Study of the genus Rhytidodus Fieb. (Homoptera, Auchenorrhyncha) with description of two new species from the Soviet Union

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For the first time genus *Rhytidodus* was isolated from the genus *Idiocerus* Lewis by Fieber in 1872, but later he united them again. Such a situation has remained up to 1953 when Zachvatkin pointed out the independence of *Rhytidodus* basing on the study of type species — *I. decimusquartus*.

Morphological differences and biological peculiarities of *Rhytidodus* and *Idiocerus* are mainly as follows:

Rhytidodus Fieb.	*Idiocerus Lewis.*
Pronotum with rough cross grooves.	Pronotum shagreen, without cross grooves.
Pygofer lobes are supplied with roundish or angular prolongations on posterior margins.	Pygofer lobes without prolongations on posterior margins.
Representatives of the genus live practically only on poplars.	Representatives of the genus have an inclination to willows, although some species live on maples, pistache, sloes and the like.

Recently a great number of species have been described in the genus *Rhytidodus* (Korolevskaja, 1964; Dlabola, 1965; Dubovsky, 1966), but there is no work with a good key for their identification. The key for the 7 species from Fergana valley which is given in the work of Dubovsky (1966) is not regarded satisfactory because it is constructed mainly on the base of colour signs, and the representatives of the genus are sometimes very variable in colouring; on account of am. it is often impossible to determine the species correctly.

Through kind permission of Mr. A. F. Emeljanov, to whom I express my sincere thanks, I got a possibility to get familiar with the representatives of the genus *Rhytidodus* in the materials of Leningrad Zoological Institute collection.

A list of the species, two of which are new, is adduced below. Besides, most of the examined material, which makes our knowledge about the distribution of some species more exact and full, is unumerated. In conclusion a key is given, based on the male genital structure for the identification of all known species of the genus. The two species of the genus from Tadjikistan (*Rh. differens* Korolevskaja, 1968 and *Rh. buxenus* Korolevskaja, 1968)[1]

[1] (Korolevskaja L. L., 1968). Королевская Л. Л., 1968. Материалы к изучению дендрофильной фауны цикадовых южных склонов Гиссарского хребта. В сб. "Ущелье Кондара. Кн. 2". Душанбе, "Дониш", 1968:100-117.

described after the work had been finished were not included into the list and into the key.

The holotypes and paratypes of new species are deposited in the Leningrad Zoological Institute, some paratypes of *Rhytidodus melanthes,* sp. n. are in the author's collection.

1. *Rhytidodus decimusquartus* (Schrank, 1776) (Figs. 1—6). (=*scurra* Germ., 1834; *crenatus* Germ., 1834; *germari* Fieb., 1868; *gemmisimulans* L. & C., 1915).

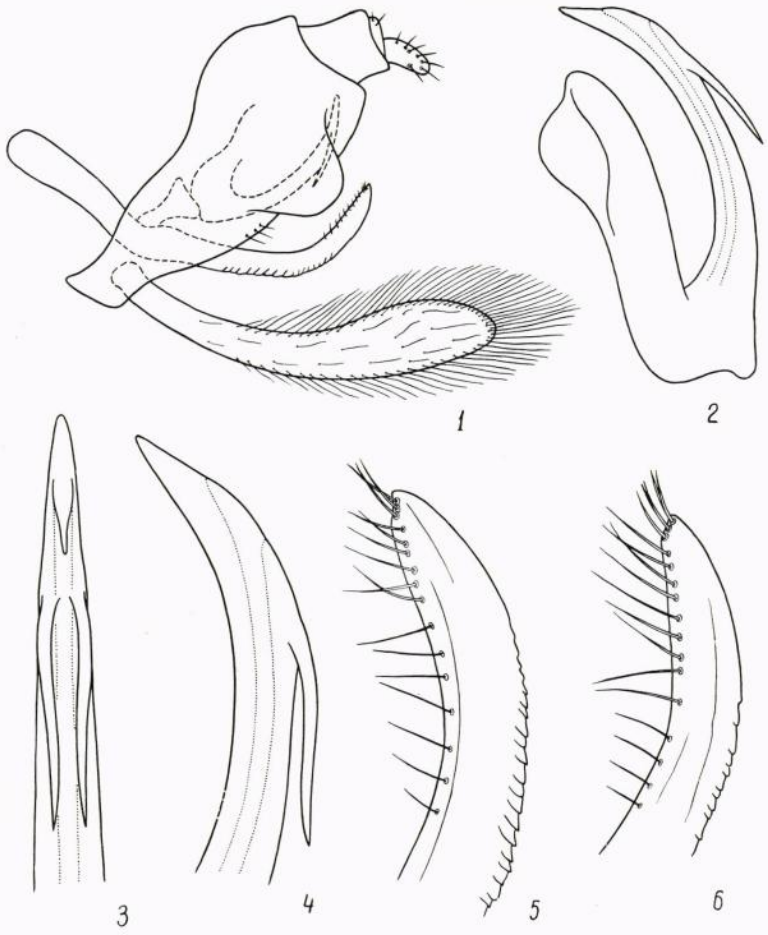
Cicada decimaquarta Schrank, 1776: 76; *Idiocerus decimusquartus* — Ribaut, 1952: 366—367; Metcalf, 1966: 56—64; *Rhytidodus decimusquartus* — Zachvatkin, 1953: 213; Dlabola, 1965: 72.

