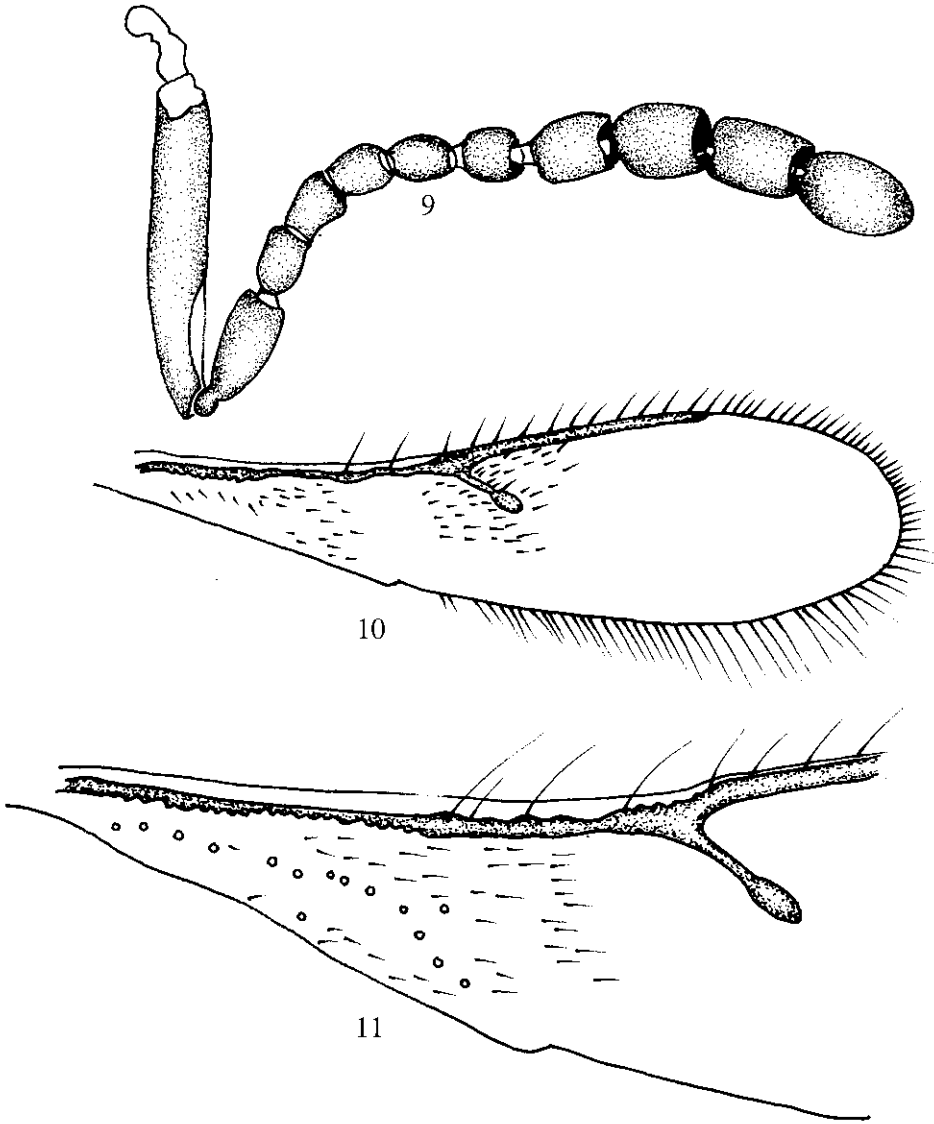
Platytelenomus antennalis Kozlov 1973. In: Kononova S.V. Ent. Obzr., 52: 662.

MATERIAL EXAMINED: 5 (ex eggs *Oxycarenum hyalipennis* Costa infesting kenaf I/X/1993 – Palermo); 3 ♀♀ (Sclafani Bagni (PA), countryside "Fontana Murata". Summer 1977); 2 ♀♀/4 ♂♂ (Bagheria (PA), countryside "Bellacera", 15-20/VII/79); 3 ♀♀/1 ♂♂ (18/VIII/79) other data as before; 2 ♀♀ (Naro (AG), countryside "Ciccobuglio", white trap baited with "grapamone" located in vineyard– VI-VII/1978).

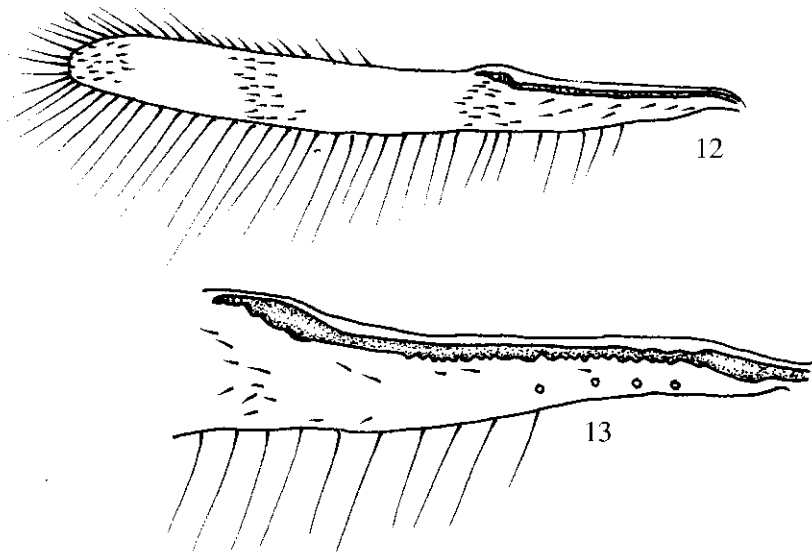
HOSTS. The original description was previously used for specimens bred from *Kleidocerys resedae* Panz.

REMARKS. All the specimens of both sexes have the same, previously-mentioned genal-temporal sulcus, rising from the malar sulcus and extending dorsally, as on *Telenomus sulculus* Johnson, on *Telenomus nysivorus* Huggert (= *ovivorus* Ashmead 1893, nec Rondani 1870), on *Telenomus stenoceps* Szabò (according to Huggert, 1983), and on *Televiggianus incisus*. This morphological feature was not mentioned for *T. antennalis*, either in the original description or in the paper⁽¹⁾ by Kozlov and Kononova (1983). The setal field on S2, as on *Telenomus regius* (see later) is very peculiar; in fact, on each side it is made up of 3 setae and a coriaceous sculpturing, with very few incomplete, elongated and irregular polygons; these connect the area around the setae with the hind reinforcement sector, progressing on to the fore-margin of the sternite (see Fig. 4). This species was identified by Dr S. V. Kononova.

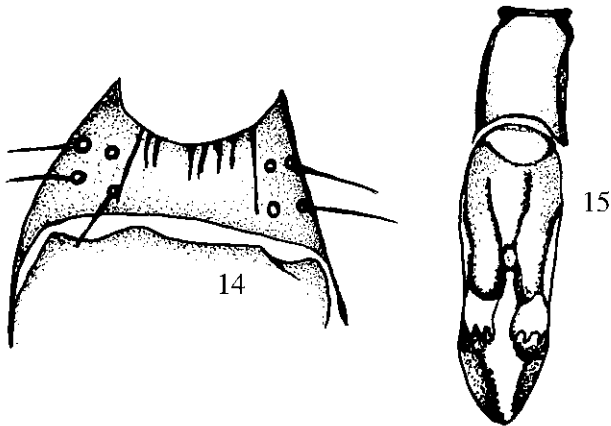
(1) Such a sulcus is also present on *Telenomus depressigaster* Szabò & Mineo.



Figs 9-11 - *Telenomus antennalis* (♀). Antenna (9); fore wing (10); detail of the same at higher magnification (11).



Figs 12-13 - *Telenomus antennalis* (♀). Hind wing (12); detail of the same at higher magnification (13).



