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colour plates (in Russian, keys to suborders,
families and genera also in English).

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all figures and all English-language keys.
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the Russian-language part of the book (pages
1-124). This part contains in addition a num-
ber of introductory chapters and a chapter
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ОПРЕДЕЛИТЕЛИ ПО ФЛОРЕ И ФАУНЕ РОССИИ. ВЫПУСК 11

Кривошеина М.Г. Определитель семейств и родов палеарктических двукрылых насекомых подотряда Nematocera по личинкам. М.: Т-во научных изданий КМК. 2012. 244 с. + 28 с. вклейка.

Настоящий определитель представляет собой результаты ревизии обширной коллекции преимагинальных стадий длинноусых двукрылых. В основе монографии — данные по личинкам 35 семейств и более 170 родов. Определительные таблицы семейственного уровня приводятся раздельно для водных и наземных личинок. Это позволяет значительно сократить ключи и сделать их более удобными в применении. Таблицы родового уровня представлены для всех семейств за исключением Chironomidae, Cecidomyiidae и Simuliidae; для них даны таблицы до подсемейств. В приложении приводятся определительные таблицы на английском языке. Книга проиллюстрирована 80 цветными фотографиями и 400 рисунками.

Для экологов, почвенных зоологов, гидробиологов, преподавателей и студентов вузов.

Krivosheina M.G. Keys to the Palaearctic families and genera of nematocerous larvae (Diptera, Nematocera). Moscow: KMK Scientific Press. 2012. 244 p. + 28 plates.

This book is the result of a revision of the extensive collection of Diptera immatures (larvae). A review of 35 families and 170 genera of Nematocera is given. Separate keys to families are given for terrestrial larvae and for aquatic larvae, which has enabled shorter keys to be composed which are also more convenient to use. Keys are given to the genera within each family, except for the Chironomidae, Cecidomyiidae and Simuliidae, where keys only to subfamilies are given. The book contains about 80 colour illustrations (photographs) and 400 figures. Data on the general morphology and biology of nematocerous larvae are discussed.

The book is recommended for specialists in ecology, soil zoology, and University teachers and students. In Russian, with keys and figure legends also in English.

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д.б.н. О.Г. Овчинникова
д.б.н. А.И. Шаталкин

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ОГЛАВЛЕНИЕ

ПРЕДИСЛОВИЕ

МОРФОЛОГИЯ ДВУКРЫЛЫХ

СИСТЕМА ДВУКРЫЛЫХ

СВЯЗИ ЛИЧИНКИ СРЕДОЙ

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Ключи, расположенные в начале раздела
Гигропетрические водоемы
Пресные и солоноватые водоемы
Поверхностные водоемы
Грунт лitorали
Ризосфера
Грунт проходных
Временные водоемы
Солоноватые водоемы
Морские водоемы
Континентальные водоемы
Горячие, соленые и солоноватые водоемы
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Определители
Определители
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ПРЕДИС

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Key to Suborders of the Order Diptera

1. Head capsule well developed, short, not invaginated inside thoracic segments. Tracheal system of all types: from holopneustic to apneustic. If the head capsule with deep incisions posteriorly and partly retracted inside prothorax, then tracheal system of metapneustic type. Mandibles of grazing type in majority of larvae and move in horizontal plane. If the head capsule reduced, small, weakly sclerotized (Cecidomyiidae, genus *Leptoconops* fam. Ceratopogonidae, Canthyloscelidae), then metacephal rods sometimes developed and tracheal system of peripneustic or apneustic type **Suborder Nematocera**
- Head capsule absent or developed, in the latter case it is elongate, half retracted inside thoracic segments, if short — then always with single or paired metacephal rods, invaginated inside thorax. Mandibles, if developed, move in vertical plane parallel to each other. Tracheal system usually of amhipneustic type 2
2. Head capsule elongate, sclerotized, half retracted inside thoracic segments, if short — then always with single or paired metacephal rods, invaginated inside thorax. Mandibles usually sickle-like. Antennae well developed
..... **Suborder Brachycera-Orthorrhapha**
- Head capsule absent, metacephal rods not developed. Internal cephalo-pharyngeal apparatus with one pair of sclerotized hooks and long pharyngeal sclerites is developed. Antennae reduced and look like small papillae
..... **Suborder Brachycera-Cyclorrhapha**

Key to families of the aquatic larvae

1. Last body segment with long slender breathing tube, when extended is as long as 1/3 of the body or longer (Fig. 123), carrying anal papillae at base and spiracles at apex. Larvae semiaquatic, live in silty grounds at shallow sites of reservoirs or in pools, in peatbogs **Ptychopteridae**
- Last body segment of another structure 2
2. Larvae oval, stongly flattened dorsoventrally, head with long 2-branched antennae (Fig. 126), thoracic segments distinct, narrow, as wide as head, abdominal segments I-VII with lateral prolegs, carrying 7-10 rows of hooks for holding on flat surface of stones. Submountain and mountain rivers with rocky ground and rapidly flowing well aerated cold water **Deuterophlebiidae**
- Body of another structure 3
3. Body flattened laterally, abdominal segments I-VII and IX with paired ventral prolegs armed with hooks (Fig. 125). Head with anterior projection, formed by clypeus, labrum and mandibles. Thorax consists of 3 cylindrical smooth segments. Upper reaches of stenothermal rivers, on firm grounds and stones covered with moss .. **Nymphomyiidae**

- Body of another structure, without 8 pairs of prolegs 4
- 4. Head, thorax and abdominal segment I fused into a compound body division; a ventromedial suctorial disc present on this compound body segment and on each of the five following segments (Figs 127, 128). The discs are regulated in one central row. Body segments with lateral projections covered with setae. In pure rapidly flowing mountain streams attached to smooth rocks **Blephariceridae**
- Head distinct, not fused with thoracic segments 5
- 5. Abdomen conspicuously swollen distally (Fig. 129). Larva with 2 anchoring organs for attaching to substrate and crawling, formed by circles of hooks: the anterior organ of 20–50 rows of hooks is situated on distal end of anterior proleg and the posterior organ of 60–220 rows of hooks — on the last body segment. Head with large filtering fans. Rivers, streams, attached to substrate, larvae are capable to mass migrations down the river **Simuliidae**
- Abdomen not swollen, rings of hooks absent 6
- 6. Thoracic segments fused and significantly wider than abdominal segments (Figs 130, 131) 7
- Thoracic segments distinct, not fused 9
- 7. Antennae not prehensile, without long setae, but labrum with a prominent brush of setae. Body not transparent and without air sucks (Figs 200, 201). In different natural and artificial reservoirs, slowly flowing and stagnant **Culicidae**
- Antennae prehensile with long apical setae 8
- 8. Body transparent with 2–3 pairs of air sucs. Antennae not put into furrows (Figs 210–213). Caudal fan no less than with 4 pairs of hairs. In constant and temporary reservoirs, bogs, lowlands, forest pools and shallow lakes **Chaoboridae**
- Body without air sucs appearing through cuticle. Antennae approximate at base and put into furrows on lateral sides of head. Caudal fan not developed, only single setae sometimes present. In stagnant waters, pools, ponds, bogs **Corethrellidae**
- 9. Tracheal system metapneustic: spiracles developed only on the last body segment (if body aselliform, flattened dorsoventrally, then see genus *Sycorax* Haliday, 1838, *Psychodidae*) 10
- Tracheal system amphipneustic: spiracles developed on prothoracic and last abdominal segment or apneustic: spiracles not developed 14
- 10. Paired ventral prolegs present on abdominal segments I–II, ventral combs on abdominal segments 5–6 or 5–7 and with 5–6 dorsal rings of hairs, body with caudal appendage (Fig. 214). Body U-like curved, anterior and posterior parts are in water, the rest of the body — above the water surface. Shore drifts, among undergrowth of macrophytes, in shallow streams and bogs **Dixidae**
- Body of another structure 11
- 11. Body with leaf-like or filamentous processes in longitudinal dorsal, lateral and ventral rows, the processes at least as long as half width of the body, sometimes significantly exceeding it (Figs 107–109). Body greenish or greenish-brown, darker dorsally. Spiracular disc with 4 lobes or projections of different length. Aquatic larvae usually inhabit stagnant water bodies and are found inside algae on the bottom. **Cylindrotomidae**

- Body smooth without longitudinal rows of long processes except on ultimate segment. If lateral processes sometimes present then they are much less than half width of body. Body light, yellowish-white or grey 12
- 12. Spiracular disc with 6 elongate or short lobes surrounding spiracular area (Figs 132, 383). Lobes light or with dark pigmented spots internally. Body with soft many-folded cuticle, as a rule without processes, sometimes with small lateral processes on median abdominal segments. Segmentation is weakly developed. Body coloration from white to dark grey. In springs, shallow rivers, in littoral and riparian zone of various reservoirs, wet swampy and silty soil, in moist mosses, at forest logs **Tipulidae**
- Spiracular disc with no more than 5 lobes, aquatic larvae are usually with 2–4 lobes, ventral of which are longer. Body segmentation distinct, light, smooth, yellowish, with well developed rows of creeping welts or densely pubescent, golden, with weakly developed creeping welts or without them 13
- 13. Head strongly sclerotized along the whole length, lateral plates are not separated from the frontal (Figs 338, 340). Frontal plate reaches posterior margin of head, with distinct median suture. Hypostomal plate (hypostoma) with even number of equal in size teeth anteriorly, divided in two parts connected at the level of teeth. Body end with 2 diverging ventral processes behind spiracles (Figs 341, 342). The processes are bare, sometimes with an apical tuft of setae only. Spiracular disc small and weakly contoured. Hypopharynx and labium without teeth on anterior margin. Creeping welts present on III–VII or IV–VII abdominal segments. Silty banks of small streams, in sand and under rocks in quick rivers, among algae in hygropethric zone, in wet soil. Aquatic larvae belongs to subfamily Pediciinae **Pediciidae**
- Head weakly sclerotized at least posteriorly, lateral plates completely or their halves are separated from the frontal plate by light membranous areas (Figs 230, 233, 266). Frontal plate without distinct median suture. Hypostoma if developed single with uneven number of teeth, median tooth being equal or significantly larger than the others. Body end without lobes or with 2, 4–5 lobes. Hypopharynx and labium without teeth or with large cone-like teeth on anterior margin. Creeping welts present on II–VII abdominal segments or absent. Inside silky tubes on the surface of stones and among vegetation in quick streams, in hygropethric zone of waterfalls, in bogs, margins of water bodies in silty ground and among fallen leaves, in mosses **Limoniidae**
- 14. Tracheal system apneustic: spiracles not developed (if body with 2 posterior long narrow projections with buns of setae and 2 pairs of 2 times shorter anal papillae, see genus *Antocha* Osten-Sacken, 1859, Limoniidae) 15
- Tracheal system amphipneustic, spiracles present on prothoracic and last abdominal segment 16
- 15. Larvae moderately elongate, usually with well developed ventral prolegs on prothoracic and last abdominal segments (Fig. 119). Body bare, tufts of setae sometimes present on two last body segments. Lateral plates of head approximate ventrally, their anterior part forming unite strongly sclerotized triangular sclerotized hypostomal plate, carrying teeth. In different reservoirs **Chironomidae**

- Larvae seprpentine, long, without prolegs, bare, only sometimes with terminal tuft of setae (Fig. 117). If anterior and posterior prolegs developed then body flattened with long lateral projections (*Atrichopogon* Kieffer, 1906). If only posterior proleg developed, then larvae C-curved and body with hairs (*Dasyhelea* Kieffer, 1911). Lateral plates fused ventrally, suture between them absent (Fig. 169), hypostomal plate, if developed, small and without dents. In streams and water bodies of different types, including riverside **Ceratopogonidae**
- 16. Posterior end of the body with 6 long filamentous projections (Fig. 142). In saturated sandy gravel bordering streams **Tanyderidae**
- Posterior end of the body without such projections 17
- 17. Body with anterior prothoracic and posterior abdominal prolegs, segments with dorsal sclerotized plates. On moist rocks where pure water forms thin layer about 1 mm **Thaumaleidae**
- Body without prolegs, aselliform, flattened dorsoventrally, with ventral sucker or elongate, often with secondary segmentation, with many sclerotized dorsal plates and short terminal breathing tube (Figs 105, 138, 141). In hygropethric zone, in shoal sites of dirrerent reservoirs **Psychodidae**

Key to families of the terrestrial larvae

1. There is a small additional postcephalic segment between head and prothorax, "neck", as a result the body consists of 13, not 12 distinct segments. Ventral side of prothorax as a rule carries well developed sclerotized small sclerite "spatula" (Fig. 1). Head capsule very small, significantly narrower than the following segment, weakly sclerotized, round or slightly elongate, often with sclerotized rods protruding inside thoracic segments. Mouthparts of pierching-sucking type, mandibles needle-like, weakly distinguishable. Antennae 2 or 3-segmented. Tracheal system usually of peripneustic type, spiracles present on prothorax and abdominal segments 1–8. Larvae small, pink, red, orange, yellow or white. Larvae of many species — phytophagous, live inside galls or plant tissues without forming galls; saprophagous amd mycophagous larvae inhabit soil (litter), under bark, in wood, in fungi; predatory larvae live in aphid colonies or in wood **Cecidomyiidae**
- Additional segment, "neck" as well as "spatula" not developed 2
2. Head capsule transparent, carries short antennae, mouth apparatus reduced (Figs 2, 13). Last body segment with 2 sclerotized and curved dorsally hooks, body cylindrical, narrowed anteriorly and posteriorly. Tracheal system of peripneustic type: spiracles present on prothoracic segment, abdominal segments I–VII and IX. Small sclerotized plate present near anterior and posterior spiracles. In strongly decayed wood **Canthyloscelidae**
- Head capsule sclerotized, sometimes partly retracted in prothorax (exception — genus *Leptoconops* Skuse, 1889, see Ceratopogonidae) 3
3. Body with long breathing tube, longer than the body, and 2–4 long anal papillae (Figs 4, 14). Head capsule closed, epicranial plates are fused ventrally. Tracheal system of amphipneustic type: spiracles present on prothorax and the last body segment

- at the end of the breathing tube. In wet decaying wood of deciduous trees **Axymyiidae**
- Body without long breathing tube 4
4. Prothoracic and abdominal segments I–VIII with distinct secondary segmentation and consist of narrow anterior annulus and wider posterior part, the latter as long as wide or longer than wide (Figs 82–84). Last body segment sometimes subdivided in 4–5 secondary annuli. Body long, narrow, vermiform. Tracheal system amphipneustic: spiracles present on prothorax and last body segment. In dung, soil, plant remains and decaying organic matter, in tree holes, in sap of trees, in fungi .. **Anisopodidae**
- Abdominal segments without distinct segmentation of such type 5
5. Three thoracic segments are of usual structure, distinct, the rest of abdominal segments with numerous secondary segmentation; as a result the body resembles earthworm (Fig. 88). Larvae apneustic; spiracles not developed 6
- Body of another structure 7
6. Body end with 4 equal pointed conical lobes, two of which directed laterally and two — posteriorly (Fig. 86). On surface of fruiting bodies of fungi under thin film — salivary excretes of the larva **Keroplatidae**
- Body end with 4 round lobes (Fig. 87), lateral lobes longer than the central. Under fallen old bark usually covered with thin film - salivary excretes of the larva **Macroceridae**
7. Tracheal system holopneustic: spiracles present on pro-, metathorax and abdominal segments 1–8 (10 pairs of spiracles) 8
- Tracheal system of another type 11
8. Spiracles present on pro-, metathorax, abdominal segments 1–7 and 9 9
- Spiracles present on pro-, metathorax and abdominal segments 1–8 10
9. Body segments, at least posterior, with soft well developed conical projections (Figs 78, 79). Larvae of *Plecia* Wiedemann, 1828 - with sclerotized dorsal plate on prothorax, bordered by projections, and less distinct but also sclerotized ventral plate. In soil, litter, where they aggregate near decaying wood remains, decaying branches, leaves, fir-needles, plant remains, in strongly decayed wood, in tree holes **Bibionidae**
- Body segments without projections (Fig. 81), covered with setae. Metathoracic spiracles microscopic, distinguishable under large magnification only. Posterior spiracles are situated at the border of abdominal segments 8 and 9. Dorsal surface of prothorax with 2 rectangular and ventral surface with 2 oval sclerotized plates. Under bark of thin branches at the height 0.5–1.5 m above ground, sometimes (rarely) in fallen branches **Cramptonomyiidae**
10. Body with short small setae. Head elongate-oval (Fig. 89). Prothorax is divided in 2 rings, posterior of which is distinct on dorsal side only. The only segment of antenna round, without apical papillae. Anal area not separated from the last body segment by dark line. In decaying stumps, trunks and branches, mainly in dark rot **Hesperinidae**
- Body with long setae, sometimes 1/3 as long as the body segment (Fig. 90). Head transverse, short, almost square. Body segments distinct dorsally as well as ventrally.

- The only segment of antenna cylindrical and with large apical papillae. Anal area separated from the last body segment by dark line. In dark soft rots of tree trunks, branches and stumps **Pachyneuridae**
11. Tracheal system peripneustic: spiracles present on prothorax abd abdominal segments 1–7 or 1–8 12
 – Tracheal system of another type 16
12. No more than 7 pairs of abdominal spiracles 13
 – 8 pairs of abdominal spiracles developed 15
13. Antennae well developed, 3-segmented. Head short, transverse, 1.5–2 times as long as wide (Figs 93, 96). Larvae of some species with sclerotized dorsal plate on the last body segment. In fruiting bodies of fungi **Bolitophilidae**
 – Antennae rudimentary, represented by wide oval plate, carrying small papillae. Head elongate, as long as wide or longer than wide 14
14. Epicranial plates contact at one point or widely separated on ventral side at anterior part of the head capsule (Figs 302, 319). If epicranial plates contact twice, bordering oval median membranous area (Fig. 300), then they contact anteriorly at significance distance (usually 1/3–1/2 of the head capsule). Body usually with thick, not transparent, cuticle (Fig. 92). In fruiting bodies and on surface of fungi, on surface of decaying wood under cases, under bark, in wood pierced by mycelium **Mycetophilidae**
 – Epicranial plates contact at 2 points on ventral side, anteriorly at short distance, bordering oval median membranous area (Fig. 366). Larvae whitish or yellow, transparent, with well developed usually black head (Fig. 91). In soil rich with humus, in litter, under bark, in decaying wood **Sciaridae**
15. Body cylindrical, compact, not narrowed anteriorly. Head capsule large, almost as wide as the body (Fig. 95). Thoracic segments as wide as abdominal or wider, abdominal segments elongate with secondary folds or shorter, transverse. Penultimate segment with 2 round spiracles on dorsal side or with 2 narrow conical sclerotized projections with 2 spiracles on their surface (Figs 97, 98). In fruiting bodies of fungi, in wood **Ditomyiidae**
 – Body flattened, usually narrowed anteriorly. Head capsule significantly narrower than the body segments. Last body segments with massive sclerotized plate and without projections or with 2–4 cylindrical projections (Figs 99, 100, 346–348). In various decaying plant remains, under bark, in fermenting sap, in birds' nests ... **Scatopsidae**
16. Tracheal system propneustic: spiracles present on prothorax only. Tracheal system reduced, tracheal trunks are developed in anterior 4 segments. Cuticle very thin. Body with 12 distinct segments. Epicranial plates are widely separated ventrally (Fig. 216). Larvae live inside silky tubes on fallen branches devoid of bark under conditions of high humidity **Diadocidiidae**
 – Tracheal system of another type 17
17. Tracheal system amphipneustic: spiracles present on prothorax and last body segment 18
 – Tracheal system of another type 19
18. Body compact, with secondary folds and 4 terminal lobes at last body segment, surrounding posterior spiracles (Fig. 101). Epicranial plates widely separated ventrally by weakly sclerotized membranous area, covered with hairs along anterior margin.

- Relatively large larvae, body length about 10 mm. In decaying plant remains, in fungi, under bark **Trichoceridae**
- Body elongate (Fig. 102), posterior end round (in this case spiracles are situated on lateral sides of the last body segment, body without sclerotized plates and larvae relatively large, about 10 mm, genus *Trichomyia* Curtis, 1839), or body with breathing tube of various length (Fig. 105), spiracles are situated at the end of it, or body without tube (Figs 103, 104) and spiracles are situated on dorsal side of the last body segment (small larvae, 4–5 mm, sometimes 7 mm). Each body segment or posterior body segments often with one or several sclerotized plates. In moist decaying wood, in litter, fungi, in mosses and burrows of rodents **Psychodidae**
19. Tracheal system metapneustic: spiracles present on last body segment only. Head massive, partly retracted inside prothorax, posterior part of head at least dorsally often with deep incisions or head capsule like long rods (Figs 110, 111, 241, 242, 400). Relatively large larvae, body length 10–12 mm and more 20
- Tracheal system apneustic: spiracles not developed. Head capsule distinct (Fig. 169), not retracted in thoracic segments, without posterior clefts, posterior margin even (exception - larvae of the genus *Leptoconops* Skuse, 1889 (Ceratopogonidae), which have half-transparent head (Fig. 12) with dark sclerotized rods). Small larvae, their length not exceeding 10 mm 23
20. Body with leaf-like or filamentous processes in longitudinal dorsal (Figs 107–109), lateral and ventral rows, the processes at least as long as half width of the body, sometimes significantly exceeding it. Body greenish or greenish-brown, darker dorsally. Spiracular disc with 4 lobes or projections of different length. Terrestrial larvae inhabit soil mosses or mosses on fallen trees (*Cylindrotoma* Macquart, 1834, *Diogma* Edwards, 1938, *Triogma* Schiner, 1863). Larvae are phytophagous **Cylindrotomidae**
- Body smooth without longitudinal rows of long processes except on ultimate segment (Figs 4, 5). If lateral processes sometimes present then they are much less than half width of body. Body light, yellowish-white or grey 21
21. Spiracular disc with 6 elongate or short lobes surrounding spiracular area (Figs 110, 111). Lobes light or with dark pigmented spots internally (Figs 385, 399). Body with soft many-folded surface, as a rule without processes, sometimes with small lateral processes on median abdominal segments only. Body coloration from white to dark grey. Segmentation is weakly developed. Larvae inhabit soil, are often found among roots, in litter, dead wood, as well as in aquatic and semiaquatic habitats in littoral and riparian zone of various water bodies. Larvae are saprophagous, feeding on plant organic, fallen leaves and wood (xylem as well as phloem of decaying trunks), some species are phytophagous. Feeding on animal decaying matter happens sometimes and helps to complete metamorphose successfully **Tipulidae**
- Spiracular disc with no more than 5 lobes. Body segmentation distinct, light, smooth, yellowish, with well developed rows of creeping welts or densely pubescent, golden, with weakly developed creeping welts or without them 22
22. Head strongly sclerotized along the whole length, lateral plates are not separated from the frontal (Figs 338, 340, *Nasiternella* Wahlgren, 1904). Frontal plate reaches posterior

- margin of head, with distinct median suture. Hypostomal plate (hypostoma) with even number of equal in size teeth anteriorly, consists of two parts connected at the level of teeth, median dent not developed. Body end with 2 diverging ventral processes behind spiracles (Figs 341, 342), spiracular disc small, weakly contoured. If the body with 5 well developed lobes — then hypostomal plate single, not divided, without median slit but always with even number of teeth (Figs 344, 345). Median tooth not developed and looks like a small tubercle. Hypopharynx and labium without teeth on anterior margin (*Ula* Haliday, 1833). Creeping welts present on III–VII or II–VII abdominal segments. Mycoxylobiotic, in fruiting bodies of fungi and in wood **Pediciidae**
- Head weakly sclerotized at least posteriorly, lateral plates completely or their halves are separated from the frontal plate by light membranous areas (Figs 240, 241). Frontal plate without distinct median suture. Hypostoma if developed single with uneven number of teeth, median tooth being equal or significantly larger than the others (Fig. 266). If hypostoma double and with even number of teeth then the head is strongly reduced (Figs 242, 261) and with well developed dorsal and ventral longitudinal rods only and lobes of spiracular disc absent (*Teucholabis* Osten Sacken, 1860). If head sclerotized (Fig. 243) then frontal plate reaches its posterior end, completely black and hypostoma unite (Fig. 264) with 5 conically situated teeth (*Lipsothrix* Loew, 1863). Body end without lobes or with 2, 4–5 lobes. Hypopharynx and labium without teeth or with large cone-like teeth on anterior margin. Creeping welts present on II–VII abdominal segments or absent. Larvae with diverse life histories - mainly terrestrial, inhabiting moist substrates (soil, litter, wood, fruiting bodies of fungi) **Limoniidae**
23. Larvae moderately long, usually with well developed prolegs on ventral side of prothorax and last body segment (Fig. 119). Body segments bare, tufts of setae present sometimes only on two terminal segments. Epicranial plates brought together ventrally, their anterior parts form unite sclerotized triangular plate, carrying dents (Figs 190, 198). Larvae in various decaying plant remains, in dust in tree holes, under bark, in litter **Chironomidae**
- Larvae serpentine, long, without prolegs, sometimes with terminal tuft of setae (Figs 188, 189). If anterior proleg present then body segments with various cuticular structures (Figs 3, 116). Epicranial plates fused ventrally, suture between them not developed, hypostomal plate, if present, small and without dents (Figs 169–171). Under bark, in decaying wood in old tunnels of insects, in dust in tree holes, in fermenting sap, in litter **Ceratopogonidae**

Key to genera of the family Anisopodidae

- Posterior spiracles are situated on lateral surfaces of abdominal segment VIII. Base of mandibles without denticulated process ventrally. Antennae long, visible both in dorsal and ventral views of head *Oligogaster* Osten-Sacken, 1886
- Posterior spiracles are situated terminally on abdominal segment VIII. Antennae short, visible in dorsal view only. Base of mandible with dentate process ventrally (Figs 21, 146) 2

2. Posterior spiracles are situated on weakly differentiated spiracular disc without distinct lobes, longitudinal axes of posterior spiracles cross almost out of spiracular disc (Fig. 145). Anterior spiracles with 16–21, posterior — with 16–26 openings *Mycetobia* Meigen, 1818
- Posterior spiracles are situated on spiracular disc with 5 distinct lobes, longitudinal axes of posterior spiracles cross in the middle of spiracular disc (Fig. 144). Anterior spiracles with 3, posterior — with 21–23 openings (genus *Sylvicola* Harris, 1776) 3
3. Last body segment simple, with short anterior ring only like in abdominal segments I–VII (Fig. 84) subgenus *Anisopus* Meigen, 1803
- Last body segment consists of 4 secondary rings besides anterior ring (Fig. 83) subgenus *Sylvicola* Harris, 1776

Key to genera of the family Axymyiidae

1. Last body segment with 4 long anal papillae (Fig. 4).. *Mesaxymyia* Mamaev, 1968
- Last body segment with 2 long anal papillae 2
2. Anal papillae with a row of simple oval swellings; sometimes the swellings with the only median bind *Protaxymyia* Mamaev et Krivosheina, 1966
- Anal papillae with 3 rows of elongated branches , both branches and main stalk with moniliform thickenings *Axymyia* McAtee, 1921

Key to genera of the family Bibionidae

1. Posterior spiracle (Fig. 149) with a single large ecdysial scar (**Pleciinae**) 2
- Posterior spiracle (Fig. 150, 151) with 2 or 3 ecdysial scars (**Bibioninae**) 3
2. Body cylindrical. Prothorax with well developed strongly sclerotized dorsal plate (Fig. 78) and with less sclerotised but disctinct ventral plate. Body length 17 mm *Plecia* Wiedemann, 1828
- Body flattened dorsoventrally. Prothorax without sclerotized plates (Fig. 79) *Penthetria* Meigen, 1803
3. Posterior spiracle with 3 ecdysial scars (Fig. 151). Protuberances of the body are developed on dorsal and lateral surfaces and absent on ventral one. Length of protuberances of all segments except the last less than twice exceeding their width (Fig. 80). Body length to 15 mm. *Dilophus* Meigen, 1803
- Posterior spiracle with 2 ecdysial scars. Protuberances of the body are developed on dorsal, lateral and ventral surfaces. Length of protuberances 3 times and more exceeding their width. Body length to 25 mm *Bibio* Geoffroy, 1762

Key to genera of the family Canthyloscelidae

1. Elongated-oval sclerotized plate near anterior spiracle is divided in halves by a suture (Fig. 147). Surface of the last body segment unsclerotized, only hooks sclerotized *Synneuron* Lundstrom, 1910

- Elongated-oval sclerotized plate near anterior spiracle simple not divided in halves by a suture (Fig. 148). Surface of the last body segment is sclerotized dorsally and laterally, hooks sclerotized *Hyperoscelis* Hardy et Nagatomi, 1960

Key to subfamilies of the family Cecidomyiidae

1. The end of the body carries 2-segmented bifurcated “proleg”, protruding at movement (Fig. 163), the rest of the body without tubercles or cuticular structures, smooth, except of minute spinules on dorsal and ventral surfaces. Large pink larvae, body length to 13 mm. In strongly decayed wood of larch
..... **Catotrichinae** (*C. marinae* Mamaev, 1985)
- The end of the body without such “proleg”, often with cuticular structures, larvae of different colours and smaller as a rule 2
2. Anal opening round, situated terminally on the last abdominal segment on rectacted or expanded tube (Figs 162, 166). In soil, decaying wood, under bark, in mosses, in fungi **Lestremiinae**
- Anal longitudinal slit is situated on ventral side of the last body segment 3
3. Abdominal segment VIII with 4 (rarely 6) dorsal papillae, situated between spiracles (Figs 164, 168). In soil, under bark, in decaying wood **Porricondylinae**
- Abdominal segment VIII with 2 dorsal papillae between spiracles (Figs 165, 167). Larvae phytophagous, many of them leave plants and pupate in soil
..... **Cecidomyiinae**

Key to subfamilies of the family Ceratopogonidae

1. Head capsule transparent, unsclerotized, dark tentorial rods are seen through cuticle of head and prothorax. Secondary segmentation of body present (sometimes indistinct). Anal segment with 3 lobes and without hairs (Figs 11, 71)
..... **Subfam. Leptoconopinae** (the only genus *Leptoconops* Skuse, 1889)
- Well developed and sclerotized head capsule present. Dark chitinous rods absent... 2
2. Larvae with anterior proleg. Body segments with numerous projections of various length and shape or with long setae. Antennae projecting significantly and replaced to posterior third of the head. Head hypognathic (Figs 3, 37) **Subfam. Forecipomyiinae**
- Larvae without anterior proleg. Body segments without projections, with short hardly visible hairs. Antennae short or weakly elongate and are situated on anterior part of the head. Head hypognathic or prognathic 3
3. Body C-curved. Last body segment with proleg carrying hooks and spines or, if proleg reduced, carrying hooks and spines only. Head hypognathic. Mandibles like wide plate with 3 large teeth (Figs 22, 118, 137). Larvae crawling
..... **Subfam. Dasyheleinae** (the only genus *Dasyhelea* Kieffer, 1911)
- Body serpentine, prolegs absent. Anal segment with setae of different length, rarely - with shortened spinelike setae. Head prognathic. Mandibles narrow, sabelform, sometimes with one or two small teeth at base. Larvae crawling or swimming
..... **Subfam. Ceratopogoninae**

Key to genera of Forcipomyiinae

1. Body flattened, oval in transverse section, lateral projections at least half as long as the segment. Segments with lateral, sometimes with dorsal, projections. In streams, rarely in decaying organic matter or leaves, sometimes under bark
..... *Atrichopogon* Kieffer, 1906
- Body segments without lateral projections, if projections developed, then their length significantly less than a half of the segment (Figs 3, 37, 40, 72, 116). Body not flattened, round in transverse section. Larvae under bark, in decaying wood, sometimes among leaves in litter *Forcipomyia* Meigen, 1818

Key to genera of Ceratopogoninae

1. Mandibles very long, about 1/3 times as long as the head .. *Clinohalea* Kieffer, 1917
- Mandibles short or elongate but their length not exceeding 1/6–1/7 of the head 2
2. Larvae often with elongate head, the relation of its length to maximal width more than 2.2. If the head shorter, then posterior margin of the collar on ventral side triangularly or hemisphaerically stretched. Ventral and dorsal sides of anal segment carry 4 short setae regulated in 2 rows with 2 setae in each, one of the rows transverse and the second longitudinal; or ventral and dorsal sides of anal segment with 1 transverse row only, consisting of 2 groups of 2 approached setae; or there is the only 1 row of 6 tufts of numerous thin setae. Frontal suture often short, rarely middle. Mandible always with ridge-furrow. Labrum narrow, projecting, relation of its length to width not exceeding 1/2. Larvae large or middle, 7–17 mm 3
- Head short or moderately elongate, the relation of its length to maximal width less than 2.1. Collar always without triangular elongation on ventral side and as a rule interrupted dorsally, forming 2 semirings. Position of setae on anal segment not as above. Frontal suture as a rule long, rarely middle. Mandibles without ridge-furrow, sometimes it is present (genus *Monohelea* Kieffer, 1917) but weakly developed. Labrum short and wide, relation of its length to width more than 1/2.5. Larvae small, sometimes middle, swimming or crawling 9
3. Head significantly elongate, the relation of its length to maximal width more than 2.2. Collar of uniform width ventrally, if stretched at middle — then the head shorter with the relation 1.5–1.6. Thick setae of anal segment are about 3/4 or 1/2 as long as the segment and always paired. Frontal suture middle (no farther than to setae *q*) or short (ending near setae *p*). Body segments with aggregations of pigment of different tinte, of brown, orange or lilac. Larvae swimming or crawling 4
- Head moderately elongate, the relation of its length to maximal width no more than 2.1, very rarely (*Jenkinshelea* sp.) about 2.8. Collar with distinct semicircular or triangular posterior elongation on ventral side. Setae of anal segment are relatively short and not thick, their position: posterior pair of setae, and 2 single setae or longitudinal row of several tufts in front of them. Frontal suture middle. Larvae swimming 5

4. Frontal suture stretching above pit κ (the exception — *P. lineata* (Meigen, 1804), head elongate-conical (Figs 176, 177). If head short-conical, then the collar with small triangular posterior elongation ventrally *Palpomyia* Meigen, 1818
- Frontal suture reaching setae p only or stretching a little farther, but not reaching pits r . Head cylindrical or elongate-conical (Figs 74, 178) *Bezzia* Kieffer, 1899
5. Anal segment conical. Its dorsal and ventral sides carrying a median row of 6 tufts of numerous thin long setae, beginning from large oval bases (Figs 173, 174)
..... *Jenkinshelea* Macfie, 1934
- Anal segment round or a little narrowed posteriorly. It carries 4 short setae on dorsal and 4 setae on ventral sides, regulated like 2 setae in 2 rows, one of which is transverse and second — longitudinal in front of it 6
6. Thoracic segments with black spots. Head bright yellow (Fig. 175)
..... *Nilobezzia* Kieffer, 1921 (*N. formosa* (Loew, 1869))
- Body with brown pigmentation 7
7. Larvae large, body length 16–17 mm. Head moderately elongate, brown, the relation of its length to maximal width no more than 1.8. Collar with triangular elongation ventrally (Fig. 117) *Sphaeromias* Curtis, 1829
- Larvae smaller. Collar with round elongation ventrally 8
8. Head more elongate, the relation of its length to maximal width more than 2.0, significantly narrowed anteriorly (Fig. 179). Labrum long, as long as wide. Head amber-yellow. Thoracic segments with irregular spots of bright brown pigmentation
..... *Probezzia* Kieffer, 1906 (*P. seminigra* (Panzer, 1798))
- Head less elongate, the relation of its length to maximal width less than 2.0, anterior part of head wider (Fig. 180). Labrum transverse, wider than long
..... *Mallochohelea* Wirth, 1962
9. Head very small if compared with thick body. Collar well developed, about 1/2 of prothoracic segment. Frontal suture reaching pits k (Fig. 181). Setae of anal segment short, thin, hardly visible, regulated in one row at equal distance from each other. Larvae crawling, slow in movement *Serromyia* Meigen, 1818
- Head large if compared with the body. Collar shorter, not exceeding 1/4, more often about 1/6–1/8 of prothoracic segment. Frontal suture long (reaching z) or shorter (reaching q). Setae of anal segment short, median or long. Larvae swimming or crawling quickly 10
10. Antennae relatively long, projecting. Frontal suture reaching setae s . Anal setae long or median (0.5–0.8 of anal segment). Labium weakly developed, round. Body weakly sclerotized on thoracic segments 11
- Antennae short, not projecting. Frontal suture long (reaching pits z) or shorter (reaching setae q). Ventral suture present or absent 12
11. Larvae very small. Length of head about 150 μm , head short, the relation of its length to maximal width 1.6. Ventral suture not long, not reaching setae y (Fig. 182)
..... *Brachypogon* Kieffer, 1899
- Larvae larger. Length of head more than 190 μm . Head elongate, the relation of its length to maximal width more than 1.8. Ventral suture long, almost reaching setae y (Fig. 183) *Isohelea* Kieffer, 1917

1. Larvae
siphuncular
...
— Larvae
reaching
2. Larvae
...
— Larvae
...
3. Setae
Median
...
— Setae
large
...
4. Antennae
other
V

12. Anal setae short, thin, light, situated on dorsal and ventral sides, regulated in 1 transverse row, with setae at equal distance from each other or approximate, forming 2 groups. Body without pigmentation or with small amount of greyish-green pigment on thoracic segments. Frontal suture reaching z or t (Figs 185, 187). Larvae not swimming or badly swimming *Stilobezzia* Kieffer, 1911
- Anal setae long, if short — then situated in another pattern. Larvae swimming quickly 13
13. Larvae without pigment, body milky-white or greyish. Anal setae median or long 14
- Body, at least thoracic segments, pigmented. Anal setae short or very long 15
14. Frontal suture long, reaching pits z . Collar interrupted ventrally, consists of 2 semirings, ventral suture breaking during moult. Mandibles without ridge-furrow. Epipharynx with 2 ridges *Ceratopogon* Meigen, 1803
- Frontal suture median, reaching setae q (Fig. 184). Collar not interrupted ventrally. Ventral suture not breaking during moult. Mandibles with noticeable or weakly developed ridge-furrow. Epipharynx with 1 ridge *Monohelea* Kieffer, 1917
15. Anal segment with very long setae which are equal or longer than the segment. Internal fat body greyish, its exterior layer brownish. Setae s and u , posterior seta from group o are represented by tuft. Seta u is situated above and behind seta v (Figs 136, 137, 186) *Alluaudomyia* Kieffer, 1913
- Anal segment with very short setae. Internal fat body not pigmented. All setae single. Seta u situated above and in front of v (Figs 25, 169, 170, 171, 188, 189) *Culicoides* Latreille, 1809

Key to genera of the family Chaoboridae

1. Larvae apneustic, with pigmented air-sacs inside thorax and abdomen but without siphon and spiracles. Head narrow, flattened laterally (*Chaoborus* Lichtenstein, 1800) 2
- Larvae metapneustic, with paired spiracles at the end of abdomen lying at least on reduced siphon, head not flattened laterally 4
2. Labral blade serrated posteriorly, thin, bristle-like. Antennae without basal curve *Chaoborus* (*Penusomyia* Saether, 1970)
- Labral blade serrated anteriorly, blade-like. Antennae with basal curve 3
3. Seta on anterior surface of antenna minute, placed at 0.8–0.95 distance from base. Mature larva 16–22 mm long, head capsule at least 2.1 mm long *Chaoborus* (*Schadonophasma* Dyar et Shannon, 1924)
- Seta on anterior surface of antenna placed less than 0.8 distance from base. Mature larva less than 16 mm long, head capsule less than 1.8 mm long (Fig. 213) *Chaoborus* (*Chaoborus* Lichtenstein, 1800)
4. Antennae widely separated, their bases closer to lateral margins of head than to each other. Tracheal trunks with 2 pairs of air-sacs — inside thorax and abdominal segment VII. Spiracles are situated at apex of well developed siphon (Fig. 211) *Mochlonyx* Loew, 1844

- Antennae close to each other. Tracheal trunks with 3 pairs of air-sucks — inside thorax and abdominal segments VI–VII. Spiracles are situated at apex of scarcely developed siphon (Figs 210, 212) ***Cryophila*** Edwards, 1930

Key to subfamilies of the family Chironomidae

1. Antennae retractile inside the head capsule (in special grooves of head, usually retracted in fixed larvae). Hypopharynx with unpaired strongly and distinctly developed sclerite, glossa, formed by 4–6 dents, paraglossae surround it from lateral (Figs 190, 194) **Tanypodinae**
- Antennae not retractile (Fig. 191). Hypopharynx without large dentate sclerite .. 2
2. Praemandibles absent 3
- Praemandibles developed (Fig. 196) 4
3. Procercus 5–10 times as long as wide (Fig. 197 compare with Fig. 199), setae of brush dark, brown-black. Mandibles at least with 6 internal dents. Posterior parapods well developed, elongate, projecting below body axis **Podonominae**
- Procercus absent. Posterior parapods reduced, short **Buchonomyiinae**
4. Ventromedial plates are situated laterally from mentum and overlie it; they are large, fan-like with diverging striation or very low with transverse striation or trapezoid. Eye spots of one side are situated one after another, sometimes there are 3 spots at one side (Figs 66, 198) **Chironominae**
- Ventromedial plates absent or developed but then always without striation. Eye spots of one side are situated one above another, sometimes they are fused in one spot 5
5. Ventromedial plates large, not striated, with many long setae or several short hairs, which are situated perpendicularly to longitudinal axis of head or at an angle to it downwardly **Prodiamesinae**
- Ventromedial plates absent or very narrow 6
6. Labrum with transverse row of overlapping serrate lamellae (Fig. 195), mandibles without inner seta **Diamesinae** (Protanypini)
- Labrum without transverse row of lamellae, mandibles with inner seta which is usually split in several branches 7
7. Antennal segment 3 not annulate (Fig. 193) **Orthocladiinae**
- Antennal segment 3 not annulate (Fig. 192) 8
8. Lateral sclerites of head with projections. Dorsal surface of the body with groups of small spines forming special picture. Antennae 4-segmented **Diamesinae** (Boreoheptagyini)
- Lateral sclerites of head without projections. Dorsal surface of the body without groups of small spines forming special picture. Antennae 5-segmented **Diamesinae** (Diamesini)

Key to genera of the family Culicidae

1. Siphon absent; stigmal plate carrying stigmata is located directly on the dorsal side of abdominal segment VIII. Larvae are parallel with the water surface. Head

- longitudinally-oval (Figs. 35, 36, 58, 200, 206). (*Anophelinae*) *Anopheles* Meigen, 1918
- Siphon is developed on the dorsal side of abdominal segment VIII, stigmata are situated on its apex (Fig. 201) 2
2. Siphon short, as long as abdominal segment IX (Fig. 209). Head of quadrangular shape. Lateral lobes of labrum are strongly replaced outwardly and carry no more than 10 thick motile thorns with toothed tips for capturing prey. Large, about 20 mm, usually dark brown with violet tinge. In tree holes (*Toxorhynchitinae*) *Toxorhynchites* Theobald, 1901
- Siphon longer, its length exceeding abdominal segment IX (Figs 205, 208). Head of transversely-oval shape. Lateral lobes of labrum carry 30 or more long thin hairs apically, forming fans (in subgenus *Lutzia* Theobald, 1903 of *Culex* Linnaeus, 1758) these hairs are thick, curved and with a row of small setae at the end). (*Culicinae*) 3
3. Siphon truncate-conical, with the length equal or less than its width at base, armed with serrated teeth on dorsal surface. Valves and lever of stigmal plate are reorganised for boring and penetrating the aerial tissues of plants — macrophytes; larvae breath with the air of plant tissues (Fig. 202) *Mansonia* Blanchard, 1901
- Siphon not modified, without teeth, larvae breath with the air from the water surface 4
4. Sclerotized chitinous plates with branched teeth on its posterior margin are situated on the sides of abdominal segment VIII (Fig. 203) *Uranotaenia* Lynch Arribalzaga, 1891
- No sclerotized chitinous plates, a group of scales (comb of scales) only, are situated on the sides of abdominal segment VIII 5
5. Sclerotized dorsal plates reaching over to the sides of the segments present on abdominal segments VII and VIII (Fig. 204). Siphon without a comb, with one bundle of siphonal hairs at the middle only. In tree holes. *Orthopodomyia* Theobald, 1904
- No sclerotized dorsal plates on abdominal segments VII and VIII 6
6. Several pairs of siphonal bundles of hairs are developed 7
- One pair of siphonal bundles of hairs is developed 9
7. Siphon without a comb of sclerotized thorns on its base. The body of the larva is covered with bundles of feather-like tassels of hairs. No fin on ventral side of the last body segment. Long thick simple, double or triple spine situated on sclerotized plate, is present on dorsolateral side of metathorax *Tripteroides* Giles, 1904
- Siphon with a comb of sclerotized thorns on its base 8
8. Siphon long, gradually narrowing to its tip (Fig. 205). Abdominal segment IX without sclerotized saddle. Antennae long. Larvae small or middle .. *Culex* Linnaeus, 1758
- Siphon widened in the middle. Sclerotized saddle embraces abdominal segment IX *Heizmannia* Ludlow, 1905
9. One bundle of siphonal hairs is present at the base of siphon on each side. Comb developed (Fig. 207) *Culiseta* Felt, 1904
- One bundle of siphonal hairs is present at the middle on each side of siphon or removed its apex 10