Distribution. Central, Eastern, Western and Southern Europe (England, France, Spain, Portugal, Belgium, Netherlands, Mediterranean Region, Italy, Switzerlands, Germany, Austria, Czechoslovakia, Hungary, Bulgaria, Rumania, Poland, Southern and Central regions of Europaean part of the USSR), Northern Africa (Tunisia), the Caucasus, Middle Asia (Dlabola, 1965; Metcalf, 1966). It is also known from New Zealand (Dumbleton, 1966), USA and Canada (Beirne, 1956), where it was obviously introduced from Europe. Records from Manchuria (Jacobi, 1943) apparently concerns Rh. melanthes, sp. n. and needs additional check-up.

Material examined. The Ukraine: Kiev, 28 IX 1924, 2 specimens (S. Ivanov leg.), 26 III 1900, 1 specimen, 10 VI 1901, 1 specimen (Lebedev leg.), 24 VIII 1916, 1 specimen (Dobrzhansky leg.); Kamenets-Podolsky, 18 II 1908, 2 specimens, 16 III 1908, 1 specimen (Jakubovsky leg.); Lugansk, 2 VII 1929, 2 specimens, 1 IV 1928, 1 specimen (Talitsky leg.); Luganskaja, 7 VII 1929, 1 specimen (Talitsky leg.); Askania-Nova, 27 VI 1926, 1 specimen, 20 VIII 1926, 2 specimens (Medvedev leg.); Odessa, 1898, 2 specimens (Graftio leg.); Kazatin station, 20 II 1911, 2 specimens (Jakubovsky leg.); the Crimea, Simpheropol, 17—22 VI 1924, 14 specimens (V. Kusnezov leg.), 7 IX 1915, 1 specimen (V. Kusnezov leg.), 1 VII 1907, 2 specimens (Kiritschenko leg.); 28—31 VI 1898, 2 specimens (collector unknown), 20 IX 1912, 1 specimen (Pliginsky leg.). The Caucasus: Georgia, Lagodechi, 5 VI 1896, 1 specimen (Mlokosevitsch leg.); Nalchik, 12 VII 1914, 1 specimen (Golovljova leg.); Mineralny Vody, VI—VII 1894, 1 specimen (Odintsov leg.); Pjatigorsk, 3—6 VII 1908, 3 specimens (Skorikov leg.). Dosang station, 64 km. N Astrakhan, 9 VII 1961, 10 specimens (Emeljanov and Kerzhner leg.). Orenburg, 15 IX 1924, 7 specimens, 9 VII 1924, 1 specimen (A. Ivanov leg.). Voronezh, 30 VI 1925, 1 specimen (Kizeritsky leg.). Saratov, 30 VI 1909, 1 specimen (Vasilevsky leg.). Katchiry station near Pavlodarsk, 28 VI 1928, 1 specimen (Belisin leg.).

2. *Rhytidodus caspicus Anufriev, sp. n.* (Figs. 7—11).