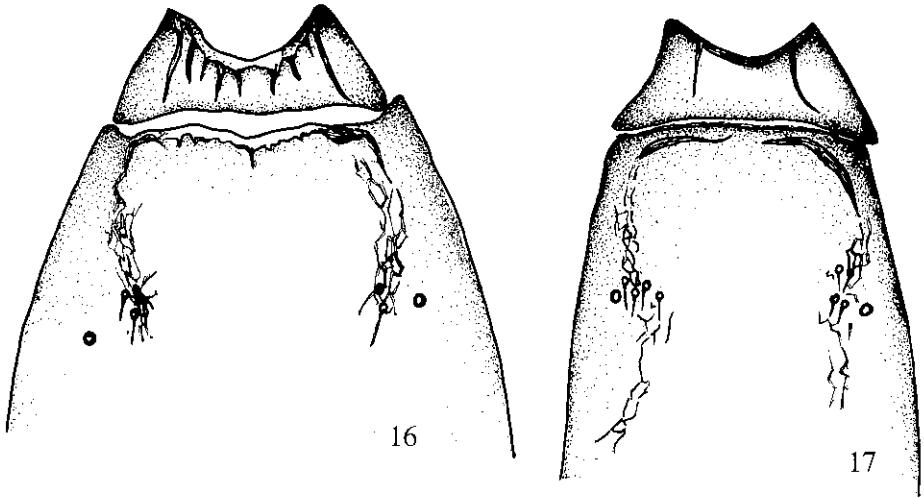
Figs 14-15 - *Telenomus antennalis* (♂). T1 (14); copulatory organ (15).

Telenomus danubialis (Szelenyi)

Platytenomus danubialis Szelenyi 1939. Annl. hist. nat. Mus. natn. hung. 32:121.

Platytenomus unilineatus Szabò 1975. Folia ent. hung. 28(1): 178.

Telenomus danubialis: Johnson 1988. Proc. ent. Soc. Wash. 90 (2).



Figs 16-17 - S1 and S2 (partim), respectively, *Telenomus antennalis* (♀) (16) and of *Telenomus regius* (♀) (17); note the different "setal field" (density both of setae and typology of coriaceous sculpturing).

MATERIAL EXAMINED: holotype in Budapest; more 4 ♀♀ (Madonie mountains, "bosco Pomieri" - sweeping net on dry grass, - 29/VII - 5/VIII / 1979).

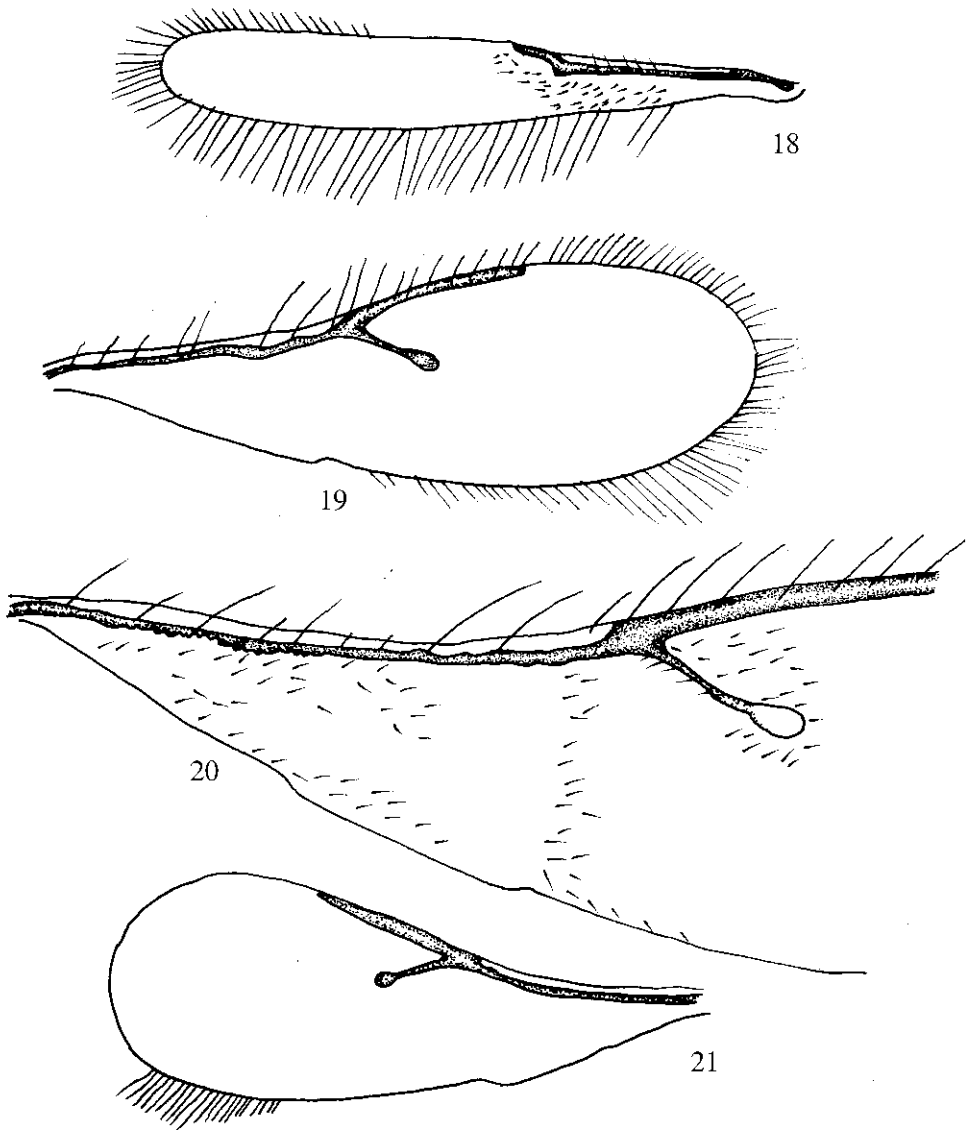
REMARKS. Johnson (1988) proposed *Platytenomus* as a synonym for *Telenomus* Hal., and it is interesting to note that he claims that this genotype (i.e. *Platytenomus planus* Dodd) belongs to the *floridanus* group, rather than the species group in which he includes *Telenomus busseolae* Gahan. Furthermore, the species of *floridanus*- are parasites on the eggs of Lygaeids, while *T. busseolae* parasitizes those of various moths. Moreover, from papers by Kozlov & Kononova (1983) and by Fergusson (1983), it is evident that the species of *Telenomus* described under *Platytenomus* belong in different species groups, and it might be necessary to divide them up in the near future. With regard to *T. danubialis* it had already been observed in northern Italy (Fergusson, *l.c.*), while it is the first recorded sighting for Sicily.

***Telenomus dissolcus* Kozlov (Figs 30-34, 36, 40-41)**

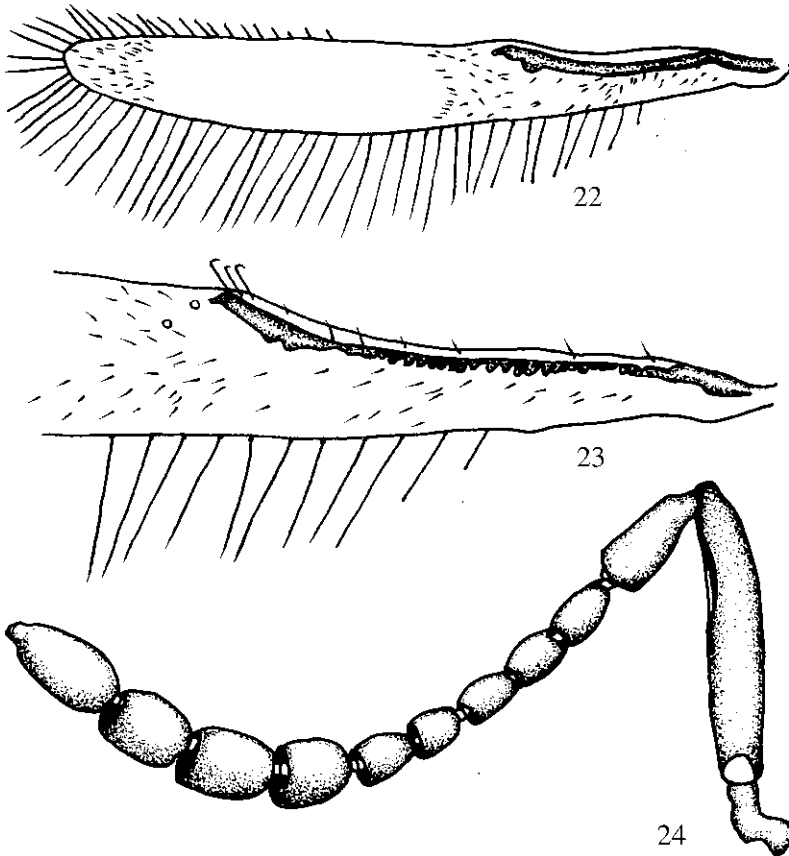
Telenomus dissolcus Kozlov 1967. Ent. Obzr., 46:363.