10. Siphon elongate, with comb of teeth (Fig. 201, 208) *Aedes* Meigen, 1818
 – Siphon short, without a comb of teeth. Bundle of siphonal hairs is closer to its apex *Armigeres* Theobald, 1901

Key to genera of the family Cylindrotomidae

1. Dorsal projections very long, filamentary, those on abdominal segments - diverging. Larvae on aquatic or semiaquatic mosses, in reservoirs among aquatic vegetation (Fig. 107) *Phalacrocera* Schiner, 1863
- Dorsal projections short, no longer or a little longer than the body diameter, conical or leaf-forming. Larvae on herbaceous or mosses 2
2. Dorsal projections on median abdominal segments form one unpaired longitudinal row. Projections blunt, short, simple, undeterminate. Lateral projections like short tubercles. Larvae on herbaceous *Cylindrotoma* Macquart, 1834
- Dorsal projections on median abdominal segments form 2 longitudinal rows. At least one pair of projections on each segment with branches. Lateral projections developed better than the others. In mosses, including those on tree stumps and fallen trunks . 3
3. All projections acute, both posterior dorsal projections with 3(4) dents. Each median abdominal segment with 3 large and 1, two times shorter, lateral projections (Fig. 109) . Body coloration brownish. In semiaquatic mosses *Triogma* Schiner, 1863
- All abdominal projections blunt, both posterior dorsal projections with 2 short blunt dents. Each median abdominal segment with 3 lateral projections at each side (Figs 56, 108). Body coloration greenish with brown punctuation. Usually in terrestrial mosses, mainly on fallen tree trunks *Diogma* Edwards, 1938

Key to genera of the family Ditomyiidae

1. Abdominal segments elongate, 1.5-2 times as long as wide. Penultimate segment carries 2 round spiracles on dorsal surface. Mandibles with 5 well developed dents (Figs 31, 95, 97) *Symmerus* Walker, 1848
- Abdominal segments short, as long as wide or shorter. Penultimate segment dorsally with 2 long acute sclerotized projections, carrying spiracles. Mandibles with 4 well developed dents 2
2. Ventral surface of prothoracic segment with 2 spinulae, situated symmetrically from median line, mesothoracic and metathoracal segments with the same groups but consisting of 3 spinulae. Width of prostheca approximately 1/4 width of mandible at median part. Head capsule yellow or light-brown, mainly uniformly weakly sclerotized (Fig. 219) *Ditomyia* Winnertz, 1846
- Ventral surface of all thoracic segments with 2 spinulae, situated symmetrically from median line. Width of prostheca approximately 1/2 width of mandible at median part. Anterior third of the head capsule yellow, weakly sclerotized, the rest of the head capsule — dark-brown, almost black (Figs 98, 218, 221) *Asioditomyia* Saigusa, 1973

Key to genera of the family Dixidae

(Figs 214–215)

1. Ventral combs present on abdominal segments V and VI only. Width of basal plate more than twice exceeding its length at median line *Dixa* Meigen, 1818 (part)
- Ventral combs present on abdominal segments V–VII. If the comb on abdominal segment VII developed weakly then the width of basal plate approximately equal to its length at median line 2
2. Larvae with dorsal crowns of setae *Dixa* Meigen, 1818 (part)
- Larvae without dorsal crowns of setae *Dixella* Dyar et Shannon, 1924

Key to genera of the family Keroplatidae

1. Head rectangular-oval, narrowed posteriorly, posterior margin with deep dorsal incisions, dividing lateral plates in 2 unequal lobes (Fig. 224) *Orfelia* Costa, 1857 (*Orfelia fasciata* (Meigen, 1804))
- Head rectangular or square, not narrowed posteriorly, posterior margin even, without incisions or with incisions — then the 2 lobes are at the same level 2
2. Head elongate, rectangular. Posterior margin of the head capsule without dorsal incisions. Lateral plates contact anteriorly on ventral side at short distance (Fig. 223) *Cerotelion* Rondani, 1856
- Head rectangular or square. Posterior margin of the head capsule with deep dorsal incisions. Lateral plates not contacting ventrally, widely separated (Fig. 225) *Keroplatus* Bosc, 1792

Key to Subfamilies and genera of Limoniidae

(Figs 229–279)

1. Body end with 2, 4–5 lobes of spiracular disc or ultimate body segment cut obliquely and even. Hypopharynx and labium blade-like without large conical teeth on anterior margin. The exclusions — larvae of the genus *Helius* Lepeletier et Serville, 1828 — which have hypopharynx and labium with large blunt teeth and *Lipsothrix* Loew, 1863, which have blade-like hypopharynx but labium with distinct blunt teeth. Clypeus without transparent lateral projections carrying seta. Hypostoma different in degree of development and shape. Creeping welts present on II–VII or on V–VII abdominal segments. Larvae inhabit different terrestrial, aquatic and semiaquatic substrates. Subfamilies **Hexatominae**, **Eriopterinae**, **Dactylolabinae** 2
- Body end without well developed lobes of spiracular disc, surrounded by small blunt tubercles. If body end with 2 long ventral lobes then larva apneustic — spiracles absent (*Antocha* Osten Sacken, 1860). Clypeus with lateral projections. Hypopharynx, labium and hypostoma with a row of large conical teeth on anterior margin. Creeping welts (6 welts) well developed on II–VII abdominal segments. Larvae inside silk tubes or leather ellipsoid cases. Mainly terrestrial, inhabit different moist substrates

- decaying wood, fruiting bodies of fungi, litter. Larvae — destructors of decaying plant remains Subfamily **Limoniiinae**
- 2. Spiracular disc with 4 well developed lobes. If lobes absent then spiracular disc with 5 distinct pigmented spots (*Austrolimnophila* Alexander, 1920). Lobes with long hairs especially on the apex of ventral ones. Hairs promote fixation of the larvae on water surface or keeping air bubble after submergence. Hypostoma is represented by single or double plate, carrying conical teeth on anterior margin or hypostoma only like thin rod without teeth. Mainly aquatic and semiaquatic larvae, majority of species — predators. Subfamilies **Hexatominae**, **Dactylolabinae** 3
- Spiracular disc with 5 well developed lobes with internal pigmented spots. If lobes absent then spiracular disc without spots (*Teucholabis* Osten Sacken, 1860; *Chionea* Dalman, 1816). Hypostoma usually not developed. Apices of ventral rods sometimes widened, sometimes with several teeth but always separated, not closing head capsule ventrally (*Molophilus* Curtis, 1833 and others). If double massive hypostomal plate with 8–9 teeth on each half developed, closing head capsule ventrally, then lobes of spiracular disc absent (*Teucholabis* Osten Sacken, 1860). Larvae in moist soil often near water bodies, saprophages, many species are very important utilizers of litter and for soil-formation Subfamily **Eriopterinae**
- 3. Body flattened dorsoventrally. Abdominal segments II–VII with secondary segmentation. Cuticle dorsally with many short dark grouped setae forming 2 dark inclined dorsal stripes on abdominal segments II–VII. Hypostoma conical, its anterior margin with 9–11 teeth. Body without creeping welts. Species are distributed in highlands. Larvae hygrophilous and one of the components of hygropethric fauna (wet stones in riparian zone, regularly moistened rocks) Subfamily **Dactylolabinae** (*Dactylolabis* Osten Sacken, 1860)
- Body not flattened dorsoventrally. Abdominal segments without distinct secondary segmentation. Groups of dark dense setae forming longitudinal stripes absent Subfamily **Hexatominae**

Key to Genera of the Subfamily Hexatominae

- 1. Spiracular disc without lobes (Fig. 268), with small hardly distinguished tubercles and with 5 pigmented spots, among them: massive triangular ventral spots, small externally contacting spiracles lateral spots and small oval dorsal ones. Anterior margin of hypostoma (Fig. 256) not arched conically, with 5 teeth, 3 median being larger than the marginal. Praeclypeus (sclerotized plate in base of labrum) not developed. Frontal plate almost triangular, pointed posteriorly, with 2 wide terminal projections behind it (Figs 230, 246). Cuticle with dense long lying hairs (Fig. 114). Body length 11–15 mm. Larvae develop in soft wood of fallen deciduous trees without bark and inhabit upper layers of sapwood, saproxylophages *Austrolimnophila* (s.str.) Alexander, 1920
- Spiracular disc with 4 well developed lateral and ventral lobes. Dorsal lobe if present represented by small light tubercle 2

2. Head capsule massive, well developed. Frontal and lateral plates of head sclerotized, dark at anterior half and separated only at posterior half or posterior third. Hypostoma well developed, wide, double with even number of teeth or single with odd number of teeth on anterior margin 3
- Head capsule reduced, only marginal sections of plates sclerotized, looking like longitudinal rods. Frontal and lateral plates separated at the whole length to the base. Hypostoma not developed or formed by thin rods without teeth 5
3. Hypostoma single with 3 large median and 2 small short marginal teeth. Maxilla of usual type with short stipes. Spiracular disc with short marginal hairs, their maximal length no more than the width of lobes (Fig. 62). Spiracular disc with 4 elongated lobes and small dorsal tubercle, without pigmented spots. Frontal plate of the head capsule darkened anteriorly with 2 light median spots on this section and narrowed posteriorly, with 2 parallel terminal projections behind it (Figs 233, 237). Praeclypeus not developed. Body length 12–16 mm. Larvae inhabit the thickness of light and dark dead solid wood of deciduous trees, common in stumps. Larvae are typical xylophages *Epiphragma* Osten Sacken, 1860
- Hypostoma massive, double, with 4 or 6 teeth on each half. Median teeth very short and look like small tubercles. Maxilla with elongate narrow stipes significantly protruding forward over the labrum. Spiracular disc with long stout marginal hairs. Hairs of ventral lobes as long as or longer than spiracular disc 4
4. Each half of hypostoma with 4 teeth on anterior margin (Fig. 65). Conical lobes of spiracular disc short, with tufts of long hairs, hairs on ventral lobes long. Anal papillae relatively short. Body length 8–10 mm. Larvae semiaquatic, common in moist, rich with organic matter, soil on lake banks, on permanently watered rocks under mosses and algae, they are part of “fauna hygropetrica”, also in mud of low-lying marsh on the boggy lakeshore. Larvae feed mainly as zoophages, eating small invertebrates like amoebas and larvae of insects including *Pericoma* Haliday, 1856 (Psychodidae) as well as on decaying fallen leaves, but they need animal-derived proteins for successful development. Tribe *Paradelphomyiini*
..... *Paradelphomyia* Alexander, 1936 (subgenus *Oxyrhiza* De Meijere, 1946)
- Each half of hypostoma with 6 teeth and median tubercle on anterior margin (Fig. 262). Ventral and lateral lobes of spiracular disc elongate, parallel-sided, completely posteriorly darkened, black, with dense hairs of approximately equal length reaching width of stigmal disc (Fig. 273). Besides, all the four lobes with few long apical setae. Anal papillae very long, several times as long as the width of segment. Body length 14–18 mm. Larvae inhabit moist swampy soil under moss or at sites without flora, riparian silt of shallow water bodies. *P. sepium* (Verrall, 1886) develops in bed silts under water, in small springs with low current. Larvae feed on decaying vegetation and diatoms. Tribe *Limnophilini* *Pseudolimnophila* Alexander, 1919
5. Larvae (Fig. 113) develop in moist wood. Stipes of maxilla shortened, no longer than the other parts of head capsule, not protruding forward over it (Fig. 231). Lobes of spiracular disc massive, broadly rounded apically, with poorly developed pubescence. Ventral lobes with additional long apical seta 2 times as long as the width of lobe

- (Figs 270, 272). Creeping welts well developed on V–VII abdominal segments only. A tuft of long dense hairs present in front of anal slit. Body seems golden because of dense lying pubescence. Body length 10–17 mm. Larvae typical for decaying wood, prefer strongly moistened brown wood of fallen blocks of various deciduous trees. Sometimes they inhabit light wood following larvae of boring beetles. Tribe *Elephantomyiini* *Elephantomyia* Osten Sacken, 1860
- Larvae breed in aquatic and semiaquatic habitats. Maxilla elongate, significantly protruding forward over the level of the head capsule. They are distinguished well even on retracted inside thorax head capsule. Ventral lobes or all the 4 lobes of spiracular disc with long dense setae. Tribes *Hexatomini* и *Limnophilini* 6
 - 6. Labrum with a pair of elongate pubescent lateral projections at anterior-lateral angles. Lobes of spiracular disc narrow, long, rounded apically. Lateral lobes with very narrow dark longitudinal stripe on the middle. Hairs better developed on margins of lateral lobes, than on ventral lobes, where they are accumulated at apex. Body greenish or greenish-brown. Body length 18–24 mm. Larvae live on bottom and in riparian zone of small shallow water bodies in sandy or gravel soil devoid of vegetation or in aquatic or semiaquatic mosses on surface of stones in streams and rivers. Predators, feed on small invertebrates, mainly larvae of chironomids. Pupate in sandy and pebbly soils at the bank. Tribe *Hexatomini* *Hexatoma* Latreille, 1809
 - Labrum without pubescent projections. Lateral lobes of spiracular disc with pigmented spots of another shape. Hairs on lobes uniform or better developed on ventral lobes. Body white or yellow-brown. Tribe *Limnophilini* 7
 - 7. Last body segment conical with closed lobes of spiracular disc and a tuft of stout long setae. Body length 8–15 mm. Larvae of *N. batava* (Edwards, 1938) inhabit swampy silty rich with organic matter soil in riparian zone of forest water bodies. Saprophages with mixed type of feeding — plant and animal remains *Neolimnomyia* (s.str.) Séguay, 1937
 - Last body segment not pointed, blunt. Lobes of spiracular disc not fused, separated 8
 - 8. Lobes of spiracular disc long and narrow, almost of equal length, with pointed apices, their length 1.5–2 times exceeding segment width. All lobes light without pigmented spots. Body length 13–18 mm. Larvae inhabit wet biotopes — banks of various water bodies and moist meadows. Larvae helobiontic, preferring silty rich with humus and saturated with water riparian soils, swampy soils, aggregations of silt and fallen leaves. Predators, feed on small invertebrates including chironomid and ceratopogonid larvae (Chironomidae, Ceratopogonidae) *Eloeophila* Rondani, 1856
 - Lobes of spiracular disc shorter, if ventral lobes long — then lateral ones distinctly shorter. Lobes with pigmented spots of various shape 9
 - 9. Mandibles two-segmented with broad base and narrow pointed apical segment. Prosteca massive and distinguished from above. Ventral lobes of spiracular disc 3 times as long as lateral lobes, strongly pigmented, completely black or black at apical third and at base. Anal papillae narrowed and rounded apically, their length almost equal to the width of anal segment. Body length 11–24 mm. Larvae inhabit wet forest biotopes developing in moist decaying fallen leaves, in swampy soil, in saturated

- with water silty and sandy drifts of water bodies at riparian zone. Obligatory predators, feed on small invertebrates *Pilaria* Sintenis, 1889
- Mandibles one-segmented. Prosteca usually situated on ventral side and not seen from above 10
10. Lateral and ventral lobes of spiracular disc almost of equal length, parallel-sided with broadly rounded apex, with hairs of equal length, 1.5–2 times exceeding the width of lobes, along the whole margin. Head capsule without developed hypostoma, maxilla elongate, rounded apically. Anal papillae pear-like, swollen basally and narrowed apically. Body length 20–22 mm. Larvae common in wet soils on moist meadows, in riparian silt and sand of lakes and rivers (*L. (s.str.) schranki* Oosterbroek, 1992); sometimes semiaquatic; data on the development in decaying wood need verification. Larvae of *L. (s.str.) pictipennis* (Meigen, 1818), besides swampy soil and silk, develop in saturated with water aggregations of fallen leaves. Predators, feed on small invertebrates *Limnophila* (s.str.) Macquart, 1834
- Lateral lobes of spiracular disc conical with pointed apices. Anal papillae short or elongate-oval 11
11. Spiracular lobes with V-shaped narrow pigmented stripes, situated along their margins. Two small dark spots present between spiracles. Spiracular disc with short hairs of equal length at least 3 times less than the basal width of lobes. Anal papillae short and oval. Body length 10–12 mm. Larvae of *B. nemoralis* (Meigen, 1818) inhabit swampy and moist soil along river banks and other water bodies
..... *Neolimnomyia* Séguin, 1937, subgenus *Brachylimnophila* Alexander, 1966
- Spiracular lobes with large pigmented spots. Pubescence of spiracular disc represented by hairs of different length 12
12. Hairs on the apices of lateral and ventral lobes of equal length and a little exceeding basal width of lobes. Hairs on lateral sides of lobes very short, 5–6 times less than on the apices. Lateral lobes with long and wide pigmented spot separated from spiracle by wide light stripe. Pigmented spot on ventral lobes like 2 long isolated stripes. Exterior stripe with thin finger-like projection, reaching the base of spiracle. Body length 34–38 mm. Larvae of *Eutonia barbipes* (Meigen, 1804) in moist soil, aggregations of remains of leaves, mosses, fern, mixed with silt. Typical predators, feed on mites, oligochaets, chironomid larvae
..... *Eutonia* v.d. Wulp, 1874
- Hairs on the apices of lateral lobes significantly shorter than on ventral lobes.... 13
13. Maxilla elongate gradually narrowing towards apex where they are rounded, smooth, without dense pubescence at apical third. Clypeolabrum with elongate dark stripes. Ventral lobes of spiracular disc significantly longer than the lateral, with a tuft of several long setae, the length of which exceeds the length of spiracular disc. Naturally lobes of spiracular disc approximate and only a tuft of setae visible at the end of the body. Spiracular disc (Fig. 276) with simple elongate dark pigmented stripes on ventral lobes and behind spiracles on lateral lobes. Body length 11–13 mm. Larvae of *I. pulchella* (Meigen, 1830) usually inhabit lowermost part of Sphagnum moss in a low-lying swamp and in swampy soil in deciduous forests *Idioptera* Macquart, 1834

- Maxilla elongate, massive, practically not narrowed towards apex, where they are broadly rounded. Apical third of maxilla internally with tufts of dense hairs. Ventral lobes of spiracular disc only a little longer than the lateral 14
- 14. Dark pigmented spots on lateral lobes of spiracular disc narrow, even, almost parallel-sided, short, not contacting spiracles (Fig. 279). Body length to 20 mm (Fig. 229). Larvae hygrophilous, distributed in moist habitats along the margins of peatbogs and sphagnum bogs, water bodies, moist meadows; live in silt, in saturated with water soil, in accumulations of semiaquatic mosses. Larvae of *Phylidorea* (s.str.) *ferruginea* (Meigen, 1818) — in swampy soil, overgrown with *Juncus*, among decaying fallen leaves on bottom of water bodies; *P. (Paraphylidorea) fulvonervosa* (Schummel, 1829) — in riparian silt, silty marshy soils. Active predators, feed on small invertebrates, mainly chironomid and ceratopogonid larvae, copepods, oligochaets *Phylidorea* Bigot, 1854
- Dark pigmented spots on lateral lobes of spiracular disc with median projection and archially surround spiracle outwardly. Body length 13–18 mm. Larvae of *Euphylidorea lineola* (Meigen, 1804) — in silty soil at river banks, larvae of *E. meigenii* (Verrall, 1887) in silt, in saturated with water swampy soil and accumulations of sphagnum *Euphylidorea* Alexander, 1972

Key to Genera of the subfamily Eriopterinae

1. Body end without spiracular lobes, rounded. Dark pigmented spots on spiracular disc absent 2
- Body end with 5 well developed lobes of spiracular disc. Dorsal lobe a little shorter than the others but well developed, with pigmented spot as well as on the other lobes. Lateral and ventral lobes of almost equal size, pubescent by short hairs 3
2. Body segments without developed creeping welts (Fig. 274). Hypostoma (Fig. 261) represented by 2 wide approximate hypostomal plates, completely closing head capsule ventrally and each carrying 6–9 anterior teeth. Head capsule strongly reduced and consists of thin long longitudinal rods only (Figs 242, 252). Body length 10 mm. Larvae inhabit thickness of phloem of fallen trunks of deciduous trees. Tribe Gonomyiini *Teucholabis* Osten Sacken, 1860
- Abdominal segments II–VII with creeping welts. Hypostoma reduced, head ventrally membranous. Head capsule with light but well developed frontal and lateral plates and massive sclerotized rods on their border. Body length 6–9 mm. Larvae were collected in organic detritus of old thrown over mice nests, burrows of earthworms and in loose surface detritus in soil. Tribe Cladurini *Chionea* Dalman, 1816
3. Several or all lobes of spiracular disc with elongate spine on apex. Lobes with oval large darkened pigmented spots which are dark externally and light in the middle. Head capsule elongate, strongly reduced like narrow longitudinal rods. Anterior part of ventral rods widened, rounded or with several small blunt teeth. Hypopharynx semispherical with many small spines. Body cylindrical. Cuticle golden with microscopic yellow hairs. Body length 13–17 mm. Littoral species, along banks of running water bodies with sandy and gravel bottom. Larvae in shallow streams in

- bottom soil as well as in aggregations of algae in riparian zone, in sand, silt drifts, at the depth of 3–4 cm, among roots, under mosses
..... *Rhabdomastix* Skuse, 1890, subgenus *Sacandaga* Alexander, 1911
- Lobes of spiracular disc of usual type, without scleroized apical spines 4
 - 4. Last body segment with 5 well developed equal lobes of spiracular disc pigmented and black externally as well as internally. Head capsule like thin longitudinal rods. Body length 12–14 mm. Larvae in riparian zone of water bodies or on bottom, mainly in drifts of silty or clean sand, in marshy soil near streams, in moist sand inside decaying fallen leaves in streams *Scleroprocta* Edwards, 1938
 - All the five lobes of spiracular disc with internal pigmented spots only 5
 - 5. Hypostoma united, massive, with narrow slit reaching the base of median tooth or to its apex, as a result the apical tooth is almost double. Anterior margin of hypostoma practically even, not conically extended, but median tooth sometimes longer than the others 6
 - Hypostomal plates reduced, if present — then double, small, separated, with anterior margin uneven and rounded. Sometimes with teeth situated fan-like 8
 - 6. Head capsule strongly sclerotized, frontal plate as well as lateral plates dark, long, reaching almost its posterior margin, slightly narrowed and broadly rounded posteriorly (Figs 235, 247, 243). Terminal projections absent. Praeclypeus like transverse sclerotized plate rounded at posterior margin. Hypostoma with 3 rounded large median teeth and adjoining small marginal teeth (Fig. 264). Pigmented spot of lateral lobes reaches spiracles (Figs 67, 271). Larvae in decaying strongly moistened wood of fallen tree trunks, lying near streams *Lipsothrix* Loew, 1873
 - Head capsule with relatively light frontal plate, its length no more than 2/3 of head, sharply narrowed and pointed posteriorly. Praeclypeus reduced. Hypostoma with 5–6 well developed teeth. Pigmented spots of lateral lobes separated from spiracles by light stripe. Body with long thin hairs 7
 - 7. There are 2 approximate rounded apically terminal projections behind frontal plate (Figs 244, 253). Spiracular disc with pigmented spots divided by light stripe on lateral and ventral lobes (Fig. 275). Hypostoma with 5 pointed teeth (Fig. 265). Creeping welts present on abdominal segments II–VII. Body length 11.5–13 mm. In littoral zone of lakes in mud among roots of *Phragmites* sp., *Typha* sp. and other aquatic plants *Helius* Lepeletier et Serville, 1828
 - No terminal projections behind frontal plate (Figs 241, 255). Spiracular disc with continuous dark pigmented spots on all lobes (Fig. 277). Hypostoma with blunt rounded teeth, median one is divided by narrow slit to the apex (Fig. 263). Weakly developed flat creeping welts present on abdominal segments II–VII. Body length 13.5 mm. Larvae inhabit relatively fresh yellowish phloem of dying trunks mainly of deciduous trees. Prefer substrate saturated with sap. Sometimes develop in decaying wood in foot of fruiting bodies of polyporous fungi *Microlimonia* Savchenko, 1976
 - 8. Hypostoma like 2 small isolated oval plates, distinctly separated with suture from ventral rod and carrying each 3–4 teeth (Fig. 259). Spiracles transverse-oval. Lateral pigmented spots surround spiracles. Dorsal pigmented spot continuous, pigmented spots of lateral and ventral lobes are divided in two by light stripe. Body length 7–13

- mm. Larvae inhabit silty soils of riparian zone, in swampy soils; saprophagous
- Molophilus*** Curtis, 1833 (*occultus* de Meijere, 1918, *crassipygus* de Meijere, 1918)
- Hypostoma not developed or anterior part of ventral rods slightly broaded, sometimes with 1–2 small teeth 9
 - 9. All lobes of spiracular disc are of about equal size and completely black internally. Very narrow weak light stripe is seen sometimes 10
 - At least ventral pigmented spots are divided partially or completely by light wide stripe 11
 - 10. Internal margin of dorsal and ventral pigmented spots even, not conical. Apices of all lobes with dense short equal setae hardly half as long as lobes' width. Lateral pigmented spots are separated from spiracles by light stripe. Body length 10–12 mm. Ecologically connected with moist swampy banks of small streams, larvae — in wet silty ground. Inhabit silt near shoreline and in salty ground at sea surf zone; saprophages ***Symplecta*** Meigen, 1830; subgenus ***Trimicra*** Osten-Sacken, 1861
 - Internal margin of dorsal and ventral pigmented spots conical. Lobes of spiracular disc with long lateral setae. Apices of lobes with shorter and sparse setae. Lateral pigmented spots adjoin spiracles. Body length 12–15 mm. Larvae in wet rich with organic riparian silt, in aggregations of silt and fallen leaves, in swampy soil; saprophages ***Rhypholophus*** Kolenati, 1860
 - 11. Dorsal pigmented spot continuous, not divided along median line by light stripe . 12
 - Dorsal pigmented spot partly or completely divided along median line by light stripe. If not divided — then like narrow archially curved stripe 15
 - 12. Pigmented spots between spiracles absent. Lateral pigmented spots continuous, without light stripe, ventral spots separated by wide light stripe almost to apex. Frontal plate divided at end 13
 - There are pigmented spots between spiracles adjoining spiracles. Not only ventral but sometimes lateral spots with light median dividing stripe too 14
 - 13. Creeping welts on abdominal segments II–VII well developed, oval. Pigmented spots of ventral lobes of regular form, oval. Anterior anal papillae elongate, reaching segment's width. Labrum short, transverse. Hypostoma (Fig. 258). Body length 11.5 mm. Larvae discovered in decaying yucca ***Idiognophomyia*** Alexander, 1956
 - Creeping welts on abdominal segments II–VII weakly developed, with transverse rows of long thin hairs. Pigmented spots of ventral lobes of irregular form, with lateral tubercle. Anal papillae short like tubercles (Figs 63, 269). Labrum elongate, conical (Figs 26, 240, 248, 249). Body with dense long silky hairs. Body length 10–13 mm. Larvae are the first in settling decaying trees, develop in relatively fresh phloem and sap aggregations under bark of deciduous and coniferous trees
 - ***Gnophomyia*** Osten Sacken, 1860
 - 14. There are 2 adjoining to spiracles spots between them. Two elongate terminal projections present behind frontal plate. Lateral pigmented spots with wide light stripe almost reaching apex. Apices of lobes of spiracular disc with relatively long setae forming 2 isolated tufts. Body length 8–11 mm. Larvae in riparian zone of rivers and streams, drainage channels, larvae of *E. trivialis* (Meigen, 1818) were discovered in rich with organics silty ground, in peat ***Eriocnopa*** Starý, 1976

- Dark pigmented spot between spiracles like wide stripe. Only ventral pigmented spots double. Lateral pigmented spots massive, surrounding spiracles internally and reaching almost the level of half distance between them, sometimes fused. Frontal plate rounded posteriorly. Body length 12–14 mm. Larvae inhabit moist drifts of riparian zone, inside sand, silt, decaying leaves as a rule near water
..... *Gonomyia* Meigen, 1818
- 15. Lateral pigmented spot continuous, closely adjoining spiracle and surrounding it, with small light area near apex. Ventral pigmented spots divided completely by light stripe, apex of ventral lobe with long seta 16
- Lateral pigmented spots as well as the others divided partly or completely 17
- 16. Dorsal pigmented spot massive, oval, dark on periphery. Lateral pigmented spots without distinct light spot near apices. Spiracular disc with short hairs the length of which not reaching of the lobes' width. Anterior sclerotized part of frontal plate with 3 posterior projections. Body length 5–7 mm. Larvae inhabit banks of small rivers in wet riparian ground near shoreline. Larvae of palaearctic *G. flava* (Schummel, 1828) — in riparian zone of small rivers, in solid drifts of sand and silt, among leaf litter and/or roots of plants. Larvae of Nearctic *G. burra* (Alexander, 1924) were discovered in clay sediments in reed-bed at the border of large river and small confluent
..... *Gonempeda* Alexander, 1924
- Dorsal pigmented spot divided almost to its apex by wide light stripe. Lateral pigmented spots with distinct oval light spot near apex. Apical hairs of lobes significantly shorter than the lateral. Body length 6–7 mm. Larvae of *Ch. (Empeda) cinerascens* (Meigen, 1804) inhabit wet leaf litter among roots of swampy plants on bottom of ponds and springs *Cheilotrichia* Rossi, 1848
- 17. All pigmented spots completely divided in two halves. The stripe, separating them, parallel-sided, pigmented stripes are parallel-sided too 18
- Some of pigmented spots with wide light conical stripe, not reaching their apices or completely separating pigmented spots 21
- 18. Pigmented spots adjoin spiracles internally. Body length to 10 mm. Larvae — in silty and swampy ground, in saturated with water swampy soil, in wet silt along banks of forest streams *Iisia* Rondani, 1856 [*I. maculata* (Meigen, 1804)]
- Pigmented spots between spiracles absent 19
- 19. A small dotted spot present at base of ventral pigmented spot. Apical hairs of spiracular lobes short, but a little longer than on lateral sides of lobes. Dorsal stripe of lateral pigmented spots significantly longer than the ventral. Head (Figs. 245, 250). Body length 10 mm. Larvae develop in silty wet ground of fresh as well as of salty water bodies of steppe and seaboard ... *Symplecta (Psiloconopa) stictica* (Meigen, 1818)
- Small dotted spot at base of ventral spot absent. Hairs on upper half of lobes significantly shorter than on lateral 20
- 20. Pigmented spots like elongate stripes, bicolor, dark internally and significantly lighter externally. Internal ends of pigmented spots approximate, separated by light stripe, the width of which not exceeding half of diameter of spiracle. Body length 10 mm. Larvae develop in swampy and silty ground among roots of aquatic plants
..... *Erioptera (Mesocyphona) bivittata* (Loew, 1873)

- Pigmented spots oval and uniformly colored. Internal pigmented stripes of ventral lobes shorter than the external, their internal ends not approximate. Body length 10–12 mm. Larvae of *O. lineata* (Meigen, 1804) — in riparian silt together with larvae of *Tricyphona immaculata* (Meig.), *Dicranota bimaculata* (Schumm.) and *Limnophila schranki* Oosterbroek, 1992 (=*punctata* Schrank, 1781), in aggregations of moist ground; feed on organic remains *Ormosia* (s.str.) Rondani, 1856
- 21. Dorsal spot only a little shorter than the others. Spots at the most apex are divided by narrow light stripes or spots of dorsal and lateral lobes connected. Lateral spots surround spiracles in front of it almost completely. Dotted dark spot present at base of ventral pigmented spots. Apical halves of lobes pubescent with relatively equal in length hairs, shorter than the lobe's width. Body length 8–10 mm. Larvae in wet riparian ground; larvae of *S. hybrida* (Meigen, 1804) — in wet sand of banks, making tunnels near surface; feed on various organic substrates *Symplecta* (s.str.) Meigen, 1830
- Dorsal spot short, at least twice shorter than the others, like bent stripe. Lateral and ventral pigmented spots divided to apex distinctly. Lateral spots only slightly surround spiracle anteriorly. Body length 8–10 mm. Larvae in wet swampy and silty riparian ground among roots of aquatic plants; larvae of *E. flavata* (Westhoff, 1822) (=*gemina* Tjeder, 1967) in riparian soil of water bodies, at edge of swamps, in rich with organic matter wet ground among roots of *Glyceria fluitans*, *Alisma* sp., *Sparganium simplex* and others; saprophagous, feeding possibly on green algae, larvae of *E. divisa* in low-lying marshes, in mud and leaf litter *Erioptera* (s.str.) Meigen, 1803 [*E. divisa* (Walker, 1848)]

Key to Genera of the subfamily Limoniinae

1. Body end with long narrow conical or rounded ventral lobes of spiracular disc carrying apical tufts of setae. If such lobes absent then larvae live inside leather-like flattened cases. Larvae aquatic, rheo-, limnophilous forms, develop in algal and moss aggregations on surface of stones, regularly moistened with water. Tribe Antochini 2
- Body end with small tubercles on spiracular disc or the latter practically not developed. Marginal pubescence of spiracular disc short and weakly distinguishable. Spiracular disc with well developed or small (usually ventral) pigmented spots or light, without pigmented spots (as a rule in larvae inhabiting wet substrates, including riparian zone of water bodies). Postclypeus transparent, light, with developed upper-lateral projections carrying seta at apex. Larvae inhabit terrestrial substrates (decaying litter, wood, tree sap exudates, fruiting bodies of fungi) or wet substrates (riparian zone of various water bodies, some species of *Dicranomyia* Stephens, 1829). Tribe Limoniini 5
2. Body end with 2–4 long narrow conical or rounded ventral lobes of spiracular disc, carrying tufts of hairs at apex. Body with well developed dorsal and ventral creeping welts on abdominal segments II–VII. Larvae live inside silk tubes 3

- Body e... hairs.
- round... inside as river
- 3. Body apex (tubes
- Body
- 4. Body conica... longer Comp... conica... in silk... stones
- Body hairs c... and al...
- 5. Hypo... anteric... narrow... poster... separa... length... under... mold...
- Hypo...
- 6. Body e... spots... hairs... spirac... coastal...
- Body surrou...
- 7. Large... decay... light w... spot o...
- Larva... forest

- Body end without lobes, with conical emargination. Spiracular disc with short marginal hairs. Thoracic segments with dense pubescence. Hypostoma like united plate with rounded anterior margin carrying 11–13 teeth. Body length 6–7 mm. Larvae live inside leather-like flattened cases, typical for water bodies with slow current as well as riverside constantly moist substrates
..... *Thaumastoptera* Mik, 1866 (*T. calceata* Mik, 1866)
- 3. Body end with 2 elongate ventral lobes, carrying tufts of short setae at base and at apex (Fig. 133). Spiracles not developed. Body length 10–12 mm. Larvae in silky tubes on half submerged stones under layer of moss and algae in well aerated water
..... *Antocha* Osten Sacken, 1860
- Body end with 4 conical or rounded lobes surrounding spiracular disc 4
- 4. Body short and wide, greenish-white, flattened dorso-ventrally. Body end with 4 conical lobes of spiracular disc. Ventral lobes relatively long, no less than 2 times longer than wide at base. Lobes of spiracular disc with a row of dense lateral setae. Complex of hypopharynx+labium with a row of large teeth. Hypostoma like united conical plate with odd number of large rounded teeth. Body length 8–9 mm. Larvae in silk cases under layer of moss and algae on periodically moistened rocks and stones *Elliptera* Schiner, 1863 (*E. omissa* Schiner, 1863)
- Body long, worm-like, orange, with very short dense hairs. Spiracular disc with long hairs on rounded lobes. Body length to 13 mm. Larvae inhabit aggregations of mosses and algae in water bodies with slow current and edge of swamps
..... *Orimarga* Osten Sacken, 1869 (*O. attenuata* Walker, 1848)
- 5. Hypostoma compact, massive, without longitudinal median slit (Fig. 57), with conical anterior margin, carrying 9 teeth. Praeclypeus (sclerotized plate at base of labrum) narrow, parallel-sided. Frontal plate rounded posteriorly and slightly narrowed towards posterior margin. Spiracular disc with 4 pigmented spots, 2 ventral and 2 lateral, separated from spiracles. Middle body segments 1.5 times as long as wide. Body length 8–13.5 mm. Larvae live inside silk tubes in old basidioms of polyporous fungi, under bark in wood dust of decayed fallen tree trunks at sites covered with white mold *Achyrolimonia* Alexander, 1965
- Hypostomal plate with deep median slit 6
- 6. Body end rounded, spiracular disc flat, oval, without tubercles and without pigmented spots. Spiracles small, less than 1/5 of the length of spiracular disc. Dense pubescent hairs, sclerotized at base and widened at apical half, present on the periphery of spiracular disc. Frontal plate rounded posteriorly. Body length 12 mm. Larvae live in coastal zone among seaweed *Geranomyia* Haliday, 1833
- Body end with concave spiracular disc and short tubercles around it. Hairs, surrounding spiracular disc, of usual structure. Spiracles oval, relatively large.... 7
- 7. Large larvae, body length 30–35 mm. Larvae live among moist phloem fibers in decaying tree trunks or fruiting bodies of fungi. Spiracular disc on ventral tubercles light without pigmented spots or with weakly defined oval spot or with dotted apical spot or bent elongate dark stripe reaching at least the level of base of spiracle 8
- Larvae smaller. Body length to 20 mm. Larvae develop in wood substrates or in forest litter. Spiracular disc with 4 or 2 dark pigmented spots, in the latter case the

- spots almost parallel-sided, narrow, pointed on internal end, approximate as a rule. If spiracular disc light and without spots then larvae live in riparian zone of water bodies 9
8. Middle body segments 1.5–2 times as long as wide. Head capsule strongly sclerotized anteriorly, parallel-sided, with wide dark transverse band on anterior margin. Hypostoma with arcuately rounded anterior margin carrying 5–9 teeth, median tooth simple, without lateral tubercles, a little longer or a little shorter than the others. If anterior margin conical, then the number of teeth no more than 5. Anterior margin of hypopharynx and labium convex, rounded, with many small short teeth. More than 20 short and rounded teeth present on labium. Ventral tubercles of spiracular disc with weakly sclerotized small pigmented spots of different shape. Body length 15–35 mm. Larvae develop in tunnels of boring beetles, fibers of decaying tree trunks of deciduous and coniferous trees. Typical phloeoophages, some — ambrosial mycophages, settling bark at the early stages of its decomposition, preferring strongly moist substrates *Libnotes* Westwood, 1876
- Length of middle segments only slightly exceeding their width. Head capsule of oval shape (Figs 236, 238) without wide dark band anteriorly. Hypostoma with conical anterior margin carrying 11–13 teeth. Median tooth significantly protruding forward, with well developed lateral tubercles. Hypopharynx anteriorly almost even or weakly convex, anterior part of labium — even or concave, with 16–18 teeth. Teeth massive, conical. Spiracular disc light, bare or with groups of setae between spiracles. Body length 15–30 mm. Larvae develop in loose moist infested with fungi wood of dead fallen trunks; in carpophores of polyporous and agaricales fungi, in sap aggregations on trunks and stumps *Metalimnobia* Matsumura, 1911
9. Spiracular disc with 4 oval pigmented spots, 2 lateral of which approximate externally to spiracles 10
- Spiracular disc with 2 oval or narrow elongate vertical pigmented spots on ventral lobes 12
10. Spiracular disc of trapezium shape, lateral tubercles significantly larger than the ventral 11
- Spiracular disc round or oval, lateral tubercles not larger than the ventral. Frontal plate bluntly cut at end without terminal projections behind it. Hypopharynx and labium with 6 large median teeth and 2–3 narrow marginal. Hypostome with long cylindrical median tooth surrounded by 2 blunt very short teeth from each side and farther 4 small separated by suture teeth (Fig. 267). Clypeus with 2 long lateral setae and one pore between them. Body length 7 mm. Larvae inhabit upper layers of light wood of fallen trunks of deciduous trees *Dicranomyia* (s.str.) *ochripes* (Alexander, 1954)
11. Pigment spots of lateral lobes massive, closely adjoining spiracles externally. Praeclypeus like transverse sclerotized band, posterior margin even or rounded, without median conical projection. Frontal plate rounded posteriorly, without or with terminal projections of various length behind it - with short median and larger lateral conical ones. Hypopharynx and labium with many, to 18, teeth along anterior margin. Hypostoma with 9–11 teeth. Lateral projections of clypeus with 1 long apical seta. A

- pair of the same setae present on anterior part of frontal plate. Body length 15–19 mm. Larvae develop in decaying litter near water bodies ... *Limonia* Meigen, 1803
- Pigmented spots of lateral lobes as well as of ventral, oval, separated from spiracles by light stripe. Praeclypeus with pointed conical projection at middle of posterior margin. Three terminal projections present behind frontal plate. Hypostoma with conical teeth on anterior margin. Body length 14–15 mm. Larvae in coastal zone of seas *Dicranomyia* (s.str.) *monostromia* (Tokunaga, 1930)
12. Pigmented spots on ventral side of spiracular disc approximate, separated only with narrow light stripe or the distance between them not exceeding their width. Spiracular disc with large spiracles which reach half of its length in some species. Anterior margin of hypostoma conical. Length of middle abdominal segments no less than twice exceeding their width. Body length 10–18 mm. Larvae develop in moist forest litter, in swampy soil near water bodies, including salty habitats, among aquatic and semiaquatic plants *Dicranomyia* (s.str.) Stephens, 1829
- Pigmented spots on ventral side of spiracular disc of another shape, the distance between them no less than twice their width. Spiracle's length less than half of spiracular disc. Hypostoma with 9–11 large conical teeth 13
13. Praeclypeus (sclerotized plate at base of labrum) with arcuately rounded posterior margin 14
- Praeclypeus (sclerotized plate at base of labrum) with conical elongate posterior margin 15
14. Pigmented spots of spiracular disc narrow, spindle-like. There are median narrow weakly sclerotized terminal projection and short dark lateral projections behind frontal plate. Four pairs of short setae present along the border of frontal suture. Clypeus with 1 pair of apical setae and a pair of pores behind them. Hypostoma with 9 teeth, 3 lateral of which at each side are separated by suture. Hypopharynx with 12 relatively large teeth. Labium with 8 median and 2 marginal teeth at each side. Body length 13–13.5 mm. Larvae live in wood dust in fallen trunks of deciduous trees and on surface of trunks at sites covered with mycelium
Achyrolimonia neonebulosa (Alexander, 1924)
- Pigmented spots of spiracular disc elongate, wide externally and slightly narrowed and rounded internally. There are short conical median terminal projection and two longer lateral projections behind frontal plate. 3 pairs of short setae present along the border of frontal suture. Clypeus with 1 pair of apical setae and 2 pairs of pores of different size behind them. Hypostoma with 11 teeth, 4 lateral of which at each side are separated by suture. Hypopharynx and labrum with 8 relatively large blunt median teeth and 3–4 narrow pointed lateral ones at each side. Body length 12 mm. Larvae live in decaying infested with fungi wood of deciduous trees
Atypophthalmus inustus (Meigen, 1818)
15. Frontal plate narrowed posteriorly, 2 large conical lateral terminal and practically not developed median terminal projections present behind it (Figs 234, 254, 260). Clypeus with 2 pairs of setae or pores. Hypopharynx and labium at least with 12 almost equal teeth. Spiracular disc with 2 pointed at end ventral pigmented spots not

- reaching the level of the base of spiracle (Fig. 278). Length of middle abdominal segments less than twice exceeding their width. Body length 9–10 mm. Larvae (Fig. 115) develop in fruiting bodies of *Piptoporus* sp., in decaying lying on ground devoid of bark stumps of trunks of deciduous trees (rarely coniferous) and on surface of wood covered with mycelium. Larvae move inside silk tubes covered with substrate particles *Discobola* Osten Sacken, 1865
- Frontal plate with bluntly cut posterior margin, with 3 short terminal projections behind it (Figs 232, 239, 266). Clypeus with 2 pairs of setae and 1 pair of pores between them. Hypopharynx and labium with 6 large median teeth and 3 narrower marginal teeth at each side (Fig. 253). Ventral pigmented spot of spiracular disc elongate, reaching the level of base of spiracle. Body elongate, middle abdominal segments 2.5 times as long as wide (Fig. 68). Body length 9–10 mm. Larvae develop mainly under bark of dead trees, in decaying wood of trunks and stumps, were registered in loose as well as in solid wood, saturated with sap; in slivers and under bark of excavating stumps *Rhipidia* Meigen, 1818

Key to subfamilies and genera of Mycetophilidae

1. Lateral plates contact ventrally practically at one point in the anterior part of the head capsule (Figs 286, 311–319). Larvae as a rule with developed creeping welts. In fruiting bodies of fungi or on surface of decaying wood, can migrate inside wood along cracks and tunnels of insects; larvae sometimes under conical cases 2
- Lateral plates contact ventrally at significant distance in the anterior part of the head capsule or don't contact at all (Figs 281, 302). Larvae as a rule without developed creeping welts. In fruiting bodies of fungi or on surface of decaying wood 3
2. Head (Fig. 283–286) longitudinally-oval, parallel-sided, labrum with 6 conical papillae, creeping welts reduced, very weakly developed *Manotinae* (*Manota* Williston, 1896)
- Head of another form, often transverse, labrum without large papillae, creeping welts often well developed (Figs 311–319) *Mycetophilinae*
3. Maxillary palpus strongly developed, elongate, often significantly projecting beyond the margin of the head capsule (Figs 297, 300, 302, 305) *Sciophilinae*
- Maxillary palpus like flat oval plate, not elongate (Fig. 291) 4
4. The head capsule has the following structure: epicranial plates contact at significant distance, then diverge and contact again with the help of narrow sclerotized tentorial bridge. Mandibles short, transverse (Figs 291, 295) *Mycomyinae*
- Head capsule of another structure. Mandibles often elongate 5
5. Epicranial plates contact at significant distance, then diverge and contact again with the help of narrow unsclerotized bridge (Figs 281, 288, 289) *Allactoneurinae* (*Allactoneura* de Meijere, 1907), *Leiinae* (part, *Greenomyia* Brunetti, 1912, *Neoclastobasis* Ostroverkhova, 1970)
- Epicranial plates contact at significant distance, then diverge and don't contact again or their lower angles approximate 6

Key to ...