Greenish-yellow. Face and vertex unicolourly-yellow, rarely with brownish spots at vertex and apical part of face. Ocelli dark, well distinguished on the face background; distance between ocelli approximately 1.5 as long as the distance from them to eyes and two as long as the distance from them to antennal bases. Basal antennal joints yellow, the second ones black, apical bristles light. Pronotum yellow, posteriorly with greenish tint, sometimes with irregular brownish markings; it is slightly narrower than head with eyes, its breadth approximately three times as long as the length. Scutellum yellow, in



Figs. 1—6. 1—6 — *Rhytidodus decimusquartus*: 1 — male genital segment from side, 2 — penis, lateral view, 3 — penis apex, dorsal view, 4 — penis apex, lateral view, 5—6 — apical part of style, different specimens.

some specimens with black basal triangulars and black medial spot which is divided into two symmetrical parts with yellow longitudinal stripe. Forewings are semitransparent, basally and along costal margin yellow. Veins brightly-yellow, with granular depression along them; there are brownish markings on veins in some specimens. Hindwings are whitish with brownish veins. Legs brightly-yellow, claws brownish. Abdomen is ventrally yellow, dorsally black with yellow segment margins.

It somewhat resembles *Rh. decimusquartus* in outward appearance but differs in brighter yellow colouring, smaller size and some peculiarities of the male genital structure.

In the male genital structure it is closely similar to *Rh. decimusquartus*: pygofer lobes with the same broad prolongation on posterior margin; apical

and lateral groups of macrochaetae are on outer style margin and drawn together, there is no gap between them.

Differences in the male genitalia of the two species:

Rh. decimusquartus Schrank.	*Rh. caspicus Anufriev, sp. n.*
Penis shaft laterally flattened especially in apical half.	Penis shaft rowndish in cross section.
Aedeagal processes are strongly drawn with each other; they begin on dorsal surface of penis.	Aedeagal processes are widely moved apart and begin on lateral surfaces of penis.
Honopore opens more apically than aedeagal processes begin.	Honopore opens between bases of aedeagal processes.

Length of the body: ♂ — 6.0—6.3 mm; ♀ — 7.4 mm.

Holotype male and paratypes: Dagestan, Makhachkala, 12 VIII—28 VIII 1944, 21 specimens (Rjabov leg.).

3. *Rhytidodus melanthes Anufriev, sp. n.* (Figs. 12—16).