MATERIAL EXAMINED: 10 ♂♂/2 ♀♀ (Balestrate "Calatubo" VII/1981)

MALE (nov.). Head and thorax blackish, metasoma brown; antennae brown, as well as tegulae; eyes clear grey; wing venations pale brown; legs rust-coloured, except brown coxae and mid portions of femora, which are brownish; mandibles reddish; wing plans

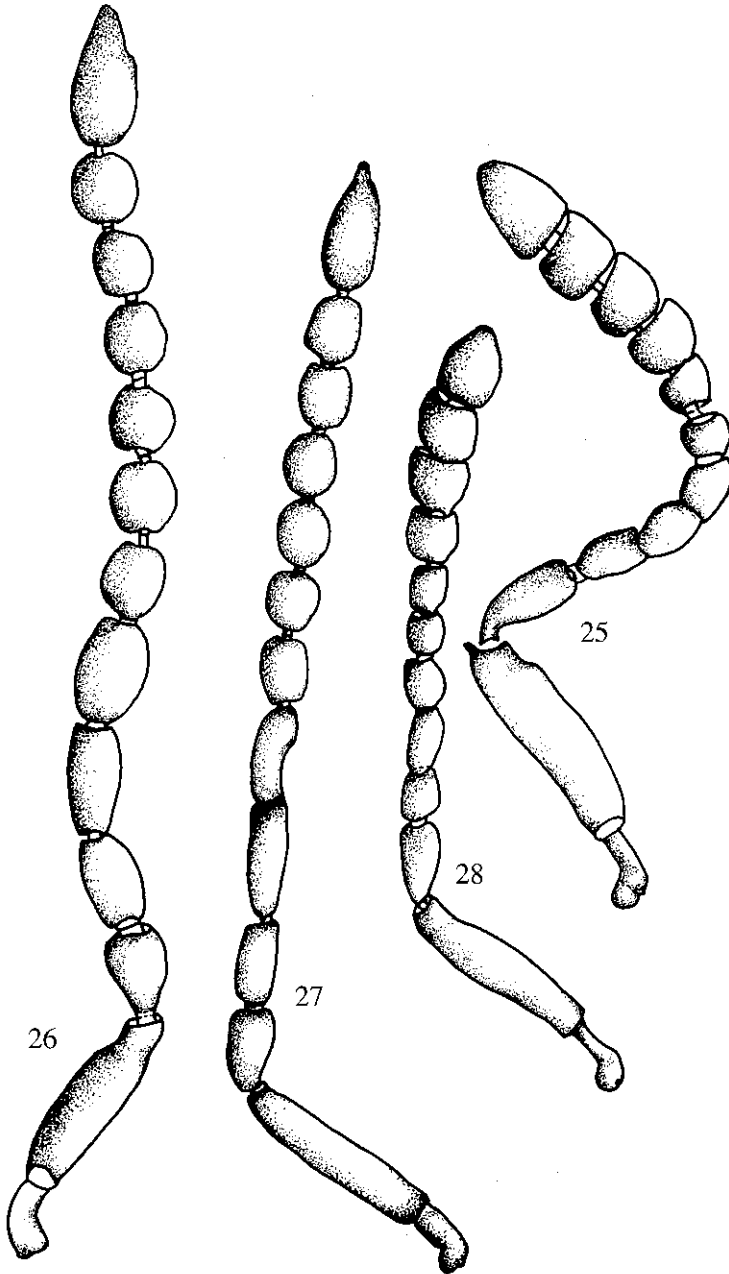


Figs 18-21 - *Telenomus rachelae* n. sp (♀). Hind-wing (18); fore-wing (19); detail of the same at higher magnification (20). *Telenomus laricis* (♂). Fore-wing (21).

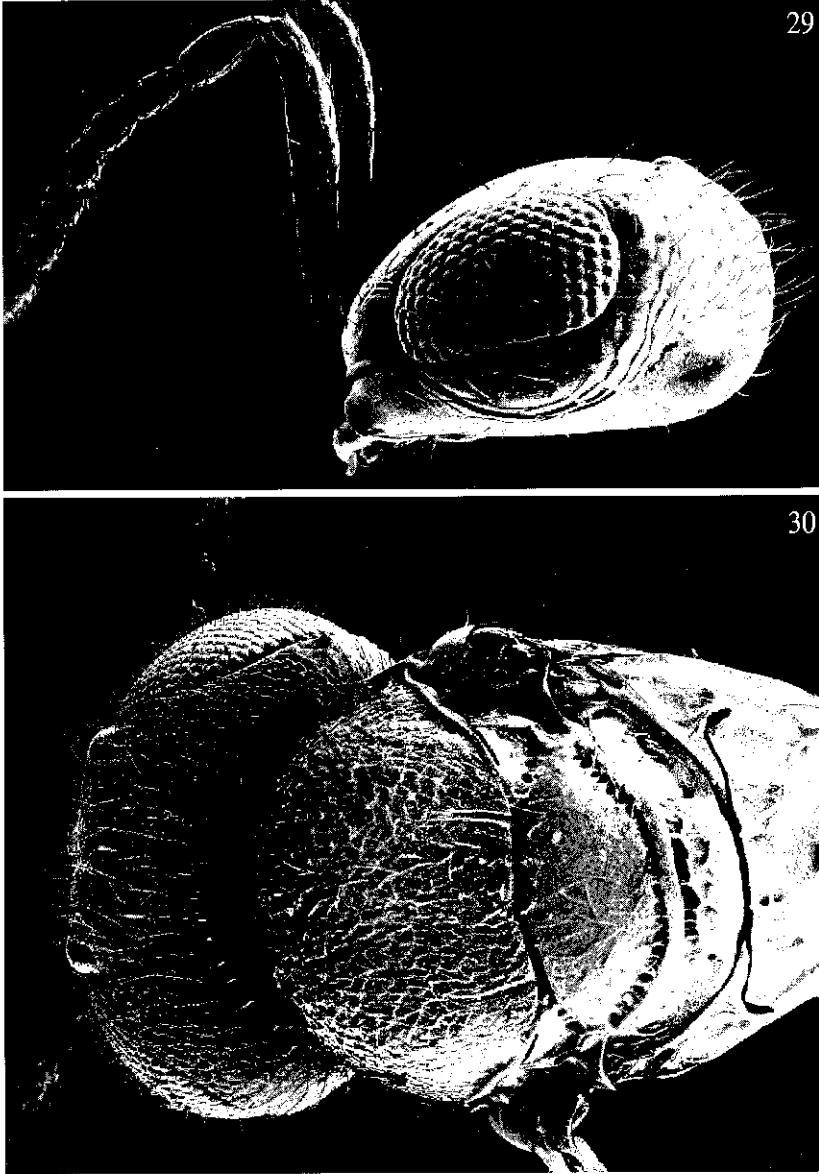


Figs 22-24 - *Telenomus regius* (♀). Hind wing (22); detail of the same at higher magnification (23); antenna (24).

