

Всероссийский институт повышения квалификации  
руководящих работников и специалистов лесного  
хозяйства

All - Russian Institute of Continuous Education  
in Forestry

4

Б. Мамаев , Б. Окланд

ОПИСАНИЕ ДВУХ НОВЫХ ВИДОВ  
И ОПРЕДЕЛИТЕЛЬНАЯ ТАБЛИЦА РОДА  
*Anaretella Enderlein* (Diptera, Cecidomyiidae)

ПУШКИНО - PUSHKINO

1996

УДК 593.771

Печатается по рекомендации  
кафедры ЭКОЛОГИИ И  
ЛЕСОВОДСТВА ВИПКЛХ  
протокол заседания от  
3.XII.1996 г.

Мамеев Б.М., Окланд Б. Описание двух видов и определительная таблица рода *Anaretella* Enderlein (Diptera, Cecidomyiidae). - Пушкино, 1996, 8 стр., 13 рис., библи. 7 назв.

В работе приводятся материалы по группе мелких насекомых - галлиц, наиболее часто отлавливаемых ловушками при изучении биоразнообразия лесных экосистем в Норвегии, в сравнении с восточноевропейским комплексом. Составлена иллюстрированная таблица для идентификации видов данной группы.

Предназначена для энтомологов-систематиков и экологов, изучающих проблемы биоразнообразия.

Опубликована в декабре 1996 г. в переводе на английский язык.

Заказ на приобретение научно-методических публикаций ВИПКЛХ принимается по адресу:

Библиотека ВИПКЛХ,  
Институтская ул., 17  
141200, Пушкино

Россия

С Всероссийский институт повышения квалификации руководящих работников и специалистов лесного хозяйства.

Library of ARICEF,  
Institutsкая str., 17  
141200 Pushkino  
Russia

Description of two new species and key to the genus  
*Anaretella* Enderlein (Diptera, Cecidomyiidae).

B. M. Mamaev<sup>1</sup> and Bjørn Økland<sup>2</sup>

1 - All-Russian Institute of Continuous Education in Forestry, Institutsкая str. 17, 141200 Pushkino, Moscow Region, Russia.

2 - Norwegian Forest Research Institute, Høgskoleveien 12, 1432 Ås, Norway.

There is a growing awareness to preserve the biodiversity in the forest ecosystems. A first step in biodiversity research is to find out what species really are found in the forest, using the scientific tool named taxonomy. Still there are species-rich groups of forest insects which have been poorly researched, and which include several unclearities concerning the species identities. One such group is the free-developing gall midges connected with litter, dead wood and fungi in the ground layer of the forest. This paper intends to improve the taxonomy of one genus in this group - *Anaretella* (Enderlein 1911), including the description of two new species and a key to the current species within the Holarctic region.

Genus *Anaretella* End. was described as a subgenus of the genus *Lestremia* Macq. by G. Enderlein (1911). According to initial revisions (Edwards, 1938, Pritchard, 1947) this genus consists of two Holarctic (*A. defecta* Winn., *A. spiraeina* Felt), one Nearctic (*A. iola* Pritch.) and possibly a few uncertain species from other Zoogeographical regions. Later on, B. Mamaev (1964) described another three new species in *Anaretella*. M. Skuhrová (1986) included six species of this genus in the Catalogue of Palaearctic Diptera, but it seems rather doubtful to confirm the distribution of nearctic *A. iola* Pritch. in Europe.

**Genus *Anaretella* Enderlein**

Figs. 1-15.

Enderlein, 1911. Arch. Naturgesch., 77(1), suppl. 3: 193.

Type species: *Lestremia defecta* Winnertz, 1870. Verh. zool.-bot. Ges. Wien, 20: 33.