1. Lateral plates contact ventrally 2
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3. Lar 14
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- Lar 17
4. Man 18
- fruit 19
- 20
- Man 21
5. Man 22
- slim 23
- 24
- Man 25
- surf 26
- myc 27

Key to ...

1. From open rods broad pier 2

6. Lateral plates of the head capsule with posterior emargination (like in Fig. 290)
.... *Gnoristinae* (part, *Apolephthisa* Grzegorzek, 1885, *Speolepta* Edwards, 1925,
Tetragoneura Winnertz, 1846)
- Dorsal part of the head capsule rounded posteriorly (like in Fig. 282)
..... *Leiinae* (part, *Leia* Meigen, 1818, *Docosia* Winnertz, 1863)

Key to genera of the subfamily Gnoristinae

1. Lateral plates not contacting ventrally, are parallel anteriorly, then diverging and then approximating, forming ventral opening of peer-form. Body length about 16 mm. Under decaying bark of deciduous trees on internal side on a surface of mycelium, on fruiting bodies of polyporous fungi; live inside tubes made of salivary secret ...
..... *Apolephthisa* Grzegorzek, 1885
- Lateral plates contacting ventrally at significant distance 2
2. Premandibles with 3 branches. Body length 17–23 mm. In moist strongly decayed but solid wood of Ulmus, birch, bird-cherry tree and Maackia. Larvae graze small cavities in upper layers of inner bark, one larva living in each cavity; the cavities are filled with salivary excrete and condensed water; so larvae live under conditions of almost 100% humidity; possibly as a result of this their abdominal spiracles are reduced *Aglaomyia* Vockeroth, 1980
- Premandibles with 2 branches 3
3. Larvae propneustic — only anterior spiracles are developed. Body length about 15 mm. Live in underground caves on walls; body of larva is inside silky tube
..... *Speolepta* Edwards, 1925
- Larvae peripneustic 4
4. Mandibles with 3 large marginal dents and 2 isolated small median dents. On resupinat fruiting bodies of xylotrophic fungi. Form slimy tubes, move inside them
..... *Tetragoneura* Winnertz, 1846
- Mandibles with larger number of marginal teeth 5
5. Mandibles with 5 large marginal dents and very small 4 median dents. Larvae inside slimy tubes on surface of decaying wood; sometimes form galleries of detritus
..... *Ectrepestoneura* Enderlein, 1911
- Mandibles with 6 marginal teeth and 1 median dent. Body length 10–12 mm. On surface of fungi and in decaying wood, in mosses where they probably feed on mycelium too *Boletina* Staeger, 1840

Key to genera of the subfamily Leiinae

1. Frontoclypeal plate reaching posterior margin of the head capsule. Round ventral opening of the head capsule is closed by well developed sclerotized almost contacting rods. Mandible rectangular-round, with 3 external blunt dents and 2 isolated median broad dents. Body length about 10 mm. Fruiting bodies of various fungi or wood, pierced by mycelium, in nests of birds *Docosia* Winnertz, 1863

- Frontoclypeal plate not reaching posterior margin of the head capsule. Round ventral opening of the head capsule is not closed or closed by unsclerotized transparent tentorial bridge. Mandible with many dents 2
- 2. Ventral opening of the head capsule double, with additional short not contacting sclerotized projections. Body length 18 mm. In fruiting bodies of various fungi, on surface of decaying wood covered with mycelium, under bark of decayed trunks, in nests of birds and mammals. Move inside tubes, attached to substrate; the length of tube is about 2 times exceeding the length of larva *Leia* Meigen, 1818
- Ventral opening of the head capsule simple, closed by transparent tentorial bridge 3
- 3. Anterior-lateral margin of frontoclypeal plate round (Figs 282, 289). Labrum without well developed anterior central depression. Anterior branch of premandible with 6–7 branches. Body length 18–20 mm. On mycelium on surface of decaying wood, including birch; move along slimy filaments attached to the substrate *Greenomyia* Brunetti, 1912
- Anterior-lateral margin of frontoclypeal plate with depression at the level of antennae (Figs 287, 288). Labrum with anterior central depression. Anterior branch of premandible with 11 branches. Body length 17–18 mm. On old fruiting bodies of polyporous fungi *Neoclastobasis* Ostroverkhova, 1970

Key to genera of the subfamily Mycetophilinae

- 1. Body short, oval, usually convex dorsally and flattened ventrally. Head capsule with ventral opening of broad, transverse-round form. Many larvae live on dead trunk surface under cases which they form out of their excrements 2
- Body elongate, worm-like, body not flattened dorsoventrally, middle segments (sometimes posterior segments as well) a little broader than the others. Head capsule with ventral opening of another form. Living free or inside substrate — fungi 4
- 2. Prothoracic spiracles with 6–7 openings. Ventral opening of head capsule simple. Frontoclypeal plate with distinct suture anteriorly and reaches posterior margin of the head capsule (Figs 19, 27, 50, 315, 331). Larva free or under case of conical form *Phronia* Winnertz, 1863
- Prothoracic spiracles with 1–2 openings. Ventral opening of head capsule divided secondary by long rods. Frontoclypeal plate with interrupted suture anteriorly and doesn't reach posterior margin of the head capsule. Larva free or under case of oval form or with another mode of life 3
- 3. Prothoracic spiracles with 2 openings. Larva with 8 creeping welts, the anterior of which carries 1 row of hooks and is situated between thoracic segment III and abdominal segment I. The rest of creeping welts carry 2 rows of hooks surrounded with 4–5 rows of small spines. All dents of mandibles are approximately equal in size, mandibles with 1 row of small median dents (Figs 313, 316, 321). Body length 4–6 mm. Larvae on surface of wood under oval cases *Epicypta* Winnertz, 1863
- Prothoracic spiracles with 1 opening. Larva with 10 creeping welts, the anterior of

which is situated between thoracic segment I and thoracic segment II. The anterior 1–3 or 1–4 welts and posterior welt are incomplete, the rest of creeping welts carry 2 rows of hooks surrounded with 3–4 rows of small spines anteriorly and 3–6 small spines posteriorly. Second dent of mandible is very large, 2–5 times as long as the third one, mandibles with 12 rows of small median dents (Fig. 322). Body length 4 mm. Larva under mass of spores inside dry aethalium of Myxomycetes

Platurocypta Enderlein, 1910

4. Posterior margin of the head capsule with dorsal narrow short posteriorly directed sclerotized rods (Figs 311, 324). Lateral plates contact ventrally at anterior 1/3 of the head capsule. Creeping welts without large hooks. Body length 6–8 mm. Larvae in sporophore of different fungi, were often reared from Pezizales, Agaricales and others *Allodia* Winnertz, 1863 (part)
 - Posterior margin of the head capsule even or with incision of different form but without such rods 5
5. Creeping welts without large hooks, possessing very small hooks or spines only. Ventral opening of the head capsule is triangular as a rule, widened posteriorly ... 6
 - Creeping welts with 1–2 rows of large hooks, significantly increasing the length of bordering spines. Ventral opening of the head capsule round, partly closed posteriorly, or triangular 12
6. Anterior creeping welt is situated between thoracic segment I and thoracic segment II 7
 - Anterior creeping welt is situated farther 8
7. Head capsule rounded posteriorly, with ventral opening triangular and elongate, lateral plates contact at anterior 1/4 of the head capsule (Figs 314, 325, 335). Postlabrum is sclerotized irregularly, median part membranous. Creeping welts with 22–24 rows of small hooks and 6–7 rows of spines. Prothoracic spiracles with 4 openings. Body length 12–14 mm. Larvae are mainly connected with wood-destroying fungi such as *Pleurotes* and others *Brachypeza* Winnertz, 1863
 - Head capsule with posterodorsal deep incision, ventral opening round, lateral plates contact at the middle of the head capsule (Figs 312, 318, 333). Postlabrum is sclerotized significantly, including median part, with distinct postlabral suture. The first, second and the last creeping welts are incomplete, the rest of welts with 2 rows of small hooks several times larger than bordering spines and 18–24 rows of spines. Prothoracic spiracles with 3–4 openings. Body length 11.5 mm. Larvae develop on fungi growing on trees *Dynatosoma* Winnertz, 1863
8. Anterior creeping welt is situated between thoracic segment 3 and abdominal segment 1. Larva with 9 creeping welts or welts poorly developed (Figs 92, 319, 320, 326, 330, 332, 334). Prothoracic spiracles with 2 openings. Body length 12–14 mm. Larvae develop in fruiting bodies of fungi (often in stems) of different Agaricales, Ascomycetes and Myxomycetes *Rymosia* Winnertz, 1863
 - Anterior creeping welt is situated between thoracic segment 2 and thoracic segment 3 9
9. Anterior margin of frontoclypeal plate with lateral incision near antenna 10

- Anterior margin of frontoclypeal plate without lateral incision near antenna 11
- 10. Head capsule with epicranial plates contacting ventrally behind the middle of the head capsule, sometimes at posterior 1/3 of the head capsule. Body length about 11 mm. Larvae develop in sporophore of Agaricales, Gasteromycetes and others
..... *Allodiopsis* Tuomikoski, 1960
- Head capsule with epicranial plates contacting ventrally at the middle of the head capsule. Body length 6–8 mm. In sporophore of different fungi, often in Pezizales, Agaricales and others *Allodia* Winnertz, 1863 (part, *Allodia*)
- 11. Head capsule with lateral plates contacting ventrally in front of the middle of the head capsule. Median dents of the mandible are in 3–5 rows, the group of median dents occupies the whole length of the mandible. Body length 10 mm. In fruiting bodies of Agaricales and Aphyllophorales *Tarnania* Tuomikoski, 1966
- Head capsule with lateral plates contacting ventrally behind the middle of the head capsule. Median dents of the mandible are in 2–4 rows, the group of median dents occupies basal 2/3 of the mandible, the apical 1/3 is free from dents. Body length 6–8 mm. Often in sporophore of Pezizales and Agaricales
..... *Allodia* Winnertz, 1963 (part, *Brachycampta*)
- 12. Creeping welts of median segments with 2 rows of hooks and 6–8 rows of spines ... 13
- Creeping welts of median segments with 2 rows of hooks and less rows of spines 14
- 13. Frontoclypeal plate with distinct suture anteriorly. Posterior margin of the head capsule with small incision. Labrum has cylindrical as well as round sensillae (Fig. 336). Body length 7–10 mm. In sporophore of different groups of fungi .. *Exechia* Winnertz, 1863
- Frontoclypeal plate without distinct suture anteriorly. Posterior margin of the head capsule with distinct incision. Labrum (Fig. 337) has round sensillae (or 1 pair of them cylindrical). Body length 7–8 mm. Mainly in Agaricales
..... *Exechiopsis* Tuomikoski, 1966
- 14. Last body segment as a rule with 2 lobes. Labrum posteriorly (postlabrum) and anterior parts of epicranial plates are sclerotized significantly in such a way that form double sclerotized line. Larva with 10 creeping welts, the first and the tenth are incomplete, with 1 row of hooks, and the rest carry 2 rows of large hooks and 2 rows of spines. Prothoracic spiracles with 2 openings. Body length 8 mm. Larvae in sporophore of some Gasteromycetes. Some species were reared from fungi growing on the surface of bark *Trichonta* Winnertz, 1863
- Last body segment without lobes 15
- 15. Labrum with sclerotized posterior part (postlabrum) and one sclerotised suture in front of it (Fig. 328). Head black, strongly chitinized, posterior margin without or with shallow incision. Prothoracic spiracles with 2 openings. Body length 5.5–7 mm. Larvae in Russulales, Boletales and others, usually eating stem of fungus
..... *Cordyla* Meigen, 1803
- Labrum (with rare exception) without such suture. Head coloration from light-brown to black. Posterior margin of the head capsule as a rule with distinct incision 16
- 16. Frontoclypeal plate with incision near antenna (Fig. 323). Tentorial bridge often not developed. Larva with 10 creeping welts, the first incomplete, the rest armed with 2

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- rows of hooks and 2 irregular rows of transparent spines. Larvae in fruiting bodies of Helotium and in sporophore of Exidia *Anatella* Winnertz, 1863
- Frontoclypeal plate rounded anteriorly. Tentorial bridge developed. Larva with 10 creeping welts, the first incomplete, the rest armed with 2 rows of hooks and 2 (rarely 3–4) distinct rows of dark spines (Figs 317, 327, 329). Body length about 8 mm. Larvae are typical mycetobionts, develop in sporophore of different fungi *Mycetophila* Meigen, 1803

Key to genera of the subfamily Mycomyinae

- Frontoclypeal plate reaching the posterior end of the head capsule. Labrum sclerotized irregularly, often with acute projections on posterior margin. Median dents of mandible long, form 1–2 rows (Figs 290–293). Premandible as a rule with 1 apical branch. Body length to 18 mm. Larvae inside slimy tubes, formed by salivary excretes; live on surface of soil, fungi, blocks of wood and branches, lying on ground and covered with mycelium, inside wood in cavities and old tunnels of insects *Mycomya* Rondani, 1856
- Frontoclypeal plate not reaching posterior end of the head capsule. Labrum sclerotized irregularly, but without acute projections on posterior margin (Figs 294, 295, 298, 299). Median dents of mandible broad, form 1 row. Premandible as a rule with 2 apical branches. On surface of mycelium on wood and resupinat fruiting bodies of wood-desrotying fungi; move along slimy filaments formed by salivary excretes ... *Neoempheria* Osten-Sacken, 1863

Key to genera of the subfamily Sciophilinae

- Epicranial plates widely separated ventrally 2
- Epicranial plates close ventrally at anterior part 3
- Head longitudinal, oval, not broaded posteriorly. Frontoclypeal plate parallel-sided. Epicranial plates are parallel at anterior part. Maxillary palpus long, projecting beyond the head capsule (Figs 304, 305, 309, 310). Body length about 14 mm. Larvae are connected with decaying wood, covered with mycelium, move along filaments formed by salivary excretes, with anterior part of body moving continually; live under covering of such filaments *Phthinia* Winnertz, 1863
- Head round-oval, broaded posteriorly. Frontoclypeal plate triangular-oval, narrowed posteriorly. Epicranial plates diverging anteriorly on ventral side. Maxillary palpus relatively short, not projectiong beyond the head capsule (Figs 301, 302, 306). Body length 20 mm. On surface of carpophores of polyporous fungi, sliding along shining branching filaments formed by salivary excretes *Leptomorphus* Curtis, 1831
- Head longitudinal, oval, weakly broaded posteriorly. Lateral plates ventrally are close at anterior third, then diverge, bordering oval membranous area - ventral opening of the head capsule (Figs 297, 307, 308). Creeping welts of thoracic segments are formed by 3 irregular rows of hooks. Body length to 20 mm. On surface of strongly decayed wood, fruiting bodies of various fungi, but some species — *Sciophila varia* (Winnertz,

- 1863) and *S. lutea* Macquart, 1826 inside fungi; larvae leading external mode of life and move along filaments formed by salivary excretes, some of them — under thick covering of such filaments *Sciophila* Meigen, 1818
- Head capsule round-oval, narrowed anteriorly. Lateral plates ventrally are close at anterior half, then diverge and join again, bordering round membranous area — ventral opening of the head capsule (Figs 296, 300, 303). Creeping welts of thoracic segments are formed by 1 row of hooks. Body length 15 mm. On surface of decaying wood, covered with mycelium and on carpophores of polyporous fungi. Move along filaments formed by salivary excretes *Monoclonia* Mik, 1886

Key to Genera of the Family Pediciidae

1. Spiracular disc with 2 lobes their length exceeding their width at base, small, flat, without pigmented spots. Creeping welts present on ventral sides of abdominal segments III–VII or IV–VII, with rows of spines or larvae with pseudopodia. Hypostoma consists of 2 isolated plates, joint anteriorly by articulate tubercles and each carrying 6–8 teeth, anterior margin straight with teeth in one line. Praeclypeus (sclerotized plate at base of labrum) like narrow transverse plate. Larvae semiaquatic or aquatic. Subfamily Pediciinae 2
- Spiracular disc with 5 well developed lobes, carrying dark pigmented spots (Figs 112, 339, 344, 345). Creeping welts present on abdominal segments II–VII, oval with rows of small spines. Hypostoma consists of single plate, with conical anterior margin, with 8 teeth but without developed unpaired median tooth, two central teeth are well separated. Praeclypeus massive. Body length 10–12 mm. Larvae in fruiting bodies of mainly polyporous fungi, usually in Polyporales, common in *Laetiporus sulphureus*, as well as in *Armillariella mellea*, *Hydnus* sp., sometimes in *Paxillus* sp. Sometimes in wood dust under bark. Subfamily Ulinae *Ula* Haliday, 1833
2. Lobes of spiracular disc short, their length no more than 2 times exceeding their width at base, widely spaced basally. Spiracular disc relatively large, oval 3
- Lobes of spiracular disc elongate, their length more than 3 times exceeding their width at base, approximate. Spiracular disc small, round 4
3. Creeping welts present on abdominal segments IV–VII. Antennae 4 times as long as wide. Anterior margin of frontal plate even. Hypostoma with 6 teeth, median teeth being shorter than the others. Distance between spiracles more than twice their diameter (Fig. 341). Body with light short silky pubescence. Body length 11–15 mm. Larvae inhabit strongly moistened or swampy soil, sphagnum bogs, saturated riparian silt, pupate in silky cases covered with detritus particles *Tricyphona* Zetterstedt, 1837 (*T. immaculata* (Meigen, 1804))
- Creeping welts present on abdominal segments III–VII. Antennae 2.5 times as long as wide (Figs 338, 340, 343). Anterior margin of frontal plate arcuately emarginate. Hypostoma with 6 teeth of equal size. Distance between spiracles 1.5 times their diameter (Fig. 342). Body with dark brown dorsal hairs and light ventral hairs. Body length 10 mm. Larvae inhabit decaying wood of fallen tree trunks of deciduous and

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Key to subfamilies

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— Larvae a
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- coniferous trees and are not connected with moistened substrata
..... *Nasiternella* Wahlgren, 1904 (*N. varinervis* (Zetterstedt, 1851))
4. Abdominal segments IV–VII with pseudopodia devoid of sclerotized hooks. Body pale, covered with light sparse hairs which form vague transverse bands. Lobes of spiracular disc of moderate length, their length approximately 3 times exceeding their width at base. Body length 15–25 mm. Larvae aquatic and semiaquatic, live among mosses in swampy soil or under rocks in streams, pupate in silky cases covered with detritus particles *Pedicia* Latreille, 1809
- Abdominal segments III–VII with pseudopodia carrying hooks arcuately situated at their apex. Body with dark hairs which form transverse bands. Lobes of spiracular disc elongate, their length more than 5–6 times exceeding their width at base. Body length 12–15 mm. Larvae inhabit swampy soil along banks of streams and rivers, live on rocks covered with moss and algae *Dicranota* Zetterstedt, 1838

Key to subfamilies of the family Psychodidae

1. Larvae elongate, vermiform. Body bare or with rare long setae, sclerotized plates absent. Last body segment rounded, without breathing tube. Spiracles are situated on body surface or on small tubercles, which are widely separated. Lobes around spiracles absent. Antennae well developed, long, 1 or 3 segmented 2
- Larvae a little flattened dorsoventrally. Body covered with many cuticular structures including tergal plates 3
2. Body bare with small setae and thin microscopic hairs. Lateral plates of head not contacting ventrally and are divided by light sclerite (Figs 8, 54, 102). Larvae in moist strongly decayed wood **Trichomyiinae** (*Trichomyia* Curtis, 1839)
- Larvae with large branched and simple setae (Fig. 103, 104). Last body segment with 2 pairs of long setae. Lateral plates of head fused ventrally, ventral surface of head uniformly sclerotized. In rodent's holes, decaying litter, decaying wood, fungi, basements, sewage **Phlebotominae** (*Phlebotomus* (Rondani et Bertè, 1840))
3. Body elongate with secondary segmentation, usually with many tergal plates, situated on anterior, posterior parts of the body or on the whole body uniformly. Spiracles are at the end of breathing tube and surrounded by 4 lobes (Figs. 24, 44, 52, 57, 105, 135, 138). Larvae in reservoirs, in aquatic mosses, silty grounds in streams, tree holes filled with water, forest litter, decaying trunks of trees, decaying fungi and dung **Psychodinae**
- Larvae aselliform, body oval 4
4. Abdominal segments, except the last, with one broad tergal plate. Head longer than wide, almost square (Fig. 141). Larvae in hygropethic zone, mosses near reservoirs, on water-logged grounds, near streams **Sycoracinae** (*Sycorax* Haliday, 1839)
- Abdominal segments, except the last, each with 2 narrow tergal plates. Head transverse, its width exceeding its length (Fig. 143). With one large ventral sucker. In hygropethic zone **Horaiellinae** (*Horaiella* Tonnoir, 1933)

Key to genera of the family Ptynopteridae

1. Body surface with fine hairs, transparent, coloration from white to brown. Mandibles with 3 outer teeth. Prolegs and apical claws inconspicuous (Figs 65, 123, 124) *Ptynoptera* Meigen, 1803
- Body surface with long horny projections, predominantly black. Mandible with 1 outer tooth. Prolegs prominent, claws large *Bittacomorphella* Alexander, 1916

Key to genera of the family Scatopsidae

1. Last body segment without cylindrical projections, with massive strongly sclerotized blackish-brown plate. Posterior spiracles sessile, situated at dorsal surface of abdominal segment 8. Body except the last segment is usually bare, without cuticular structures, without well visible pattern of ornamentation of hairs, spines or tubercles 2
- Last body segment with 2 or 4 cylindrical projections, without sclerotized plate. Posterior spiracles are situated at the ends of cylindrical projections of various length. Dorsal surfaces of thoracic and abdominal segments usually bear dense groups of cuticular structures: setae, small spines or tubercles, forming more or less regular rows or lines 4
2. Posterior spiracles are situated at noticeable distance from sclerotized plate. Sclerotized plate narrowed posteriorly and with depression. Antennae long, 4–5 times as long as wide (Figs 346, 347, 349, 354). In loose wood, in dust in tree holes, in holes filled with water (*Ectaetiinae*) *Ectaetia* Enderlein, 1912
- Posterior spiracles are situated on sclerotized plate or near it. Sclerotized plate transverse, without posterior depression. Antennae short, only 2–2.5 times as long as wide (*Aspistinae*) 3
3. Posterior spiracles are situated on sclerotized plate (Fig. 351). In decaying potato, in sandy soil *Aspistes* Meigen, 1818
- Posterior spiracles are situated near sclerotized plate (Fig. 352, 353). Under bark of fir, in inner bark covered with mycelium *Arthria* Kirby, 1837
4. Last body segment simple or with apical depression but without paired projections, paired projections carrying posterior spiracles present on penultimate segment only 5
- Last body segment with long paired projections which are at least equal to half of spiracular projections, carrying posterior spiracles. The latter are well sclerotized, usually bare, excluding apical crown of setae (tribes *Scatopsini* и *Swammerdamellini*) 7
5. Apical emargination of the last body segment deep, reaching the half of the segment, penultimate segment covered with spinules dorsally (Fig. 356) *Reichertella* Enderlein, 1912
- Apical emargination of the last body segment shallow or absent, penultimate segment covered with hairs dorsally 6
6. Last body segment with apical emargination (Figs 348, 355). Stigmal projections, carrying posterior spiracles, are covered with regular circles of setae. Body yellow-

Key to

1. Antennae
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- Antennae
of the head 2
2. Head
hand –
- head
readily
comes –
- Head
narrow 3
3. Small
of the head –
- Large
form –
4. Ternary
– Ternary –
- Vertical
me –

- white, larvae 3.9–4.3 mm. In tree holes, including those filled with water, in ants' nests (tribe Colobostematinii) *Holoplagia* Enderlein, 1912
- Last body segment simple, rounded. Stigmal projections, carrying posterior spiracles, are not covered with regular circles of setae. Body dark, strongly sclerotized, larvae 2.0–2.5 mm. In saline soil (tribe Rhegmoclematinii) *Parascatopse* Cook, 1955
7. Cylindrical projections of the last body segment narrow, significantly shorter and narrower than the stigmal projections 8
- Cylindrical projections of the last body segment broad, equal to or exceeding in length the stigmal projections 9
8. Dorsal surface of the body with irregular thin setae. Appendage of the second antennal segment reaching 3/4 of the third segment in length (Figs 94, 100, 359, 360). In dung, fungi, under bark, in birds' nests, in carrion *Coboldia* Melander, 1916
- Dorsal surface of the thoracic segments with anterior transverse rows of spines and isolated groups of setae, abdominal segments - with transverse rows of setae. Appendage of the second antennal segment less than 1/2 of the third segment in length (Fig. 350). In litter of deciduous and mixed forests, in fungi *Apiloscatopse* Cook, 1974
9. Abdominal segment 8 with dorsal transverse rows of setae (Figs 99, 357). In decaying plant remains, in fungi, in dung, in carrion *Scatopse* Geoffroy, 1762
- Abdominal segment 8 with longitudinal rows of spines dorsally (Figs 358, 361–364). Under bark of decaying fallen trunks of deciduous trees *Rhexoza* Enderlein, 1936

Key to genera of the family Sciaridae

1. Anterior median projections of lateral plates contact ventrally, ventral opening of the head capsule is closed anteriorly 2
- Anterior median projections of lateral plates not contacting ventrally, ventral opening of the head capsule is not closed anteriorly 4
2. Head capsule 4 times as long as ventral opening. Ventral opening oval. Angle between handle of maxilla and its base blunt (Figs 368, 371). Larvae elongate. Body length reaching 14 mm. In brown decaying wood and black wooden dust of deciduous and coniferous trunks *Trichosia* Winnertz, 1867
- Head capsule less than 4 times as long as ventral opening. Ventral opening piriform, narrowed anteriorly. Angle between handle of maxilla and its base right 3
3. Small larvae, body length no more than 6 mm. Ventral opening of the head capsule of lamp form, the width of tentorial bridge is 1/5 of its length (Figs 366, 372). In cones of coniferous trees, fruiting bodies of fungi *Lycoriella* Frey, 1942
- Large larvae, body length reaching 16 mm. Ventral opening of the head capsule peer-form, width of tentorial bridge is 1/7 of its length (Fig. 370). Litter, decaying wood *Sciara* Meigen, 1803
4. Tentorial bridge light, sometimes transparent 5
- Tentorial bridge dark, never transparent 8
5. Ventral opening of the head capsule transverse, its width exceeding its length. Anterior median projections of epicranial plates broad, blade-like 6

- Ventral opening of the head capsule elongate, its length exceeding its width. Anterior median projections of epicranial plates narrow 7
- 6. Basal dent of maxilla is removed to its base and is situated at about its lower third. Exterior part of maxilla with depression in middle of its lateral margin (Fig. 374). Body length 4.5 mm. Under bark of dying trunks of deciduous and coniferous trees, in wood of deciduous trees *Xylosciara* Tuomikoski, 1957
- Basal dent of maxilla is situated at its middle. Exterior part of maxilla with depression at base of its lateral margin (Figs 365, 373, 377). Body length 5–6 mm. Under bark of dying trunks of deciduous and coniferous trees, in polyporous fungi, in fruiting bodies of fungi, in cones of coniferous trees, some species damage potatoes and cucumbers *Claustropygia* Hippa, Vilkamaa et Mohrig, 2003
- 7. Ventral opening of the head capsule triangular-oval, narrowed anteriorly. Width of tentorial bridge is 1/3 of its length. Exterior part of maxilla (without its handle) is equal to the interior part in length (Figs 367, 376). Ventral surface of labrum without epipharyngeal spines. Body length to 7 mm. In brown decaying wood of deciduous trees *Epidapus* Haliday, 1851 (*E. alnicola* (Tuomikoski, 1957))
- Ventral opening of the head capsule oval. Width of tentorial bridge is less than 1/3 of its length (Fig. 375). Exterior part of maxilla (without its handle) is significantly shorter than the interior. Ventral surface of labrum with rows of epipharyngeal spines. Body length to 6.5 mm. In blocks of tree trunks, in soil *Phytosciara* Frey, 1942
- 8. Ventral opening of the head capsule transverse-oval, its length not exceeding its width 9
- Ventral opening of the head capsule elongate-oval, its length significantly exceeding its width 10
- 9. Anterior median projections of epicranial plates more than 2 times as wide as tentorial bridge. Ventral opening of the head capsule triangular (Fig. 380). Lateral margin of exterior part of maxilla even, without depression. Body length to 10 mm. In decaying wood including brown wood of deciduous and coniferous trees *Scythropochroa* Enderlein, 1911
- Anterior median projections of epicranial plates as wide as or less than tentorial bridge. Ventral opening of the head capsule trapezoid (Fig. 379). Lateral margin of exterior part of maxilla with depression at base. Body length to 4–6 mm. Under bark of dying deciduous trees *Zygoneura* Meigen, 1830
- 10. Anterior median projections of epicranial plates small, approximately as wide as tentorial bridge. Ventral opening of the head capsule triangular-oval, narrowed and almost closed anteriorly (Fig. 369). Body length to 9 mm. Under bark of decaying deciduous and coniferous trees, in dust of oak stump, damage cucumbers *Pseudolycoriella* Menzel et Mohrig, 1998
- Anterior median projections of epicranial plates broad, blade-like, their width significantly exceeding the width of tentorial bridge. Ventral opening of the head capsule of pitcher-form 11
- 11. Anterior median projections of epicranial plates are approximate (Fig. 348). Labrum with wide anterior depression, carrying 8 sensillae at each side. In cones of coniferous,

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- in litter, fruiting bodies of polyporous fungi, under bark of decaying deciduous trees, on roots of wheat, damage cucumbers and fungi *Bradyzia* Winnertz, 1867
- Anterior median projections of epicranial plates are widely separated (Figs 378, 382). Labrum with even anterior margin, carrying 7 sensillae at each side. In wood of alder, under bark of oak, in fruiting bodies of fungi, including polyporous
..... *Scatopsciara* Tonnoir et Edwards, 1927

Key to genera of the family Thaumaleidae

1. Reduced antennae emerge from conical projections; besides, head carries 3 paired and 1 unpaired protuberances *Thaumalea* Ruthe, 1831
- Reduced antennae emerge from low tubercles; other protuberances of head not developed *Androprosopa* Mik, 1898

Key to genera of the family Tipulidae

1. Spiracular disc with 6 narrow finger-like projections, each 3–4 times as long as wide at base, marginal row of long setae developed; each projection with long dark-brown or black lateral spots and median light narrow stripe; anal area with 6 long thin papillae (Figs 132, 383, 386). Body length 24–38 mm. Typical aquatic forms, live in streams, small rivers, stagnant reservoirs near aquatic plants, in mosses, surface layers of wet soils, in riverside soils; single *Prionocera* Loew, 1844
- Spiracular disc with projections (or lobes) no more than 2 times as long as wide at base, marginal rows of setae of different length in different species. If projections longer – then there are no marginal rows of long setae on lobes 2
2. Dorsal lobes of spiracular disc are approximate to each other so that spiracular disc seems to have 5 lobes (Fig. 385). Anal area with 4 round papillae. Larvae green, with 2 dark-brown zigzag stripes. Body length 14–16 mm. Near streams and springs on mosses, in wet forest soils under moss *Dolichopeza* Curtis, 1825
- Dorsal lobes of spiracular disc not fused, spiracular disc with 6 distinct lobes 3
3. Anal slit transverse, horizontal, with many additional rays. Anal papillae, at least 1–2 pairs, are well developed 4
- Anal slit vertical, with 1–2 lateral rays. Anal papillae reduced to 4 small tubercles 5
4. Anterior margin of prothorax dorsally with typical sclerotized and darkened transverse welt, which is interrupted at middle by broad longitudinal furrow. Lateral lobes of spiracular disc are not sclerotized; dorsal lobes sometimes with small dark spot near base; ventral lobes with transverse row of 2–3 spots near base and sometimes with dark apical spot (Fig. 388). Larvae in moderately moist soil; phytophages
..... *Nephrotoma* Meigen, 1803
- Anterior margin of prothorax dorsally without sclerotized darkened welt. Spiracular disc with lobes of different shape and length, lateral lobes as a rule (with rare exception) with sclerotized stripes and spots (Figs 69, 110, 384, 390, 391, 392, 396, 399, 400). Body length 24–40 mm. In different moist substrates, in soil, silty grounds, in mosses, litter, wood etc *Tipula* Linnaeus, 1758

5. Dark triangular sclerotized spots present at base of dorsal or at base of dorsal and lateral lobes, not covering lobes themselves. Lobes of spiracular disc always well developed 6
- Dark sclerotized spots are of irregular form, often oval, usually small and not always distinct, projecting over the bases of spiracular lobes 7
6. Sclerotized spots present near base of dorsal lobes of spiracular disc only (Fig. 387). Head without thin resilient setae behind the bases of antennae. Antennae long, at least 3–3.5 times as long as wide. Body dirty-white, anal tergite often brownish. Body length 24–25 mm. In turf, decayed stumps and trunks, peats, moist soil of meadows and bogs *Nigrotipula* Hudson et Vane-Wright, 1969
- Sclerotized spots present near base of dorsal and lateral lobes of spiracular disc (Fig. 398). Head with a thin resilient seta behind the base of antenna. Antennae short, no more than 2 times as long as wide. Body completely dirty-white. Body length 28–29 mm. In decayed stumps and in dust in tree holes and forks of trees, in soil by accident *Dictenidia* Brulle, 1833
7. Spiracular disc is distinctly contoured and bordered by a fringe of short setae, projecting above the bases of lobes; dorsal and lateral lobes with large light or dark-brown oval spots of different form; lateral lobes as a rule are longer than the dorsal. Spiracles round (Figs 55, 393, 395, 401). Body dirty-white. Body length 30–40 mm. In decaying wood *Ctenophora* Meigen, 1803
- Spiracular disc is not distinctly contoured from the rest of the segment and without a fringe of short setae; dorsal or both dorsal and lateral lobes with small often dotted spots. Lobes of spiracular disc as a rule small, if developed — then of equal length. Spiracles oval 8
8. Dorsal and lateral lobes of spiracular disc are very short, round; dorsal lobes not pigmented; each lateral lobe with long dark apical seta and small brown or dark-brown spot near base; each ventral lobe with small brown or dark-brown spot near apex. Head capsule broad anteriorly, almost rectangular. Antennae short, only 2 times as long as wide (Figs 77, 111, 394, 397). Body dirty-white. Body length 36–38 mm. In deciduous and mixed forests under bark and in decaying wood, in soil by accident *Tanyptera* Latreille, 1804
- Dorsal and lateral lobes of spiracular disc are conical, their length exceeding their width; each lobe with well developed spot near base (Fig. 389). Head capsule oval, a little narrowed anteriorly and posteriorly. Antennae relatively long, 3–4 times as long as wide. Body dirty-white. Body length 30 mm. In decaying wood of deciduous trees *Phoroctenia* Coquillett, 1910

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ОБЩАЯ ЧАСТЬ

Условные обозначения

ab — брюшко; *anop* — анальное отверстие; *anp* — анальные папиллы; *ant* — усики; *ap* — апофизы; *brt* — дыхательная трубка; *cl* — клипеус; *crd* — кардо; *crw* — ползательные валики; *dl, ll, vl* — дорсальный, латеральные и вентральные выросты стигмального поля; *ep* — эпифаринкс; *eppl* — эпикраниальная или латеральная пластинка; *f* — фронс, или лоб; *fn* — плавник; *fr* — фронтальная пластинка головы (фронс); *frcl* — фронтоклипеус; *gal* — галеа; *h* — голова; *hst* — гипостомальная пластинка (гипостомиум); *hyp* — гипофаринкс; *lac* — лациия; *lb* — нижняя губа; *lbr* — верхняя губа; *md* — мандибула; *mdd* — срединные зубцы мандибул; *mx* — максилла; *n* — дополнительный сегмент галлиц; *oc* — глазок; *pl lb* — щупики нижней губы; *pl mx* — щупики максиллы; *pr* — простека; *prcl* — преклипеус; *prmd* — премандибула; *pscl* — постклипеус; *s* — присоска; *siph* — сифон; *sp* — лопаточка галлиц; *spir* — дыхальца; *spl* — склеротизованные пластинки; *st* — стipes; *t* — торма; *ten* — тенториум; *th* — грудь; *tpl* — терминальный выступ; *vo* — вентральное отверстие головной капсулы.

Abbreviations

ab — abdomen; *anop* — anal opening; *anp* — anal papillae; *ant* — antenna; *ap* — apophyse; *brt* — breathing tube; *cl* — clypeus; *crd* — cardo; *crw* — creeping welts; *dl, ll, vl* — dorsal, lateral and ventral lobes of spiracular disc; *ep* — epipharynx; *eppl* — epicranial or lateral plate; *fn* — fin; *fr* — frontal plate of head (frons); *frcl* — frontoclypeus; *gal* — galea; *h* — head; *hst* — hypostomal plate (hypostoma); *hyp* — hypopharynx; *lac* — lacinia; *lb* — labium; *lbr* — labrum; *md* — mandible; *mdd* — median dents of mandible; *mx* — maxilla; *n* — additional segment of gall-midges; *oc* — ocellus; *pl lb* — palpus of labium; *pl mx* — palpus of maxilla; *pr* — prosteca; *prcl* — preclypeus; *prmd* — premandible; *pscl* — postclypeus; *s* — sucker; *siph* — siphon; *sp* — spatula of gall-midges; *spir* — spiracles; *spl* — sclerotized plates; *st* — stipes; *t* — torma; *ten* — tenthorium; *th* — thorax; *tpl* — terminal projection of frontal plate; *vo* — ventral opening of the head capsule.

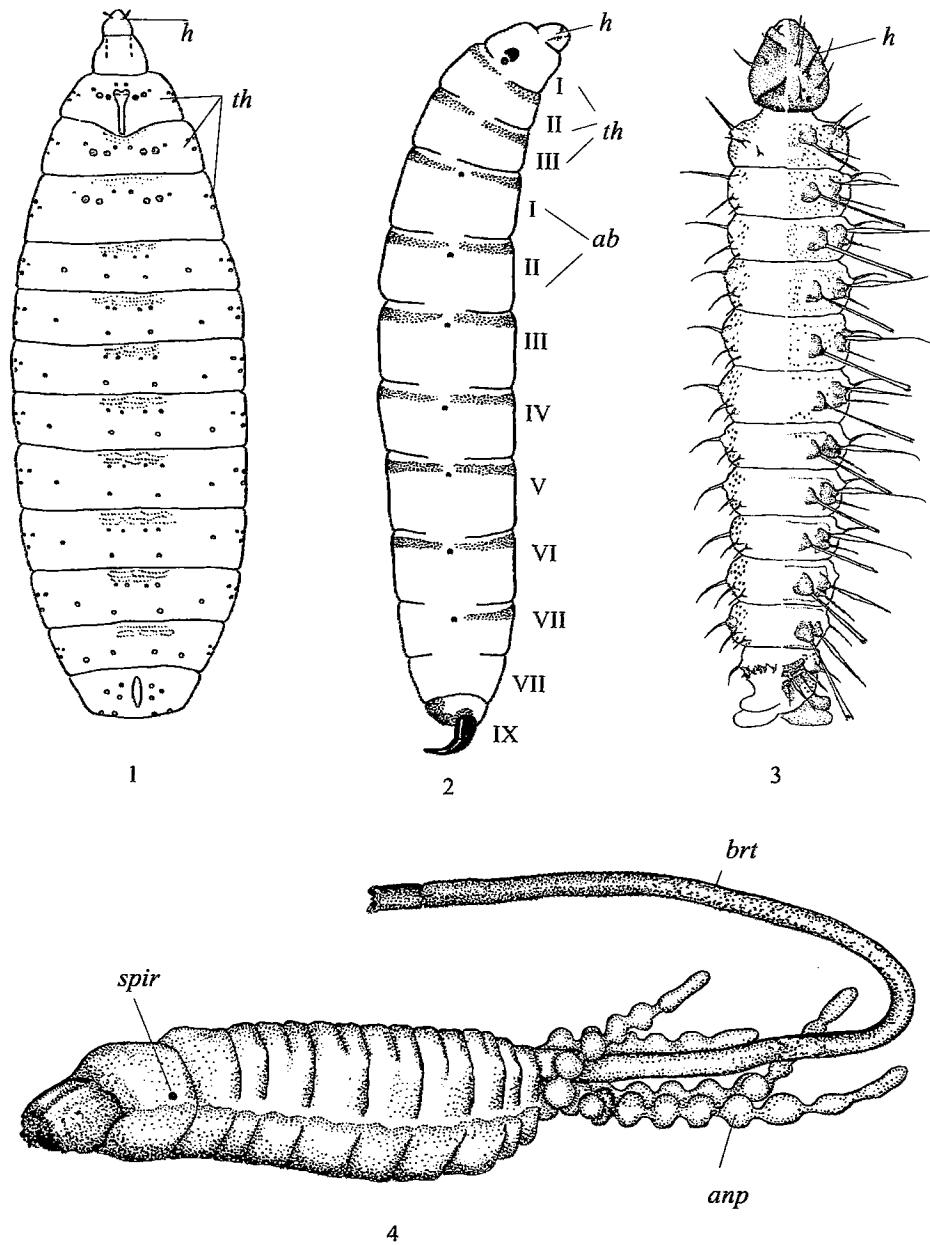


Рис. 1—4. Общий вид личинок Nematocera (по: Кривошеина, Мамаев, 1967):
 1 — Cecidomyiidae; 2 — *Hyperoscelis* sp. (Canthyloscelidae); 3 — *Forcipomyia* (*Forcipomyia*) *nigra* (Winnertz, 1852) (Ceratopogonidae); 4 — *Mesaxomyia kerteszi* (Duda, 1930) (Axymyiidae).
 Figs 1—4. Larvae of Nematocera, general view (after Кривошеина, Мамаев, 1967).