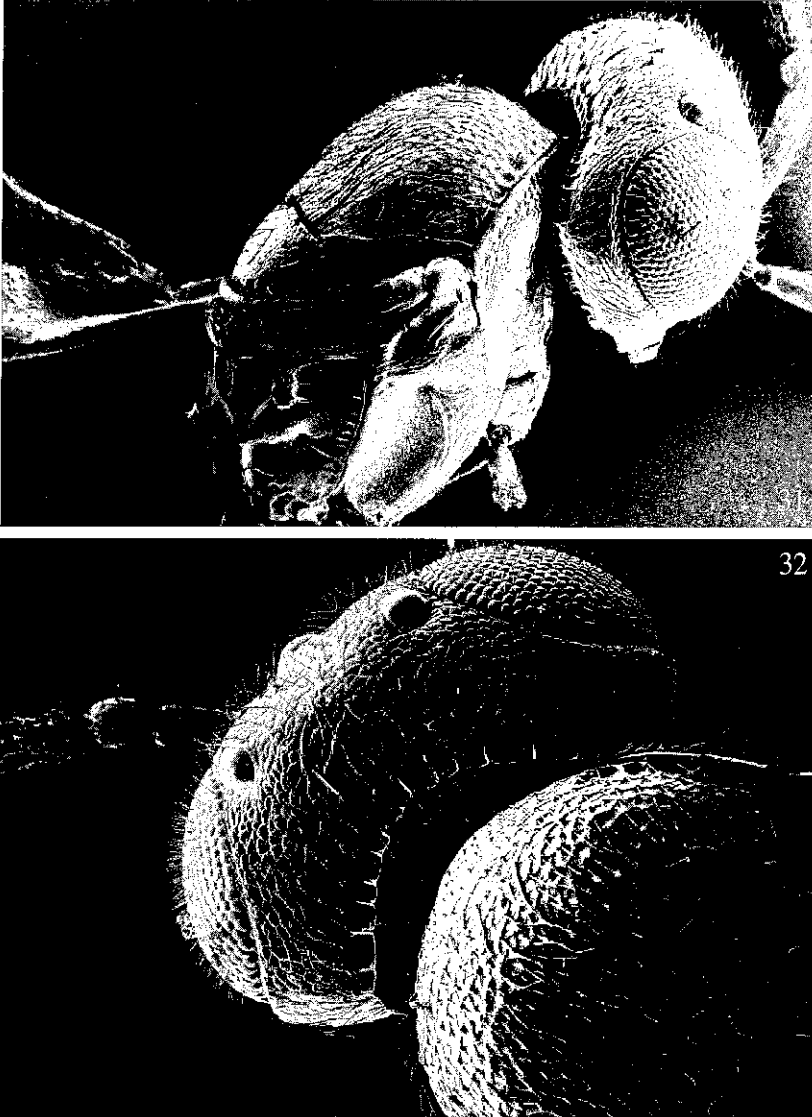
not quite clear due to extremely dense and short vestiture. Occipital carina crenulated and complete medially; from the crenulae some non-uniformly short, and extremely pointed, elements develop on the occiput; in some specimens (also in one female) they may also be almost percurrent. Lscape \pm L A2+A3; A3 very short, not more than $1/3$ L A3, globose; A3 stouter than A1, its length a little less than A4, the latter longer than all other subsequent antennomeres; L A6 \pm L A7; L A8 = L A9 = L A10 > L A11; A 12 \pm L A3; the diameter at each antennomer from A3 to A12, slightly decreases, so that A12 is more slender. Mesoscutum depressed; metapleural carina and



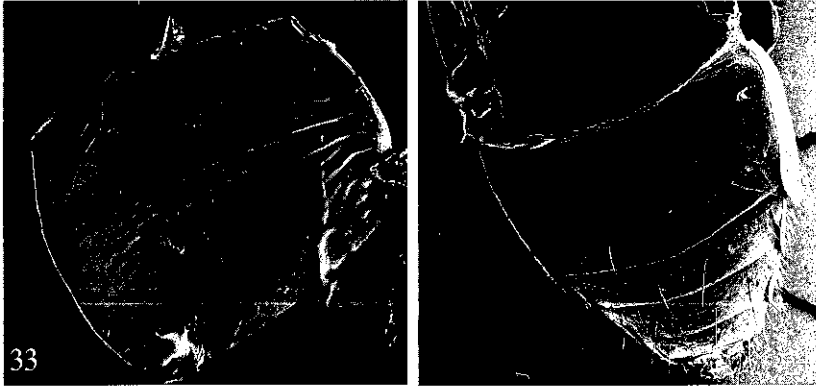
Figs 25-28 - *Telenomus rachelae* n. sp.. Female (25). Male antenna (26). *T. laricis*: male (27); female antenna (28) both from type material; redrawn from Huggert, 1983.



Figs 29-30 - *Telenomus antennalis* (δ). Head in lateral view (x 637); note the course of temporal-genal sulcus (29); *Telenomus dissolcus* (φ). Head and mesosoma in dorsal view (30) (x 334).



Figs 31-32 - *Telenomus dissolcus* (δ). Head and mesosoma in dorso-lateral view (31) (x 318); detail of occiput in dorsal view to show the reinforcements rising from the crenulated occipital carina (32) (x 447).



Figs 33-34 - *Telenomus dissolcus* (♀). Sculpturing of T2 (33) (x 444); relative sculptures on S3-S6 (34) (x 444).

episternal foveolae absent; dorsellum punctate, reticulated, not overlapping propodeum medially; 1 pair and 2 pairs of sublateral and lateral setae, respectively, are seen on T1; T3-T6 very slightly alutaceous.

The remaining features as in the female, except for sexual characteristics.

Length 1.5 mm ($\bar{x}=1.42$) (n=8).

HOST. In a previous paper (1978) I described *Telenomus viggiani* Mineo, bred from *Rhinocoris costae* Picco. This species is closely related, in many respects, both to *T. dissolcus* and *T. tauricus* Kononova (see later); the main distinguishing feature is the absence of notaulices. I believe that the species included by Kozlov & Kononova (1983) in the *dissolcus*- group, could, in the natural state, parasitize the same egg host as *T. viggiani*, i.e. Reduviidae, or similar ones.

REMARKS. With regard to distribution *T. dissolcus* is recorded for the first time in Italy.

Telenomus lopicida Silvestri

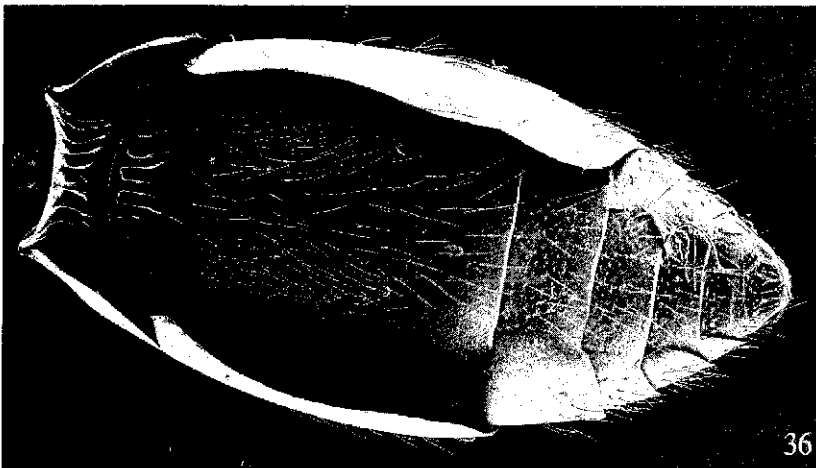
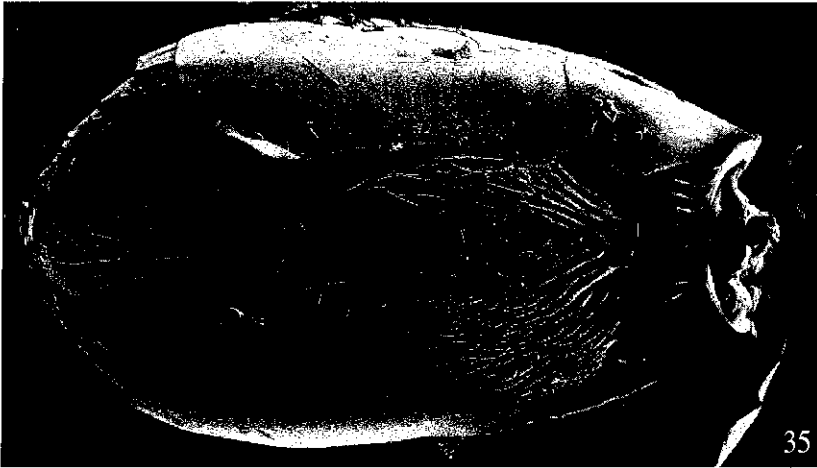
Telenomus lopicida Silvestri 1932. Livre du Centenaire, Soc. ent. France : 562.