General diagnosis. Eye bridge narrow, 2-3 facets broad medially. Male with 2+14, female with 2+9 antennal segments. Flagellar segments of male with long stem, enlargement with a proximal whorl of short setae, a complete median crenulate whorl of long hairs, with an additional incomplete crenulate whorl distally and paired digitate sensoriae on the first 5-9 flagellar segments with 2-5 branches. Flagellar segments of female subelliptical with very short stem, and with one basal whorl of bristles and an apical pair of digitate sensoriae with 4-7 branches on the seven first flagellar segments; terminal segment not constricted. Palpi four segmented, long and thin, the first segment not enlarged, with sensory bristles, segments successively increasing in length. Wings long and broad, covered with macro- and microtrichia on veins and membranes, and with well developed anal

vein. C ending abruptly at the tip of R5, with a sharp interruption of the thickening of wing margin just beyond the end of C, Rs short, r-m indistinct, fork of M much longer than its stem, lower branch (M2) very faint; C, R1 and R5 darker than the other veins and with dense cover of macrotrichia. Claws with small teeth in the middle; empodium well developed and longer than claw. Male postabdomen with rather short 8th and 10th tergites, 10th tergite subdivided, gonocoxites stout with distinctly pigmented apodeme, tegmen broad with strong apodeme, gonostyles variously shaped, genital rod present. Ovipositor short, penultimate segment of lamellae trapezoidal in lateral

view, longer than subovate terminal segment; spermathecae unsclerotized.

***Anaretella glacialis* Mamaev et Økland sp.n.**

Figs 1,2

Holotype: male, Russia, Jamal, Khadyta, 30.VII.1981 (leg. V.Olschwang), in the collection of B.Mamaev; paratypes: 2 males, Norway, Sør-Varanger, Mellesmo, Svanvik, malaise trap, VIII.1986 and IX.1986 (leg. F. Midtgaard), in the collection of B.Økland.

Male. Dark brown, wing length of types 2.6 mm ( $\pm 0.2$ ). Stem of middle flagellar segments as long as basal enlargement; one complete and two incomplete crenulate whorls present; digitate sensoriae with 3-4 branches; 3rd flagellar segment with basal enlargement about twice as long as broad; stem of penultimate segment distinctly shorter than basal enlargement; terminal segment of antennae slightly longer than basal enlargement of penultimate segment, with 3 whorls of hairs. Fourth palpal segment almost twice as long as 2nd. Claws sharply bent, with 3-4 small dents in the middle; empodium nearly as long as claw.

Gonocoxites stout, gonostyle broad, with wrinkles and small apical dent; tegmen broad with distinctly sclerotized sides; genital rod short, weakly sclerotized; roots of gonocoxites short, with triangular incision between them.

Female unknown.

***Anaretella supermagna* Mamaev et Økland sp.n.**

Figs. 3,4.

Holotype: male, Russia, Moscow region, Pavlovskaya Sloboda, deciduous forest, 10.09.1963 (leg. H.Mamaeva), in the collection of B.Mamaev; paratypes: 3 males, Norway, Tromsø, Tromsdalen, IX.1993 (leg. B.Økland); 2 males, Sør-Varanger,

Mellesmo, Svanvik, IX.1986 (leg. F. Midtgaard), in the collection of B. Økland.

Male. Blackish, wing length of types 2.8 mm ( $\pm 0.5$ ). Stem of middle antennal segment about 1.2 times as long as basal enlargement and 5.4 times as long as broad; basal enlargement with two pigmented rings, one complete and two incomplete crenulate whorls and digitate sensoriae with 3-4 branches. Terminal segment of antennae nearly as long as basal enlargement of penultimate segment, with three whorls of hairs. Fourth palpal segment 1.2 times as long as 3rd and 1.8 times as long as 2nd. Claws bent, with 3-4 small dents in the middle; empodium about 1/2 as long as claw.

Gonocoxites stout, without inner lobe subapically; gonostyles thick, with large basal dilation; tegmen tapering towards apex, broadly rounded apically; genital rod weakly sclerotized; roots of gonocoxites turned outwards, apodeme with posterior arms very broad.

Female unknown.

#### Key to species of the genus *Anaretella* End (males)

1. Sensoriae present on first 8-9 flagellar segments. Gonostyles broadly expanded distally with subapical angulations. Gonocoxites with small lobe on inside medioventrally ..... 2
- Sensoriae present on first 5-7 flagellar segments. Gonostyles tapering distally, without angulations. Gonocoxites without medioventral lobe ..... 4
2. Wing length 3.2 mm. Gonostyles with large dorsal and ventral angulations. Tegmen with 2 long strongly sclerotized, diverging, acuminate projections ..... *A. iola* Pritch.
- Wing length 2.0 - 2.5 mm. Gonostyle with short angulation dorsally. Tegmen with 2 weakly