Рис. 5—13. Типы
 5 — *Trichocera annularis* (Linné, 1758) (Limoniidae); 9 —
 1963 (Cecidomyiidae); 11 —
Leptoconops (*Holopogon*) *hirsutus* (Fabricius, 1781) (Canthyloscelidae).
 Figs 5—13. Types

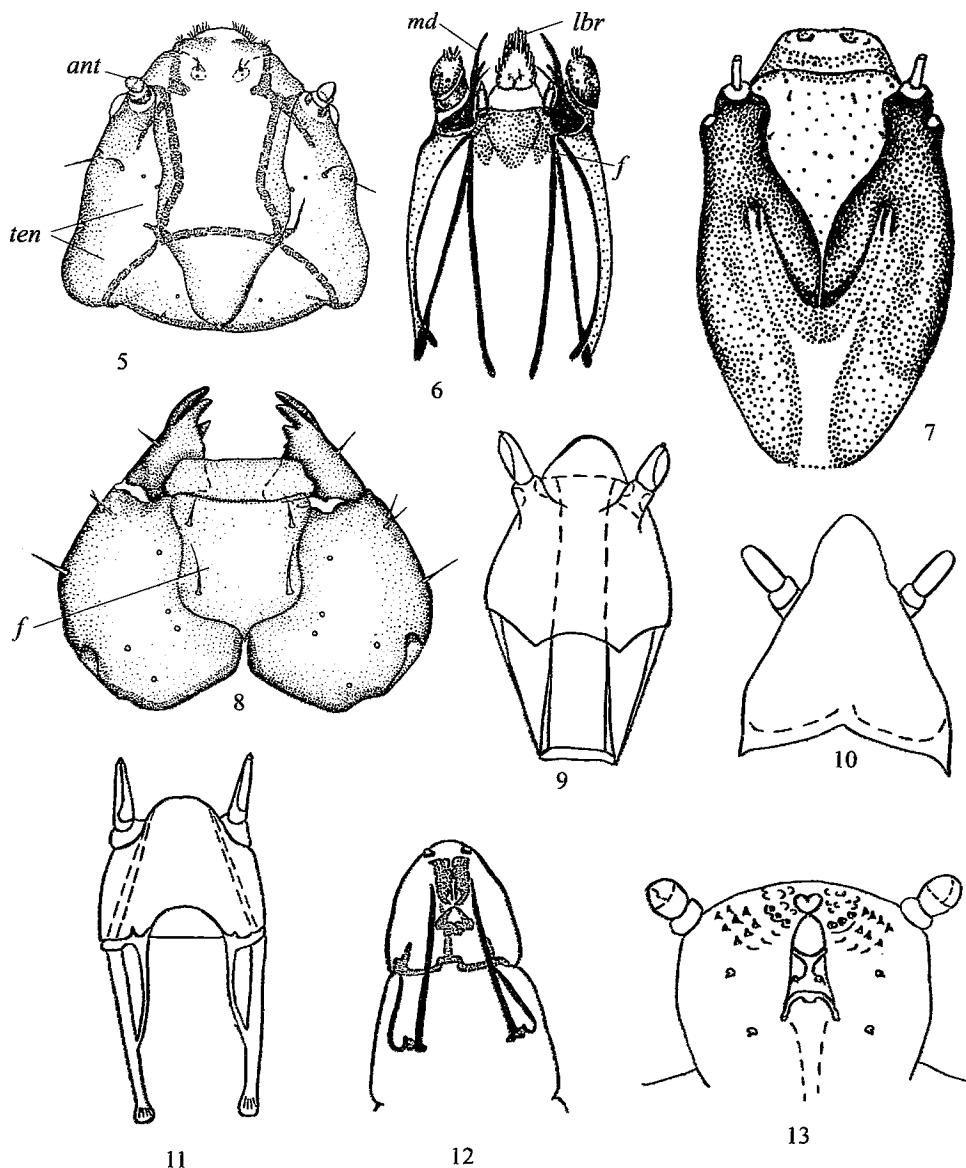


Рис. 5–13. Типы строения головы личинок (по: Кривошеина, Мамаев, 1967):
 5 — *Trichocera annulata* Meigen, 1818 (Trichoceridae); 6 — *Symplecta (Symplecta) hybrida* (Meigen, 1804) (Limoniidae); 7 — *Microlimonia machidai* (Alexander, 1921) (Limoniidae); 8 — *Trichomyia* sp. (Psychodidae); 9 — *Aprionus similis* Mamaev, 1963 (Cecidomyiidae); 10 — *Winnertzia nigra* Mamaev, 1963 (Cecidomyiidae); 11 — *Mycodiplosis pucciniae* (Rubaamen, 1889) (Cecidomyiidae); 12 — *Leptoconops (Holoconops) borealis* Gutsevich, 1945 (Ceratopogonidae); 13 — *Hyperoscelis* sp. (Canthyloscelidae).

Figs 5–13. Types of the structure of the head capsule (after Кривошеина, Мамаев, 1967).

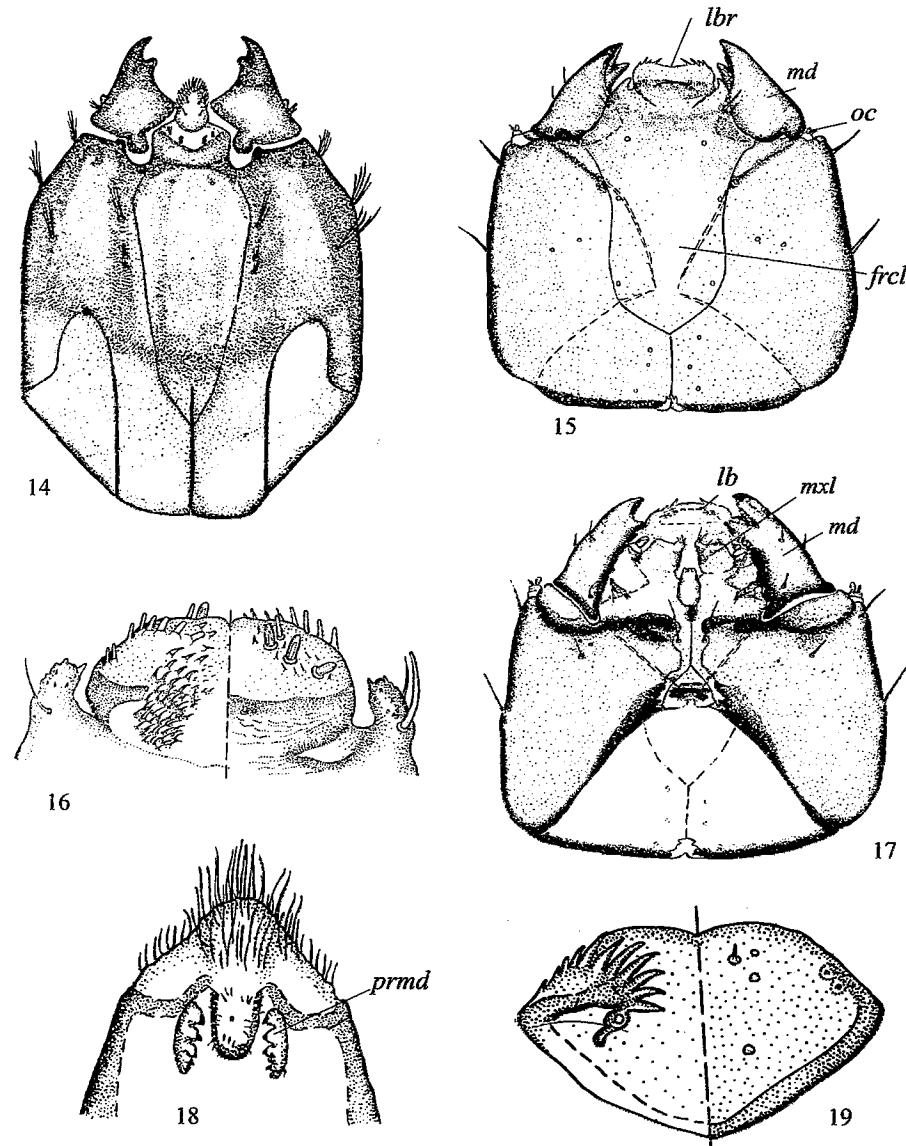


Рис. 14–19. Детали строения головы личинок длинноусых двукрылых (по: Кривошеина, Мамаев, 1967):

14 — *Mesaxomyia kerteszi* (Duda, 1930) (Axomyiidae); 15 — *Pergratospes holoptica* Krivosheina et Mamaev, 1970 (Cramptonomyiidae); 16 — *Bibio pomonae* (Fabricius, 1775) (Bibionidae); 17 — *Pergratospes holoptica* Krivosheina et Mamaev, 1970 (Cramptonomyiidae); 18 — *Coboldia fuscipes* (Meigen, 1810) (Scatopsidae); 19 — *Phronia* sp. (Mycetophilidae). 14, 15 — голова сверху; 16 — верхняя губа дорсально (справа) и вентрально (слева); 17 — голова снизу; 18 — верхняя губа вентрально; 19 — верхняя губа дорсально (справа) и вентрально (слева).

Figs 14–19. Details of the head morphology (after Кривошеина, Мамаев, 1967):

14, 15 — head dorsally; 16 — labrum dorsally (right) and ventrally (left); 17 — head ventrally; 18 — labrum ventrally; 19 — labrum dorsally (right) and ventrally (left).

Рис. 20–27. Мандибулы личинок длинноусых двукрылых (по: Кривошеина, 2010):
20 — *Coboldia fuscipes* (Scatopsidae); 21 — *Dasyhelea* sp. (Ceratopogonidae); 22 — *surcoufi* Tonnoir, (Ceratopogonidae); 23 — *Phronia* sp. (Mycetophilidae).

Figs 20–27. Mandibles of larva of Diptera (after Кривошеина, 2010):

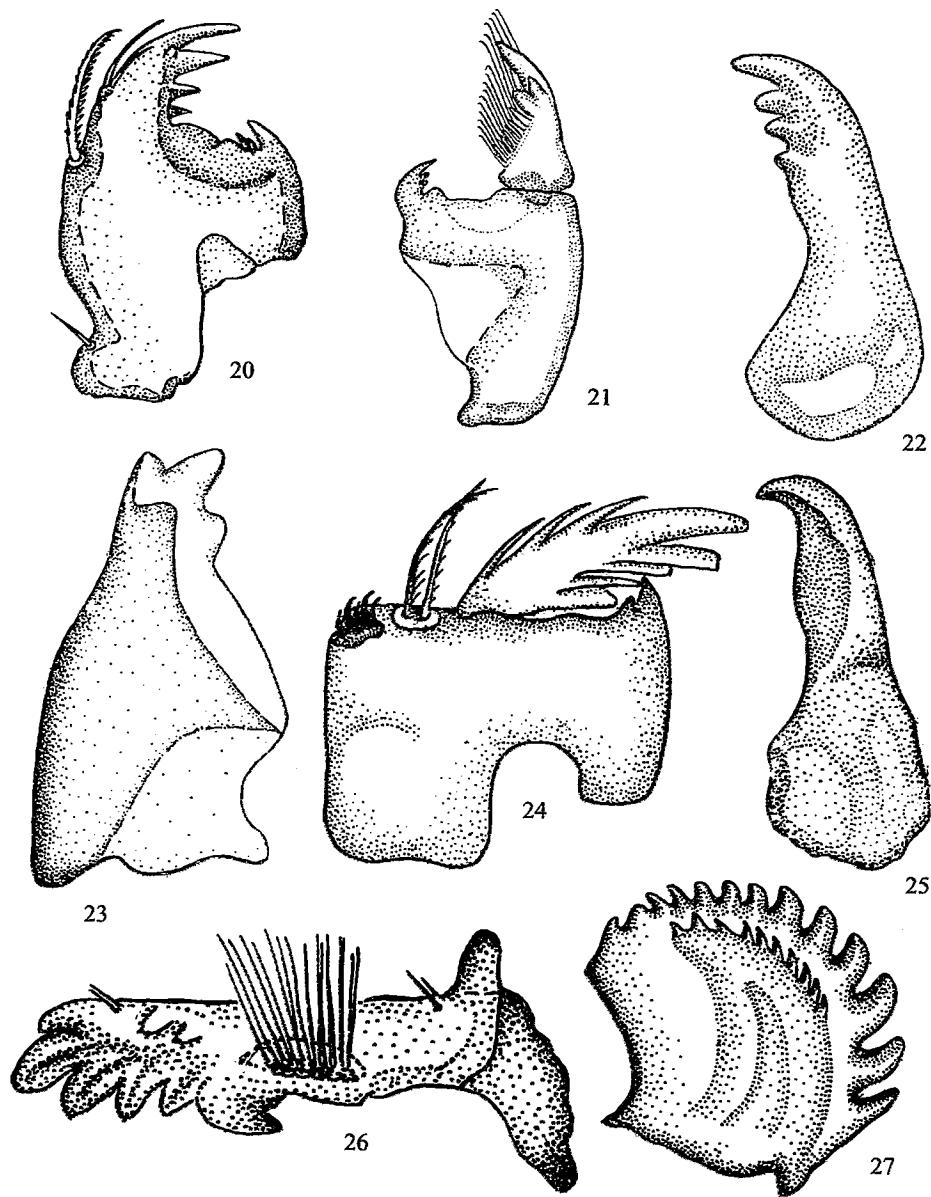


Рис. 20–27. Мандибулы личинок длинноусых двукрылых (по: Кривошеина, Мамаев, 1967; Кривошеина, 2010; Кривошеина, Кривошеина, 2011):

20 — *Coboldia fuscipes* (Meigen, 1810) (Scatopsidae); 21 — *Mycetobia* sp. (Anisopodidae); 22 — *Dasyhelea* sp. (Ceratopogonidae); 23 — *Bibio pomona* (Fabricius, 1775) (Bibionidae); 24 — *Psychoda surcoufi* Tonnoir, 1922 (Psychodidae); 25 — *Culicoides (Monoculicoides) riethi* Kieffer, 1914 (Ceratopogonidae); 26 — *Gnophomyia lugubris* (Zetterstedt, 1838) (Limoniidae); 27 — *Phronia* sp. (Mycetophilidae).

Figs 20–27. Mandibles of nematocerous larvae (after Кривошеина, Мамаев, 1967; Кривошеина, 2010; Кривошеина, Кривошеина, 2011).

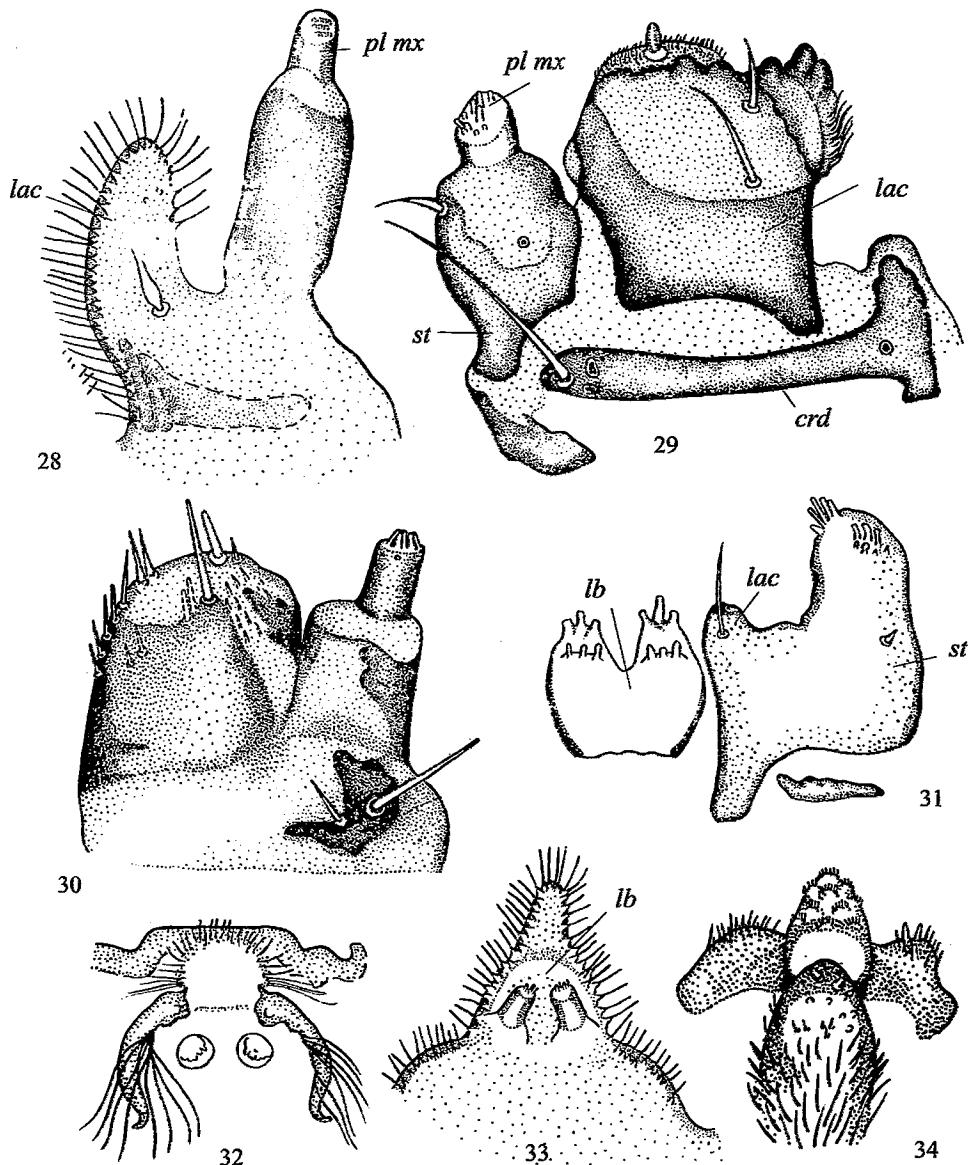


Рис. 28–34. Максиллы и нижняя губа личинок длинноусых двукрылых (по: Кривошеина, Мамаев, 1967):

28 — *Protaxymyia melanoptera* Mamaev et Krivosheina, 1966 (Axymyiidae); 29 — *Plecia thulinigra* Hardy, 1961 (Bibionidae); 30 — *Pachyneura* sp. (Pachyneuridae); 31 — *Symmerus annulatus* (Meigen, 1830) (Ditomyiidae); 32 — *Mycetobia* sp. (Anisopodidae); 33 — *Protaxymyia melanoptera* Mamaev et Krivosheina, 1966 (Axymyiidae); 34 — *Trichocera annulata* Meigen, 1818 (Trichoceridae). 28–30 — максилла; 31 — нижняя губа и максилла; 32, 34 — нижняя губа и гипофаринкс; 33 — нижняя губа.

Figs 28–34. Maxilla and labium of nematocerous larvae (after Кривошеина, Мамаев, 1967): 28–30 — maxilla; 31 — labium and maxilla; 32, 34 — labium and hypopharynx; 33 — labium.

Рис. 35–47. Кутикула
1951; Кривошеина,
35 — *Anopheles* sp.
kaltenbachi (Winneke),
39 — *Claspettomyia*
(Linnaeus, 1767) (L.)
42 — *Winnertzia* r.
Psychoda albipennis
trifolii Rubsaamen,
древовидная щетина;
дорсальная папилла;
тикулярные структуры
брюшных сегментов;
Figs 35–47. Cuticle
of Winnertzia r.
Psychoda albipennis
trifolii Rubsaamen,
35 — branched seta;
39 — dorsolateral seta; 42 — dorsal
papilla; 44 — tectorial
structures of abdominal
segments; 45 — cuticle

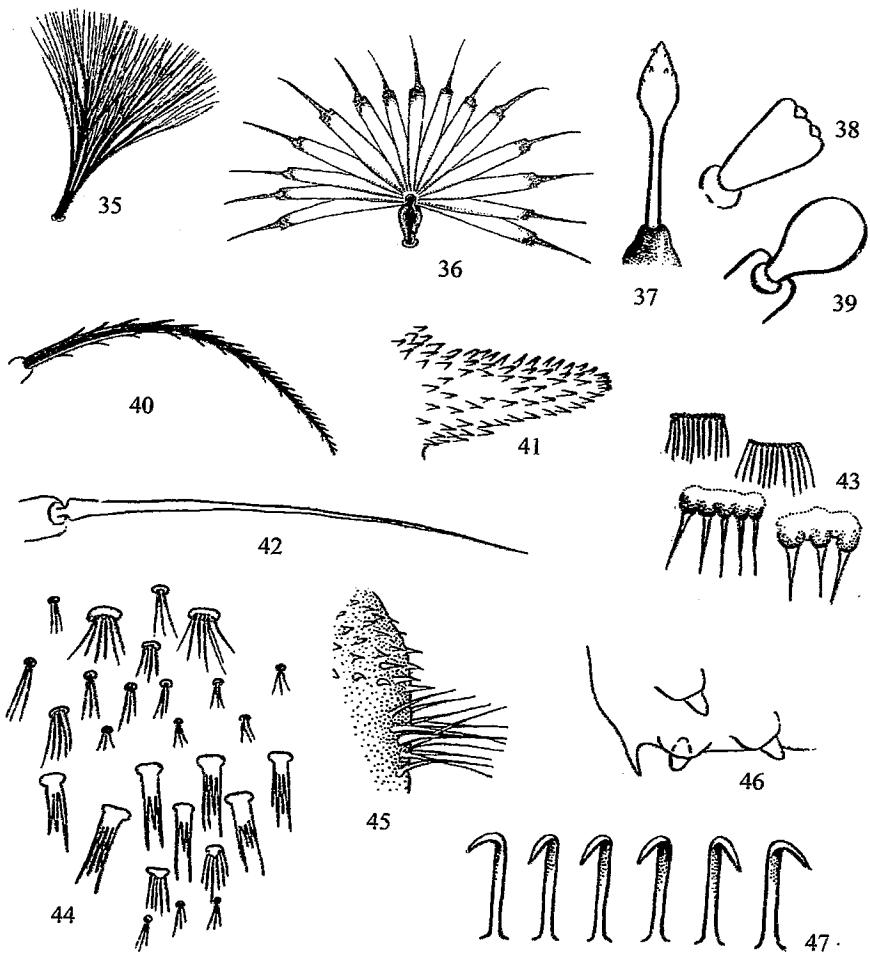


Рис. 35—47. Кутикулярные структуры личинок длинноусых двукрылых (по: Мончадский, 1951; Кривошеина, Мамаев, 1967; Мамаев, Кривошеина, 1965):
 35 — *Anopheles* sp. (Culicidae); 36 — *Anopheles* sp. (Culicidae); 37 — *Forcipomyia (Forcipomyia) kaltenbachii* (Winnertz, 1852) (Ceratopogonidae); 38 — *Holoneurus fulvus* Kieffer, 1896 (Cecidomyiidae); 39 — *Claspetomyia hamata* (Felt, 1907) (Cecidomyiidae); 40 — *Forcipomyia (Forcipomyia) bipunctata* (Linnaeus, 1767) (Ceratopogonidae); 41 — *Peromyia perpusilla* (Winnertz, 1870) (Cecidomyiidae); 42 — *Winnertzia rubricola* Mamaev, 1963 (Cecidomyiidae); 43 — *Scatopsidae* sp. (Scatopsidae); 44 — *Psychoda albipennis* Zetterstedt, 1850 (Psychodidae); 45 — *Scatopsidae* sp. (Scatopsidae); 46 — *Tricholaba trifolii* Rubsaamen, 1917 (Cecidomyiidae); 47 — *Holoneurus fulvus* Kieffer, 1896 (Cecidomyiidae). 35 — деревовидная щетинка лобного щитка; 36 — пальмовидный (звездчатый) волосок; 37—39, 41, 42 — дорсальная папилла; 40 — дорсолатеральная щетинка; 43 — кутикулярные структуры; 44 — структуры брюшных сегментов; 46 — терминальные папиллы; 47 — вентральные крючки.

Figs 35—47. Cuticular structures of nematocerous larvae (after Мончадский, 1951; Кривошеина, Мамаев, 1967; Мамаев, Кривошеина, 1965):

35 — branched seta of frontal sclerite; 36 — palmate seta; 37—39, 41, 42 — dorsal papilla; 40 — dorsolateral seta; 43 — cuticular structures; 44 — cuticular structures on dorsal side of the I abdominal segment; 45 — cuticular structures of abdominal segments; 46 — terminal papilla; 47 — ventral hooks.

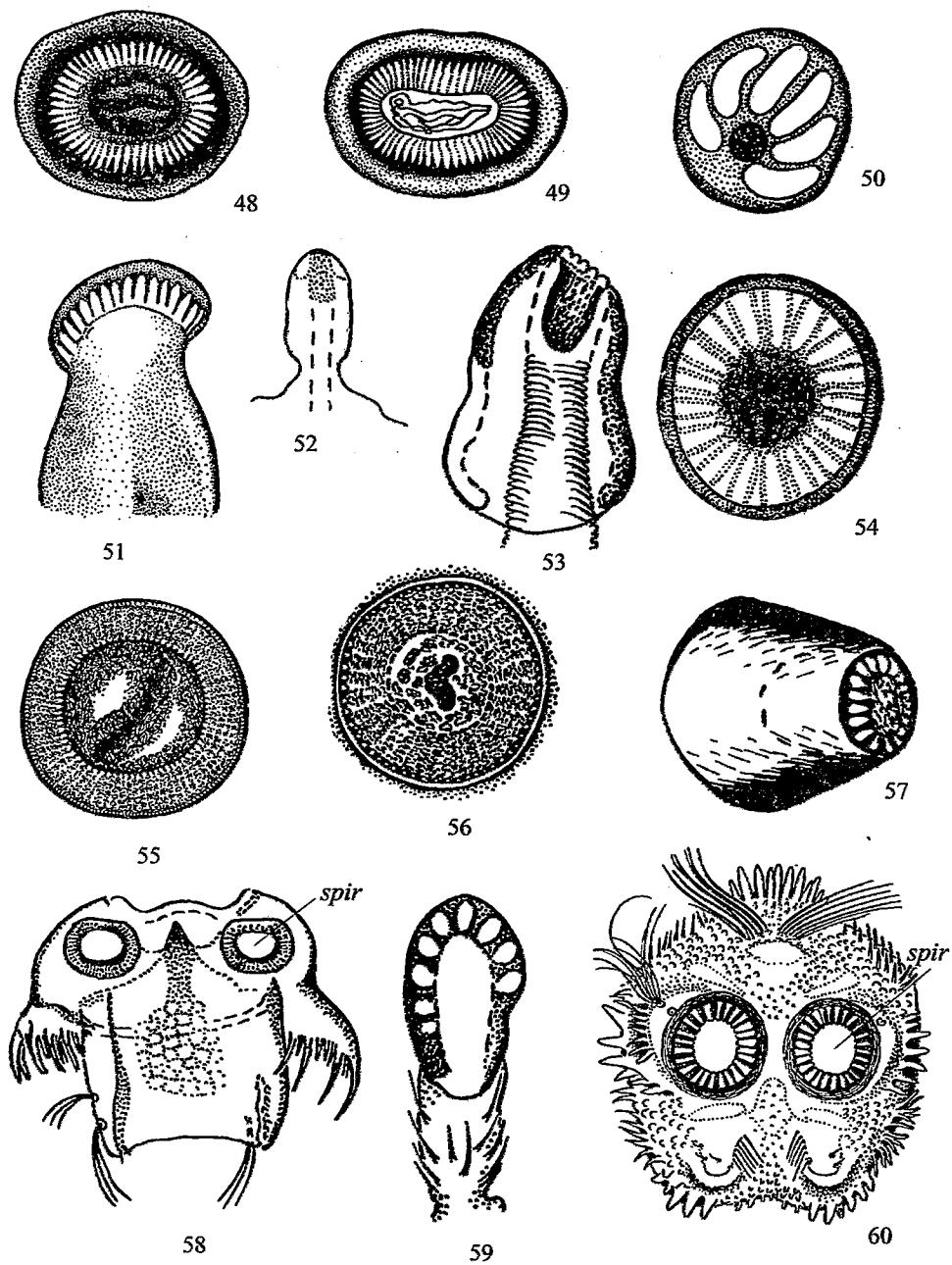


Рис. 48–60. Строение дыхальца у насекомых Кривошеина, Мамаева и др.
 48 — *Hesperinus* (Pachyneuridae); 49 — *Psychoda surcoufi* sp. (Psychodidae); 50 — *Cylindrotomus* (Cylindrotomidae); 51 — *Moselyanella* (Culicidae); 52 — *Stictochironomus* (Chironomidae); 53 — *Stictochironomus* (Chironomidae); 54 — *Mamaevia* (Acalyptratae); 55 — *Stictochironomus* (Chironomidae); 56 — *Stictochironomus* (Chironomidae); 57 — *Stictochironomus* (Chironomidae); 58 — *Stictochironomus* (Chironomidae); 59 — *Stictochironomus* (Chironomidae); 60 — *Stictochironomus* (Chironomidae).

Рис. 48–60. Строение дыхалец личинок длинноусых двукрылых (по: Мончадский, 1951; Кривошеина, Мамаев, 1967; Кривошеина, 2004):

48 — *Hesperinus rohdendorfi* Krivosheina et Mamaev, 1967 (Hesperiidae); 49 — *Pachyneura* sp. (Pachyneuridae); 50 — *Phronia* sp. (Mycetophilidae); 51 — *Mycetobia* sp. (Anisopodidae); 52 — *Psychoda surcoufi* Tonnoir, 1922 (Psychodidae); 53 — *Scatopse* sp. (Scatopsidae); 54 — *Trichomyia* sp. (Psychodidae); 55 — *Ctenophora* sp. (Tipulidae); 56 — *Diogma glabrata* (Meigen, 1818) (Cylindrotomidae); 57 — *Pericoma* sp. (Psychodidae); 58 — *Anopheles maculipennis* Meigen, 1818 (Culicidae); 59 — *Rhexoza subnitens* (Verrall, 1886) (Scatopsidae); 60 — *Mesaxymyia stackerbergi* Mamaev, 1968 (Axytomyiidae). 48, 49 — дыхальце 8-го брюшного сегмента; 50–52, 57, 59 — переднее дыхальце; 53–56 — заднее дыхальце; 58 — стигмальная пластинка с дыхальцами; 60 — стигмальное поле.

Figs 48–60. Morphology of spiracles of nematocerous larvae (after Мончадский, 1951; Кривошеина, Мамаев, 1967; Кривошеина, 2004):

48, 49 — spiracle of the VIII abdominal segment; 50–52, 57, 59 — anterior spiracle; 53–56 — posterior spiracle; 58 — spiracular disc with spiracles; 60 — spiracular disc.

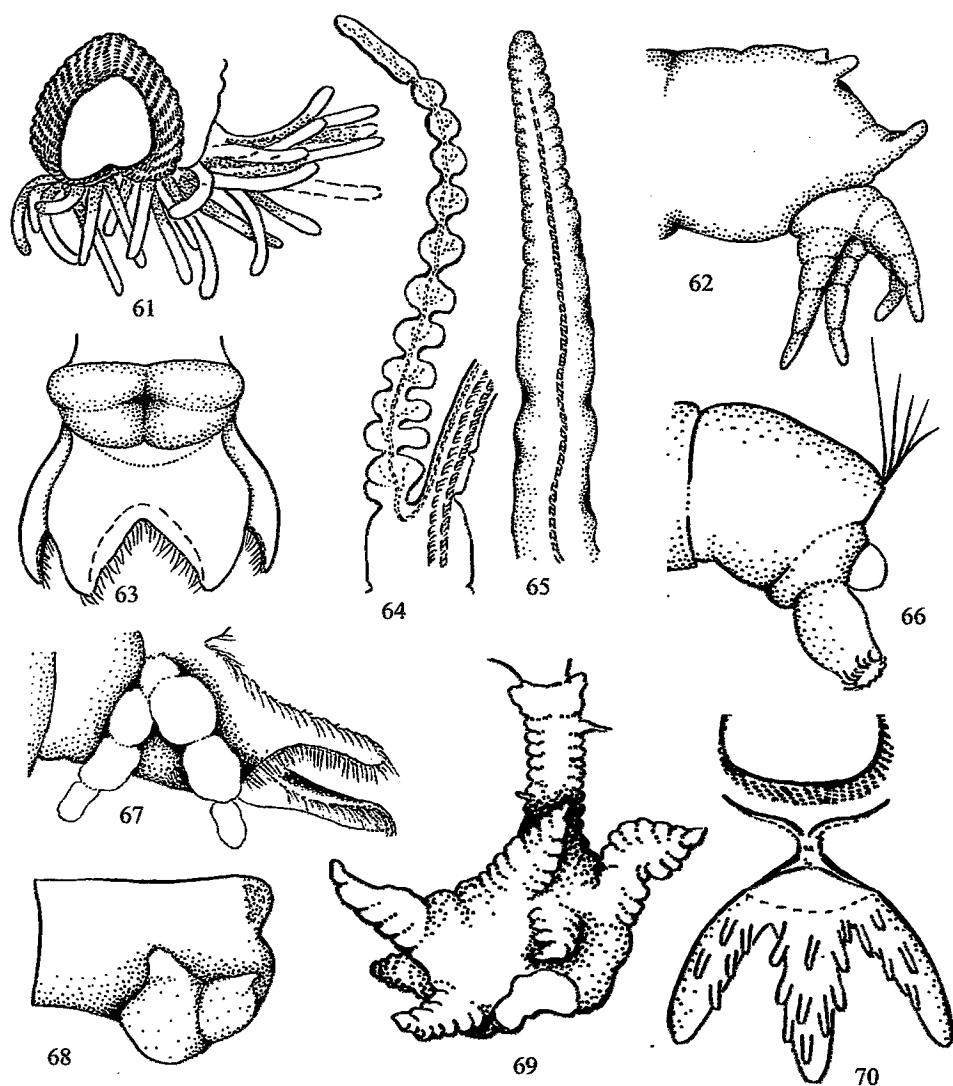


Рис. 61–70. Строение анальных папилл личинок длинноусых двукрылых (по: Кривошеина, 2005):

61 — *Simulium (Byssodon) maculatum* (Meigen, 1804) (Simuliidae); 62 — *Epiphragma subfascipenne* Alexander, 1920 (Limoniiidae); 63 — *Gnophomyia viridipennis* (Gimmerthal, 1847) (Limoniiidae); 64 — *Mesaxomyia stackelbergi* Mamaev, 1968 (Axomyiidae); 65 — *Ptychoptera minuta* Tonnoir, 1919 (Ptychopteridae); 66 — *Glyptotendipes* sp. (Chironomidae); 67 — *Lipsothrix nobilis* Loew, 1873 (Limoniiidae); 68 — *Rhipidia uniseriata* Schiner, 1864 (Limoniiidae); 69 — *Arctotipula salicetorum* Siebke, 1870 (Tipulidae); 70 — *Prosimulium* sp. (Simuliidae). 61 — конец тела сзади; 62, 66–68 — конец тела сбоку; 63 — конец тела снизу; 64 — терминальная папилла; 65 — анальная папилла в основании дыхательной трубки; 69 — трахея и анальные папиллы сбоку; 70 — анальные папиллы на конце тела.

Figs 61–70. Morphology of anal papillae of nematocerous larvae (after Кривошеина, 2005): 61 — body end posteriorly; 62, 66–68 — body end laterally; 63 — body end ventrally; 64 — terminal papilla; 65 — anal papilla at the base of breathing tube; 69 — trachea and anal papillae laterally; 70 — anal papillae at the end of the body.

Рис. 71–77. Строение анальных папилл личинок длинноусых двукрылых (по: Кривошеина, Мамаев, 1967):
71 — *Leptoconoprotiniae* Krivosheina, 1967; 72 — *Bezzia xanthocephala* (Culicidae); 73 — *Leptoconoprotiniae* Krivosheina, 1967; 74 — *Leptoconoprotiniae* Krivosheina, 1967; 75 — *Leptoconoprotiniae* Krivosheina, 1967; 76 — *Leptoconoprotiniae* Krivosheina, 1967; 77 — *Leptoconoprotiniae* Krivosheina, 1967.

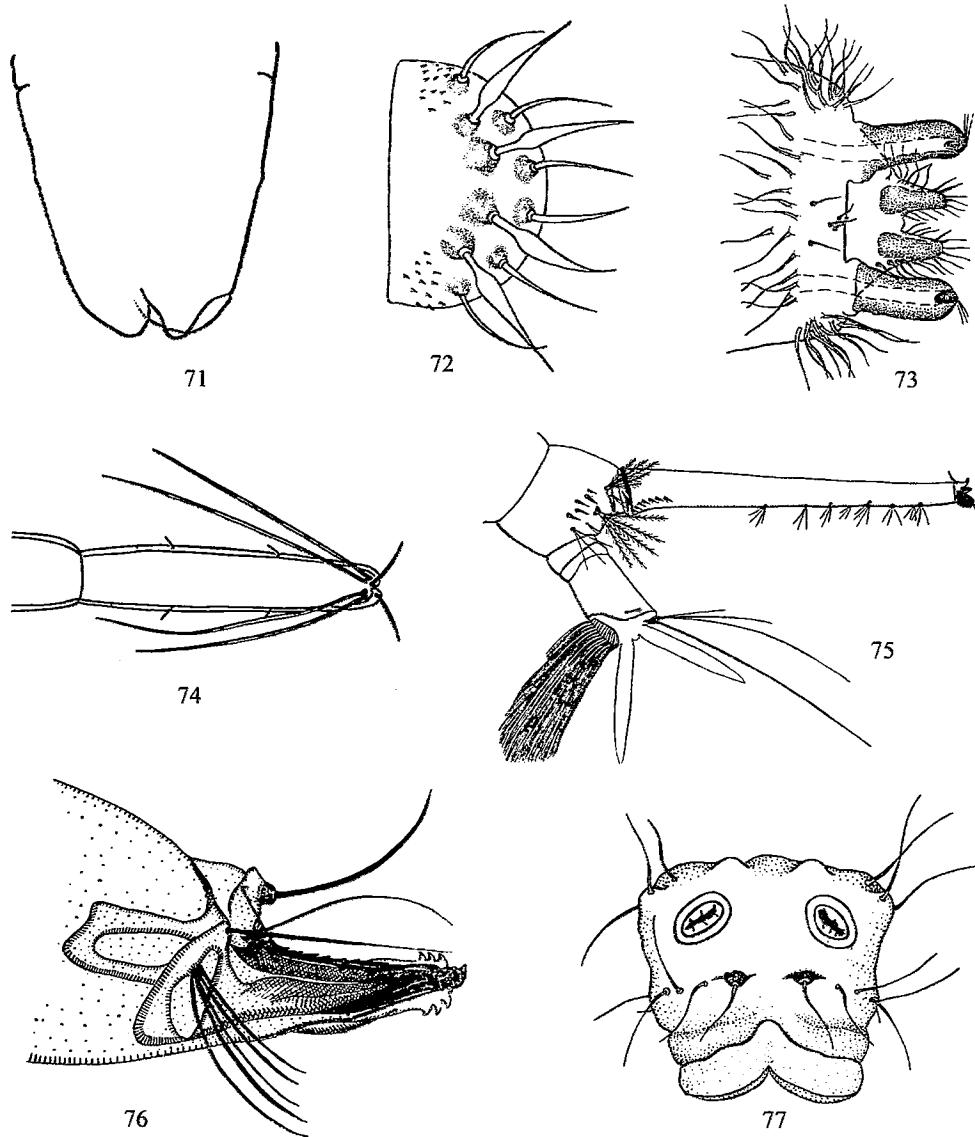


Рис. 71–77. Строение терминального отдела тела личинок (по: Мончадский, 1951; Кривошина, Мамаев, 1967):

71 — *Leptoconops (Holoconops) borealis* Gutsevich, 1945 (Ceratopogonidae); 72 — *Forcipomyia tinia* Krivosheina, 1968 (Ceratopogonidae); 73 — *Coboldia fuscipes* (Meigen, 1830) (Scatopsidae); 74 — *Bezzia xanthocephala* Goetghebuer, 1911 (Ceratopogonidae); 75 — *Culex bitaeniorhynchus* Giles, 1901 (Culicidae); 76 — *Mansonia* sp. (Culicidae); 77 — *Tanyptera (Tanyptera) nigricornis* (Meigen, 1818) (Tipulidae).

Figs 71–77. Structures of the end of the body (after Мончадский, 1951; Кривошина, Мамаев, 1967).

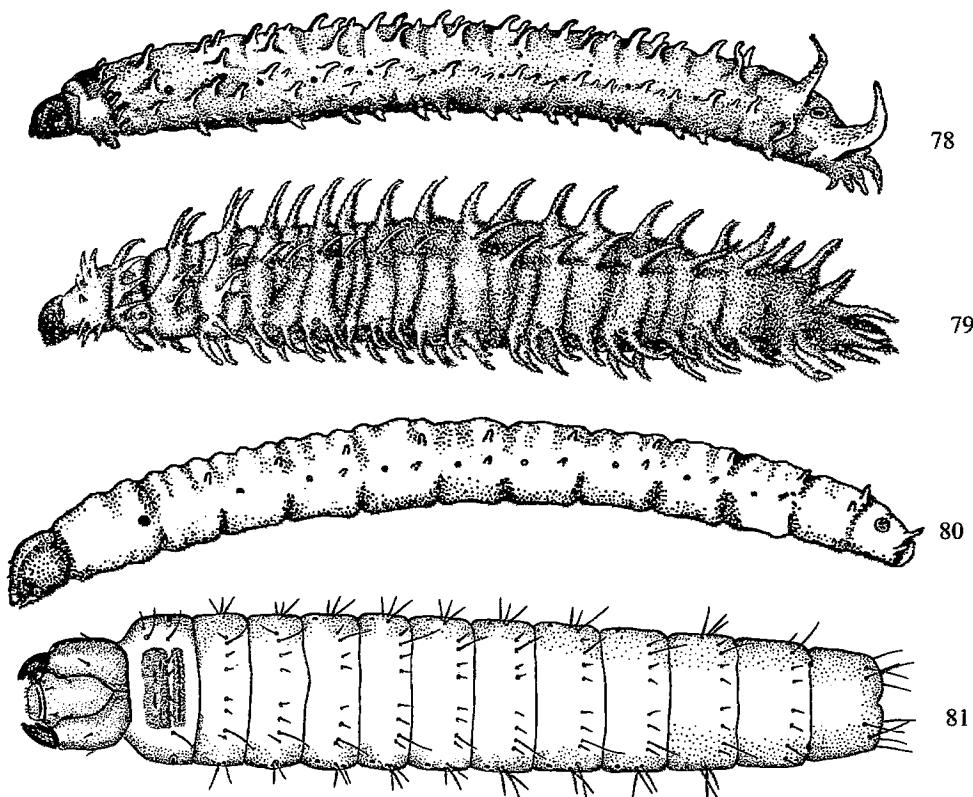


Рис. 78–81. Общий вид личинок Nematocera (по: Кривошеина, Мамаев, 1967, 1970):
 78 — *Plecia thulinigra* Hardy, 1961 (Bibionidae); 79 — *Penthetria funebris* Meigen, 1804 (Bibionidae);
 80 — *Dilophus febrilis* (Linnaeus, 1758) (Bibionidae); 81 — *Pergratospes holoptica* Krivosheina et
 Mamaev, 1970 (Cramptonomyiidae). 78–80 — вид сбоку; 81 — вид сверху.