MATERIAL EXAMINED: 1 ♀ (Madonie – Albergo Pomieri; bosco – nord- 13-IX-1978); 1 ♀ (Sicilia – Villafranca Sicula (AG)- 29-VI-78; type material kept at Department of Agricultural Entomologic and Zoology of Portici (Napoli).

HOSTS AND BIOLOGY. *T. lopicida* develops on some Miridae like *Lopus lineolatus* (Brullè) and *Calocoris trivialis* (Costa) (Mineo & Sinacori, 1978). The biological aspects have been studied by both Silvestri (*l.c.*) and Mineo & Sinacori (*l.c.*).

Telenomus macroceps Szabò

Telenomus macroceps Szabò 1957. Folia ent. Hung., n.s. 10(12):259.

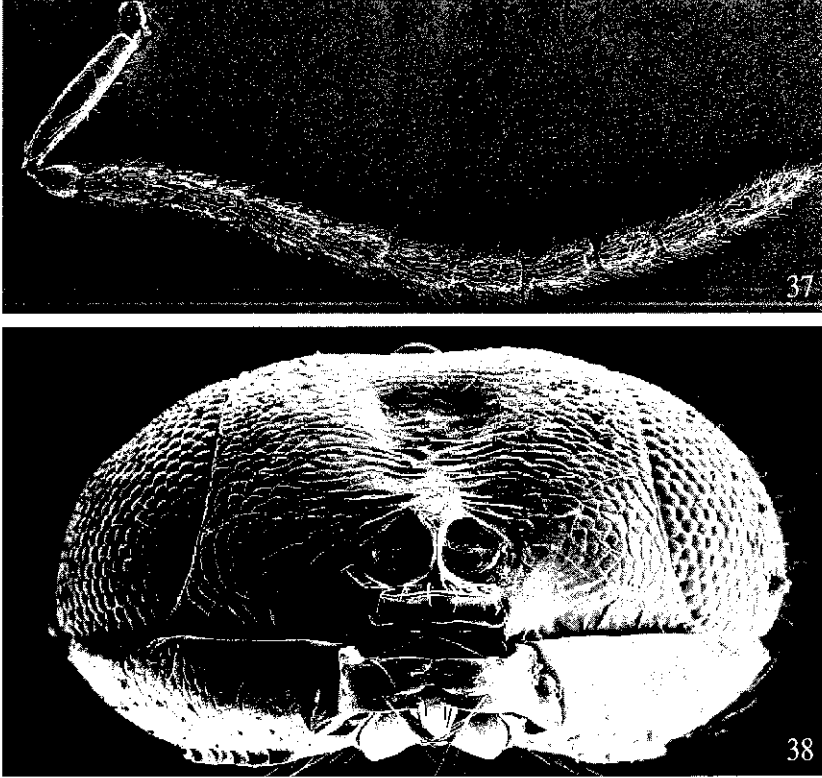


Figs 35-36 - Metasoma of *Telenomus tauricus* (35) (x 340) and of *Telenomus dissolcus* (36) (x 377), both in ventral view: note the disposition of setae and sculpture on S2 forming the "setal field" (*sensu* Johnson and Masner, 1985).

MATERIAL EXAMINED: the holotype and: 1 ♀ (Balestrate "Calatubo" VII/1981), 1 ♀ (X/19881), other data as before; 2 ♀ ♀ (Ustica, 17/6, 2/7/1981).

HOST. Not known.

REMARKS. This is the first record for Italy.



Figs 37-38 - *Telenomus tauricus* (δ). Antenna (37) (x 287); head in front-dorsal view (38) (x 526).

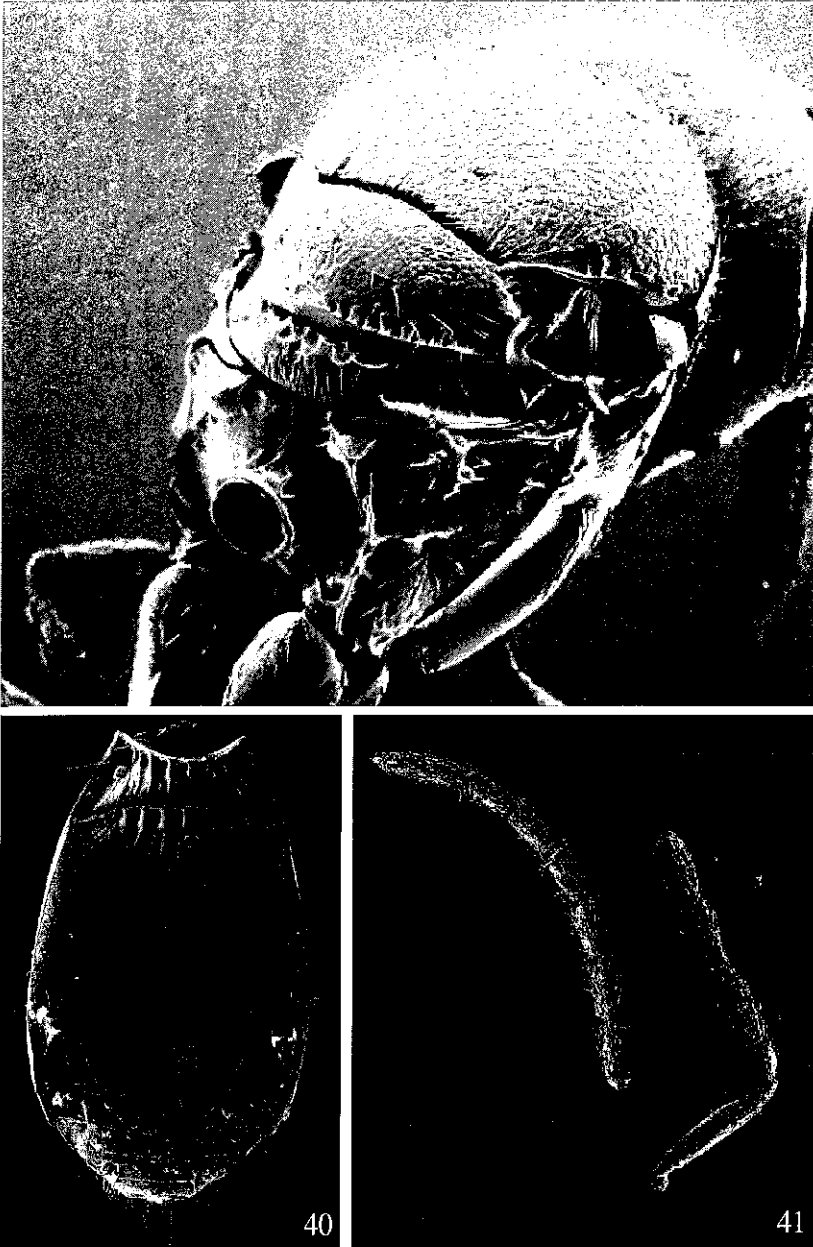
Telenomus paraothus Szabo & Mineo

Telenomus paraothus Szabo & Mineo 1978. Dunantuli tern. Tud. Sor., 1: 148, 150.