- sclerotized convergent or sinuous projections ..... 3
3. Apex of sclerotized projections of tegmen curved inside (fig. 5) ..... *A. borealis* Mam.
  - Apex of sclerotized projections of tegmen curved outside (fig. 6) ..... *A. corniculata* Mam.
  4. Stem of middle antennal segments 1/2 - 2/3 times as long as basal enlargement (fig. 7, 10) ..... 5
  - Stem of middle antennal segments nearly as long as basal enlargement or longer (fig. 2, 14) ..... 7
  5. Gonocoxites with distinct mediodorsal lobe (fig. 9, 11) ..... 6
  - Gonocoxites without mediodorsal lobe (fig. 8) ..... *A. defecta* (Winn.)
  6. Dilated base of gonostyles, 1/3 times as long as the whole gonostyle. Gonocoxites without round inner basal lobe. Mediodorsal lobe of gonocoxites not extremely prominent (fig. 9) ..... *A. spiraeina* (Felt)
  - Dilated base of gonostyle, 1/4 times as long as full gonostyle. Gonocoxites with round inner lobe. Mediodorsal lobe of gonocoxites extremely prominent (fig. 11) ..... *A. cincta* Mam.
  7. Stem of middle flagellar segments 3.0 - 4.0 times as long as broad, nearly as long as basal enlargement (fig. 2, 12) ..... 8
  - Stem of middle flagellar segments 5.4 - 5.6 times as long as broad, distinctly longer than basal enlargement (fig. 4, 14) ..... 9
  8. Incision between gonocoxites parallelsided, with nearly rectangular bottom. Gonostyle with small apical dent (fig. 1) ..... *A. glacialis* sp.n.
  - Incision between gonocoxites with triangular broadly rounded bottom. Gonostyles without apical dent (fig. 13) ..... *A. elegantula* Mam.
  9. Gonocoxites broadened in mediosubapical part, with a marked angulation on the inner margin. Apodeme with thin posterior sclerotized arms. Tegmen with

slight constriction in middle (fig. 15) (wing length of types  $2.6 \pm 0.2$  mm) ..... *A. magnicornis* Mam.  
Mediosubapical part of gonocoxites with nearly straight margin, without any marked angulation.  
Apodeme with thick posterior sclerotized arms (fig. 3) (wing length of types  $2.8 \pm 0.5$  mm) ....  
..... *A. supermagna* sp.n.

### Discussion

There are at present nine Palaearctic species of *Anaretella*. In the present key, some new important characters have been taken into account, such as proportions between width and length of antennal stems and genital morphology of male. Even though such characters may vary within a population, the variation between species appears to be sufficient to establish distinct hiatus between close species. However, this requires well-prepared slides without any deformation of antennae and male postabdomen in order to avoid wrong impression about proportions and species appearances.

The type of the genus - *Anaretella defecta* - was briefly redescribed by F.W. Edwards (1938), who investigated type specimen and concluded that the stem of male flagellar segments is  $2/3$  as long as basal enlargement. According to figures published by the abovementioned author, male postabdomen of *A. defecta* has no mediosubapical lobe on gonocoxites, and has a rather thick gonostyle and a short simple genital rod. J. Yukawa (1971) also made an excellent redescription of male *A. defecta*, and confirmed that the stem of the 5th flagellar segment of male is only  $2/3$  as long as basal enlargement. J. Yukawa (1971) published figures of postabdomen and 5th flagellar segment of male (fig. 7,8) which corresponds well with those of F.W. Edwards (1938). Later on, W. Kleesattel

(1979) investigated three males of E.W. Edwards' collection in British Museum (not type specimens), and described stem of the 5-6th male flagellar segments as only slightly shorter than the basal enlargement (ratio 0.88) and figured a male postabdomen somewhat aberrant from figures of F.W. Edwards and J. Yukawa. In the present key we applied the characters used in the redescrptions and figures by F.W. Edwards (1938) and J. Yukawa (1971).

### Acknowledgements

The present study received financial support from Norwegian Research Council and All-Russian Institute of Continuous Education in Forestry. We thank H. Barstad (Tromsø), H. Mamaeva (Moscow), F. Midtgaard (Ås) and V. Olschwang (Novosibirsk) for supply of insect material for this study.