Figs 78–81. Larvae of Nematocera, general view (after Кривошеина, Мамаев, 1967, 1970):
 78–80 — lateral view; 81 — dorsal view.



Рис. 82–88. Общи
 82 — *Mycetobia* sp.
Sylvicola punctatus
Keroplatus sp. (Kero
 82, 88 — вид сверху
 вид сверху.
 Figs 82–88. Larva
 orig.):
 82, 88 — dorsal view

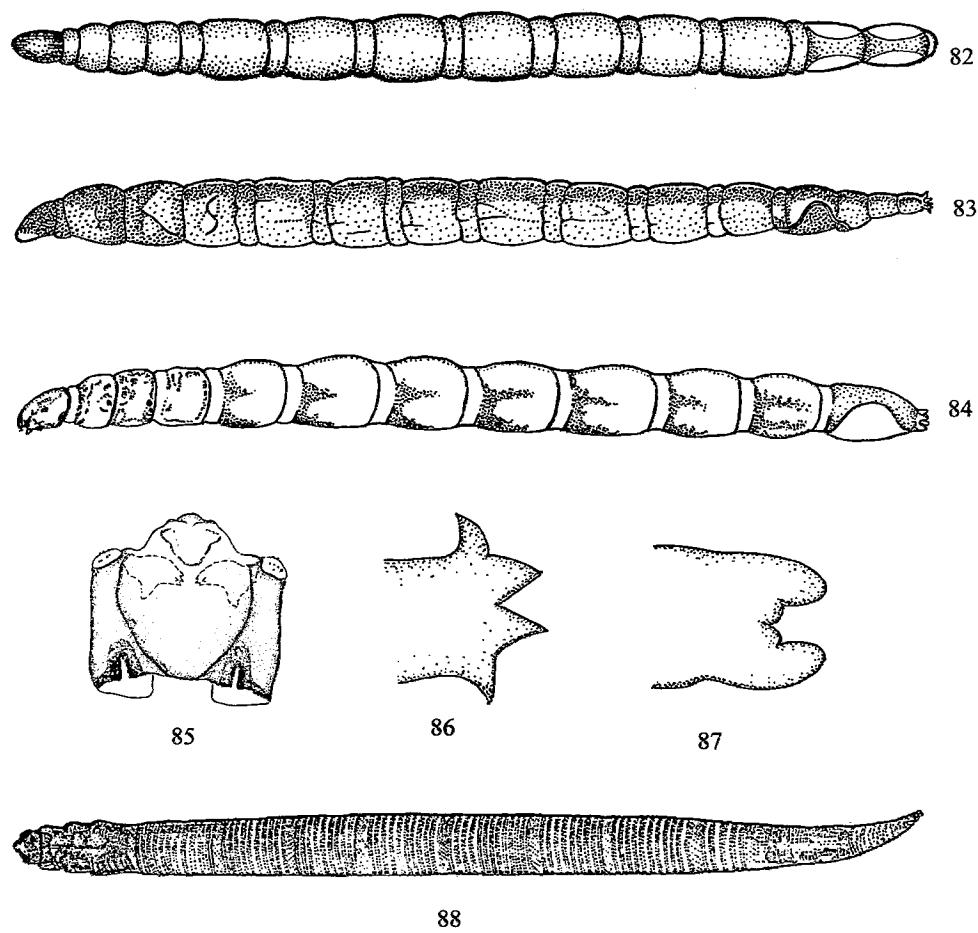


Рис. 82–88. Общий вид личинок (по: Кривошеина, Мамаев, 1967, и orig.):

82 — *Mycetobia* sp. (Anisopodidae); 83 — *Sylvicola fenestralis* (Scopoli, 1763) (Anisopodidae); 84 — *Sylvicola punctatus* (Fabricius, 1787) (Anisopodidae); 85 — *Keroplatys* sp. (Keroplatidae); 86 — *Keroplatys* sp. (Keroplatidae); 87 — *Macrocerata* sp. (Macroceridae); 88 — *Macrocerata* sp. (Macroceridae). 82, 88 — вид сверху; 83, 84 — вид сбоку; 85 — голова, вид сверху; 86, 87 — конец тела личинки, вид сверху.

Figs 82–88. Larvae of Nematocera, general view (after Кривошеина, Мамаев, 1967, and orig.):

82, 88 — dorsal view; 83, 84 — lateral view; 85 — head dorsally; 86, 87 — body end dorsally.

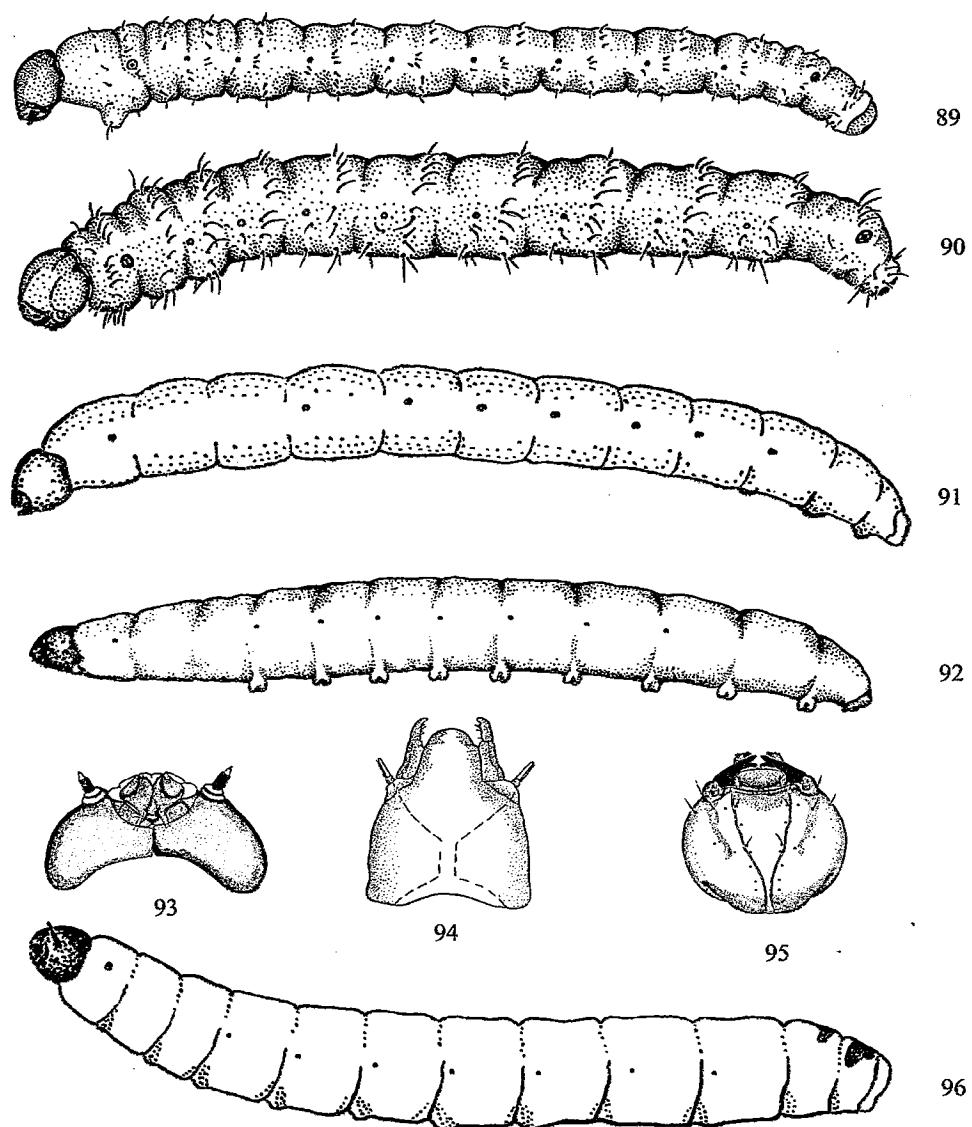


Рис. 89–96. Детали строения личинок (по: Madwar, 1937; Кривошеина, Мамаев, 1967; Кривошеина, 2009):

89 — *Hesperinus rohdendorfi* Krivosheina et Mamaev, 1967 (Hesperinidae); 90 — *Pachyneura* sp. (Pachyneuridae); 91 — Sciaridae; 92 — *Rymosia* sp. (Mycetophilidae); 93 — *Bolitophila* sp. (Bolitophilidae); 94 — *Coboldia fuscipes* (Meigen, 1830) (Scatopsidae); 95 — *Symmerus fuscicaudatus* Saigusa, 1973 (Ditomyiidae); 96 — *Bolitophila rectangularis* Lundstrom, 1913 (Bolitophilidae). 89–92 — вид сбоку; 93–95 — голова сверху; 96 — личинка сбоку.

Figs 89–96. Details of larval morphology (after Madwar, 1937; Кривошеина, Мамаев, 1967; Кривошеина, 2009):

89–92 — lateral view; 93–95 — head dorsally; 96 — lateral view.

Рис. 97–101. Общ...

цев, 1980):

97 — *Symmerus ann...* 1963) (Ditomyiidae);

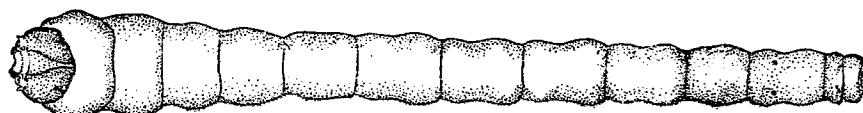
(Meigen, 1830) (Scat...

101 — вид сверху;

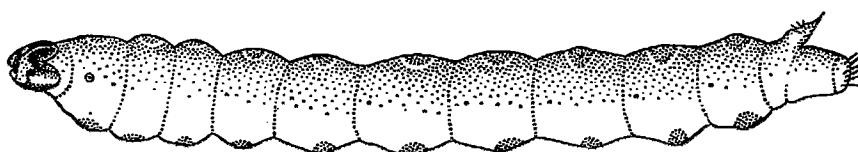
Figs 97–101. Larva...

шона, Зайцев, 1

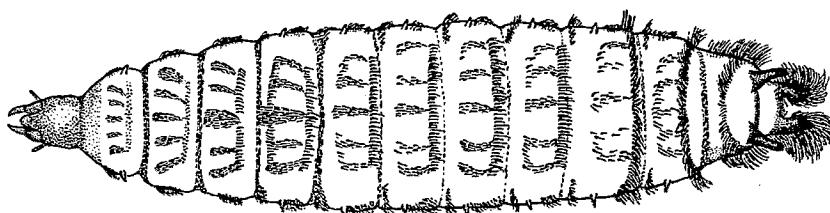
97, 99–101 — dorsal



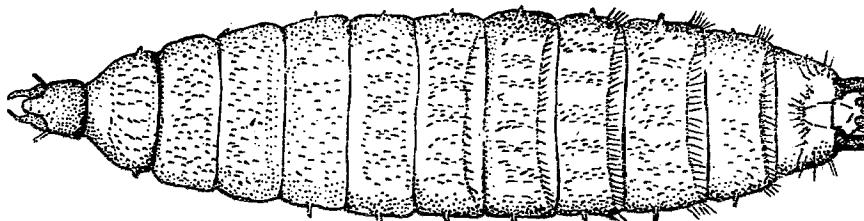
97



98



99



100



101

Рис. 97–101. Общий вид личинок (по: Кривошеина, Мамаев, 1967; Кривошеина, Зайцев, 1980):

97 — *Symmerus annulatus* (Meigen, 1830) (Ditomyiidae); 98 — *Asioditomyia japonica* (Sasakawa, 1963) (Ditomyiidae); 99 — *Scatopse notata* (Linnaeus, 1758) (Scatopsidae); 100 — *Coboldia fuscipes* (Meigen, 1830) (Scatopsidae); 101 — *Trichocera annulata* Meigen, 1818 (Trichoceridae). 97, 99—101 — вид сверху; 98 — вид сбоку;

Figs 97–101. Larvae of Nematocera, general view (after Кривошеина, Мамаев, 1967; Кривошеина, Зайцев, 1980):

97, 99–101 — dorsal view; 98 — lateral view.

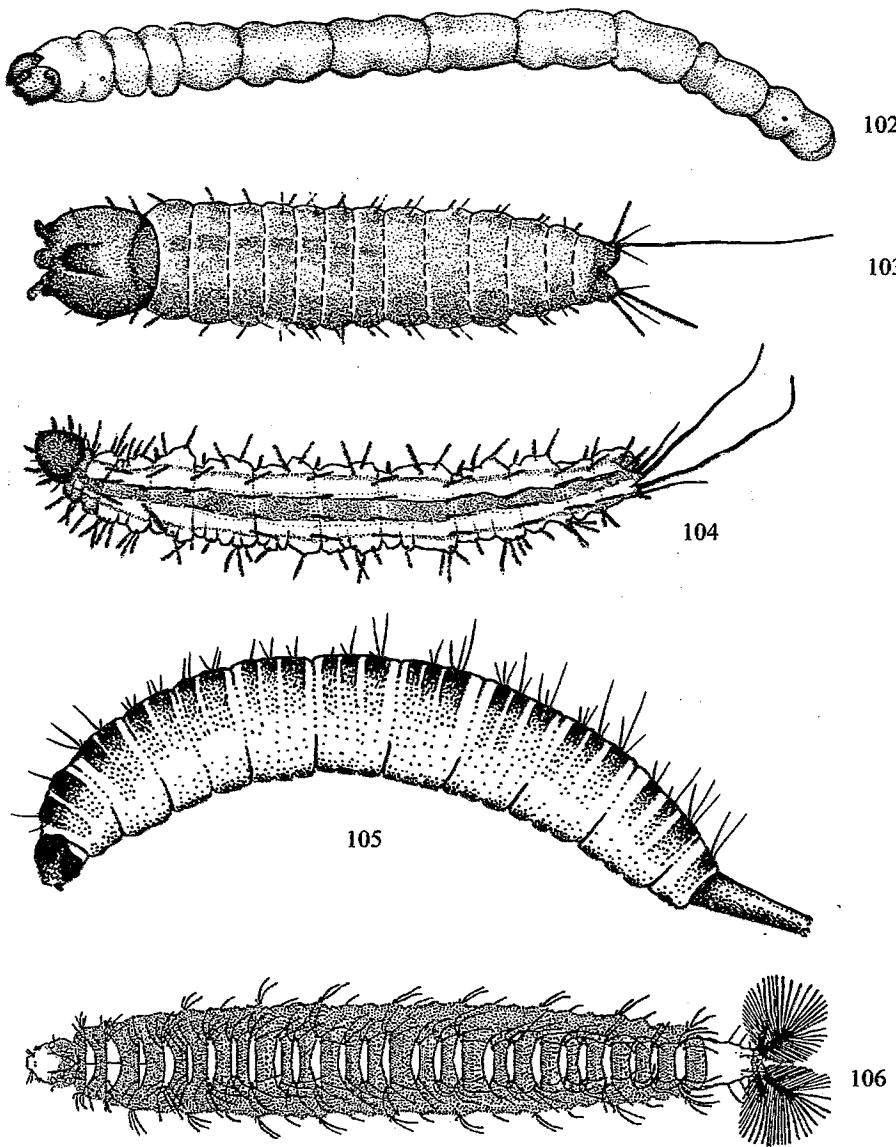


Рис. 102–106. Общий вид личинок (по: Беклемишев, 1949; Satchell, 1949; Кривошеина, Мамаев, 1967):

102 — *Trichomyia* sp. (Psychodidae); 103 — *Phlebotomus* sp. (Psychodidae); 104 — *Phlebotomus* sp. (Psychodidae); 105 — *Psychoda* sp. (Psychodidae); 106 — *Pericoma neglecta* Eaton, 1893 (Psychodidae). 102, 105 — вид сбоку; 103 — личинка 1-го возраста сверху; 104 — личинка 4-го возраста сверху; 106 — вид сверху.

Figs 102–106. Larvae of Nematocera, general view (after Беклемишев, 1949; Satchell, 1949; Кривошеина, Мамаев, 1967):

102, 105 — lateral view; 103 — larva of the 1st instar dorsally; 104 — larva of the 4th instar dorsally; 106 — dorsal view.

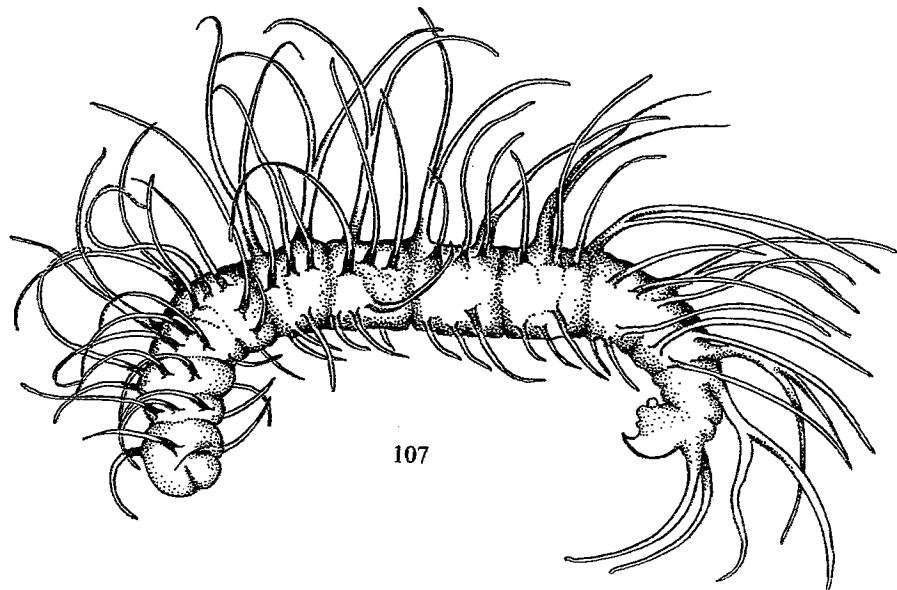
Рис. 107–109. Общий вид личинок (по: Беклемишев, 1949; Satchell, 1949; Кривошеина, Мамаев, 1967):

107 — *Phalacroceras* sp.; 108 — *Triogma* sp. 107–109

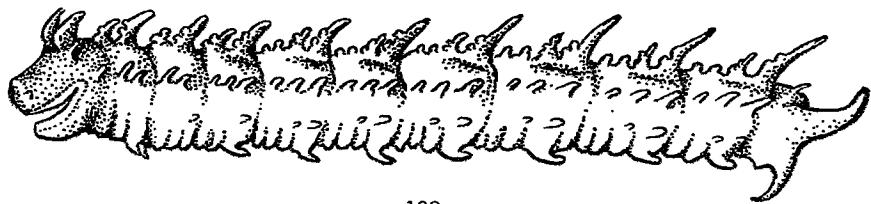
Figs 107–109. Cyli-

ев, 1967):

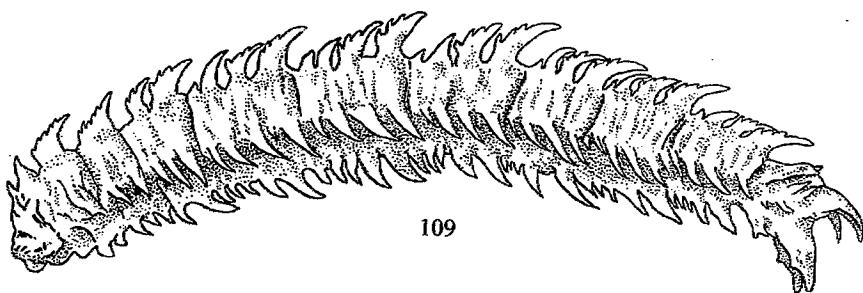
107–109 — lateral vi-



107



108



109

Рис. 107–109. Общий вид личинок Cylindrotomidae (по: Lenz, 1919; Кривошеина, Мамаев, 1967):

107 — *Phalacrocerata replicata* (Linnaeus, 1758); 108 — *Diogma glabrata* (Meigen, 1818); 109 — *Triogma* sp. 107–109 — вид сбоку.

Figs 107–109. Cylindrotomidae larvae, general view (after Lenz, 1919; Кривошеина, Мамаев, 1967):

107–109 — lateral view.

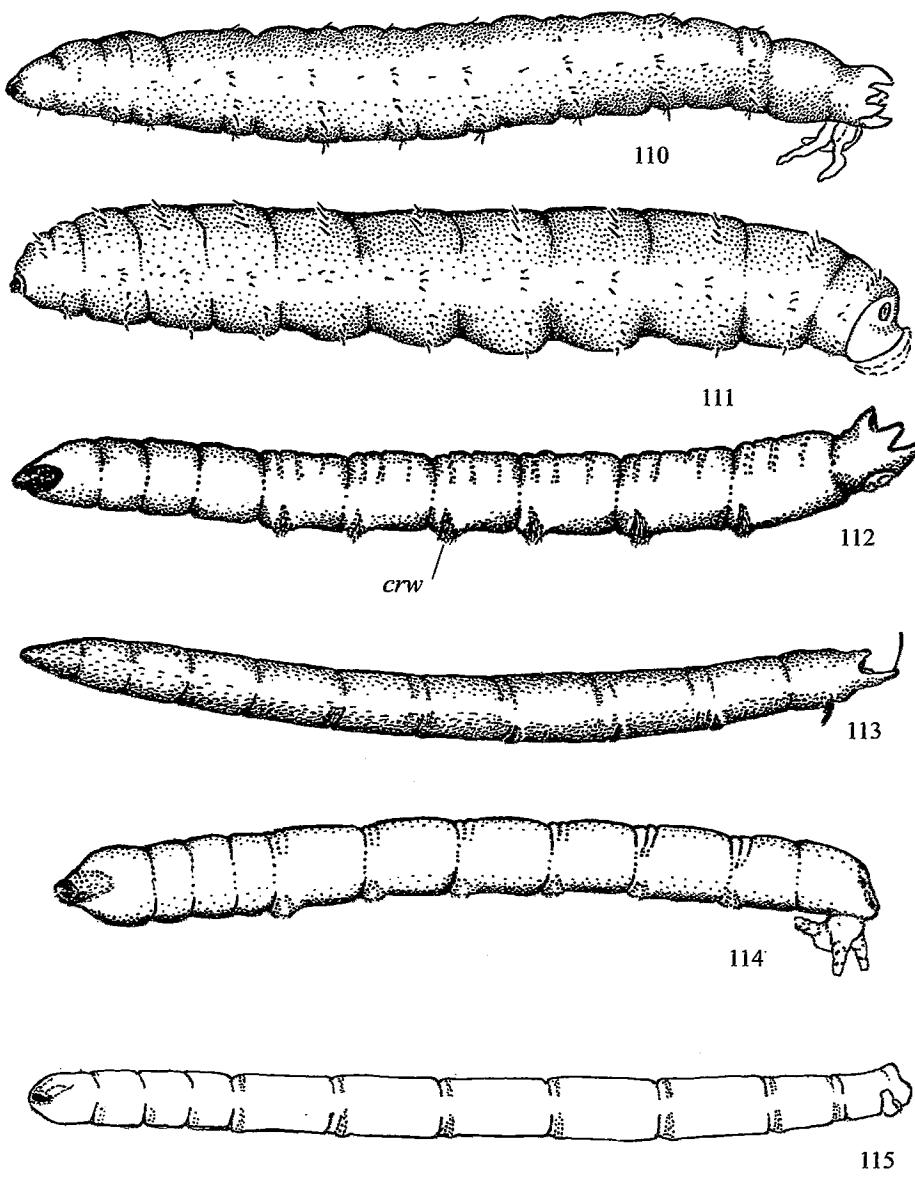


Рис. 110–115. Общий вид личинок длинноусых двукрылых (по: Кривошеина, 1964; Кривошеина, Кривошеина, 2011):

110 — *Tipula salicetorum* Siebke, 1870 (Tipulidae); 111 — *Tanyptera atrata* (Linnaeus, 1758) (Tipulidae); 112 — *Ula bolitophila* Loew, 1869 (Pediomyiidae); 113 — *Elephantomyia hokkaidensis* Alexander, 1924 (Limoniiidae); 114 — *Austrolimnophila (Austrolimnophila) asiatica* (Alexander, 1925) (Limoniiidae); 115 — *Discobola margarita* Alexander, 1924 (Limoniiidae). 110–115 — вид сбоку.

Figs 110–115. Larvae of Nematocera, general view (after Кривошеина, 1964; Кривошеина, Кривошеина, 2011):

110–115 — lateral view.



Рис. 116–122. С

1967, и orig.):

116 — *Forcipomyia*

pogonidae); 118 —

116–119 — вид с

пиллы.

Figs 116–122. L

orig.):

116–119 — lateral

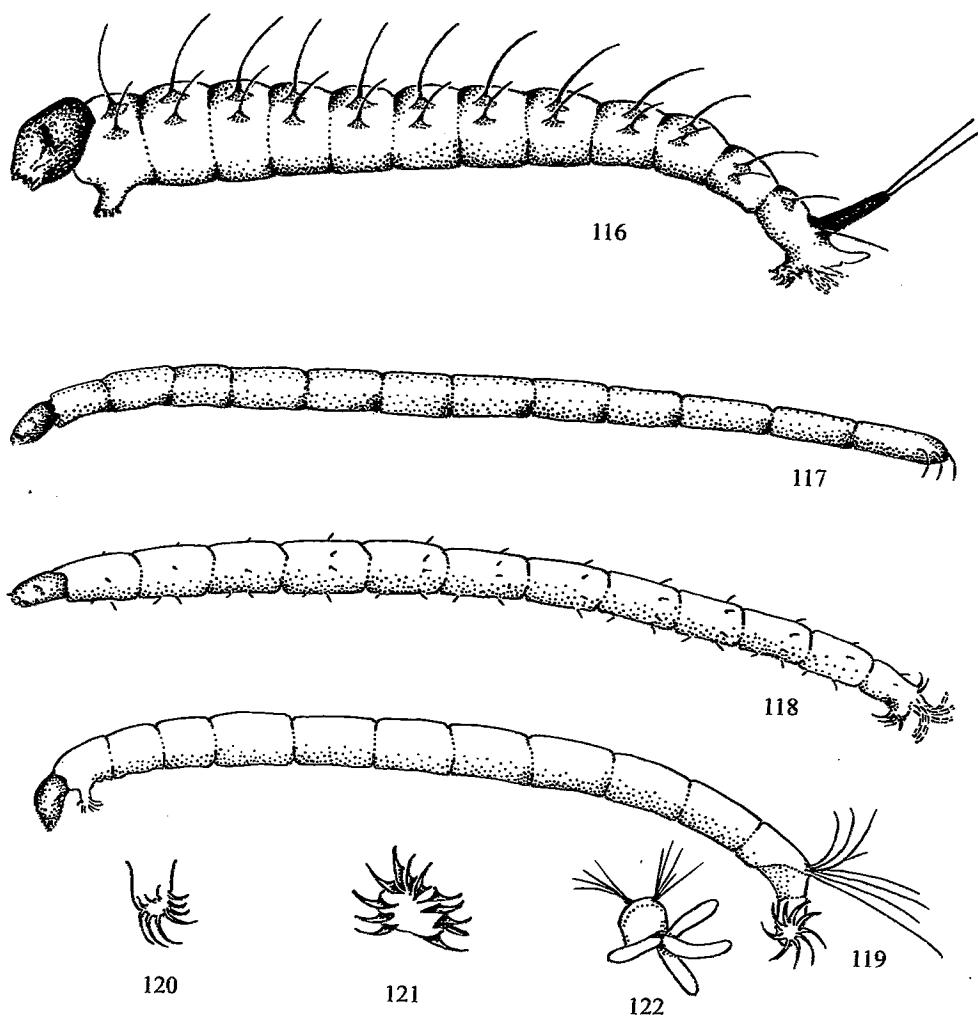


Рис. 116–122. Общий вид личинок длинноусых двукрылых (по: Кривошеина, Мамаев, 1967, и orig.):

116 — *Forcipomyia monilis* Goetghebuer, 1934 (Ceratopogonidae); 117 — *Sphaeromias* sp. (Ceratopogonidae); 118 — *Dasyhelea* sp. (Ceratopogonidae); 119–122 — *Hydrobaenus* sp. (Chironomidae). 116–119 — вид сбоку; 120–122 — вооружение передней и задней ложных ножек, анальные папиллы.

Figs 116–122. Larvae of Nematocera, general view (after Кривошеина, Мамаев, 1967 and orig.):

116–119 — lateral view; 120–122 — hooks of anterior and posterior prolegs, anal papillae.

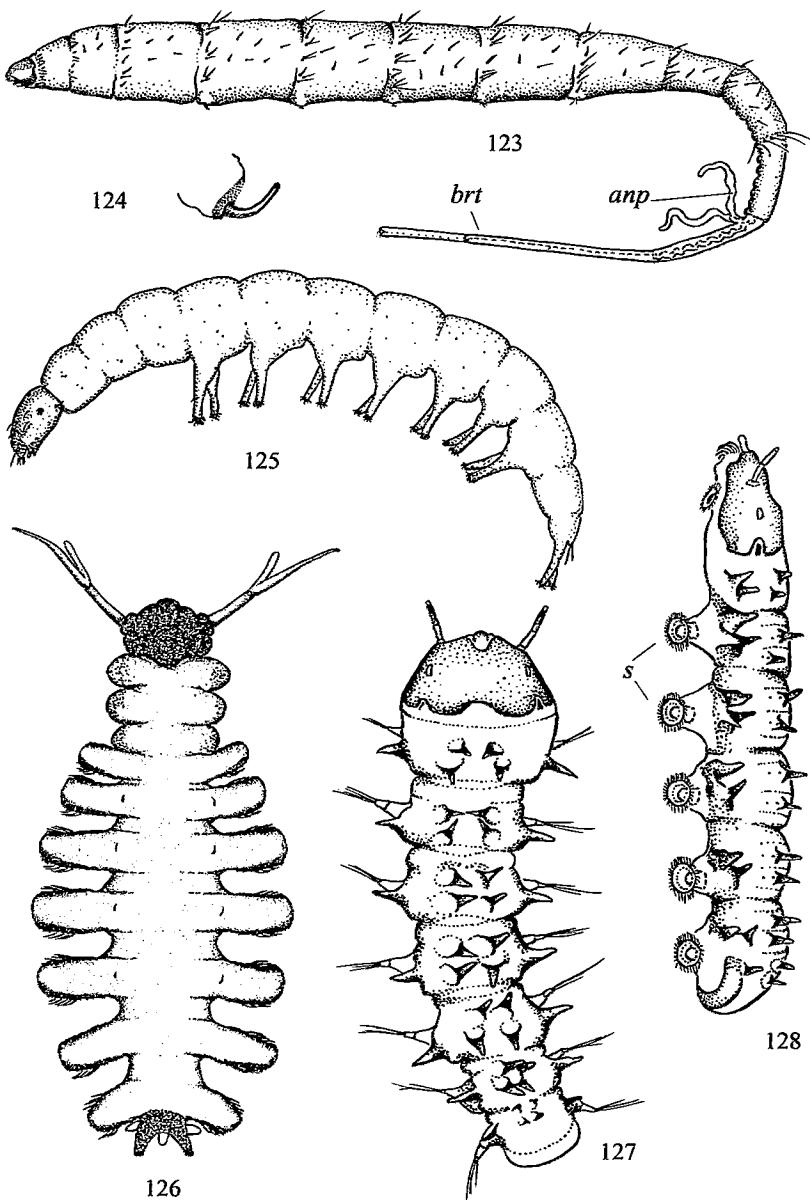


Рис. 123–128. Общий вид личинок длинноусых двукрылых (по: Павловский, Лепнева, 1948, и ориг.)

123 — *Ptychoptera minuta* Tonnoir, 1919 (Ptychopteridae); 124 — *Ptychoptera minuta* Tonnoir, 1919 (Ptychopteridae); 125 — *Nymphomyia* sp. (Nymphomyiidae); 126 — *Deuterophlebia mirabilis* Edwards, 1922 (Deuterophlebiidae); 127, 128 — *Agathon* sp. (Blephariceridae). 123, 125, 128 — вид сбоку; 124 — крючок ложной ножки; 126, 127 — вид сверху.

Figs 123–128. Larvae of Nematocera, general view (after Павловский, Лепнева, 1948 and orig.)
123, 125, 128 — lateral view; 124 — hook of proleg; 126, 127 — dorsal view.

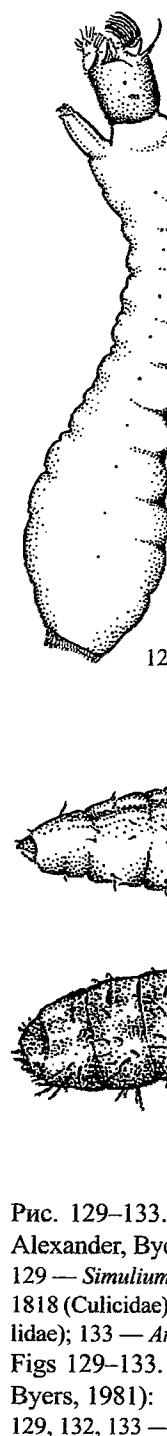


Рис. 129–133. Alexander, By

129 — *Simulium*
1818 (Culicidae)

lidae); 133 — *A*

Figs 129–133.

Byers, 1981);

129, 132, 133 —

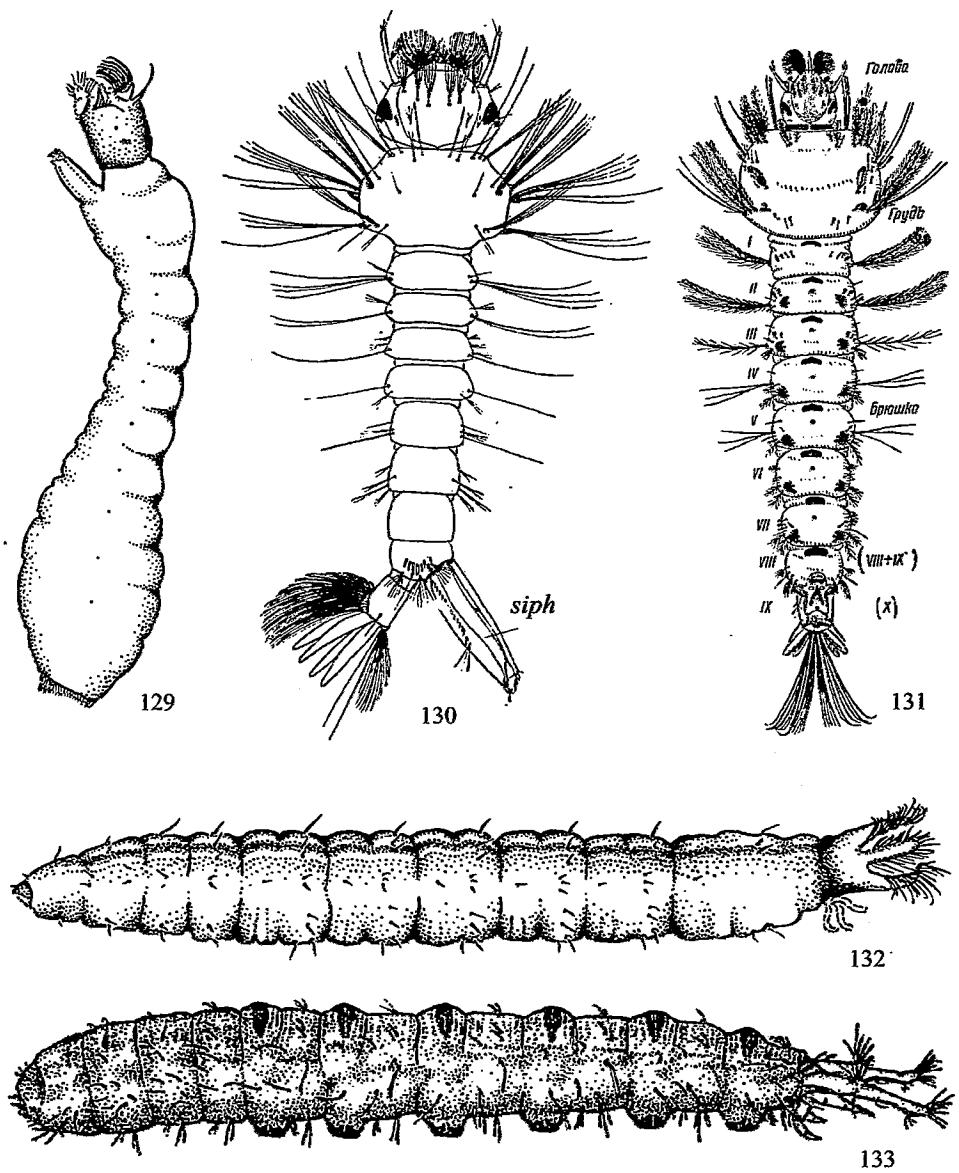


Рис. 129–133. Общий вид личинок длинноусых двукрылых (по: Мончадский, 1951, Alexander, Byers, 1981):

129 — *Simulium (Byssodon) maculatum* (Meigen, 1804) (Simuliidae); 130 — *Aedes cinereus* Meigen, 1818 (Culicidae); 131 — *Anopheles* sp. (Culicidae); 132 — *Prionocera turcica* (Fabricius, 1787) (TIPULIDAE); 133 — *Antocha* sp. (Limoniidae). 129, 132, 133 — вид сбоку; 130, 131 — вид сверху.

Figs 129–133. Larvae of Nematocera, general view (after Мончадский, 1951, Alexander, Byers, 1981):

129, 132, 133 — lateral view; 130, 131 — dorsal view.

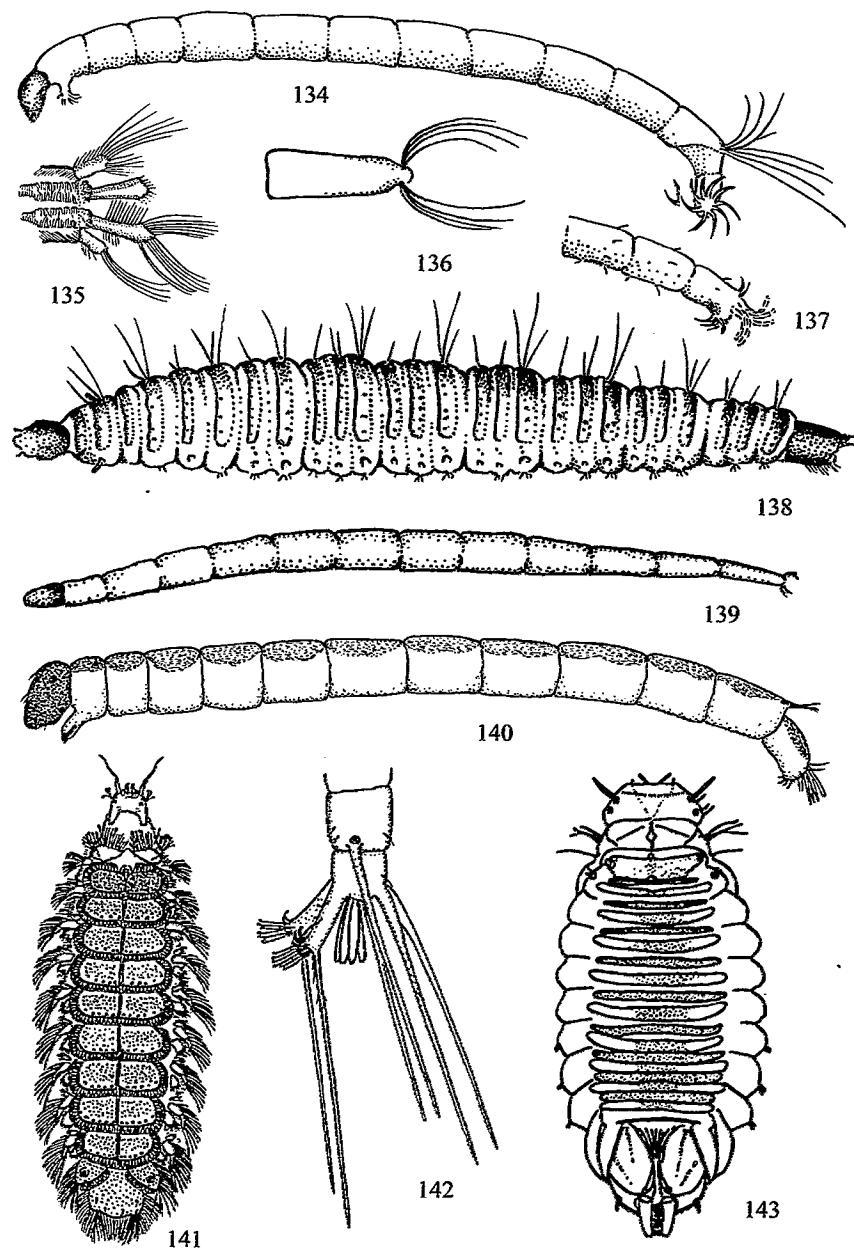


Рис. 134–143. Детали строения личинок длинноусых двухкрылых (по: Jung, 1956, и orig.):
 134 — *Hydrobaenus* sp. (Chironomidae); 135 — *Saraiella* sp. (Psychodidae); 136 — *Alluaudomyia* sp. (Ceratopogonidae); 137 — *Dasyhelea* sp. (Ceratopogonidae); 138 — *Saraiella* sp. (Psychodidae); 139 — *Alluaudomyia* sp. (Ceratopogonidae); 140 — *Thaumalea* sp. (Thaumaleidae); 141 — *Sycorax silacea* Haliday, 1839 (Psychodidae); 142 — Tanyderidae; 143 — *Horaiella prodigiosa* Tonnoir, 1933 (Psychodidae). 134, 138, 140 — вид сбоку; 135, 136 — конец тела сверху; 137 — конец тела сбоку; 139, 141, 143 — вид сверху; 142 — конец тела личинки сбоку.