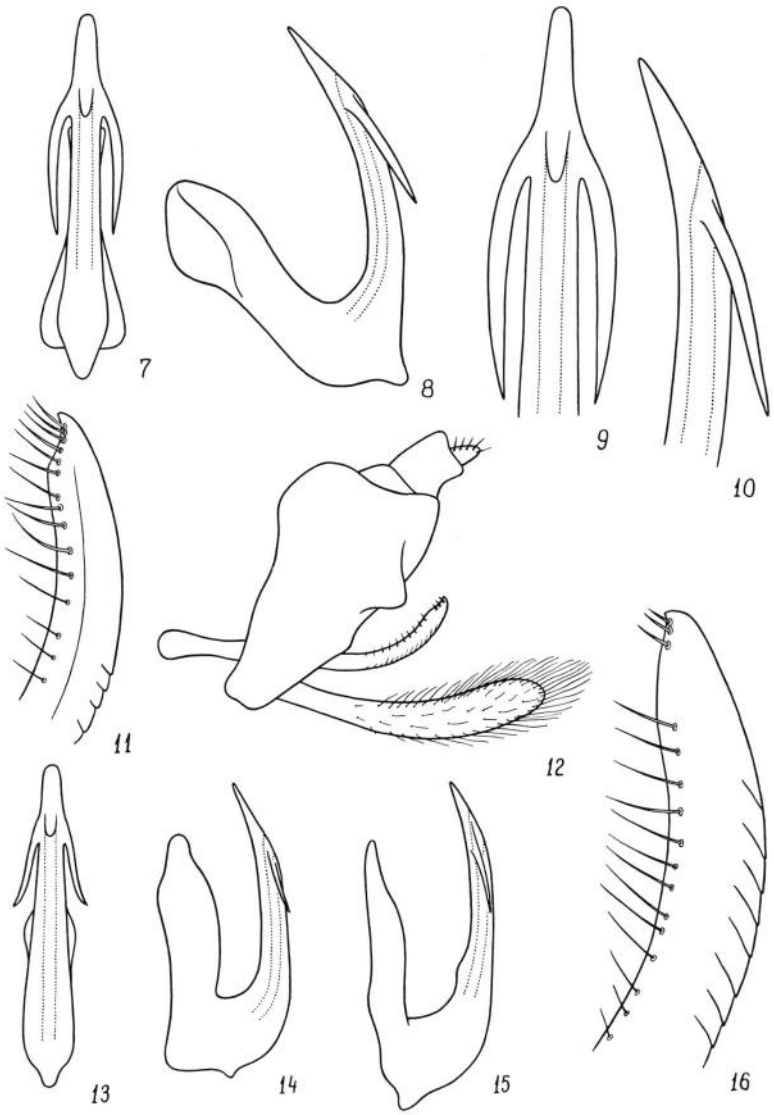
Males brown-black, females brown. Vertex yellowish-brown with black thyridias and black or brown irregular spots anastomosing between each another. Nearly all face black, glossy; narrow band between antennal bases, ocelli and dots to the outside of them as well as gena margins and small marking on frontoclypeus yellow. There is no light marking on frontoclypeus in some males. Face in part of females yellow with black band between eyes; nearantennal parts of genae and marginal spots of frontoclypeus are black too. Yellow ocelli and dots to the outside of them stand out against the background of the band. Gena and lorum are covered with whitish hairs better expressed in males. Antennae brown with the second joint which is darkest, eyes brown-red. Pronotum from jet-black in males to rusty-brown in females, posteriorly lighter, is covered with irregular anastomosing yellow markings. Scutellum black in males, brown in females; five yellow spots are usually more or less noticeable on it: two near anterior margin, two to sides from cross groove and longitudinal medial stripe expressed better in apical half. Forewings semitransparent, from brown to nearly black, with two light bands. Veins black on dark parts of forewings, usually considerably darker than general background, and brightly yellow on light bands, well distinguished in colour; claval veins with yellow markings. Some female specimens have forewings which are entirely rusty-brown with nearly indistinguishable bands. Thorax, abdomen and legs brown or black, tarsi lighter.

Male genitalia are characterized by the following peculiarities: pygofer lobes with triangular prolongations; apical cavity and apical group of macrochaetae on style are on its outer margin and separated from lateral group by an interval. The differences from nearest species are given in the key and may be seen in figures (Figs. 12—16).

Length of the body: ♂ — 5.5—6.0 mm; ♀ — 6.0—6.6 mm.

Holotype male: Soviet Maritime Territory, Sichote-Alin Reservation, source Sachalinsky, 22 VI 1967 (Anufriev leg.).

Paratypes. Soviet Maritime Territory, Sichote-Alin Reservation: source Sachalinsky, 22 VI 1967, 3 ♀, 8 VII 1967, 1 ♂ and 1 ♀, 24 VIII 1967, 1 ♂ and 1 ♀ (Anufriev leg.); Ust-Serebrjany, 30 VIII 1967, 1 ♂ and 2 ♀ (Kopylova leg.); Terney, 27 VIII 1967, 1 ♂ and 1 ♀ (Kopylova leg.).



Figs. 7—16. 7—11 — *Rhytidodus caspicus,* sp. n.: 7 — penis, dorsal view, 8 — penis, lateral view, 9 — penis apex, dorsal view, 10 — penis apex, lateral view, 11 — apical part of style; 12—16 — *Rh. melanthes,* sp. n.; 12 — male genital segment from side, 13 — penis from above, 14—15 — lateral view of penis, different specimens, 16 — apical part of style.

It is possible that the records of *Rh. decimusquartus* from Manchuria (Jacobi, 1943) concern this species.

4. *Rhytidodus almasyi Horvath, 1904.*

Idiocerus almasyi Horvath, 1904: 588; *Rhytidodus almasyi* — Dlabola, 1960: 245—246.

Distribution. Middle Asia, Northern Turkey (Metcalf, 1966).