### Bibliography.

- Edwards, F.W., 1938. On the British Lestremiinae, with notes on exotic species (Diptera, Cecidomyiidae). - Proc. R. ent. Soc. Lond. (B), 7: 25-32.
- Enderlein, G. 1911. Die phyletischen Beziehungen der Lycoriiden (Sciariden) zu den Fungivoriden (Mycetophiliden) und Itonididen (Cecidomyiiden) und ihre systematische Gliederung. - Arch. Naturgesch., 77, 1, Suppl. 3: 116-201.
- Kleesattel, W. 1979. Beiträge zu einer Revision der Lestremiinae (Diptera, Cecidomyiidae) unter besonderer Berücksichtigung ihrer Phylogenie. - Dissertation. Stuttgart: 1-275.
- Mamaev, B.M. 1964. Gall midges of the USSR. 4. New species of the tribe Lestremiini (Itonididae, Diptera). - Zool. Zh., 43: 776-779 (in Russian).
- Skuhřavá, M. 1986. Family Cecidomyiidae. In: Catalogue of Palaearctic Diptera, vol. 4. Budapest: 72-297.

Winnertz, J. 1870. Die Gruppe der Lestremiinae.  
- Verh. zool.-bot. Ges. Wien, 20: 9-36

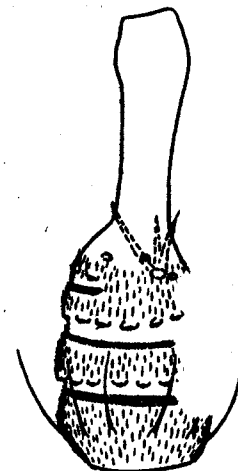
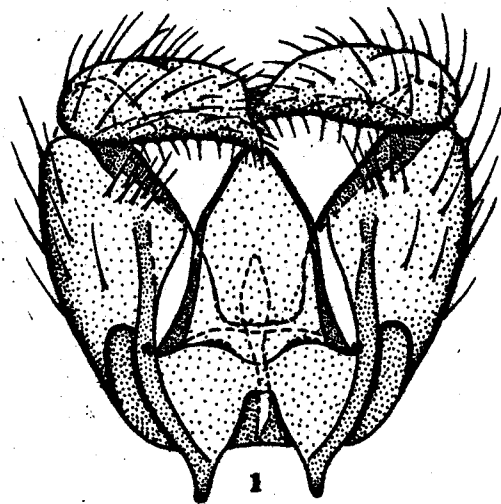
Yukawa J. 1971. A revision of the Japanese gall  
midges (Diptera, Cecidomyiidae). - Mem. Fac. Agric.  
Kagoshima Univ., 8: 1-203.

#### Explanation to figures

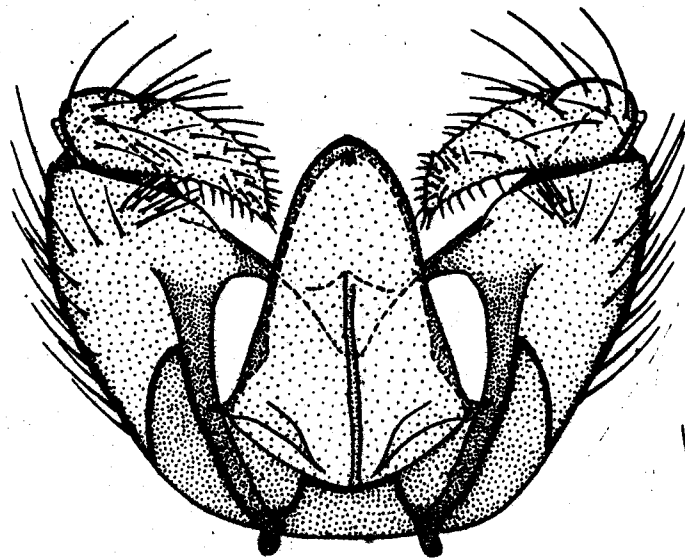
Genus *Anaretella* End.:

1,2 - *A. glacialis* sp.n.; 3,4 - *A. supermagna* sp.n.;  
5 - *A. borealis* Mam., 6 - *A. corniculata* Mam.; 7,8 -  
*A. defecta* (Winn.) (after Yukawa, 1971); 9 - *A.*  
*spiraelina* (Felt); 10,11 - *A. cincta* Mam.; 12,13 - *A.*  
*elegantula* Mam.; 14,15 - *A. magnicornis* Mam.

1,3,10,12,14 - 6th flagellar segment of male;  
2,4,5,6,8,9,11,13,15 - postabdomen of male (tergites removed);  
7 - 5th flagellar segment of male.