Figs 134–143. Details of larval morphology (after Jung, 1956 and orig.):

134, 138, 140 — lateral view; 135, 136 — body end dorsally; 137 — body end laterally; 139, 141, 143 — dorsal view; 142 — body end laterally;

СПЕЦИАЛЬНАЯ ЧАСТЬ

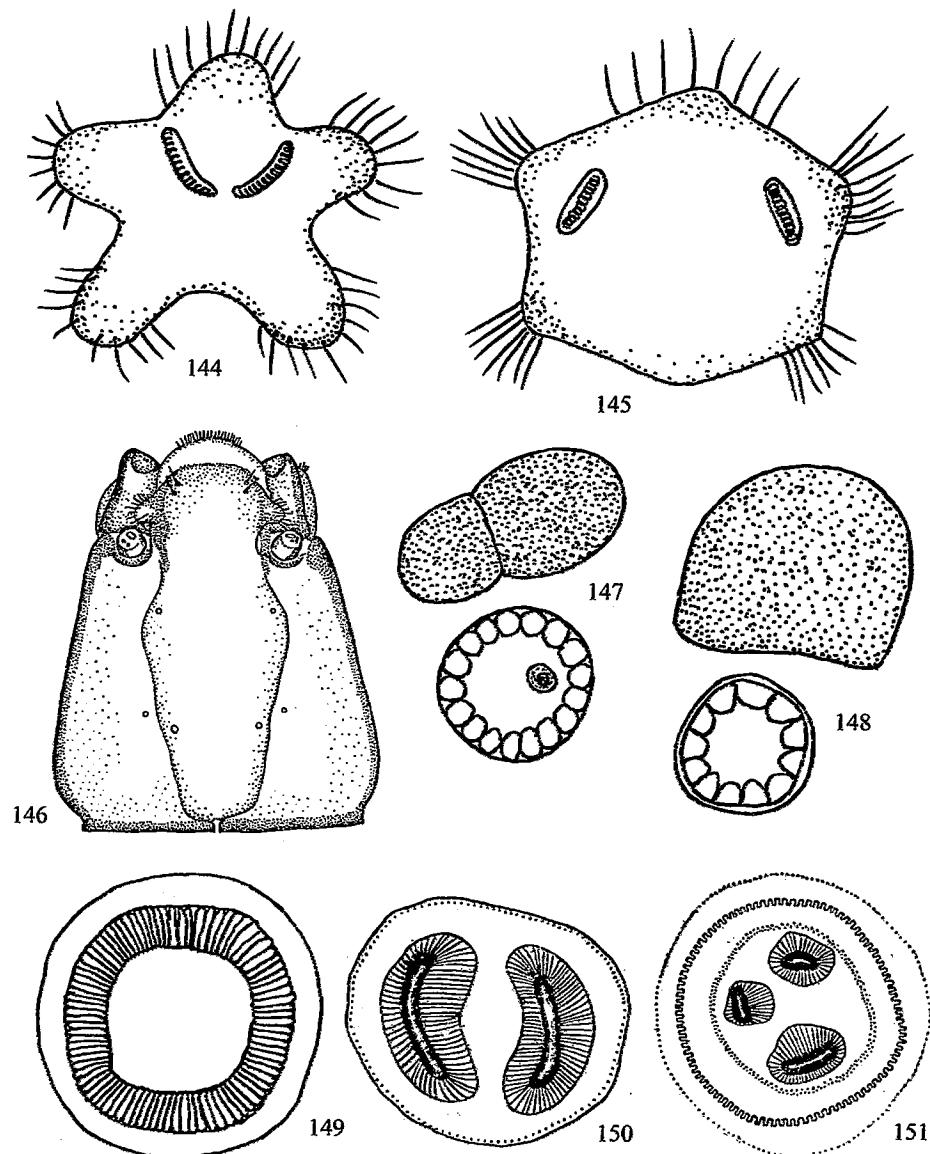


Рис. 144–151. Anisopodidae, Bibionidae и Canthyloscelidae, детали строения личинок (по: Кривошеина, Мамаев, 1967, и orig.):

144 — *Sylvicola fenestralis* (Scopoli, 1763) (Anisopodidae); 145 — *Mycetobia* sp. (Anisopodidae); 146 — *Sylvicola cinctus* (Fabricius, 1787) (Anisopodidae); 147 — *Synneuron* sp. (Canthyloscelidae); 148 — *Hyperoscelis* sp. (Canthyloscelidae); 149 — *Penthetria* sp. (Bibionidae); 150 — *Bibio marci* (Linnaeus, 1758) (Bibionidae); 151 — *Dilophus femoratus* Meigen, 1804 (Bibionidae). 144, 145 — стигмальное поле с дыхальцами; 146 — голова сверху; 147, 148 — переднегрудное дыхальце с пластинкой; 149–151 — заднее дыхальце;

Figs 144–151. Anisopodidae, Bibionidae and Canthyloscelidae, details of larval morphology (after Кривошеина, Мамаев, 1967 and orig.):

144, 145 — spiracular disc with spiracles; 146 — head dorsally; 147, 148 — anterior spiracle and plate; 149–151 — posterior spiracle.

Рис. 152–156. 1
152 — *Bolitophila*
1913; 154 — *Bo*
1912. 152, 156 —
стороны; 155 —
Figs 152–156. 1
152, 156 — latera-

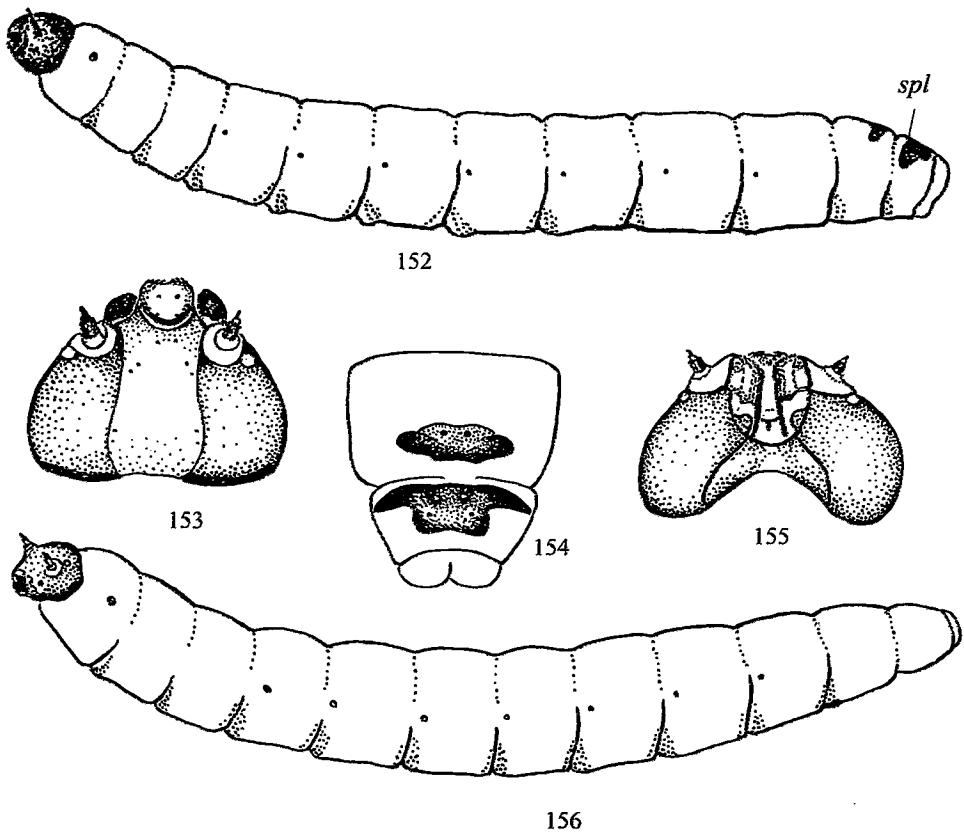


Рис. 152–156. Bolitophilidae, детали строения личинок (по: Кривошеина, 2009):
 152 — *Bolitophila rectangulata* Lundstrom, 1913; 153, 155 — *Bolitophila rectangulata* Lundstrom, 1913; 154 — *Bolitophila rectangulata* Lundstrom, 1913; 156 — *Bolitophila nigrolineata* Landrock, 1912. 152, 156 — вид сбоку; 153 — голова с дорсальной стороны; 154 — конец тела с дорсальной стороны; 155 — голова с вентральной стороны.

Figs 152–156. Bolitophilidae, details of larval morphology (after Кривошеина, 2009):
 152, 156 — lateral view; 153 — head dorsally; 154 — body end dorsally; 155 — head ventrally.

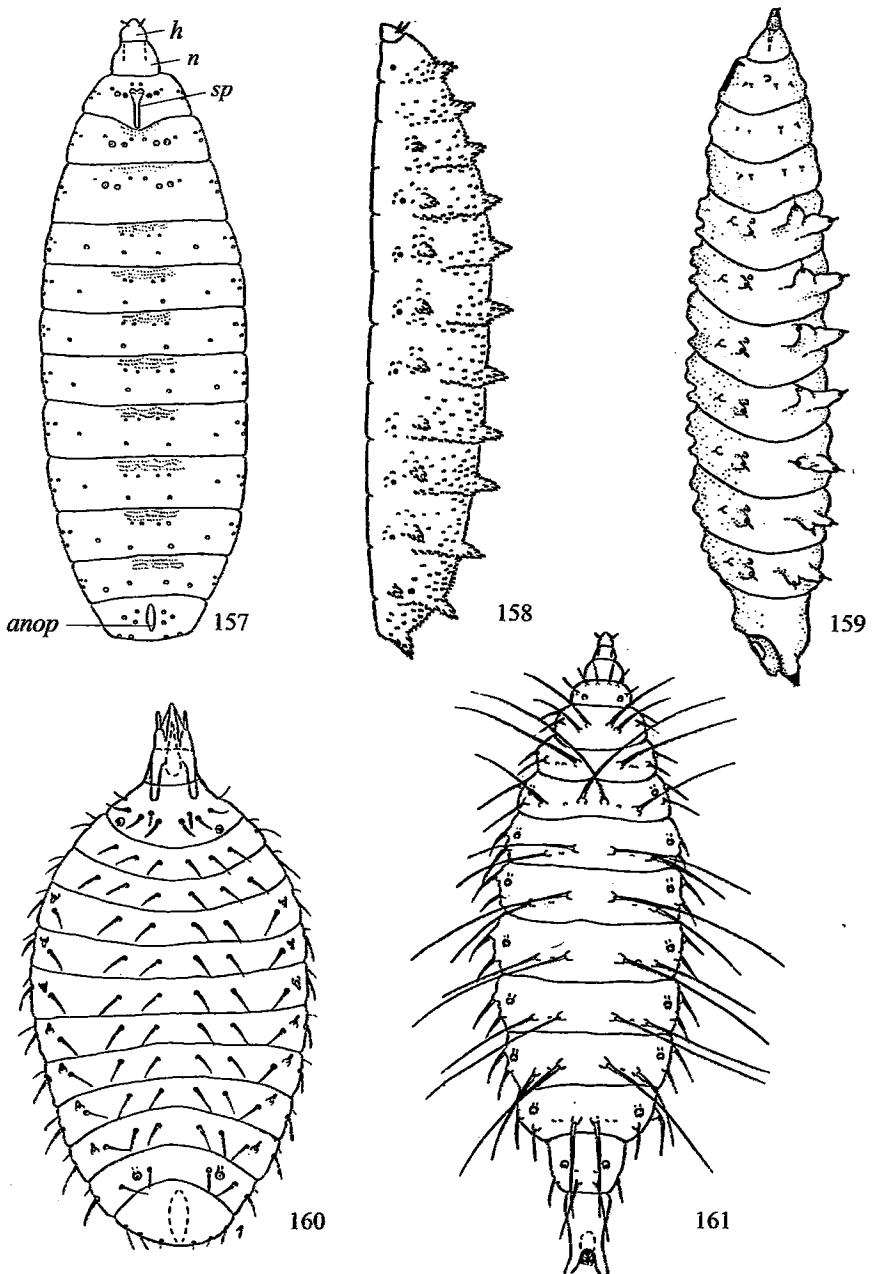


Рис. 157–161. Личинки Cecidomyiidae, общий вид (по: Мамаев, Кривошеина, 1965):
157 — Общий план строения личинки галлицы; 158 — *Peromyia perpusilla* (Winnertz, 1870); 159 — *Cecidomyia pini* (De Geer, 1776); 160 — *Rhizomyia* sp.; 161 — *Parepidosis ulmicorticis* Mamaev, 1964. 157 — вид снизу; 158, 159 — вид сбоку; 160, 161 — вид сверху.

Figs 157–161. Cecidomyiidae, general view of larvae (after Мамаев, Кривошеина, 1965):
157 — Cecidomyiidae larva, ventral view; 158, 159 — lateral view; 160, 161 — dorsal view.

Рис. 162–168. Стадии развития
162 — *Peromyia*
(Catotrichinae); 163 —
trifolii Rubsaamen;
167 — *Ametrodiplosis*
1964) (Porricondy)
Figs 162–168. Catechidae
162, 164, 165, 166

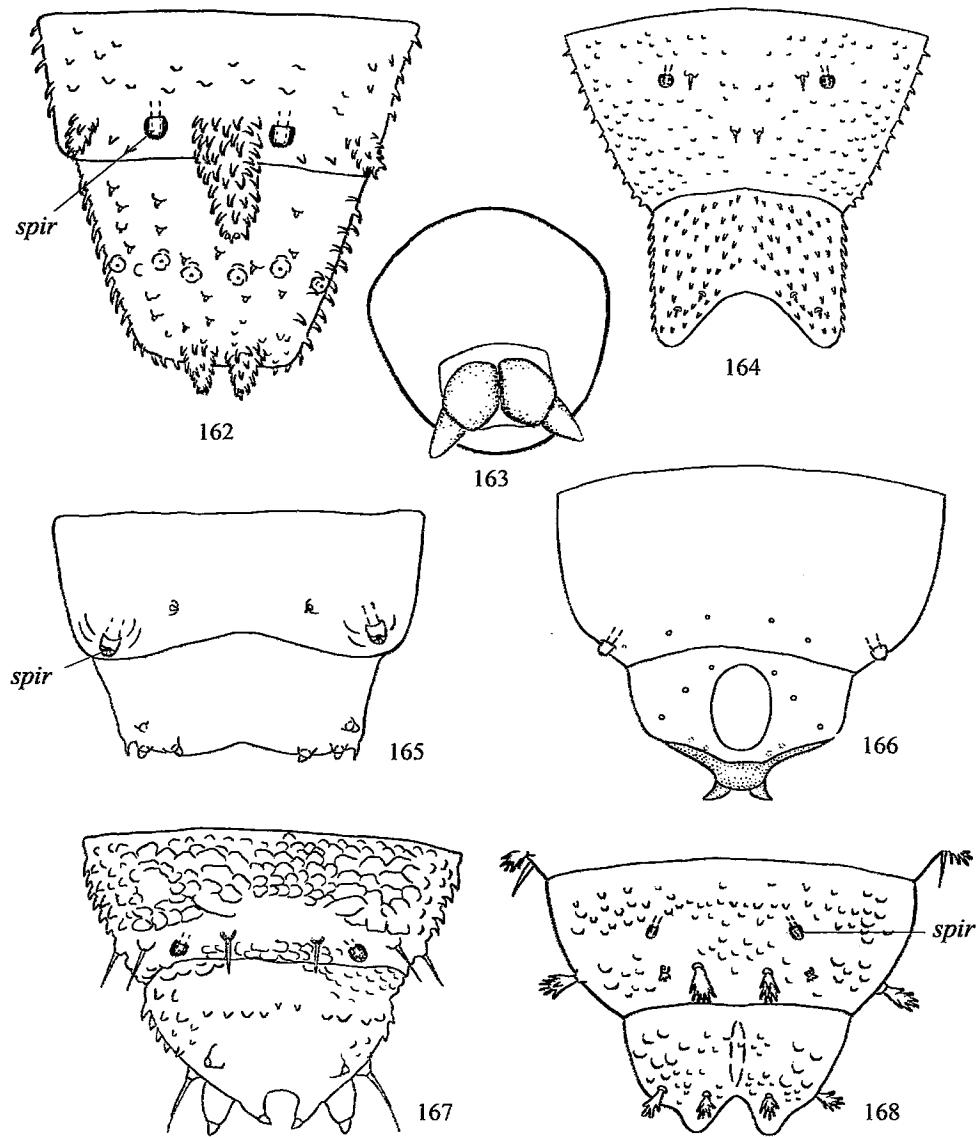


Рис. 162–168. Cecidomyiidae, детали строения личинок (по: Мамаев, Кривошеина, 1965):
 162 — *Peromyia muscorum* (Kieffer, 1895) (Lestremiinae); 163 — *Catotricha marinae* Mamaev, 1985
 (Catotrichinae); 164 — *Porricondyla neglecta* Mamaev, 1965 (Porricondylinae); 165 — *Tricholaba*
trifolii Rubsaamen, 1917 (Cecidomyiinae); 166 — *Monardia caucasica* Mamaev, 1963 (Lestremiinae);
 167 — *Ametrodiplosis medialis* Mamaev, 1961 (Cecidomyiinae); 168 — *Cassidooides corticalis* (Mamaev,
 1964) (Porricondylinae). 162, 164, 165, 167, 168 — конец тела сверху; 163, 166 — конец тела снизу.
 Figs 162–168. Cecidomyiidae, details of larval morphology (after Mamaev, Kriwošeina, 1965):
 162, 164, 165, 167, 168 — body end dorsally; 163, 166 — body end ventrally.

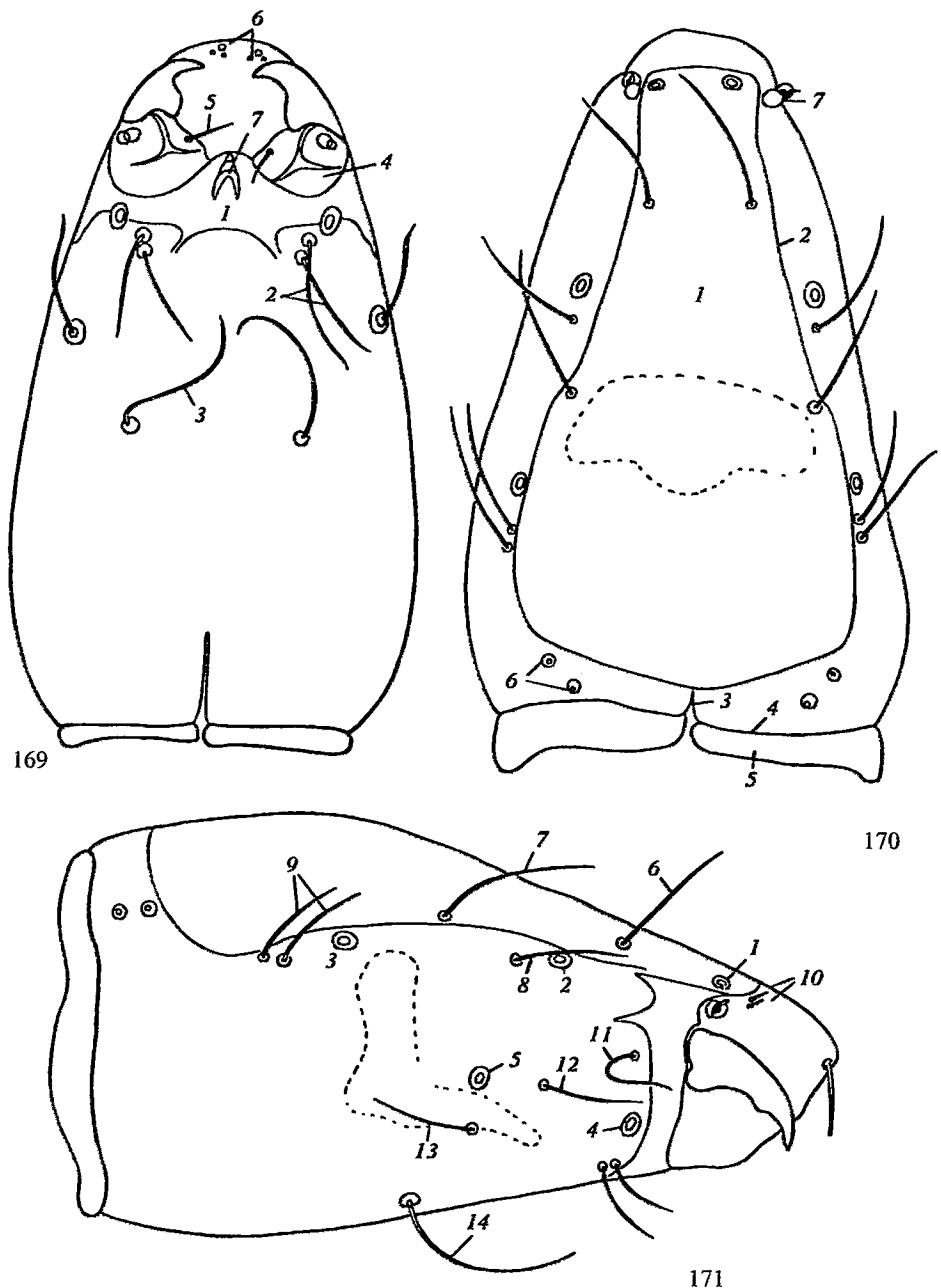


Рис. 169–171.

169 — *Culicoides* шов, 3 — коронные чувствительные вентрально: 1 — щетинка (у), 4 — губа, 7 — нижняя чувствительная боковая ямка (п), щетинки (q), 8 — параантеннальные (и), 13 — задней Figs 169–171.

169 — *Culicoides* coronar suture, 4 —

170 — *Culicoides* setae (o), 3 — ве-

labium. 171 — о-

антеродорсальная ямка (п), антерофронтальные setae (и), 13 — подголов-

ные (п), 14 —

Рис. 169–171. Ceratopogonidae, схема строения головы (по: Глухова, 1979):

169 — *Culicoides stigma* (Meigen, 1818), голова дорсально: 1 — лобный щиток, 2 — фронтальный шов, 3 — коронарный шов, 4 — заднезатылочный шов, 5 — воротничок, 6 — околоворотничковые чувствительные ямки (j), 7 — антenna. 170 — *Culicoides grisescens* Edwards, 1939, голова вентрально: 1 — субгенальное кольцо, 2 — парагипостомальные щетинки (o), 3 — брюшная щетинка (y), 4 — максилла, 5 — щетинки на лацинии, 6 — чувствительные волоски на верхней губе, 7 — нижняя губа. 171 — *Culicoides stigma* (Meigen, 1818), голова латерально: 1 — лобная чувствительная ямка (z), 2 — переднеспинная ямка (k), 3 — заднеспинная ямка (r), 4 — переднебоковая ямка (n), 5 — заднебоковая ямка (m), 6 — переднелобные щетинки (t), 7 — заднелобные щетинки (q), 8 — передняя околовлобная щетинка (s), 9 — задние околовлобные щетинки (p), 10 — параантеннальные щетинки (x), 11 — переднебоковая щетинка (w), 12 — среднебоковая щетинка (u), 13 — заднебоковая щетинка (v), 14 — брюшная щетинка (y).

Figs 169–171. Ceratopogonidae, scheme of head morphology (after Глухова, 1979):

169 — *Culicoides stigma* (Meigen, 1818), head dorsally: 1 — frontal sclerite, 2 — frontal suture, 3 — coronar suture, 4 — posterioroccipital suture, 5 — collar, 6 — subcollar sensitive pits (j), 7 — antenna. 170 — *Culicoides grisescens* Edwards, 1939, head ventrally: 1 — subgenal ring, 2 — parahypostomal setae (o), 3 — ventral seta (y), 4 — maxilla, 5 — setae on lacinia, 6 — sensitive hairs on labrum, 7 — labium. 171 — *Culicoides stigma* (Meigen, 1818), head laterally: 1 — frontal sensitive pit (z), 2 — anterodorsal pit (k), 3 — posterodorsal pit (r), 4 — anterolateral pit (n), 5 — posterolateral pit (m), 6 — anterofrontal setae (t), 7 — posterofrontal setae (q), 8 — anterior subfrontal seta (s), 9 — posterior subfrontal seta (p), 10 — paraantennal setae (x), 11 — anterolateral seta (w), 12 — mediolateral seta (u), 13 — posterolateral seta (v), 14 — ventral seta (y).

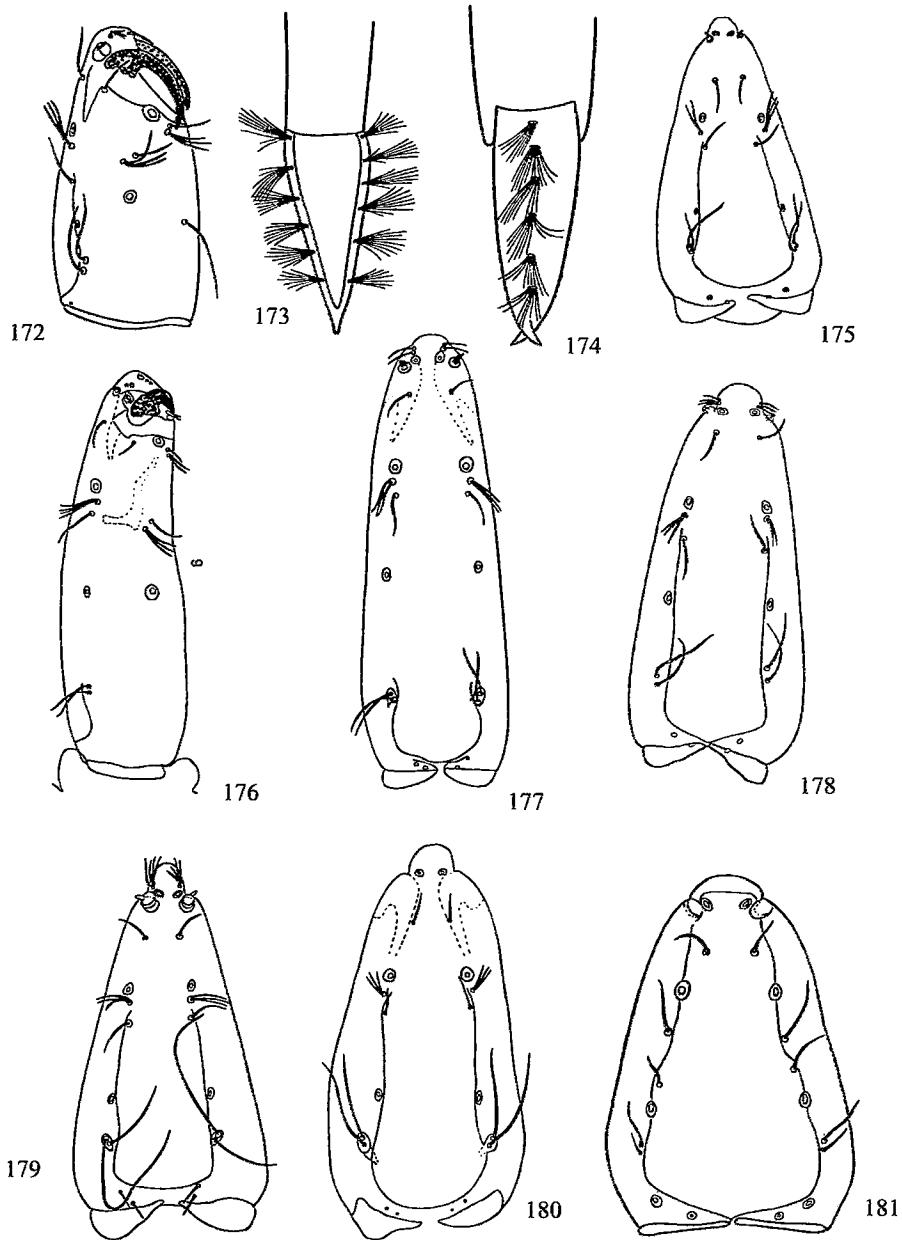


Рис. 172–181. Ceratopogonidae, детали строения личинок (по: Глухова, 1979):
 172 — *Clinohelea unimaculata* (Macquart, 1826); 173–174 — *Jenkinshelea* sp.; 175 — *Nilobezzia formosa* (Loew, 1869); 176–177 — *Palpomyia lineata* (Meigen, 1804); 178 — *Bezzia kuhetiensis* Remm, 1967; 179 — *Probezzia seminigra* (Panzer, 1798); 180 — *Mallohohelea inermis* (Kieffer, 1909); 181 — *Serromyia* sp. 172, 176 — голова сбоку; 173 — последний сегмент тела сверху; 174 — последний сегмент тела сбоку; 175, 177–181 — голова сверху.

Figs 172–181. Ceratopogonidae, details of larval morphology (after Глухова, 1979):
 172, 176 — head laterally; 173 — body end dorsally; 174 — body end laterally; 175, 177–181 — head dorsally.

Рис. 182–183
 182 — *Brachyestonica* Remm.
punctata (Goe (Meigen, 1804)
 ва сверху; 183
 Figs 182–183
 182, 183 — he anal papillae.

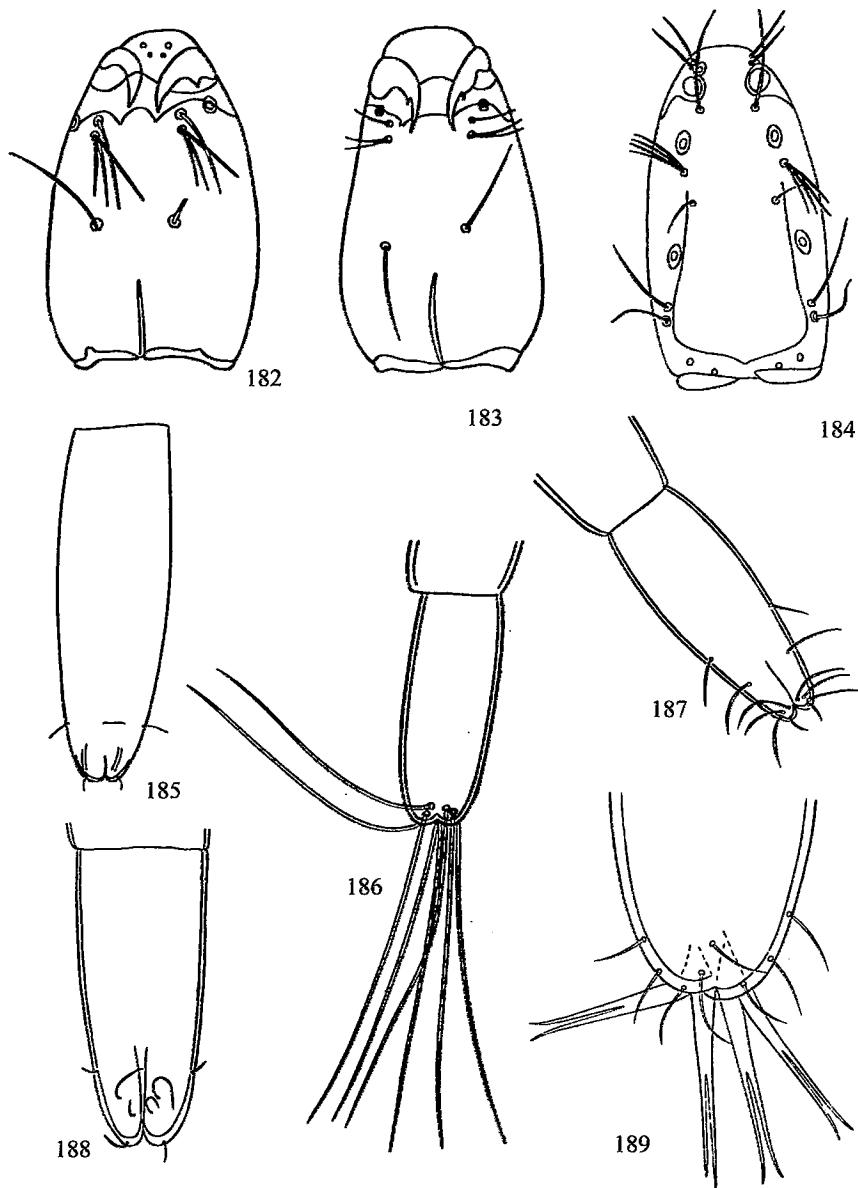


Рис. 182–189. Ceratopogonidae, детали строения личинок (по: Глухова, 1979):
 182 — *Brachypogon vitiosus* (Winnertz, 1852); 183 — *Isohelea taivoi* Remm, 1974; 184 — *Monohelea estonica* Remm, 1965; 185 — *Stilobezzia flavirostris* (Winnertz, 1852); 186 — *Alluaudomyia quadripunctata* (Goetghebuer, 1934); 187 — *Stilobezzia papillata* Remm, 1980; 188 — *Culicoides punctatus* (Meigen, 1804); 189 — *Culicoides grisescens* Edwards, 1939. 182, 183 — голова снизу; 184 — голова сверху; 185–188 — конец тела; 189 — конец тела с расправленными анальными папиллами.

Figs 182–189. Ceratopogonidae, details of larval morphology (after Глухова, 1979):

182, 183 — head ventrally; 184 — head dorsally; 185–188 — body end; 189 — body end with expanded anal papillae.

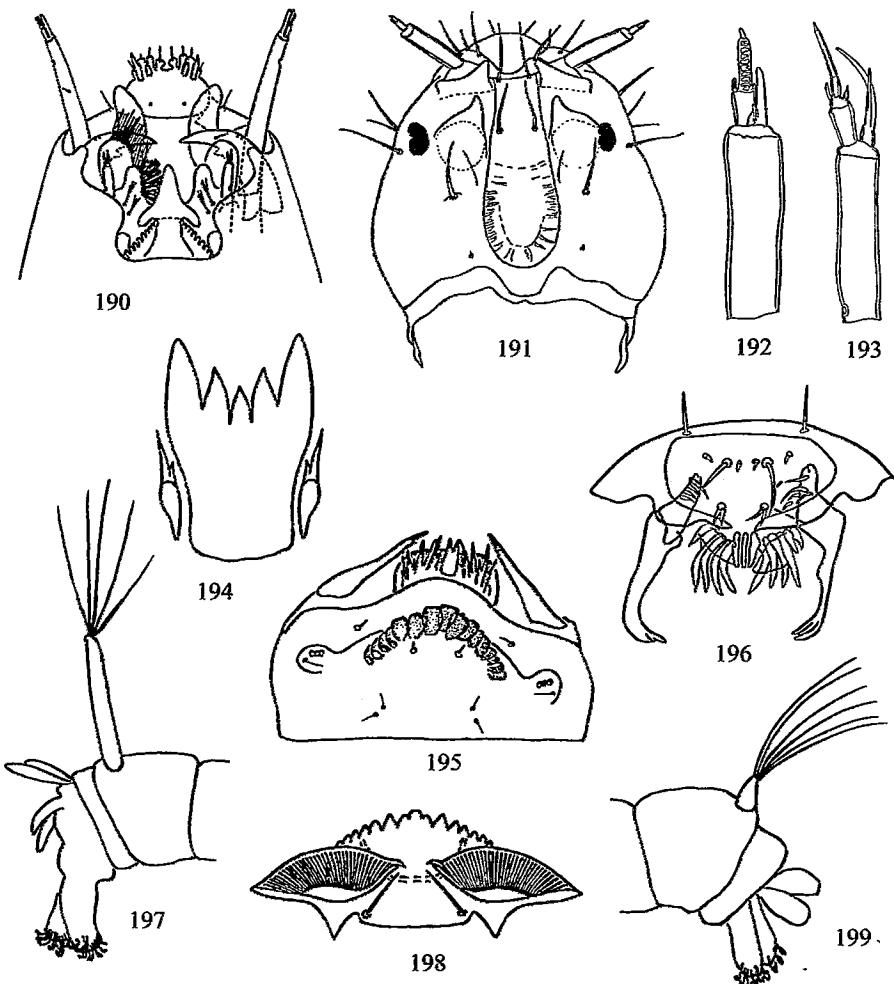


Рис. 190–199. Chironomidae, детали строения личинок (по: Панкратова, 1983; Макарченко, 1999):

190 — Tanypodinae, детали строения головы с втяжными антеннами (схема); 191 — Diamesinae, голова (схема); 192 — *Boreoheptagyia legeri* (Goetghebuer, 1933), усик с кольчатым 3-м членником; 193 — *Synorthocladius semivirens* (Kieffer, 1909), усик с простым 3-м членником; 194 — глосса и параглосса, схема; 195 — *Protanypus caudatus* Edwards, 1924, верхняя губа с чешуйками; 196 — верхняя губа с премандибулами, схема; 197 — задний конец тела личинки, подставки анальных кисточек длинные, схема; 198 — ментум и вентромедиальные пластинки, схема; 199 — задний конец тела личинки, подставки анальных кисточек короткие, схема.

Figs 190–199. Chironomidae, details of larval morphology (after Панкратова, 1983; Макарченко, 1999):

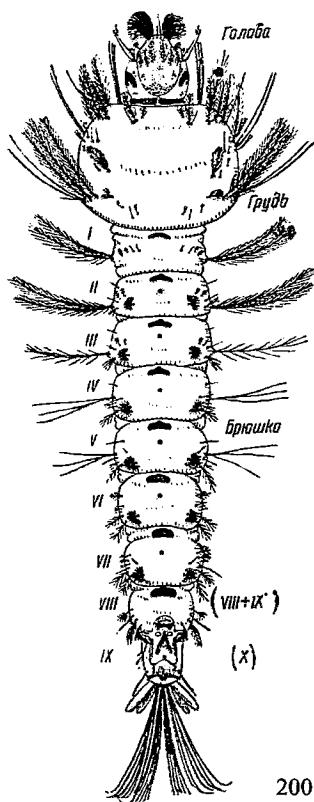
190 — Tanypodinae, details of head morphology, antennae retracted (scheme); 191 — Diamesinae, head (scheme); 192 — *Boreoheptagyia legeri* (Goetghebuer, 1933), antenna with annulate segment III; 193 — *Synorthocladius semivirens* (Kieffer, 1909), antenna without annulate segment III; 194 — glossa and paraglossa, scheme; 195 — *Protanypus caudatus* Edwards, 1924, labrum with scales; 196 — labrum with premandibles, scheme; 197 — end of the body, procercus long, scheme; 198 — mentum and ventromedial plates, scheme; 199 — end of the body, procercus short, scheme.

Рис. 200–203. С

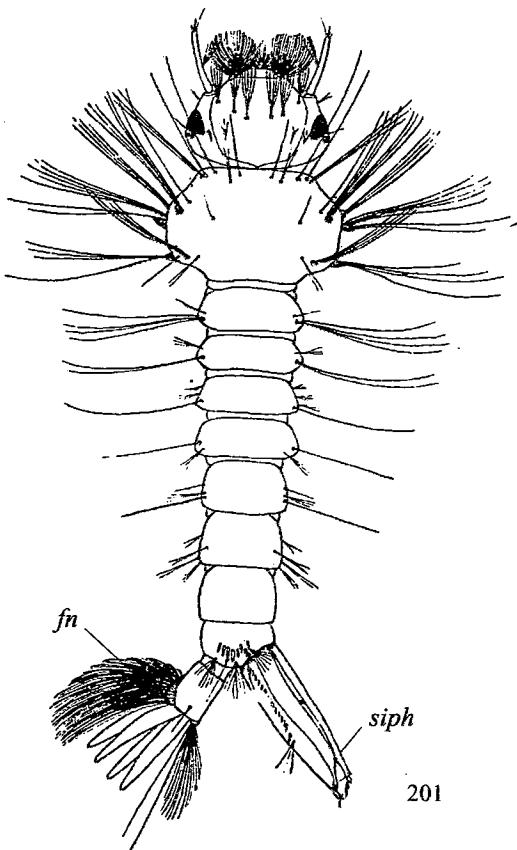
200 — *Anopheles unguiculata* Edwa

Figs 200–203. С

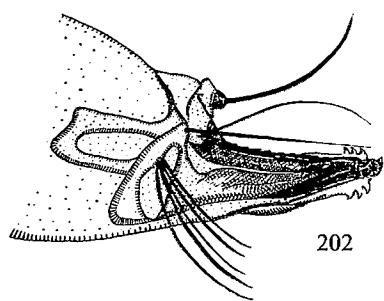
200, 201 — dorsal



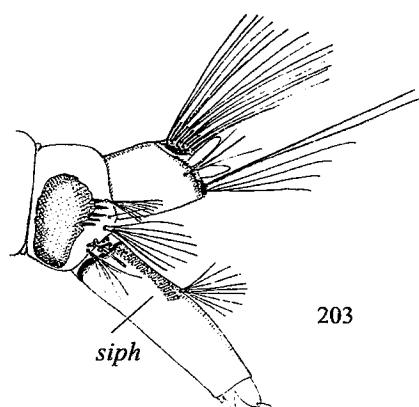
200



201



202



203

Рис. 200–203. Culicidae, детали строения личинок (по: Мончадский, 1951):
 200 — *Anopheles* sp.; 201 — *Aedes cinereus* Meigen, 1818; 202 — *Mansonia* sp.; 203 — *Uranotaenia unguiculata* Edwards, 1913. 200, 201 — общий вид сверху; 202, 203 — конец тела сбоку.
 Figs 200–203. Culicidae, details of larval morphology (after Мончадский, 1951):
 200, 201 — dorsal view; 202, 203 — body end laterally.

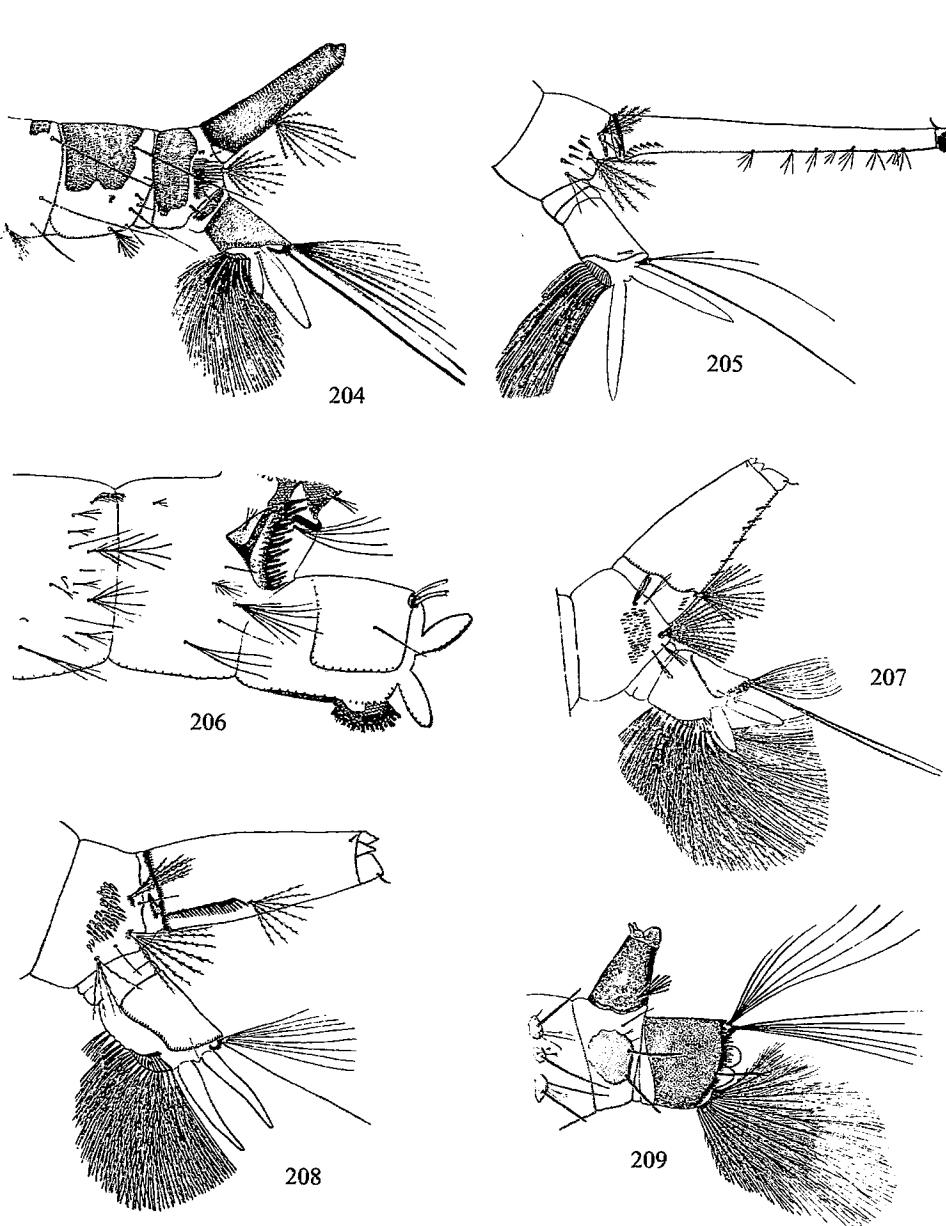


Рис. 204—209. Culicidae, конец тела личинок сбоку (по: Мончадский, 1951):
 204 — *Orthopodomyia* sp.; 205 — *Culex bitaeniorhynchus* Giles, 1901; 206 — *Anopheles* sp.; 207 — *Culiseta longiareolata* (Macquart, 1838); 208 — *Aedes rusticus* (Rossi, 1790); 209 — *Toxorhynchites christophi* (Potschinsky, 1884).
 Figs 204—209. Culicidae, body end of larva laterally (after Мончадский, 1951):

Рис. 210—215. С.
 210, 212 — *Cryop*
Chaoborus chrysata
 головной и хвост
 голова сверху.
 Figs 210—215. Ch
 210, 211 — dorsal
 the body laterally;

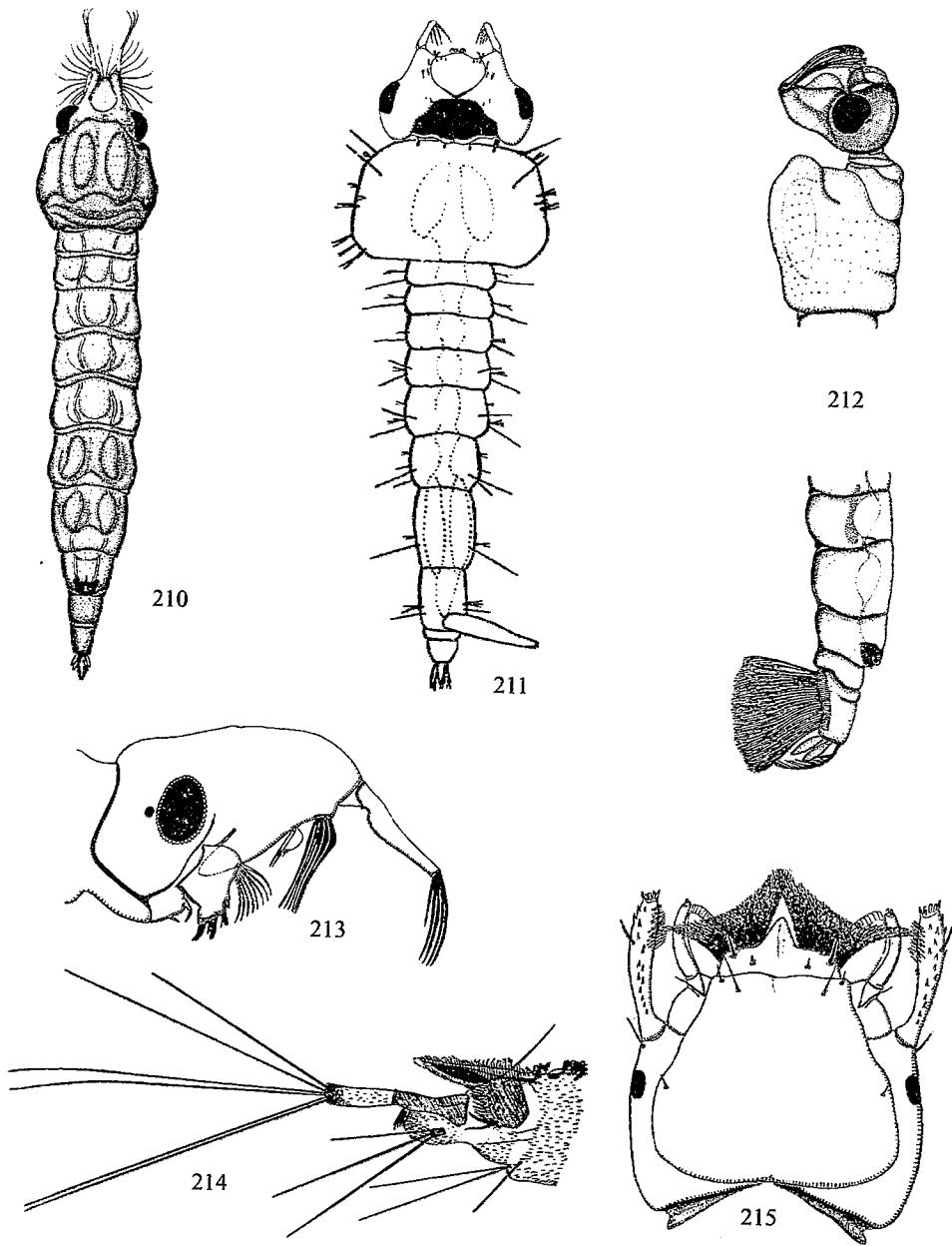


Рис. 210–215. Chaoboridae и Dixidae, детали строения личинок (по: Мончадский, 1936):
210, 212 — *Cryophila lapponica* (Martini, 1928); 211 — *Mochlonyx velutinus* (Ruthe, 1831); 213 —
Chaoborus crystallinus (De Geer, 1776); 214, 215 — *Dixella* sp. 210, 211 — общий вид сверху; 212 —
головной и хвостовой отделы, сбоку; 213 — голова сбоку; 214 — хвостовой отдел сбоку; 215 —
голова сверху.