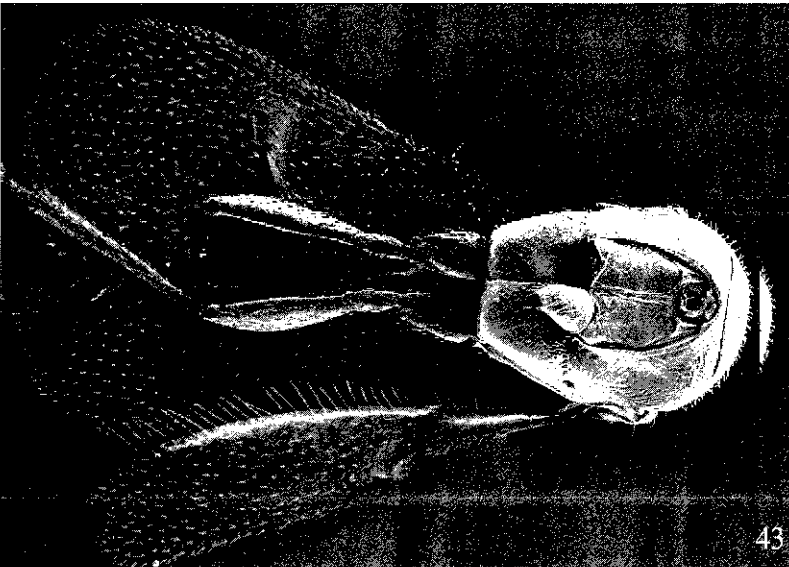
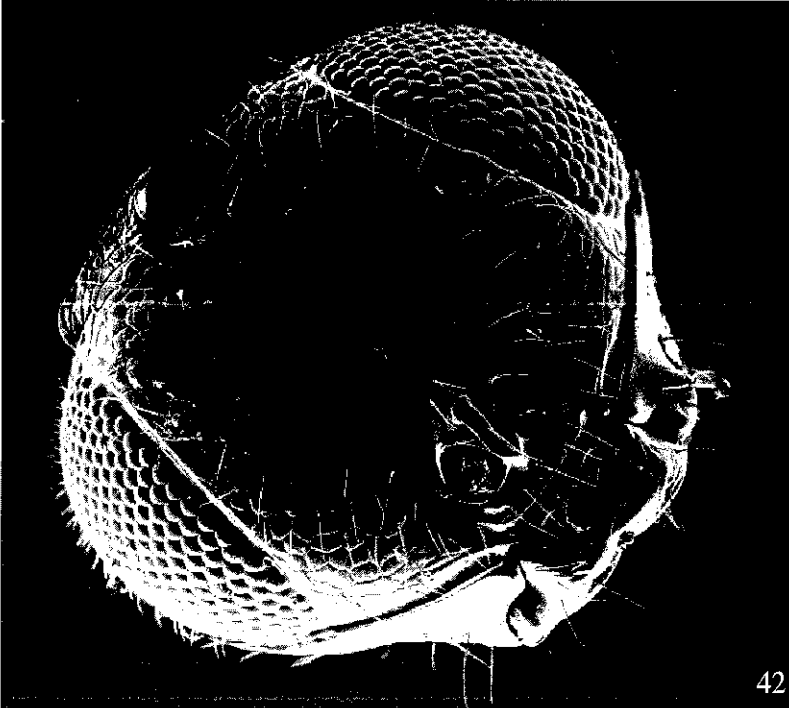
Since the original description seems inadequate, some additional details are necessary in order for students to be better able to recognize it

FEMALE. Head and mesosoma blackish; metasoma, antennae and legs, excluding 1st – 2nd tarsomeres dirty orange/brown; mandibles fire-coloured; eyes greyish; tegulae brown/yellow; wing venations dirty orange, discs slightly fumose.

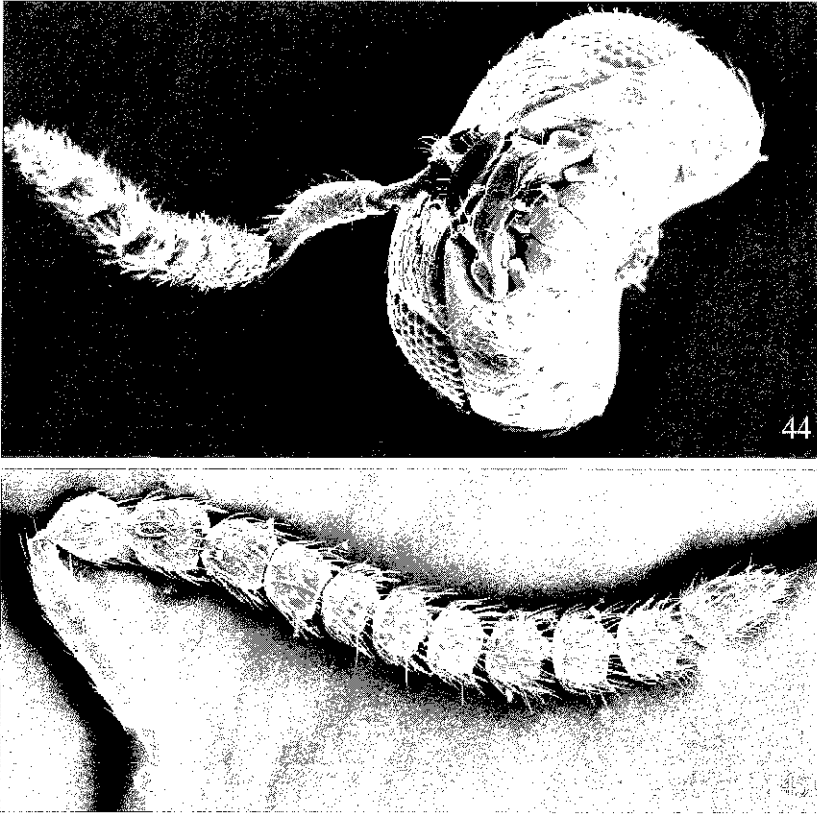
Head. F.a. 4Lx11W; ios =5; eh =7; ms =3; scape radicle length ratio as 5.5:1.5; A2-A11 length ratio as 2:1.5:1:1:0.8:0.9:1:1.8:1.8:2; A11 with pointed apex. Lateral ocelli touching inner orbits; frons convex; vertex rather elevated; eyes with short sparse hairs; interocellar space, vertex and occiput finely granulose, sculptured, and with



Figs 39-41 - *Telenomus tauricus*. Mesosoma from behind (39) (x 201); metasoma in dorsal view (40) (x 273). *Telenomus dissolcus* (δ). Antenna (41) (x 196).