5. *Rhytidodus ferganensis Dubovsky, 1966.*
Rhytidodus ferganensis Dubovsky, 1966: 120–122.
Distribution. Kirghisia (Dubovsky, 1966).

6. *Rhytidodus tenebricans Dubovsky, 1966* (Fig. 17).
Rhytidodus tenebricans Dubovsky, 1966: 121—123.
Distribution. Fergana valley, Kirghisia (Dubovsky, 1966).

Material examined. Chichkan, tributary of Naryn, 6 VIII 1930, 8 imago, 3 larvae (Bianki leg.); Fergana valley, 15 km NE Tach-Kumyr, 26 VI 1966, 3 specimens (Emeljanov leg.); Kirghisia, 80 km W Naryn, 10 VII 1966, 3 specimens (Emeljanov leg.); Kirghisia, 5 km. W mouth of At-Bashi, 24 VII 1966, 3 specimens (Emeljanov leg).

7. *Rhytidodus luteus Dubovsky, 1966.*
Rhytidodus luteus Dubovsky, 1966: 121, 124.
Distribution. Kirghisia (Dubovsky, 1966).

8. *Rhytidodus insignis Korolevskaja, 1964* (Figs. 21—24).
Rhytidodus insignis Korolevskaja, 1964: 39—40.
Distribution. Tadjikistan (Korolevskaja, 1964).

Material examined. Tadjikistan: Ramitsky canyon, kishlak Novak-Poen, 1600 m. above sea-level, Populus tadshikistanica, 18 VII 1962, holotype and allotype (Korolevskaja leg.); Kondara canyon, 1100 m. above sea-level, 4 VI—8 IX 1937, 23 specimens, 20 VI—8 VIII 1938, 6 specimens, 29 VI 1940, 1 specimen (different collectors).

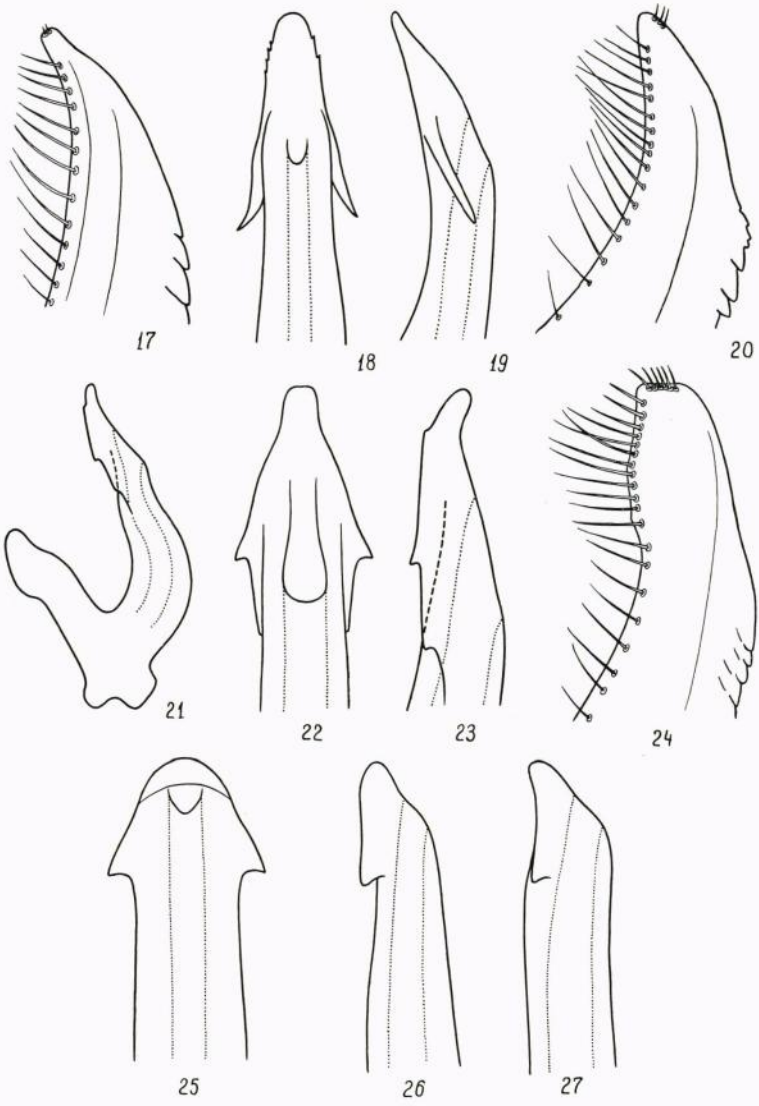
9. *Rhytidodus impalpabilis Korolevskaja, 1964* (Figs. 18—20).
Rhytidodus impalpabilis Korolevskaja, 1964: 40—41.
Distribution. Tadjikistan (Korolevskaja, 1964).