Figs 210–215. Chaoboridae and Dixidae, details of larval morphology (after Мончадский, 1936):
210, 211 — dorsal view; 212 — head and end of the body laterally; 213 — head laterally; 214 — end of
the body laterally; 215 — head dorsally.

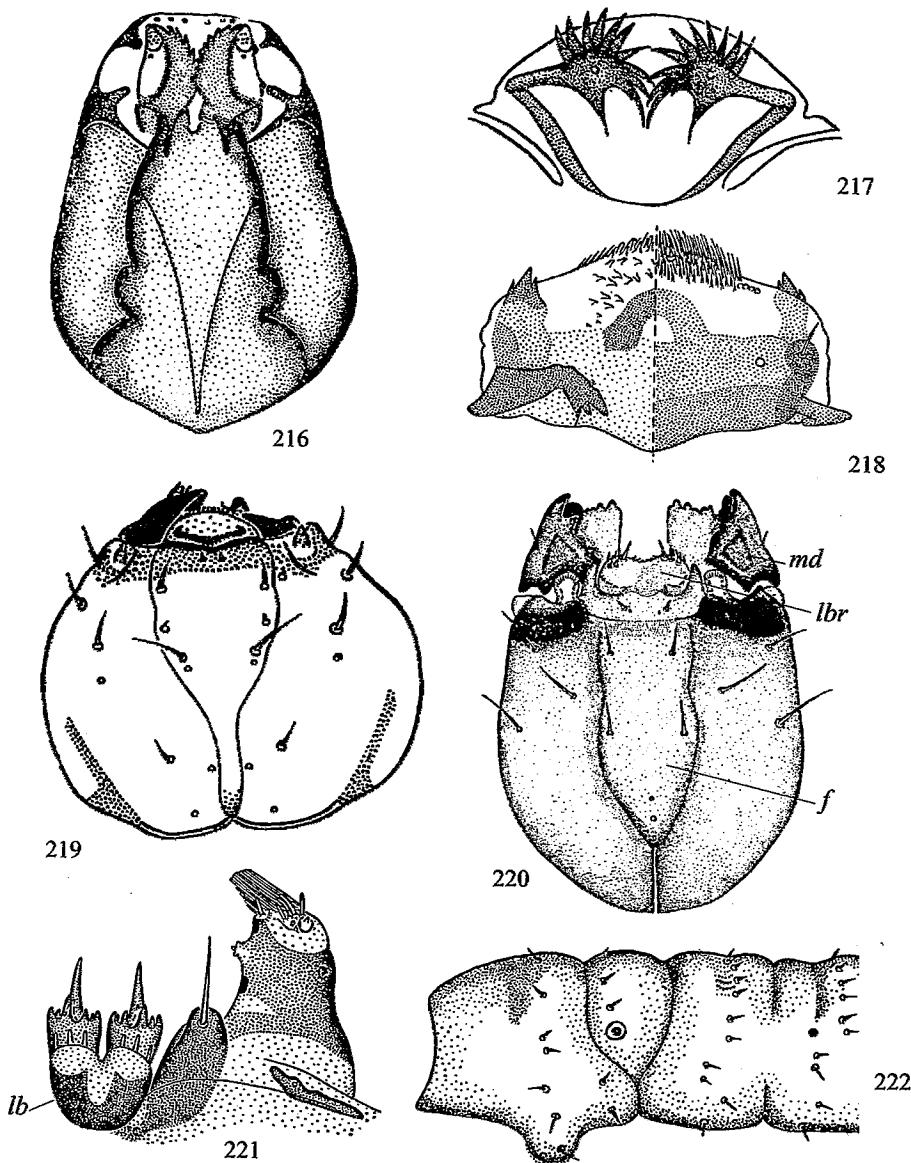


Рис. 216–222. Diadocidiidae, Ditomyiidae и Hesperinidae, детали строения личинок (по: Madwar, 1937; Кривошеина, Мамаев, 1967; Кривошеина, Зайцев, 1980):

216, 217 — *Diadocidia (Diadocidia) ferruginea* (Meigen 1830); 218, 221 — *Asioditomyia japonica* (Sasakawa, 1963); 219 — *Ditomyia spinifera* Zaitzev, 1978; 220, 222 — *Hesperinus rohdendorfi* Krivosheina et Mamaev, 1967. 216 — голова снизу; 217 — верхняя губа с вентральной стороны; 218 — верхняя губа с вентральной (слева) и дорсальной (справа) стороной; 219, 220 — голова сверху; 221 — максилла и нижняя губа; 222 — грудные сегменты сбоку.

Figs 216–222. Diadocidiidae, Ditomyiidae and Hesperinidae, details of larval morphology (after Madwar, 1937; Кривошеина, Мамаев, 1967; Кривошеина, Зайцев, 1980):

216 — head ventrally; 217 — labrum ventrally; 218 — labrum ventrally (left) and dorsally (right); 219, 220 — head dorsally; 221 — maxilla and labium; 222 — thoracal segments laterally.

Рис. 223–228. Керотелиониды
1933; Madwar, 1933;
223 — *Cerotelson* li
sp.; 226 — *Macroce
vittata* Meigen, 1833;
Figs 223–228. Ker
1933; Madwar, 1933;
223, 227 — head vo

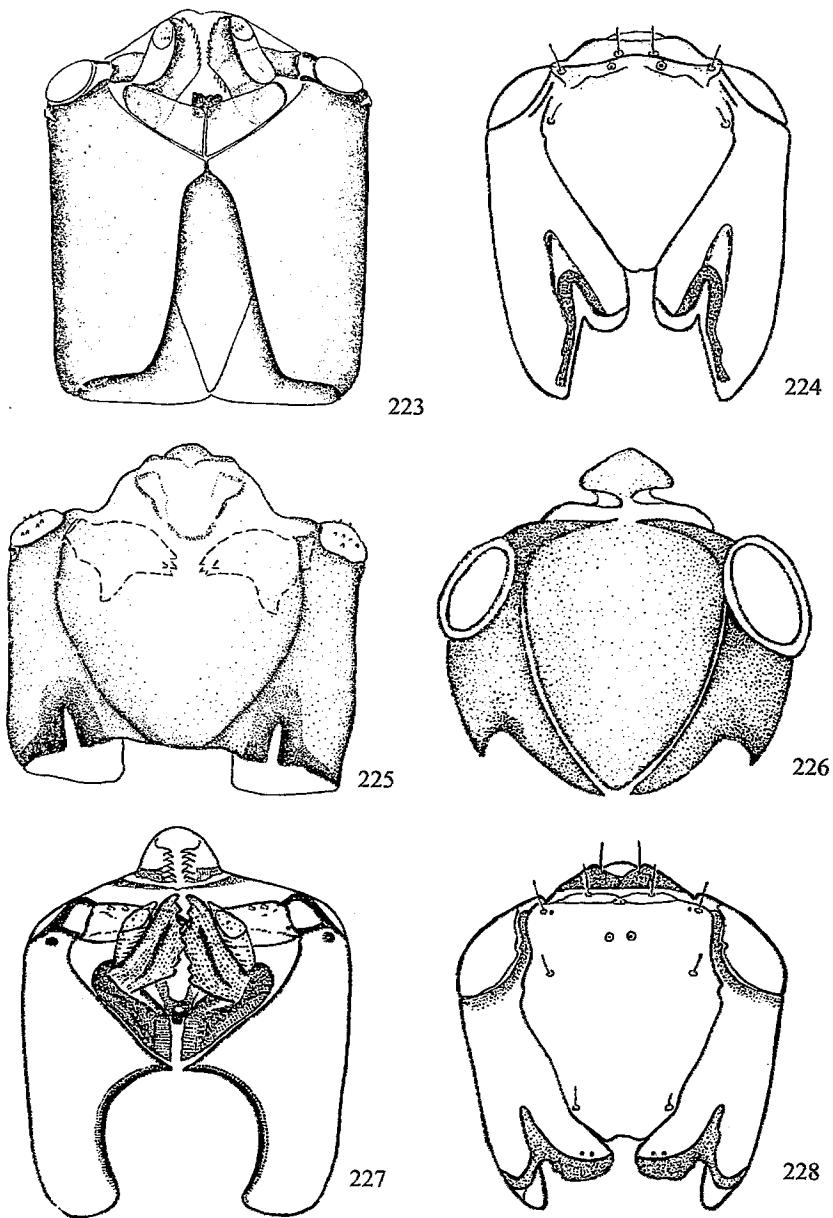


Рис. 223–228. Keroplatidae и Macroceridae, детали строения личинок (по: Mansbridge, 1933; Madwar, 1937; Кривошеина, Мамаев, 1967; Plachter, 1979):

223 — *Cerotelion lineatum* (Fabricius, 1775); 224 — *Orfelia fasciata* (Meigen, 1804); 225 — *Keroplatus* sp.; 226 — *Macrocerata anglica* Edwards, 1925; 227 — *Macrocerata stigma* Curtis, 1830; 228 — *Macrocerata vittata* Meigen, 1830. 223, 227 — голова снизу; 224–226, 228 — голова сверху.

Figs 223–228. Keroplatidae and Macroceridae, details of larval morphology (after Mansbridge, 1933; Madwar, 1937; Кривошеина, Мамаев, 1967; Plachter, 1979):
223, 227 — head ventrally; 224–226, 228 — head dorsally.

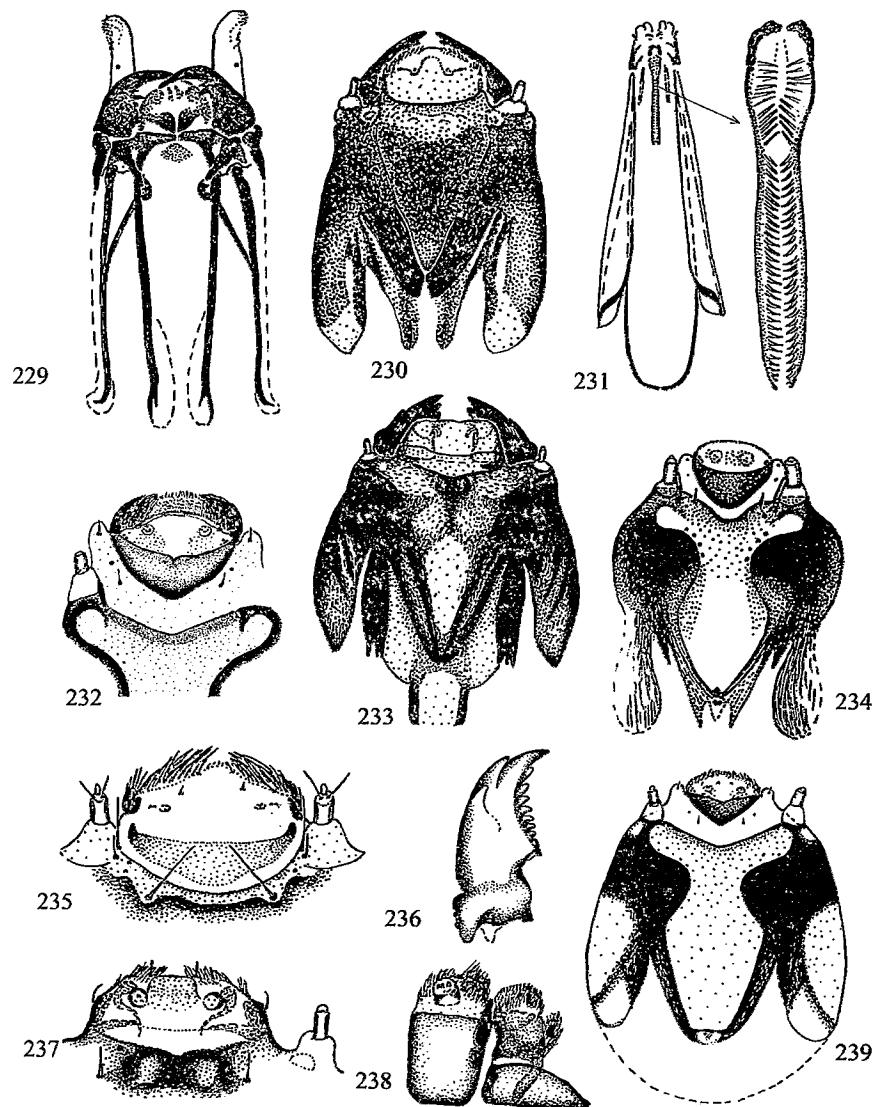


Рис. 229–239. Limoniidae, детали строения головы личинок подсемейств Hexatominae и Limoniinae (по: Кривошеина, Кривошеина, 2011):

229 — *Phylidorea longicornis* (Schummel, 1829); 230 — *Austrolimnophila asiatica* (Alexander, 1925); 231 — *Elephantomyia subterminalis* Alexander, 1954; 232 — *Rhipidia uniseriata* Schiner, 1864; 233 — *Epiphragma subfascipenne* Alexander, 1920; 234 — *Discobola margarita* Alexander, 1924; 235 — *Lipsothrix nobilis* Loew, 1873; 236 — *Metalimnobia quadrimaculata* (Linnaeus, 1761); 237 — *Epiphragma ocellare* (Linnaeus, 1761); 238 — *Metalimnobia quadrimaculata* (Linnaeus, 1761); 239 — *Rhipidia uniseriata* Schiner, 1864. 229–231, 233, 234, 239 — голова сверху; 232, 235, 237 — передний отдел головной капсулы дорсально; 236 — мандибула, 238 — максилла.

Figs 229–239. Limoniidae, details of the head morphology of Hexatominae and Limoniinae (after Кривошеина, Кривошеина, 2011):

229–231, 233, 234, 239 — head dorsally; 232, 235, 237 — anterior part of the head capsule dorsally; 236 — mandible; 237 — anterior part of the head capsule dorsally; 238 — maxilla.

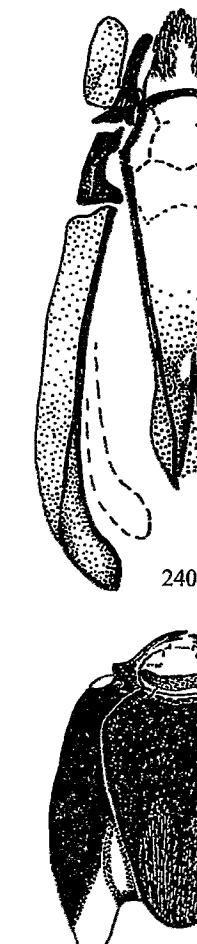


Рис. 240–245. Li-

niene, 2002; Кри-

240 — *Gnophomyia*

242 — *Teucholabis*

longirostris (Meige)

Figs 240–245. Li-

на, Кривошеина,

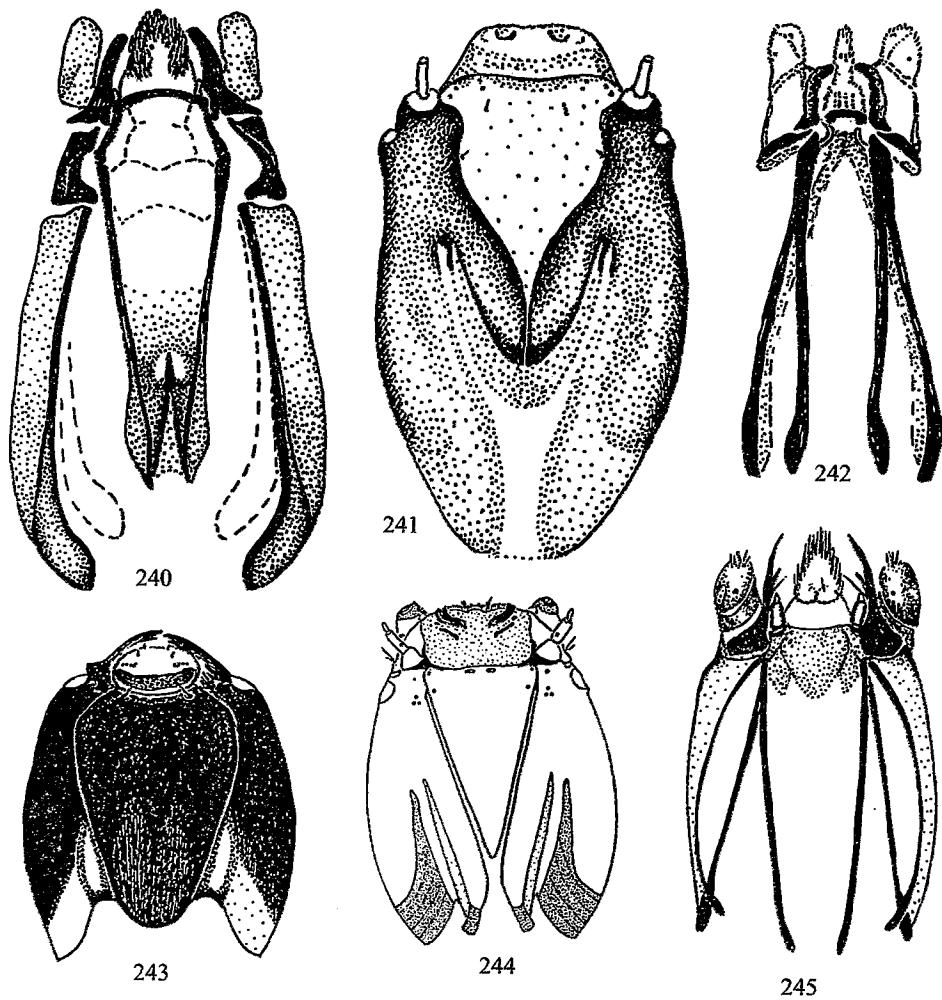


Рис. 240–245. Limoniidae, голова личинок подсемейства Eriopterinae сверху (по: Podeniene, 2002; Кривошеина, Кривошеина, 2011):

240 — *Gnophomyia lugubris* (Zetterstedt, 1838); 241 — *Microlimonia machidai* (Alexander, 1921);
242 — *Teucholabis yezoensis* Alexander, 1924; 243 — *Lipsothrix errans* (Walker, 1848); 244 — *Helius longirostris* (Meigen, 1818); 245 — *Symplecta hybrida* (Meigen, 1804).

Figs 240–245. Limoniidae, head of Eriopterinae dorsally (after Podeniene, 2002; Кривошеина, Кривошеина, 2011).

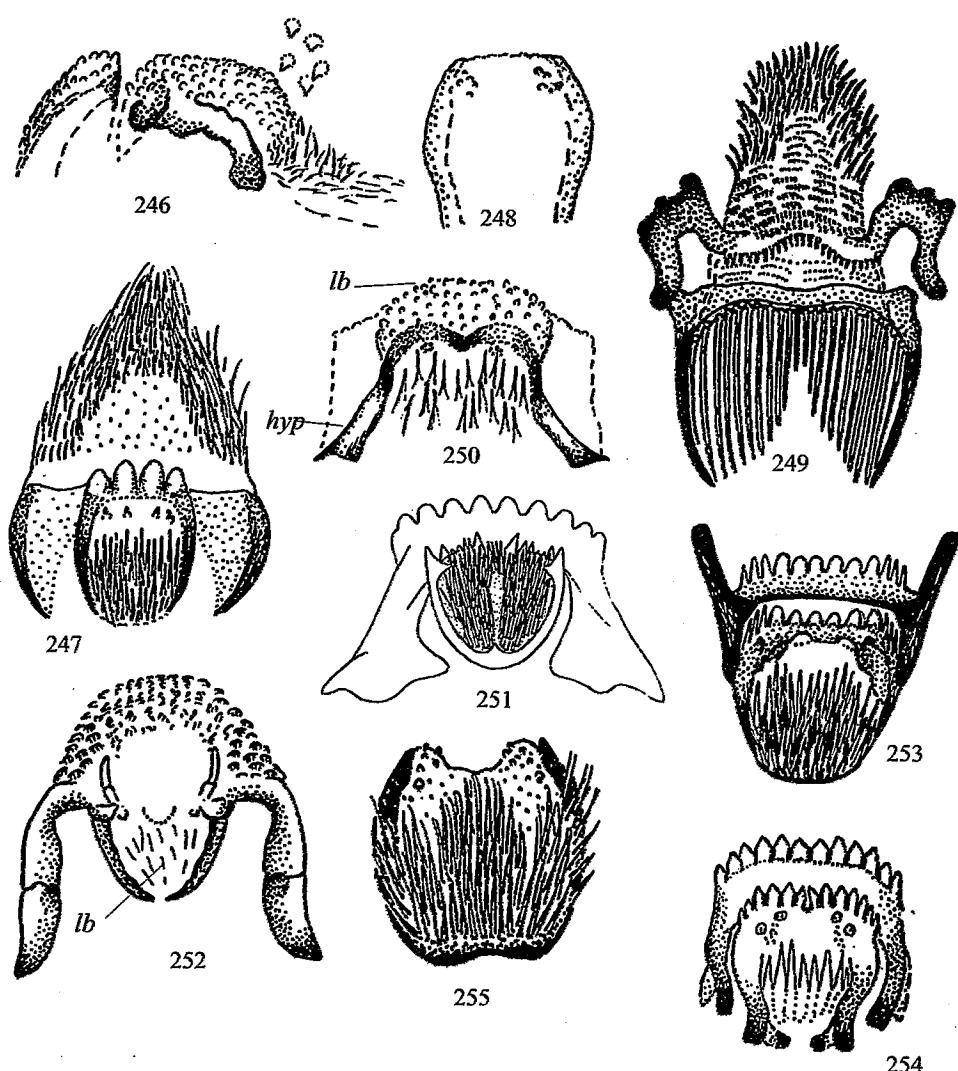


Рис. 246–255. Limoniidae, гипофаринкс и нижняя губа личинок (по: Cramer, 1968; Кри-
вощеина, Кривощеина, 2011):

246 — *Austrolimnophila ochracea* (Meigen, 1804); 247 — *Lipsothrix nobilis* Loew, 1873; 248, 249 — *Gnophomyia lugubris* (Zetterstedt, 1838); 250 — *Symplecta hybrida* (Meigen, 1804); 251 — *Helius longirostris* (Meigen, 1818); 252 — *Teucholabis esakii* (Alexander, 1924); 253 — *Rhipidia uniseriata* Schiner, 1864; 254 — *Discobola margarita* Alexander, 1924; 255 — *Microlimonia machidai* (Alexander, 1921). 246–254 — нижняя губа и гипофаринкс; 255 — нижняя губа.

Figs 246–255. Limoniidae, hypopharynx and labium (after Cramer, 1968; Кри-
вощеина, Кривощеина, 2011):

246–254 — hypopharynx and labium; 255 — labium.

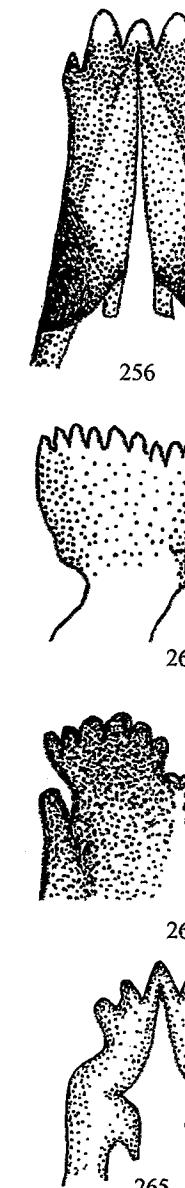


Рис. 256–267. Li-

2011):

256 — *Austrolimno-*
258 — *Idiognopho-*
Discobola marginata
limnophila sepium
nobilis Loew, 1873;
1864; 267 — *Dicr-*
Figs 256–267. Lin-

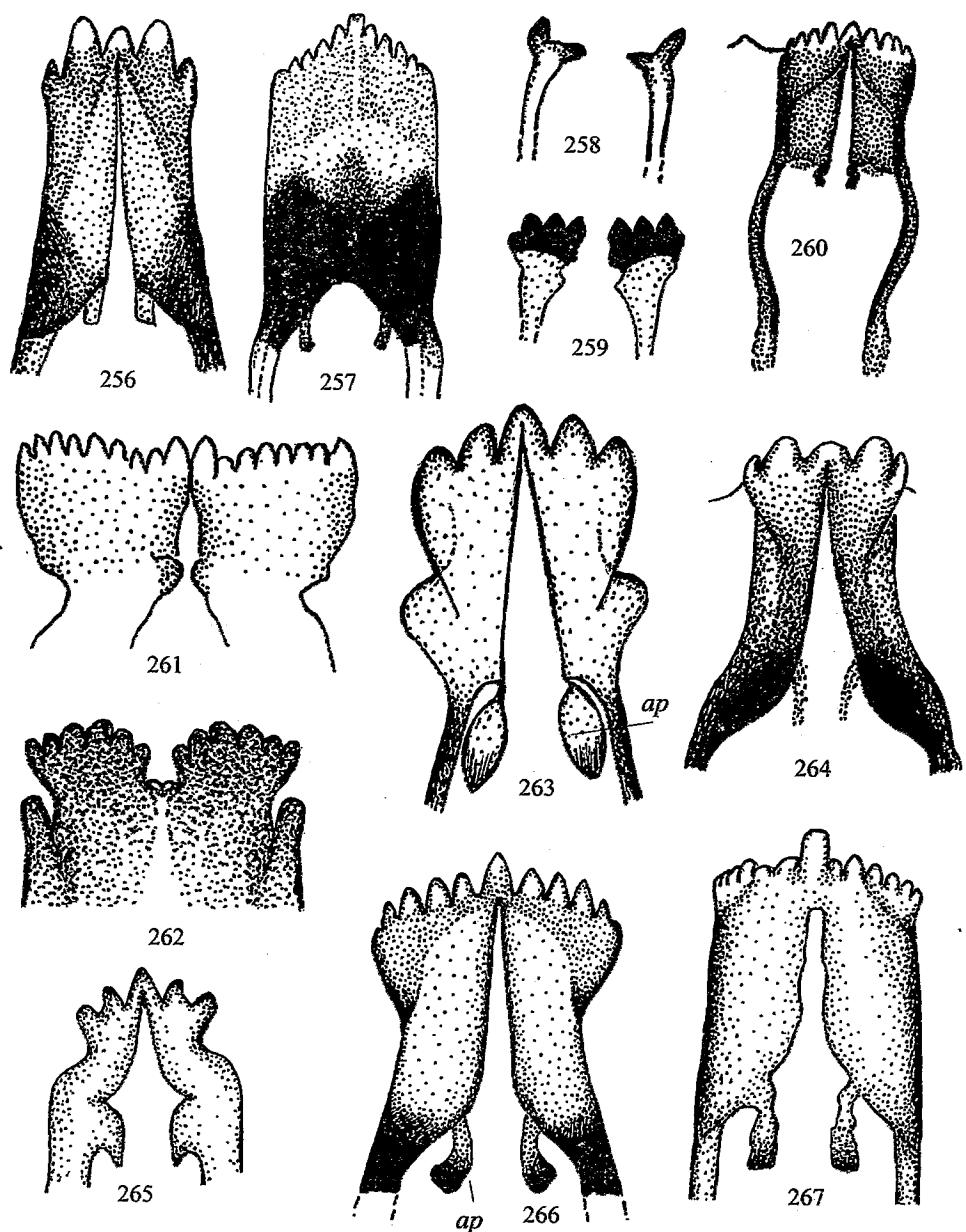


Рис. 256–267. Limoniidae, гипостомиум (по Podeniene, 2002; Кривошейна, Кривошейна, 2011):

256 — *Austrolimnophila asiatica* (Alexander, 1925); 257 — *Achyrolimonia basispina* (Alexander, 1924);
 258 — *Idiognophomyia enniki* (Alexander, 1924); 259 — *Molophilus occultus* de Meijere, 1918; 260 —
Discobola margarita Alexander, 1924; 261 — *Teucholabis yezoensis* Alexander, 1924; 262 — *Pseudolimnophila sepium* (Verrall, 1886); 263 — *Microlimonia machidai* (Alexander, 1921); 264 — *Lipsothrix nobilis* Loew, 1873; 265 — *Helius pallirostris* Edwards, 1921; 266 — *Rhipidia uniseriata* Schiner,
 1864; 267 — *Dicranomyia ochripes* (Alexander, 1925).

Figs 256–267. Limoniidae, hypostoma (after Podeniene, 2002; Кривошейна, Кривошейна, 2011).

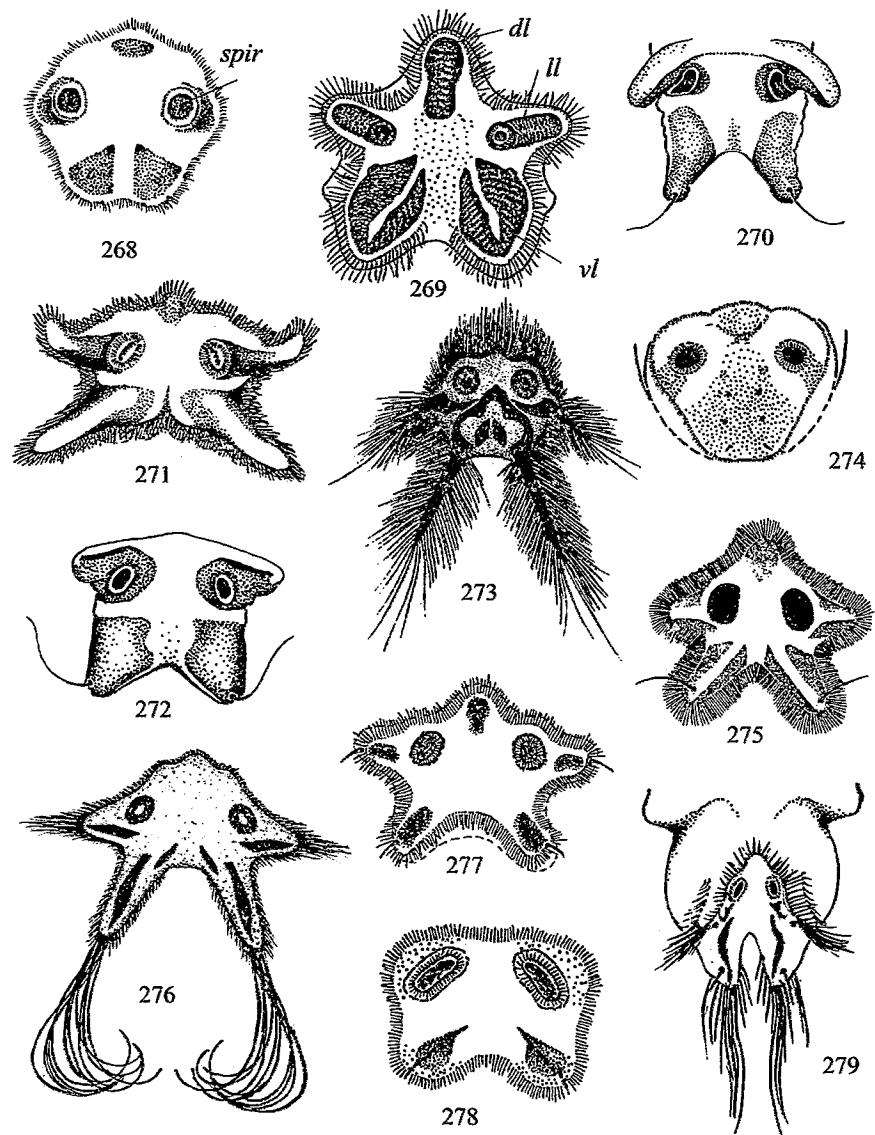


Рис. 268–279. Limoniidae, стигмальное поле (по: Podeniene; 2002, Кривошеина, Кривошеина, 2011):

268 — *Austrolimnophila ochracea* (Meigen, 1804); 269 — *Gnophomyia viridipennis* (Gimmerthal, 1847); 270 — *Elephantomyia subterminalis* Alexander, 1954; 271 — *Lipsothrix nobilis* Loew, 1873; 272 — *Elephantomyia edwardsi* Lackschewitz, 1932; 273 — *Pseudolimnophila sepium* (Verrall, 1886); 274 — *Teucholabis yezoensis* Alexander, 1924; 275 — *Helius longirostris* (Meigen, 1818); 276 — *Idioptera pulchella* (Meigen, 1830); 277 — *Microlimonia machidai* (Alexander, 1921); 278 — *Discobola annulata* (Linnaeus, 1758); 279 — *Phylidorea longicornis* (Schummel, 1829).

Figs 268–279. Limoniidae, spiracular disc (after Podeniene, 2002; Кривошеина, Кривошеина, 2011).

Рис. 280–289. Mycetophilidae

280, 281 — *Allactona*
283–286 — *Manotella*
280, 282, 283, 287 —
максилла.

Figs 280–289. Mycetophilidae

280, 282, 283, 287 —

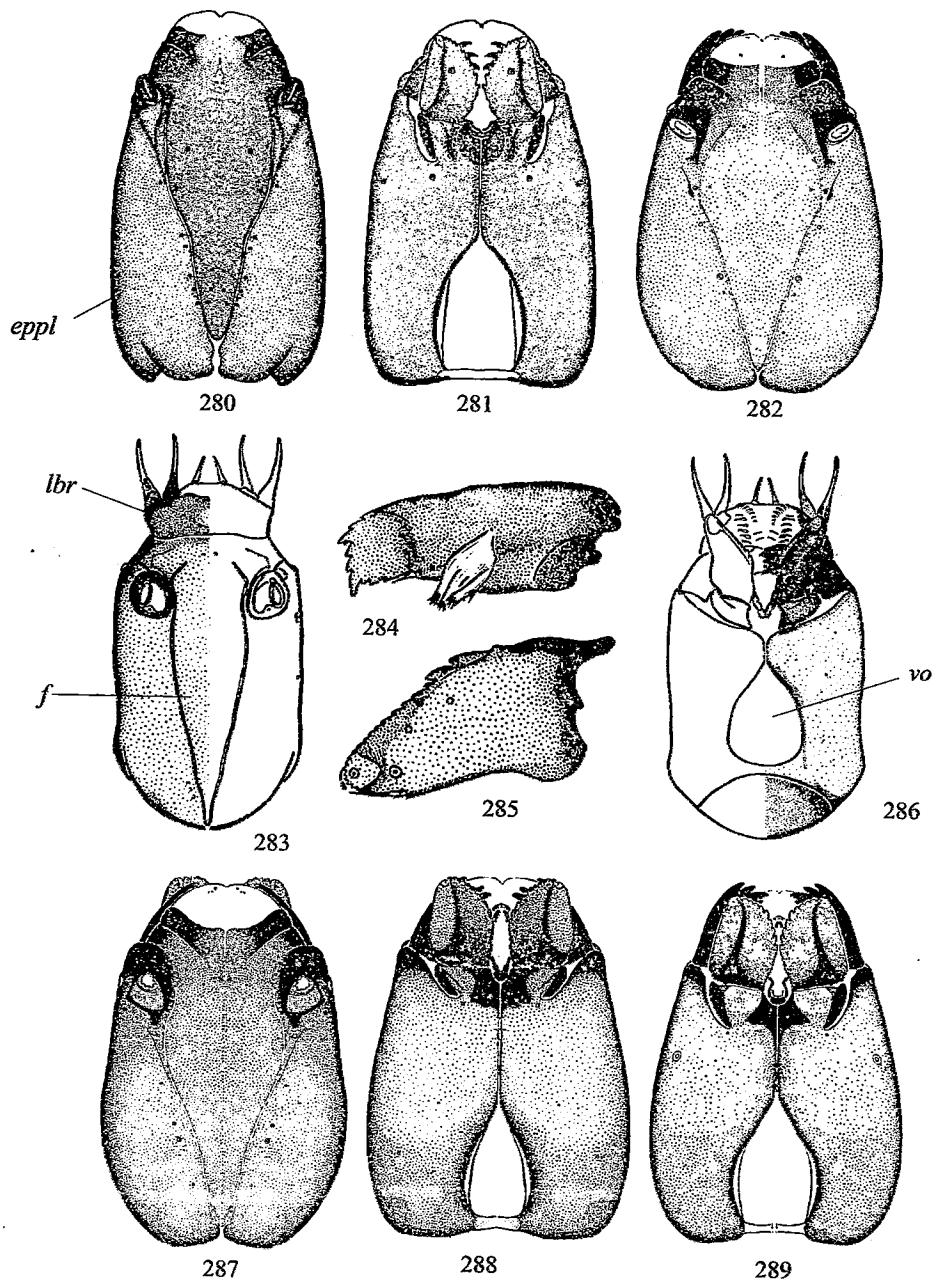


Рис. 280–289. Mycetophilidae, детали строения головы (по: Зайцев, 1981, 1982, 1990):
 280, 281 — *Allactoneura ussuriensis* Zaitzev, 1981; 282, 289 — *Greenomyia borealis* (Winnertz, 1863);
 283–286 — *Manota unifurcata* Lundstrom, 1913; 287, 288 — *Neoclastobasis kamijoi* Zaitzev, 1982.
 280, 282, 283, 287 — голова сверху; 281, 288, 289 — голова снизу; 284 — мандибула; 285 — максилла.

Figs 280–289. Mycetophilidae, details of the head morphology (after Зайцев, 1981, 1982, 1990):
 280, 282, 283, 287 — head dorsally; 281, 288, 289 — head ventrally; 284 — mandible; 285 — maxilla.

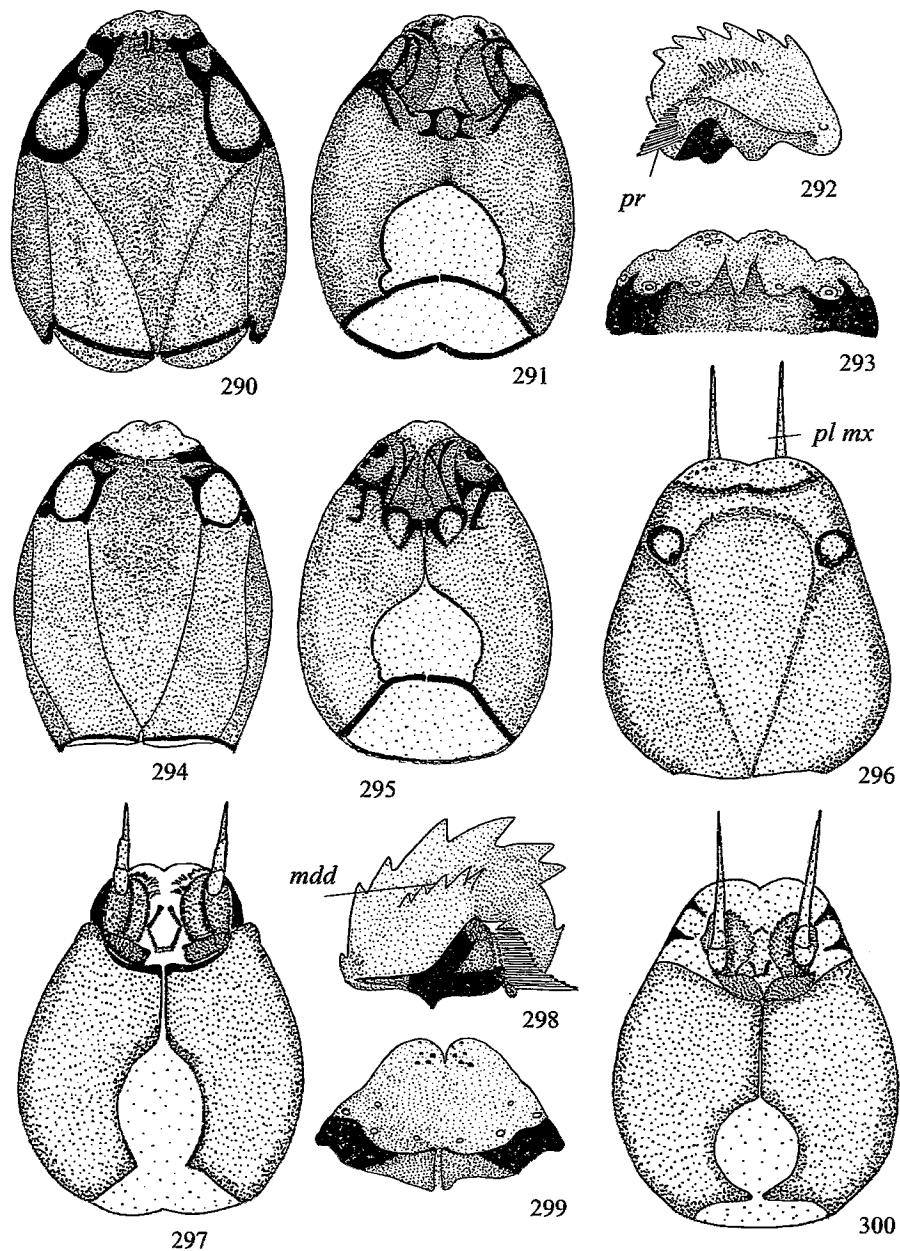


Рис. 290–300. Mycetophilidae, детали строения головы (по: Зайцев, 1979; Кривошеина, 2010): 290, 291, 293 — *Mycomya* sp.; 292 — *Mycomya fissa* (Lundstrom, 1911); 294, 295, 298, 299 — *Neotemphelia* sp.; 296, 300 — *Monoclonia* sp.; 297 — *Sciophila rufa* Meigen, 1830. 290, 294, 296 — голова сверху; 291, 295, 297, 300 — голова снизу; 292, 298 — мандибула; 293, 299 — верхняя губа.