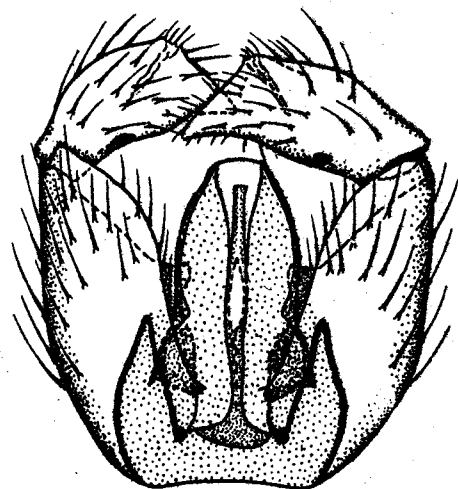


2

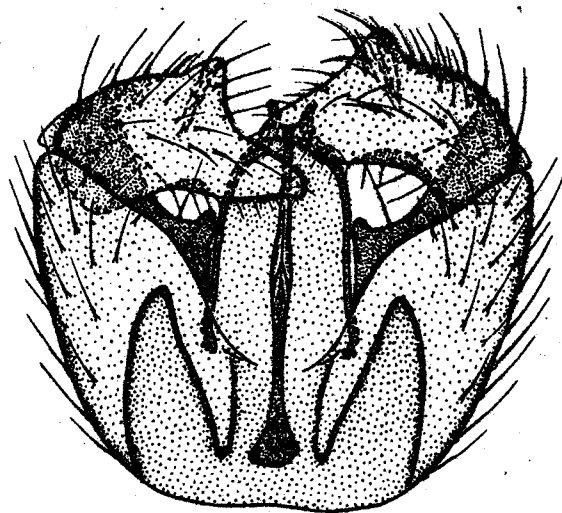


4

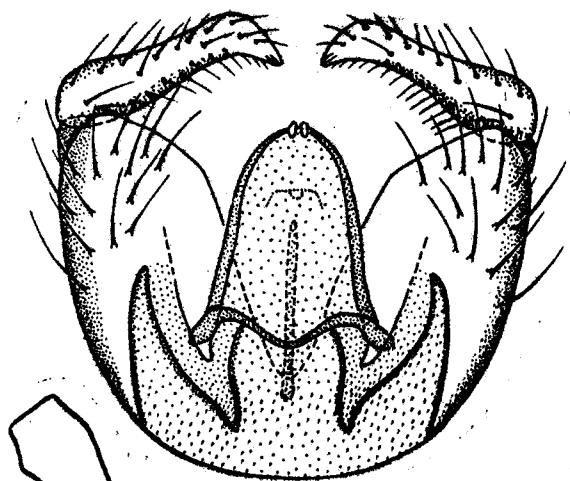
3



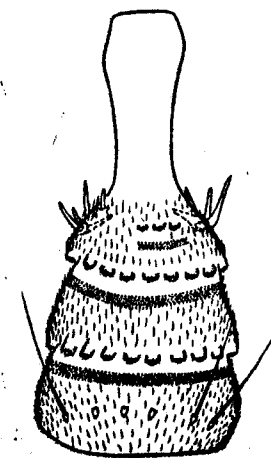
5



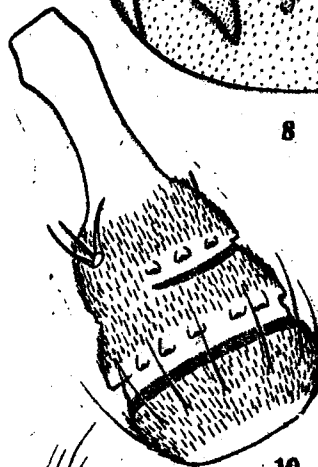
6



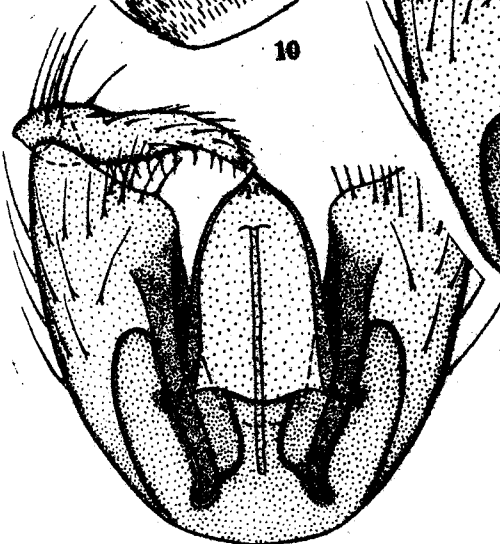
8



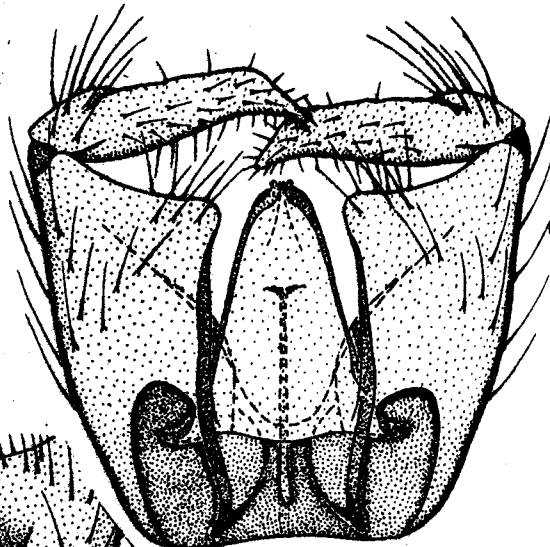
7



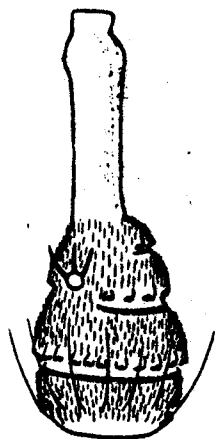
10