Material examined. Tadjikistan: Ramitsky canyon, kishlak Novak-Poen, 18 VII 1962, holotype, allotype and 6 paratypes (Korolevskaja leg.); Kondara canyon, 1100 m above sea-level, Varzob valley, 11 VIII—30 VIII 1937, 3 specimens, 21 VIII 1945, 3 specimens (Gussakovsky leg.).

10. *Rhytidodus trivialis Dubovsky, 1966* (Figs. 25—27).
Rhytidodus trivialis Dubovsky, 1966: 120—122.
Distribution. Middle Asia, Fergana valley (Dubovsky, 1966), Kirghisia, Tadjikistan and Uzbekistan.

Material examined. Phrunze, 7 X 1958, 2 specimens (Romanenko leg.); Fergana, Isphara, 25 V 1927, 7 specimens (V. Kusnezov leg.); Tashkent, 7 IV—22 IV 1927, 2 specimens (Kozhanchikov leg.); Uzbekistan, Katty-Kurgan, 30 VII 1909, 2 specimens (Shavrov leg.); Tadjikistan, Kanibadam, 15 VI 1913, 1 specimen (Minkvits leg.).

The examined specimens have aedeagal processes shorter than figured in Dubovsky's work.



Figs. 17—27. 17 — *Rhytidodus tenebricans*, apical part of style; 18—20 — *Rh. impalpabilis*: 18 — penis apex from above, 19 — penis apex from side, 20 — apical part of style; 21—24 — *Rh. insignis*: 21 — penis, lateral view, 22 — penis apex, dorsal view, 23 — penis apex from side, 24 — apical part of style; 25—27 — *Rh. trivialis*: 25 — penis, dorsal view, 26—27 — lateral view of penis, different specimens.

11. *Rhytidodus wagneri Dlabola, 1965* (Figs. 28—31)

Rhytidodus wagneri Dlabola, 1965: 73—74.

Distribution. Czechoslovakia, the Ukraine (Dlabola, 1965), Middle Asia, Kazakhstan, Mongolia.

Material examined. Turkmenistan: Imam-Baba, 9—11 V 1912, 13 specimens (Kozhanchikov leg.); Tedzhen station, 27 IX 1896, 1 specimen (Anger leg.); Ashabad, 1896, 4 specimens (Anger leg.). Northern bank of Balkhash-lake, Orta-Deresin, 18 VI 1962, 2 specimens (Emeljanov leg.). Mongolia, 15 km. NE mountain Onch-Khairkhan-ula, 4 VIII 1967, 3 specimens (Emeljanov leg.).

12. *Rhytidodus nobilis (Fieber, 1868)* (Figs. 32—33).

Idiocerus nobilis Fieber, 1868: 452—453 (in part); *Idiocerus* (*Rhytidodus*) *nobilis* — Fieber, 1872: 8; *Rhytidodus nobilis* — Dlabola, 1965: 74—75.

Distribution. South of European part of the USSR. Dagestan (Dlabola, 1965), the Ukraine, the Caucasus, Kazakhstan. Other records of this species (Austria, Germany, Hungary, Turkey, Italy and others — Metcalf, 1966) must be checked up because this species is apparently confused with recently described *Rh. wagneri* and other allied species.