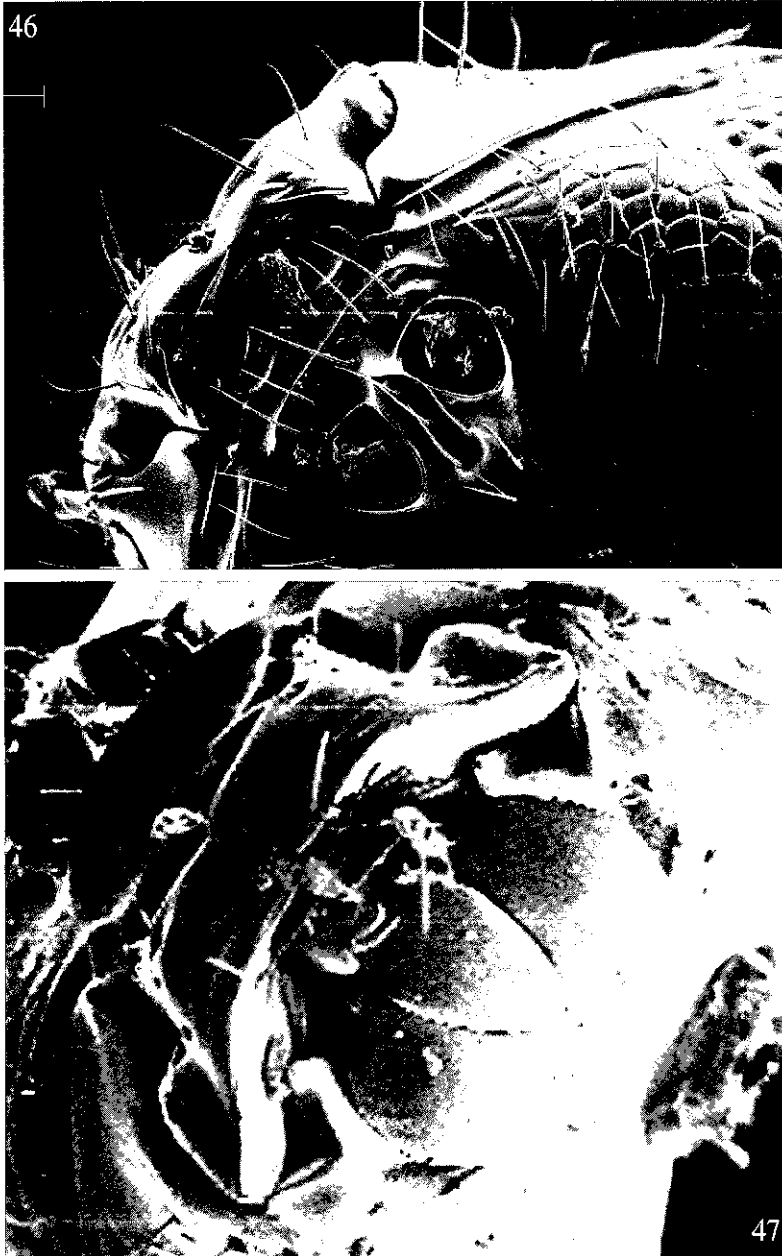
Figs 42-43 - *Telenomus* sp.. Head (42) (x 251); mesosoma in frontal view (43) (x 578).



Figs 44-45 - *Telenomus* sp. (♂). Head from below (44) (x 416); antenna (45) (x 622).

sparse, umbellicate setae; frons convex, smooth, vaguely coriaceous with extremely minute elements.

Mesosoma. F.a. 15 Lx11W; mesoscutum scutellum length ratio as 8:2.8; fore-wing 36 Lx10W with marginal cilia maximum length 2.71; length ratios of *mg*, *st*, *pm* as 3.8:4:10; hind-wing 31Lx5W, of which maximum fringe length 3.5; mesoscutum convex, setose and slightly coriaceous sculptured; scutellum longest at meson and with some sparse umbellicate setae, smooth, its posterior rim very finely marked; mesoscutum scutellar sulcus with only two ridges at each angle; temples less long than genae; occipital carina complete, fine, but irregular along its course, and with its median sector very elevated on occiput, almost behind the vertex; maximum length of mesoscutum about 1/3 that of scutellum, of which posterior rim is well marked, and with the surface before and above it minutely reticulated; dorsellum overlapping propodeum in the middle, the latter very weakly incised at meson; mesopleural carina absent, whilst the metapleural one is traceable at the beginning.



Figs 46-47 - *Telenomus* sp.. Detail of head, to show that clypeus is not fused with labrum (46) (x 1032). Indentation of mandible (47) (x 1068).

Metasoma. F.a. 31Lx9W; T1 → T7 length ratio as: 2:12:7:5:2:3:1.5; T1 moderately humped; except on both sides, without costae or wrinkles, smooth and shiny with 3 lateral and 1 sublateral setae, respectively; T2 vaguely costate, of which the lateral ones, which are the longest, do not surpass 1/6 of tergite length; the apical margin, like that of T6, is almost straight; on T3, and T4 the margin is liguliform, whilst on T5 it is incised at the sides; the remaining surface of T2, like that of the subsequent tergites, is smooth and shining. Total length of the body 1.25 mm.

MALE, HOST AND BIOLOGY. Unknown.

REMARKS. The species clearly runs into *Telenomus othus* Haliday, from which it differs in many respects and mainly: different sculpture of T1 and T2, and in the shape of T5, which in the former is not incised.

Telenomus rachelae n. sp. (Figs 18-21; 25-28)

FEMALE. Blackish; appendages brown, except 1st - 4th tarsomeres, bases and apices of tibiae and of scape rusty-whitish; wing dirty water-coloured, venations brownish; tegulae light brownish; mandible fire-coloured; eye dark greyish. TL= 0.85 mm.

Head. F.a. 7Wx6L; vertex falls sharply on to occiput; lateral ocellus touching relative inner orbit; the anterior one surrounded at the front and sides by almost horse-shoe shaped, concentrically sinuose, ledges; these ledges rise from the upper frontal area at the points where, along their courses, they touch each other, and form irregular, polygonal pits; frons above antennal insertions almost flat and with very shallow depression, though abruptly oblique; malar sulcus deep, ending directly above the inner insertions of the very narrow bidentate mandibles; frontal pit absent; inner orbit at level of lateral ocelli rounded; temple subequal (3:4) to eye width; FCI= 2.16; frons width= 4.2; frons width/eye height index= 1.0; *ms*= 3.1; frons smooth and shiny, like temples, beside malar sulcus, and as far as a point above the mid point of the outer orbits; the rest of head more or less coriaceous sculpturing, with sparse setigerous punctulae; eyes covered with sparse hairs.

Mesosoma. F.a. 10Wx13L; mesoscutum slightly convex in anterior half; scutellum triangular shaped, much longer at meson; dorsellum not very long in the middle, medially surpassing the propodeum by little; intercoxal space subequal to length of fore coxae; acetabular carina simple, while mesopleural and metapleural ones, as well as episternal foveolae, absent; scutellum coriaceous sculptured, shiny, much less hairy than on mesoscutum; dorsellum punctate, reticulated with setae longer than on the head and mesoscutum.

Appendages. Antenna 11-segmented with 5-segmented clava; A7 - A10 more or less transverse; wings clear, abundantly surpassing tip of metasoma by about 1/3 of its length; for relative proportions of veins on fore-wing see Fig. 5, a; greatest width of hind-wing subequal to greatest width of fringe at that point.

Metasoma. F.a. 9Wx15L; relative proportions in length of T1, T2 as 1:8; T1 with

one pair of lateral and of sublateral setae, respectively; length of basal costae on T2 a little more than length of lateral ones on T1, where the median ones stop a little before apical margin; the remaining surface of T1, T2 and following tergites, smooth and shiny.

MALE. TL= mm 0.77; head W/head L index= 1.20; frons W/eye height index= 0.8; FCI= 2.0; *ms*= 2.87; W/L T1= 3; L/W T2= 0.93; L/W metasoma= 1.75; fore-wing also amygdaliform, as in female, about 3 times as long as wide (106:33); its maximum width 3.3 times as great as the width of fringe at that point; postmarginalis about twice as long as stigmalis; hind-wing 7.15 times as long as wide (100:14); the greatest width of marginal fringe subequal to that of wing at that point (13:14). With regard to other features it is similar to the female, except in sexual characteristics.

MATERIAL EXAMINED: Female holotype (Zimbabwe, Salisbury, V/1980, y. pan trap, A. Watsham); 3 ♀ ♀ paratypes, VI/1980, 3 ♀ ♀ paratypes VII/1980, other data as holotype; 1 ♂ allotype, same data as holotype.

HOST. Although the Miridae as host family were attributed, by Johnson (1980; 1983), to the species of *laricis*-group, no record concerning *T. laricis* Walker has so far been published. Many years ago, during my research at the British Museum, I identified material from that species (box 15/1), collected both in Sweden and Pakistan. The specimens from the latter were labelled: Haripur; Haldevani, 5.IV.1937, Lantana expt. n° 128, *Ophiomyia lantanae*, N.C. Chatterjee. It is debatable whether these specimens belong to Walker's species, or should be included in a sister species, e.g. *T. rachelae* n. sp. Nevertheless, from this record Agromyzidae can be considered as one of the hosts of *T. laricis*, or at least of its sister species.