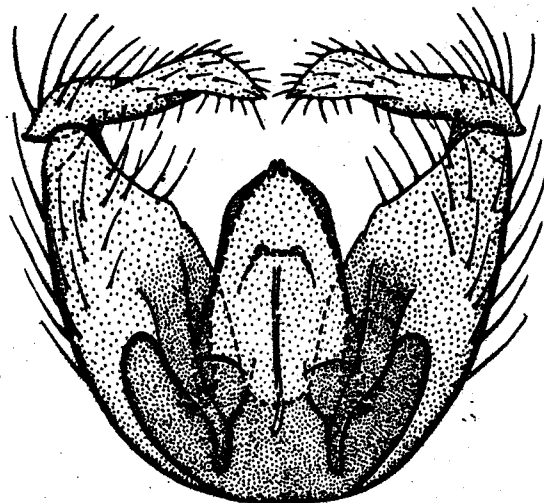
9



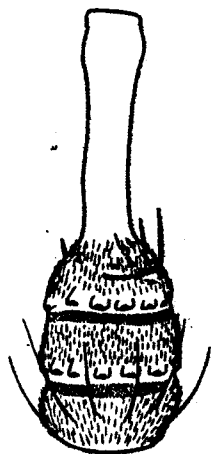
11



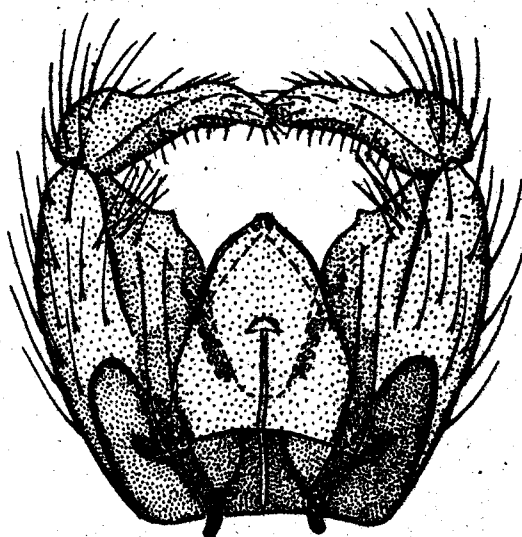
12



13



14



15

Манаев Борис  
Окланд Вьерн

Описание двух новых видов и определительная таблица рода  
*Anaretella* (Diptera, Cecidomyiidae).

Подписано в печать: 29 ноября 1996 г.  
Тираж 100 экз. Цена договорная.

КМУ ВИПКЛХ. Пушкино, Московская обл., 1996 г.