Material examined. The Ukraine: Lugansk, 2 VIII 1929, 1 specimen (Talitsky leg.); Luganskaja, 23 VI—7 VII 1929, 2 specimens (Talitsky leg.). The Crimea: Simpheropol, 17 VI 1924, 5 specimens (V. Kusnezov leg.), 2 VII 1907, 1 specimen (Kiritschenko leg.); Sevastopol, 29 VI 1907, 1 specimen (Pliginsky leg.); Alushta, 21 VI 1907, 1 specimen (Zabnin leg.); Saki, 12 VIII 1913, 1 specimen (Pliginsky leg.). The Caucasus: Ordubad, 23 IV 1955, 3 specimens (Loginova leg.); Chinanab, 28 IV 1955, 1 specimen (Loginova leg.); Kislovodsk, 12 VII 1940 (Gulikov leg.). Dagestan: Derbent, 5 VII 1928, 1 specimen (Rjabov leg.); Makhatchkala (Petrovsk-port), 20 IV 1933, 1 specimen (Rjabov leg.), 3 VIII 1944, 1 specimen (Rjabov leg.); Khasanjur, 30 VII 1928, 1 specimen, 8 VIII 1928, 1 specimen (Rjabov leg.). Dosang station, 64 km. N Astrakhan, 9 VII 1961, 22 specimens (Emeljanov and Kerzchner leg.). Kazakhstan, Uralsk, 6 IX 1897, 1 specimen (Berezovsky leg.).

13. *Rhytidodus viridiflavus Dubovsky,* 1966 (Figs. 34—38).

Rhytidodus viridiflavus Dubovsky, 1966: 121, 124.

Distribution. Kirghizia, Kazakhstan (Dubovsky, 1966), Uzbekistan.

Material examined. Alma-Ata, 5 X 1936, 1 ♂ (Birula leg.); Tashkent, IX 1905, 2 specimens (Phisher leg.), 22 IV 1909, 1 specimen (Zarudny leg.).

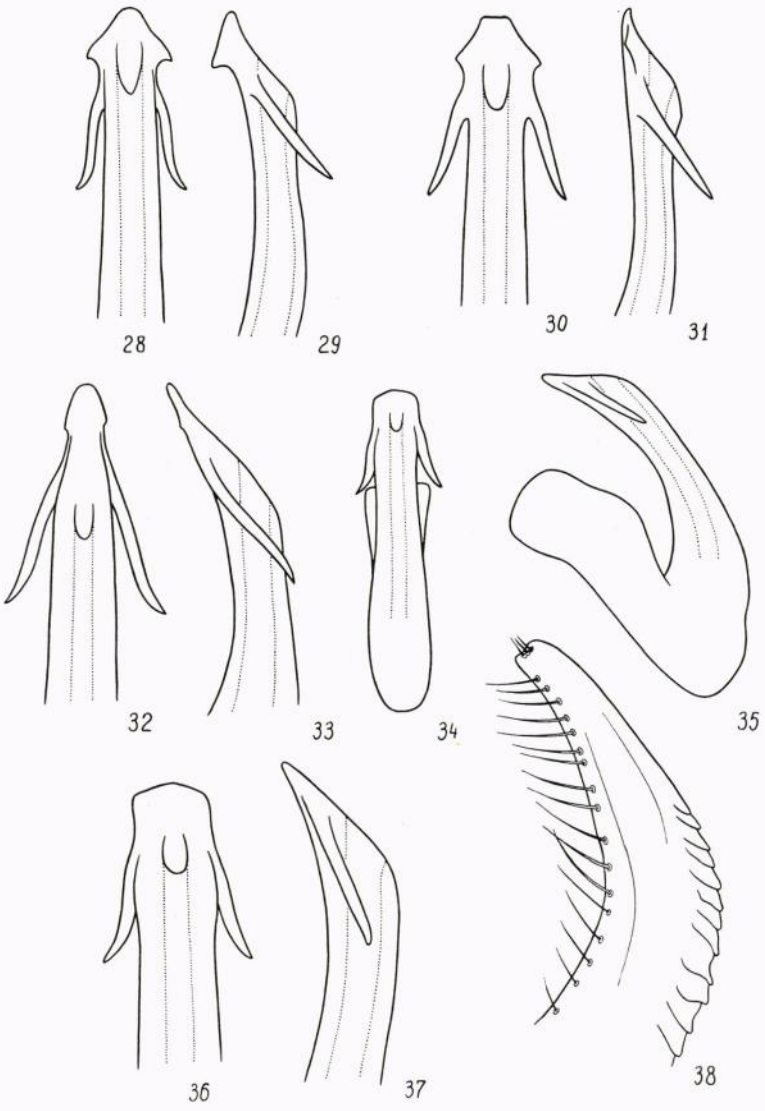
Key to the species of Rhytidodus Fieb.