REMARKS. *Telenomus rachelae* n. sp., is to be considered a sister species of *Telenomus laricis* Walker⁽²⁾, with which it shares many features, such as: habitus, similar sculpture on the frons, ledges, etc., and therefore falls into the *laricis*-group, proposed by Johnson, (1984), although Kozlov & Kononova (1983) include *T. laricis* in their *othus*-group. *T. rachelae* may be distinguished from *T. laricis* as follows: in the female: the size of A8, which in the former is of solid build, almost like A9 (see also Figs 25-28 for comparison); in the male: shape and relative proportions of antennomeres A5 – A11, as well as shape of fore-wing, which in *T. laricis* is much more expanded; additionally, the width of fringe, which is 4.7 times less than the width of the wing at that point.

VARIABILITY - On T2 of 2 ♀ ♀ the costae are distinctly more abbreviated than on the other specimens of the same sex.

DERIVATIO NOMINIS. The name *rachelae* is feminine and is named after my grand-child Rachele.

⁽²⁾ In a previous work (1979) I dealt with *Verrucosicephalia depressa* Szabò, which was later considered by Huggert (1983) as a synonym of *Telenomus laricis*; in the same year Kozlov & Kononova (1983) arrived at the same conclusion and have also proposed the synonymy of *Verrucosicephalia* Szabò with *Telenomus* Haliday.

Telenomus regius Kononova (Figs 17, 22-24)

Telenomus regius Kononova 1986. In: P.A. Ler, S.A. Belokobyl'skii & N.A. Storozheva eds.

MATERIAL EXAMINED: 3 ♀♀ ex *Chrysoesthia sexguttella* Thunb. infesting *Chenopodium* sp. collected near railway station of Milazzo (Messina Province) on July 2001; 3 ♀♀ (Sicilia – S. Flavia – countryside “Bellacera”, 15/VII/79 on grass along “Quarara” river valley); 5 ♀♀ on 15/VIII/79 more 1 ♀ on 5/X/79 with other data as before.

REMARKS. The specimens bred from the above-mentioned host had previously been submitted to Dr S.V. Kononova for identification. *T. regius* also has the same sulcus rising from the malar sulcus, as on the previously-mentioned *T. antennalis*.

Telenomus sp. (Figs 42-47)

This species, which, according to Dr Kononova (*in litteris*, 2003), runs into *Telenomus aberrans* Kozlov⁽³⁾, was bred by myself, from egg clusters of *Liorhyssus hyalinus* F. (Rhopalidae)⁽⁴⁾. Over the last two years this bug has been found in great numbers, infesting lettuce grown for seed in the region of Balestrate (Palermo). In the past, in the USA, considerable emphasis was laid on economic factors, and not only because of damage to the seeds of the above cited host plant (Radio, 1928; Mc Kinney, 1940; Carlson, 1959). In fact, in California, together with other insects, it is considered the “Achilles heel” of pistacchio fruit (Michailides, 1989), whilst, along with other bugs, near Tashkent (Uzbekistan) *L. hyalinus*, it seriously damages the buds of *Hibiscus cannabinus*; additionally, this Rhopalid also attacks *Abutilon avicennae*. Its development in Sicily was observed on lettuce from the end of May until 20-25th of November. The female generally lays eggs along the secondary axes of the inflorescences; its egg clusters may range in number from a few (2 – 3) to numerous elements (up 50 eggs). *Telenomus* sp. was observed in both years, from the beginning of June. In 2002, during breeding, the adults were offered the eggs of the host a few hours after laying. Under these conditions the percentage of parasitism was always 100%. In a climatic chamber (day-light: 18/6; temperature: 28± 0,5 °C; U.R.: 65-70%), in the case of females (n= 73), each generation lasted about 11-12 days, and 10-11 days, in the case of males (n= 96). The natural enemies of *L. hyalinus* ascertained so far, are the egg-predator *Spanogonicus albofasciatus* (Reut.) (Miridae) (Butler jr., 1965), *Telenomus rhopali* Perkins and *T. paractias* Perk. (Perkins, 1913) both bred from *L. (Rhopalus) hyalinus*; however, the list could be longer. In fact, in the same paper by Perkins (1913), in which the two species, *T. adelphus* Perk. and *T. despiciendus* Perk. are described, the author deems them to be very closely related to *T. rhopali* and *T. paractias*, respectively. From the descriptions it is not easy to establish whether *Tele-*

⁽³⁾ Johnson (1984) includes Kozlov's taxon in his *nigricoxalis*-group.

⁽⁴⁾ I am greatly indebted to Dr Paride Dioli for his identification.

nomus sp. runs into any of Perkins' taxa. This might well be the main reason why students should present *Telenomus* sp. before its taxonomic status is finalised. It might also be of interest to point out how, several years ago, in certain areas of Termini Imerese (Palermo), egg-clusters from an unidentified Rhopalid bug were collected on the seeds of *Malva* sp., together with eggs from *L. hyalinus*. All these eggs had been parasitized by another species of *Telenomus*, closely related to the species that emerged from *L. hyalinus*.

***Telenomus tauricus* Kononova (Figs 35, 37-40)**

Telenomus tauricus Kononova 1979. Trudy vs. Ent. Obzr., 61:149.

MATERIAL EXAMINED: 14 ♀♀/3 ♀♀ (Balestrate, "Calatubo", 28/08/78); 3 ♀♀ (S. Fratello, among egg masses of *L. dispar*, 12/11/1982).

MALE (nov.). TL= 1.2 mm. Black. Radicle dirty brown, otherwise antennae brown; coxae blackish; knees, apices of femora, tibiae and 1st-4th tarsomeres testaceous, otherwise femora dark brownish, last tarsomere and tegula brown, mandible dirty, testaceous.

Head. From above 18wx6L; *ms*=5; *ios*=9,5; mandible bidentate; eye 10Lx8w; frontal depression moderately deep and large, crossed by dense, weak, almost horizontal striae - above it, and as far as a point before the median ocellus, a strip of smooth surface can be observed; eyes hairy; malar sulcus deep; vertex rounded but not convex; ocelli in a low triangle but not flat; occiput declivous, minutely coriaceous, sculptured and with rather stout and dense upwardly directed setae on umbilicate puncturations; occipital carina crenulated; vertex and temples also coriaceous; the remaining surface of frons beside and above the frontal depression has roughly coriaceous sculpturing; setae uniformly sparse, short; antenna see Fig. 37.

Mesosoma. F.a. 19Lx18.5W, barely higher than long (21:19); mesoscutum scutellum length ratio as 14:5, the latter triangular in shape, both with the same sculpture, i.e. minutely alutaceous, as on the head; notaulices very abbreviated, like the central wrinkle; mesoscutum convex in its anterior half, depressed over the rest of surface; dorsellum almost uniformly expanded, overlapping propodeum at meson, the latter strongly excavated and incised in the middle; intercoxal space almost equal to fore-coxa; acetabular carina not strong; mesopleural carina absent, whilst metapleural one present; for other characteristics regarding the pleural morphology see Figs 39-40:

Metasoma. Length to width ratio as 23:5; on T1 4 lateral and 1 sublateral setae, respectively, with costae not percurrent, wide apart; S1 sculptured as T1; S2 for about 3/5 of its length sculptured like T2, though more weakly; on the surface, free from laterotergites of S2, there are two setose areas with rather dense and long elements: such structures are also found on *T. dissolcus*, one on each side, each covering a coriaceous microsculpture; they should correspond to "setal fields", described by Johnson and Masner (1985) for the same sternite as *Psix*.

HOST. The same considerations as those expressed for *T. dissolcus* apply.

ACKNOWLEDGEMENTS

The author is indebted to Mr Antonino Mineo for providing facilities for the SEM work, to Mr Leonardo Genduso who took the SEM photographs, and to my friend Surveyor Manlio Amico who kindly realized the line drawings.

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Accepted 15 June 2004