1(6). Apical cavity and apical group of macrochaetae are on outer margin of style (Figs. 5—6, 11, 16).

2(5). Prolongations on the posterior margins of pygofer lobes are broad (Fig. 1). Apical and lateral groups of macrochaetae on style are drawn together with each other, there is no interval between them (Figs. 5—6, 11).

3(4). Penis shaft laterally flattened in apical part. Aedeagal processes are strongly drawn together; they begin on dorsal surface of penis. Honopore opens more apically than aedeagal processes begin.
Rhytidodus decimusquartus (Schrank, 1776) (Figs. 1—6).

4(3). Penis shaft rowndish in cross section. Aedeagal processes are widely moved apart and begin on lateral surface of penis. Honopore opens between bases of aedeagal processes. *Rhytidodus caspicus* Anufriev. sp. n. (Figs. 7—11).



Figs. 28—38. 28—31 — *Rhytidodus wagneri*: 28—29 — penis apex from above and side, specimen from Middle Asia; 30—31 — the same, Mongolian specimen; 32—33 — *Rh. nobilis,* penis apex, dorsal and lateral views; 34—38 — *Rh. viridiflavus*: 34 — penis from above, 35 — lateral view of penis, 36 — penis apex, dorsal view, 37 — penis apex, lateral view, 38 — apical part of style.

5(2). Prolongations on the posterior margins of pygofer lobes are narrow and triangular (Fig. 12). Apical and lateral groups of macrochaetae on style are separated from one another with an interval.

Rhytidodus melanthes Anufriev, sp. n. (Figs. 12—16).

6(10). Apical cavity, if present, and apical group of macrochaetae are on apical or inner style margin (Figs. 17, 20, 24, 38).
7(8). Penis with basal processes. *Rhytidodus almasyi* Horvath, 1914.
8(7). Penis without basal processes.
9(14). Penis without prolongations and teeth near apex to sides from honopore.
10(11). Penis with small dorsal projection in apical third; style with large cavity on inner margin. *Rhytidodus ferganensis* Dubovsky, 1966.
11(10). Penis without dorsal projection; style without large cavity on inner margin.
12(13). Brown with light markings and bands. Penis shaft round in cross section. Style broad with truncated apex and inner margin which strongly notched in the middle. *Rhytidodus tenebricans* Dubovsky, 1966.
13(12). Unicolourly-yellow or whitish. Penis shaft is slightly flattened in dorso-ventral direction. Style is comparatively narrow with pointed apex and inner margin which slightly notched in the middle.
Rhytidodus luteus Dubovsky, 1966.
14(9). Penis with prolongations or teeth near apex to sides from honopore (Figs. 18—19, 21—23, 25—37).
15(16). Penis shaft is strongly curved in front of honopore. There are two lateral teeth to both sides from honopore. *Rhytidodus insignis* Korolevskaja, 1964.
16(15). Penis shaft is not curved in front of honopore.
17(18). Penis apex above processes with small notches directed to apex.
Rhytidodus impalpabilis Korolevskaja, 1964 (Figs. 18—20).
18(17). Penis sides without notches directed to apex.
19(20). Prolongations of penis are bent to ventral side.
Rhytidodus trivialis Dubovsky, 1966 (Figs. 25—27).
20(19). Prolongations of penis are bent to dorsal side.
21(22). Penis apex is broadened, with two lateral teeth over prolongations.
Rhytidodus wagneri Dlabola, 1965 (Figs. 28—31).
22(21). Penis apex without teeth over prolongations.
23(24). Penis with roundish apex.
Rhytidodus nobilis (Fieber, 1868) (Figs. 32—33).
24(23). Penis with truncated apex.
Rhytidodus viridiflavus Dubovsky, 1966 (Figs. 34—38).

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