Figs 290–300. Mycetophilidae, details of the head morphology (after Зайцев, 1979; Кривошеина, 2010):

290, 294, 296 — head dorsally; 291, 295, 297, 300 — head ventrally; 292, 298 — mandible; 293, 299 — labrum.

Рис. 301–310. Mycetophilidae, детали строения головы (по: Зайцев, 1979; Кривошеина, 2010): 301, 302, 306 — *Leptothrix* sp.; 303 — *Sciophila rufa*; 304 — *Monoclonia* sp.; 305 — *Neotemphelia* sp.; 306 — *Leptothrix* sp.

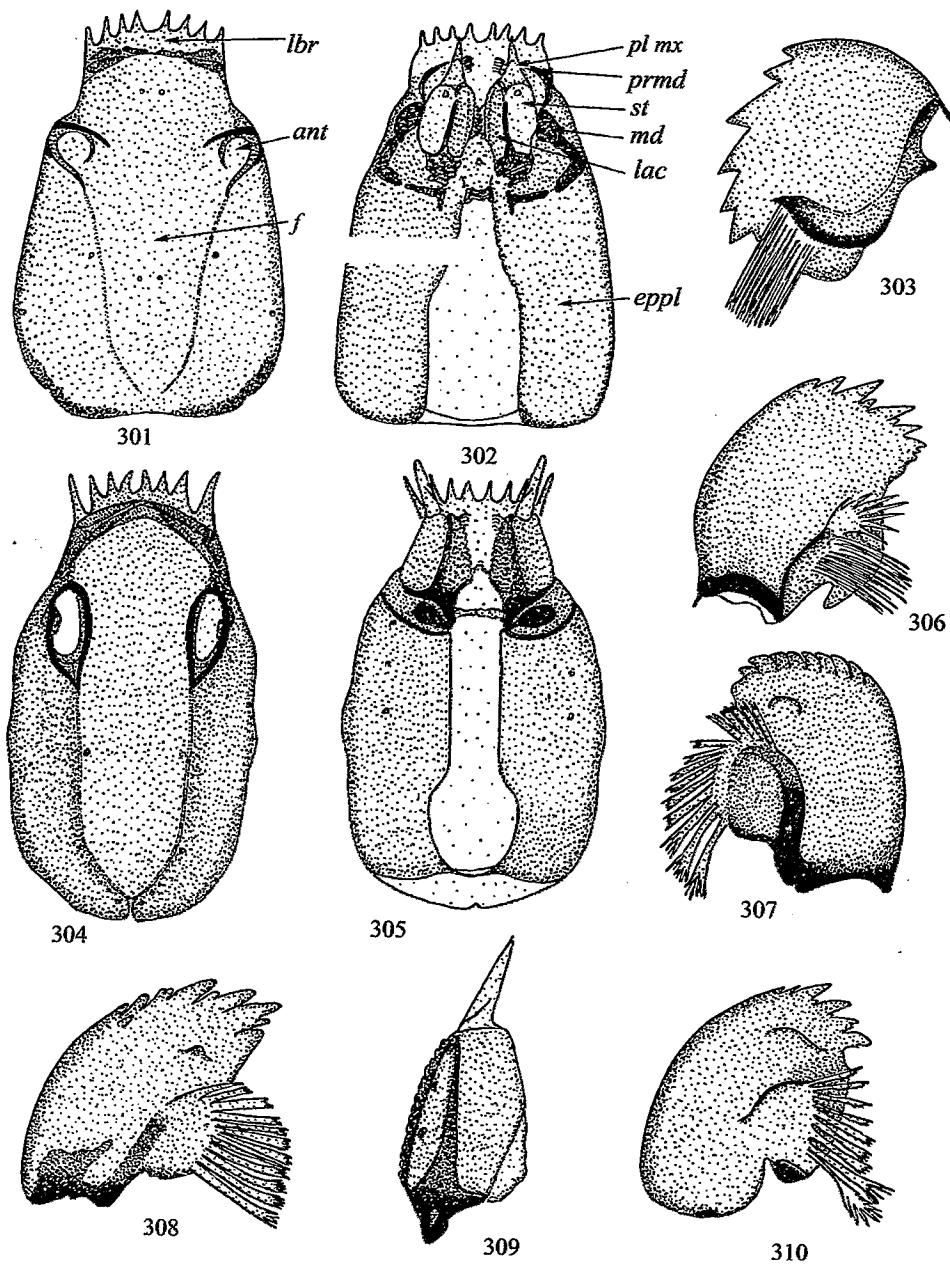


Рис. 301–310. Mycetophilidae, детали строения головы (по: Зайцев, 1984; Кривошенина, 2011):
 301, 302, 306 — *Leptomorphus* sp.; 303 — *Monoclonia* sp.; 304, 305 — *Phthinia lenae* Zaitzev, 1984;
 307 — *Sciophila rufa* Meigen, 1830; 308 — *Sciophila* sp.; 309, 310 — *Phthinia* sp. 301, 304 — голова
 сверху; 302, 305 — голова снизу; 303, 306–308, 310 — мандибула; 309 — максилла.

Figs 301–310. Mycetophilidae, details of the head morphology (after Зайцев, 1984; Кривошенина, 2011):

301, 304 — head dorsally; 302, 305 — head ventrally; 303, 306–308, 310 — mandible; 309 — maxilla.

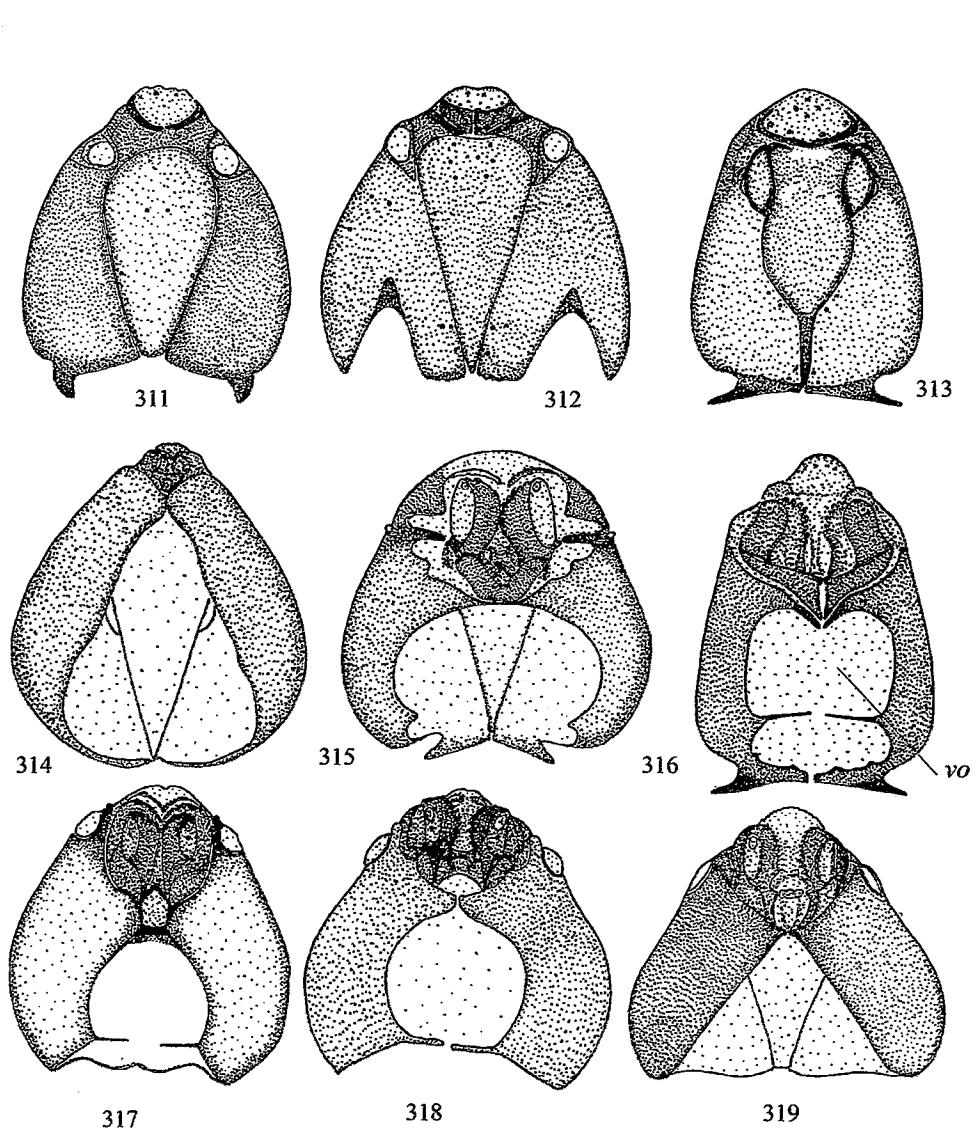


Рис. 311–319. Mycetophilidae, типы строения головной капсулы (по: Кривошеина, 2010): 311 — *Allodia* sp.; 312, 318 — *Dynatosoma* sp.; 313, 316 — *Epicyppta* sp.; 314 — *Brachypeza* sp.; 315 — *Phronia* sp.; 317 — *Mycetophila* sp.; 319 — *Rymosia* sp. 311, 312, 313 — голова сверху; 314–319 — голова снизу;

Figs 311–319. Mycetophilidae, types of the structure of the head capsule (after Кривошеина, 2010): 311, 312, 313 — head dorsally; 314–319 — head ventrally.

311, 312, 313 — head dorsally; 314–319 — head ventrally.

Рис. 320–337. Мукоиды
Кривошеина, 2010:
320, 326, 330, 332, 333,
sp.; 324 — *Allodia* sp.;
331 — *Phronia* sp.;
мандибула; 326 — боковая
верхняя губа; 330, 332 —
Figs 320–337. Mucoidea
1967; Кривошеина,
320–325 — мандибула;
330, 331, 333 —

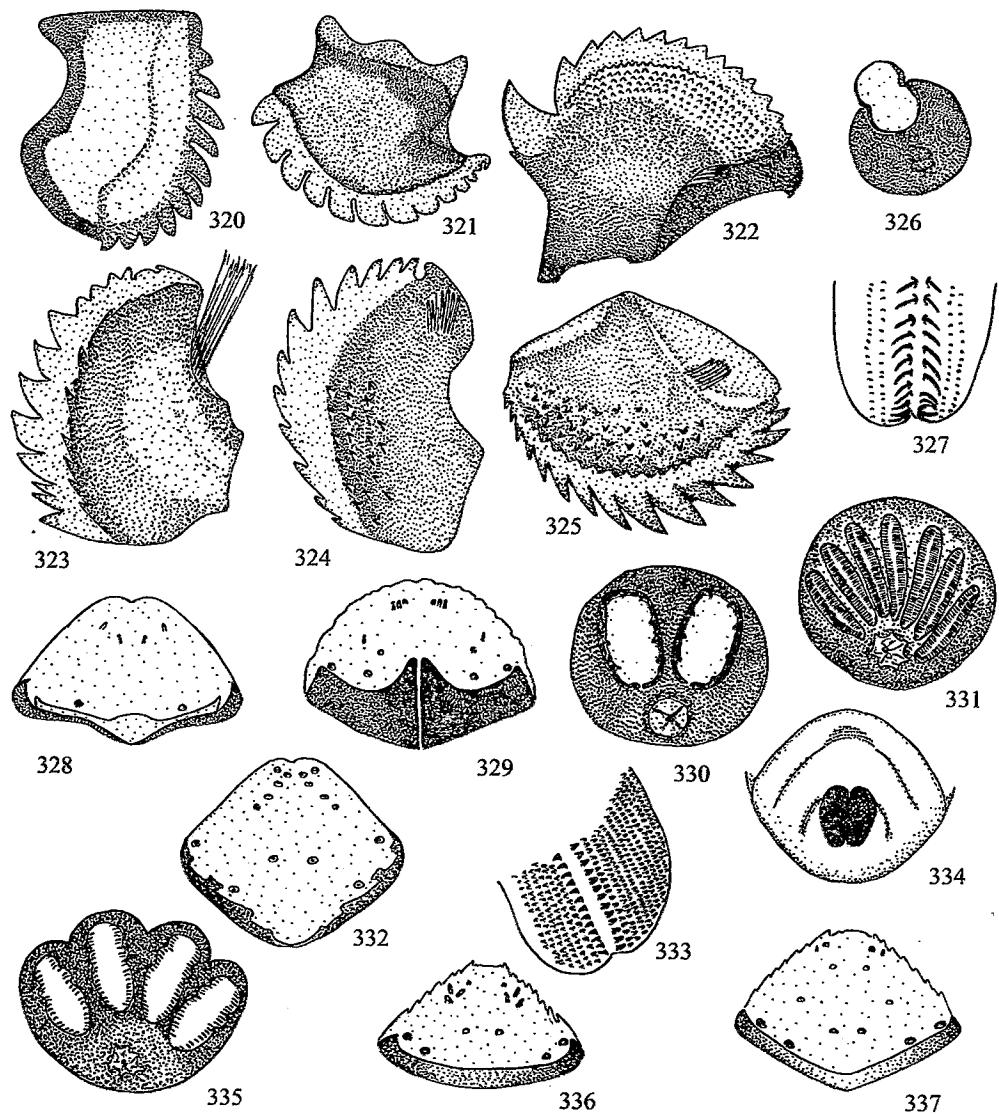


Рис. 320–337. Mycetophilidae, детали строения головы (по: Кривошеина, Мамаев, 1967; Кривошеина, 2010):

320, 326, 330, 332, 334 — *Rymosia* sp.; 321 — *Epicypta* sp.; 322 — *Platurocypta* sp.; 323 — *Anatella* sp.; 324 — *Allodia* sp.; 325, 335 — *Brachypeza* sp.; 327, 329 — *Mycetophila* sp.; 328 — *Cordyla* sp.; 331 — *Phronia* sp.; 333 — *Dynatosoma* sp.; 336 — *Exechia* sp.; 337 — *Exechiopsis* sp. 320–325 — мандибула; 326 — брюшное дыхальце; 327, 333 — ползательный валик; 328, 329, 332, 336, 337 — верхняя губа; 330, 331, 335 — переднее дыхальце; 334 — конец тела.

Figs 320–337. Mycetophilidae, details of the head morphology (after Кривошеина, Мамаев, 1967; Кривошеина, 2010):

320–325 — mandible; 326 — abdominal spiracle; 327, 333 — creeping welt; 328, 329, 332, 336, 337 — labrum; 330, 331, 335 — anterior spiracle; 334 — end of the body.

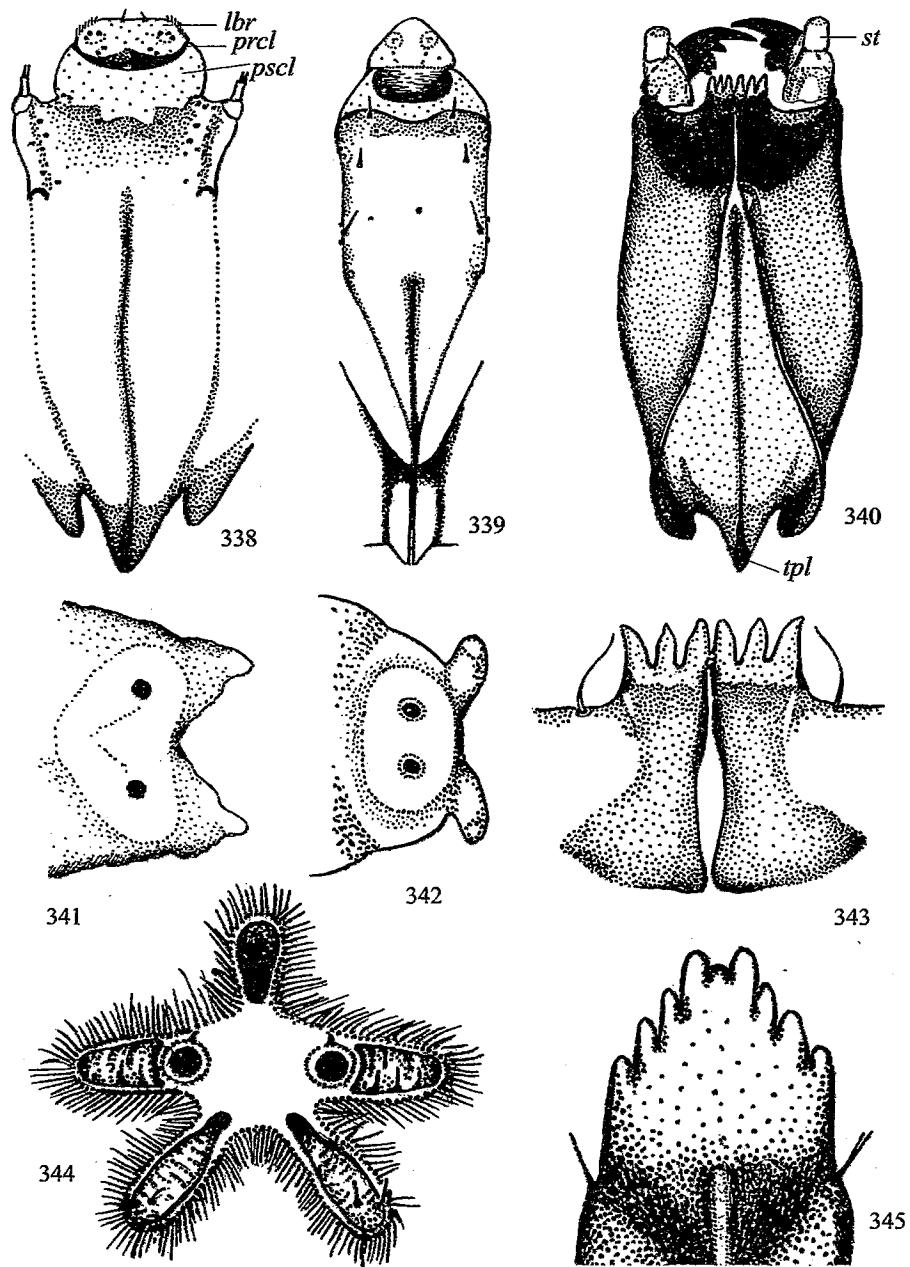


Рис. 338—345. Pediciidae, детали строения головы (по: Кривошеина, Кривошеина, 2011): 338, 340, 342, 343 — *Nasiternella varinervis* (Zetterstedt, 1851); 339, 344, 345 — *Ula mollisima* Haliday, 1833; 341 — *Tricyphona immaculata* Meigen, 1804. 338 — головная капсула сверху; 339 — срединный отдел головной капсулы сверху; 340 — головная капсула снизу; 341, 342 — конец тела сверху; 343, 345 — гипостомальная пластинка; 344 — стигмальное поле.

Figs 338—345. Pediciidae, details of the head morphology (after Кривошеина, Кривошеина, 2011): 338 — head dorsally; 339 — centre of head dorsally; 340 — head ventrally; 341, 342 — body end dorsally; 343, 345 — hypostoma; 344 — spiracular disc.

Рис. 346—355. Sca
Кривошеина, 198
346 — *Ectaetia* sp.; 3
(Edwards, 1934); 35
Arthria analis (Kirby
конец тела сверху; 3
Figs 346—355. Sca
Кривошеина, 198
346, 348, 350 — bo
354 — head ventrally

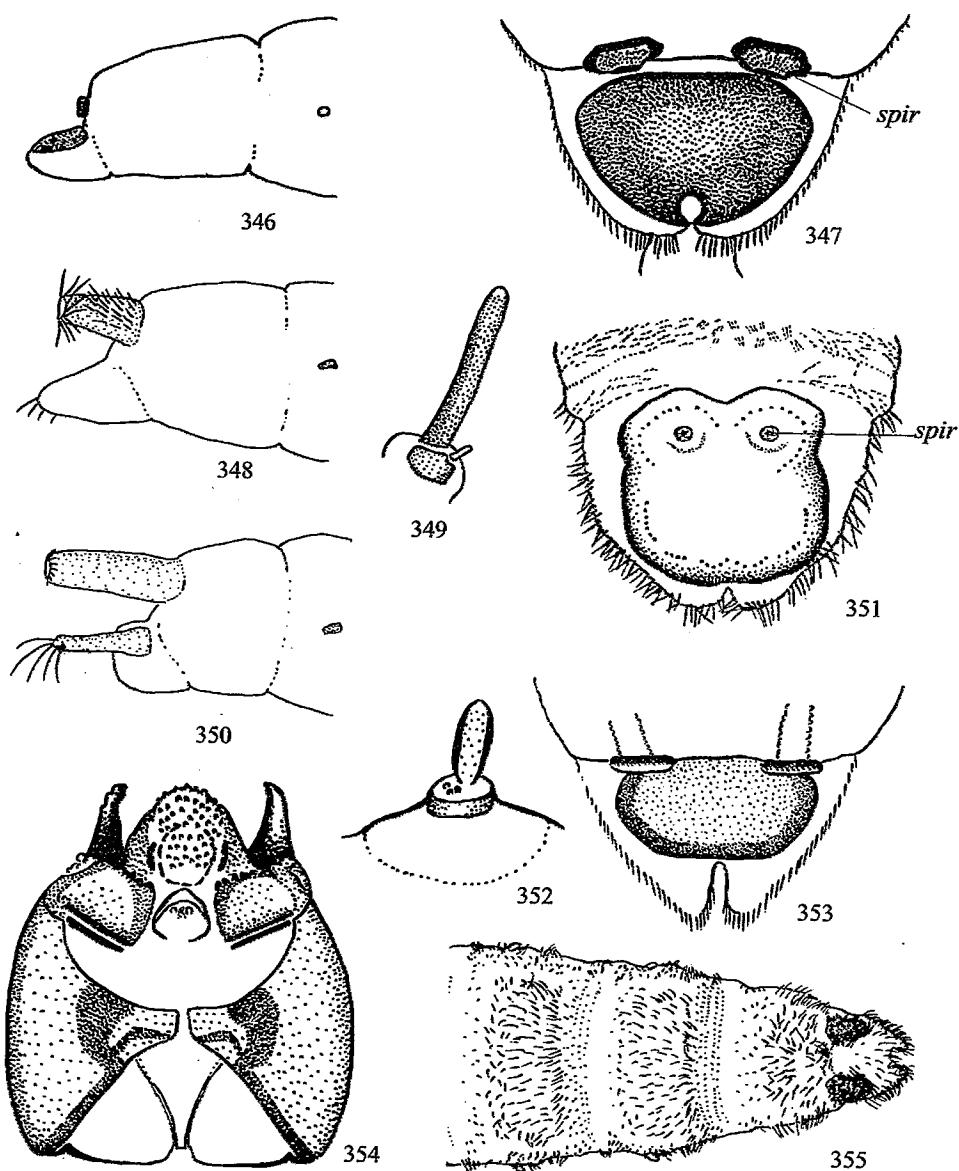


Рис. 346–355. Scatopsidae, детали строения личинок (по: Кривошеина, Мамаев, 1967; Кривошеина, 1987, 2000; Haenni, Vaillant, 1994):

346 — *Ectaetia* sp.; 347, 349, 354 — *Ectaetia clavipes* (Loew, 1846); 348, 355 — *Holoplagia richardsi* (Edwards, 1934); 350 — *Apiloscatopse* sp.; 351 — *Aspistes antidactylatis* Cook, 1965; 352, 353 — *Arthria analis* (Kirby in Richardson, 1837). 346, 348, 350 — конец тела сверху; 347, 351, 353, 355 — конец тела снизу; 349, 352 — усик; 354 — голова снизу.

Figs 346–355. Scatopsidae, details of larval morphology (after Кривошеина, Мамаев, 1967; Кривошеина, 1987, 2000; Haenni, Vaillant, 1994):

346, 348, 350 — body end laterally; 347, 351, 353, 355 — body end dorsally; 349, 352 — antenna; 354 — head ventrally.

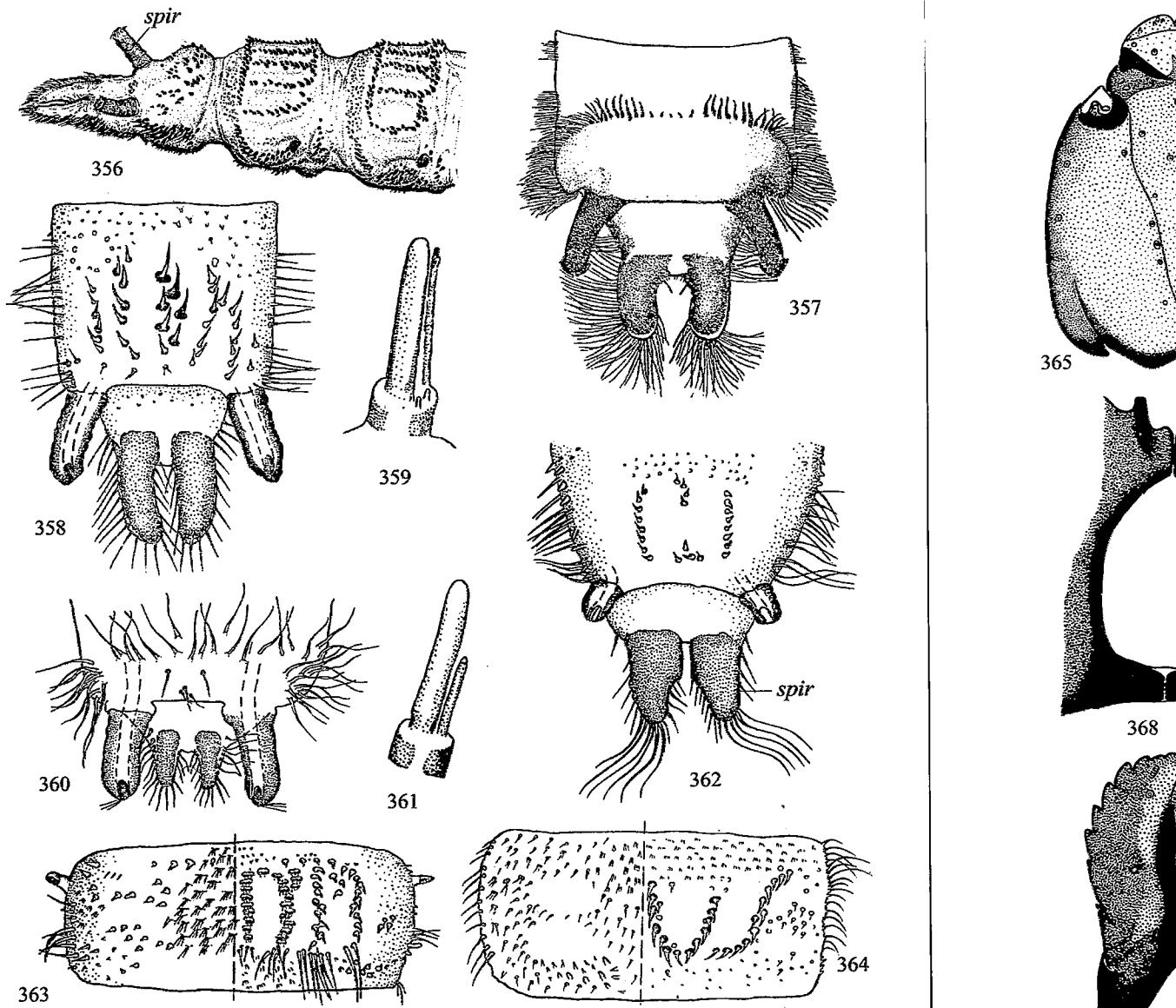


Рис. 356–364. Scatopsidae, детали строения личинок (по: Mottis, 1918; Кривошеина, Мамаев, 1967; Haenni, 1997):

356 — *Reichertella geniculata* (Zetterstedt, 1850); 357 — *Scatopse notata* (Linnaeus, 1758); 358, 361, 364 — *Rhexoza subnitens* (Verrall, 1886); 359, 360 — *Coboldia fuscipes* (Meigen, 1830); 362, 363 — *Rhexoza?* sp. 356, 362 — конец тела; 357, 358, 360 — конец тела сверху; 359, 361 — усик; 363, 364 — кутикулярные структуры 1-го брюшного сегмента с дорсальной (справа) и вентральной (слева) сторон.

Figs 356–364. Scatopsidae, details of larval morphology (after Morris, 1918; Кривошеина, Мамаев, 1967; Haenni, 1997):

356, 362 — end of the body; 357, 358, 360 — body end dorsally; 359, 361 — antenna; 363, 364 — cuticular structures of the I abdominal segment dorsally (right) and ventrally (left).

Рис. 365–373. Sci...
365, 373 — *Claust...
ingenua* (Dufour, 18...
(*Trichosia*) *morio* (F...
370 — *Sciara hem...*
часта головной ка...
Figs 365–373. Sci...

365 — head dorsall...

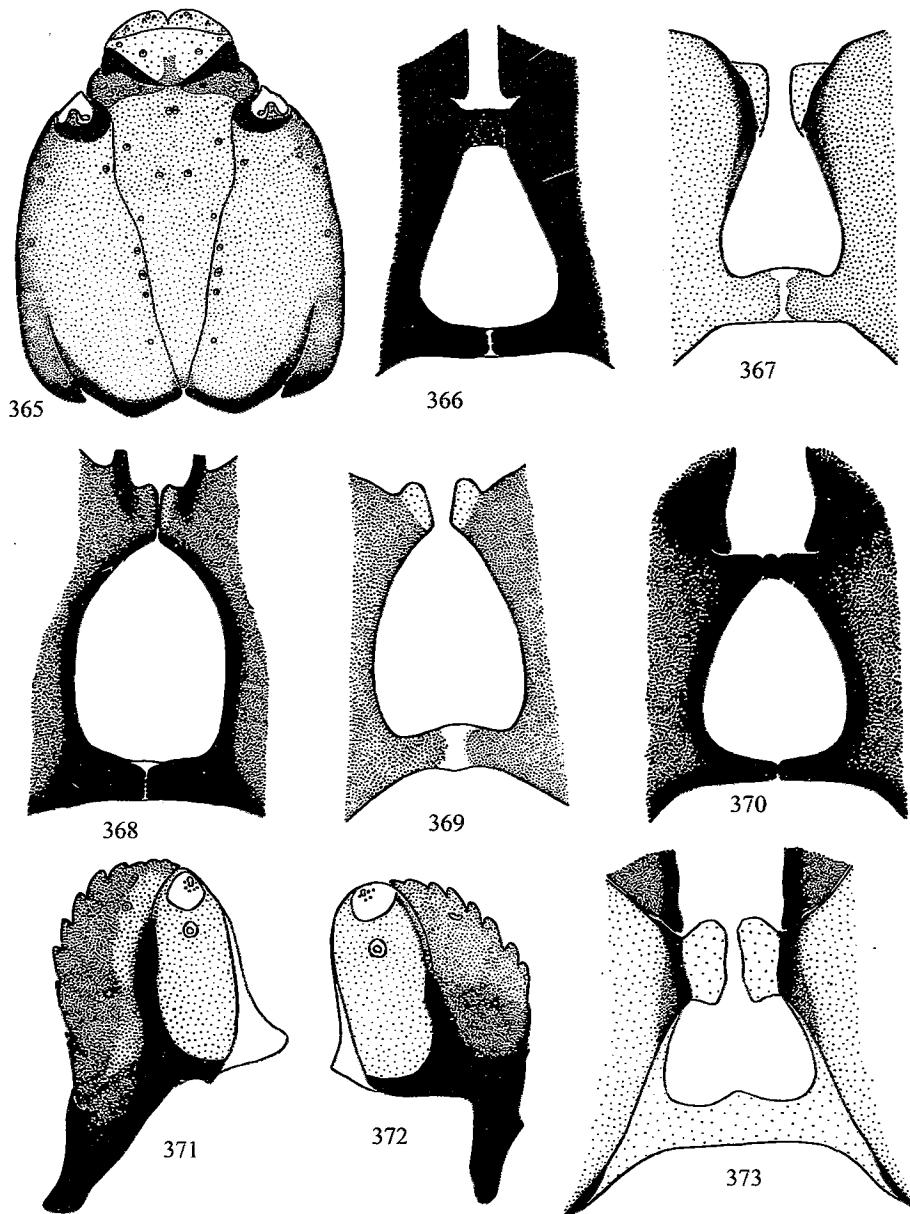


Рис. 365–373. Sciaridae, детали строения головы личинок (по: Кривошеина и др., 1987); 365, 373 — *Claustropyga corticis* (Mohrig et Antonova, 1978); 366, 372 — *Lycoriella (Lycoriella) ingenua* (Dufour, 1839); 367 — *Epidapus (Epidapus) alnicola* (Tuomikoski, 1957); 368, 371 — *Trichosia (Trichosia) morio* (Fabricius, 1794); 369 — *Pseudolycoriella brunnea* (Bukowski et Lengersdorf, 1936); 370 — *Sciara hemerobioides* (Scopoli, 1763). 365 — голова сверху; 366–370, 373 — срединная часть головной капсулы с вентральной стороны; 371, 372 — максилла.

Figs 365–373. Sciaridae, details of the head morphology (after Кривошеина et al., 1987): 365 — head dorsally; 366–370, 373 — median part of the head capsule ventrally; 371, 372 — maxilla.

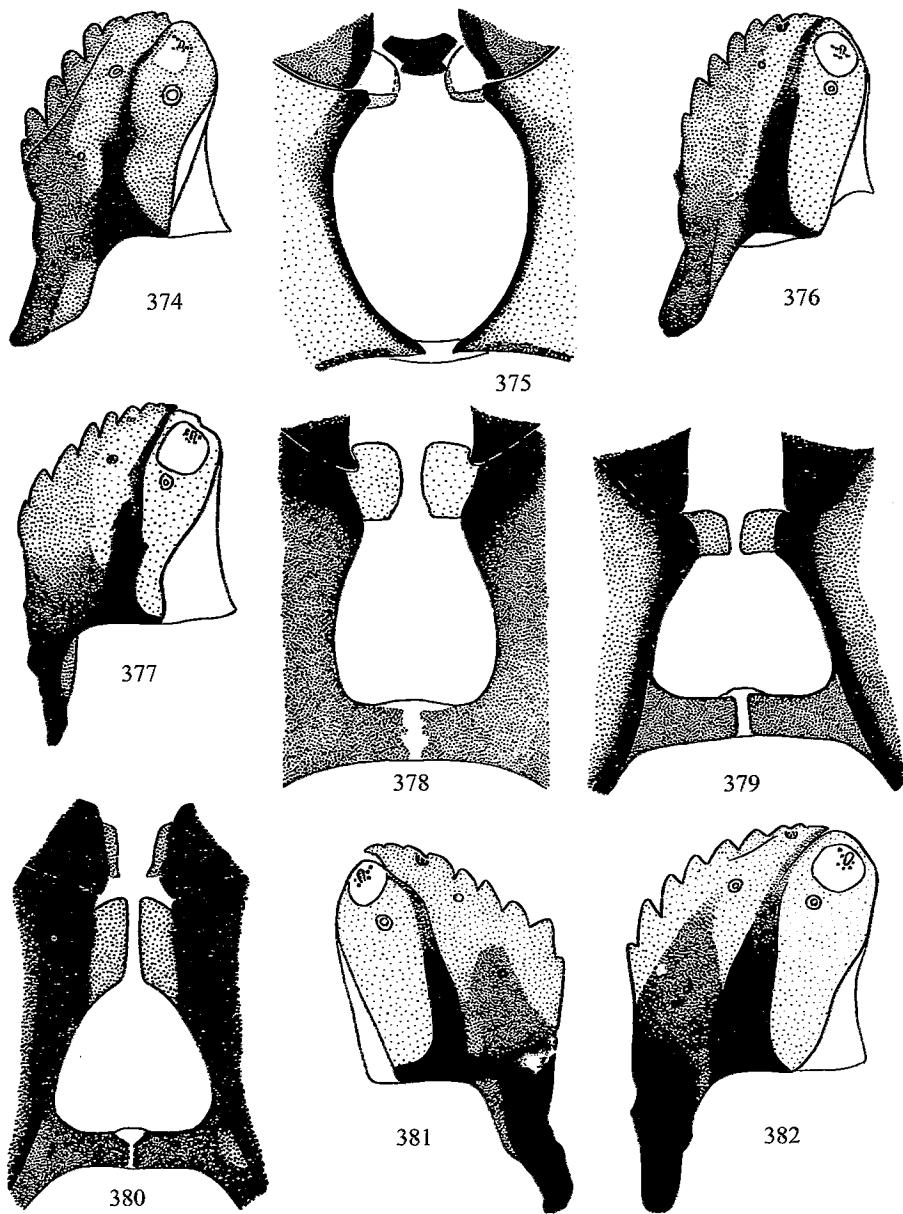


Рис. 374–382. Sciaridae, детали строения головы личинок (по: Кривошеина и др., 1987):
 374 — *Xylosciarra (Xylosciarra) lignicola* (Winnertz, 1867); 375 — *Phytosciara ninae* Antonova, 1977;
 376 — *Epidapus (Epidapus) alnicola* (Tuomikoski, 1957); 377 — *Claustropyga corticis* (Mohrig et
 Antonova, 1978); 378, 382 — *Scatopsciara calamophila* Frey, 1948; 379 — *Zygoneura* sp.; 380 —
Scythropochroa quercicola (Winnertz, 1869); 381 — *Bradysia vernalis* (Zetterstedt, 1851). 374, 376,
 377, 381, 382 — максилла; 375, 378–380 — срединная часть головной капсулы с вентральной
 стороны.

Figs 374–382. Sciaridae, details of the head morphology (after Кривошеина et al., 1987):
 374, 376, 377, 381, 382 — maxilla; 375, 378–380 — median part of the head capsule ventrally.



Рис. 383–392. Тилюлиды, детали строения головы личинок (по: Кривошеина, 1964):
 383, 386 — *Prionocera* sp.; 384, 387 — *Dolichopezus* sp.; 385 — *Dolichopezus* sp.; 388 — *Nepioleptes* sp.; 389 — *Tipula* (Sav.) sp.; 390 — *Tipula* (Sav.) sp.; 392 — *Tipula* (Sav.) sp.

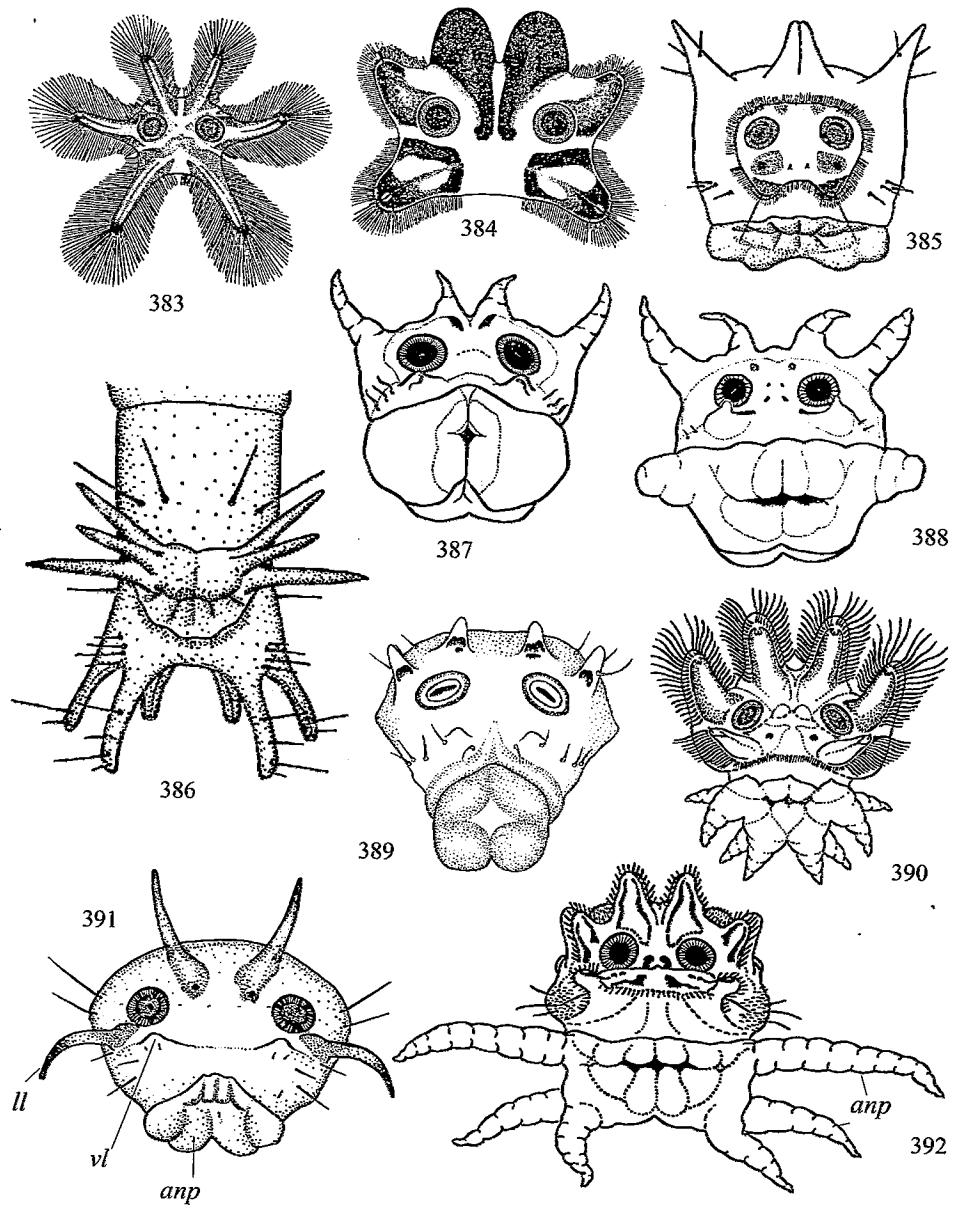


Рис. 383–392. Tipulidae, стигмальное поле личинок (по: Савченко, 1954, 1963; Chiswell, 1956; Кривошеина, 1964):

383, 386 — *Prionocera turcica* (Fabricius, 1787); 384 — *Tipula (Schummelia) varicornis* Schummel, 1833; 385 — *Dolichopeza (Dolichopeza) albipes* (Strom, 1768); 387 — *Nigrotipula nigra* (Linnaeus, 1758); 388 — *Nephrotoma pratensis* (Linnaeus, 1758); 389 — *Phoroctenia vittata* (Meigen, 1830); 390 — *Tipula (Savtshenkia) simulans* Savchenko, 1966; 391 — *Tipula (Lunatipula) livida* van der Wulp, 1858; 392 — *Tipula (Yamatotipula) lateralis* Meigen, 1804.

Figs 383–392. Tipulidae, spiracular disc (after Савченко, 1954, 1963; Chiswell, 1956; Кривошеина, 1964).

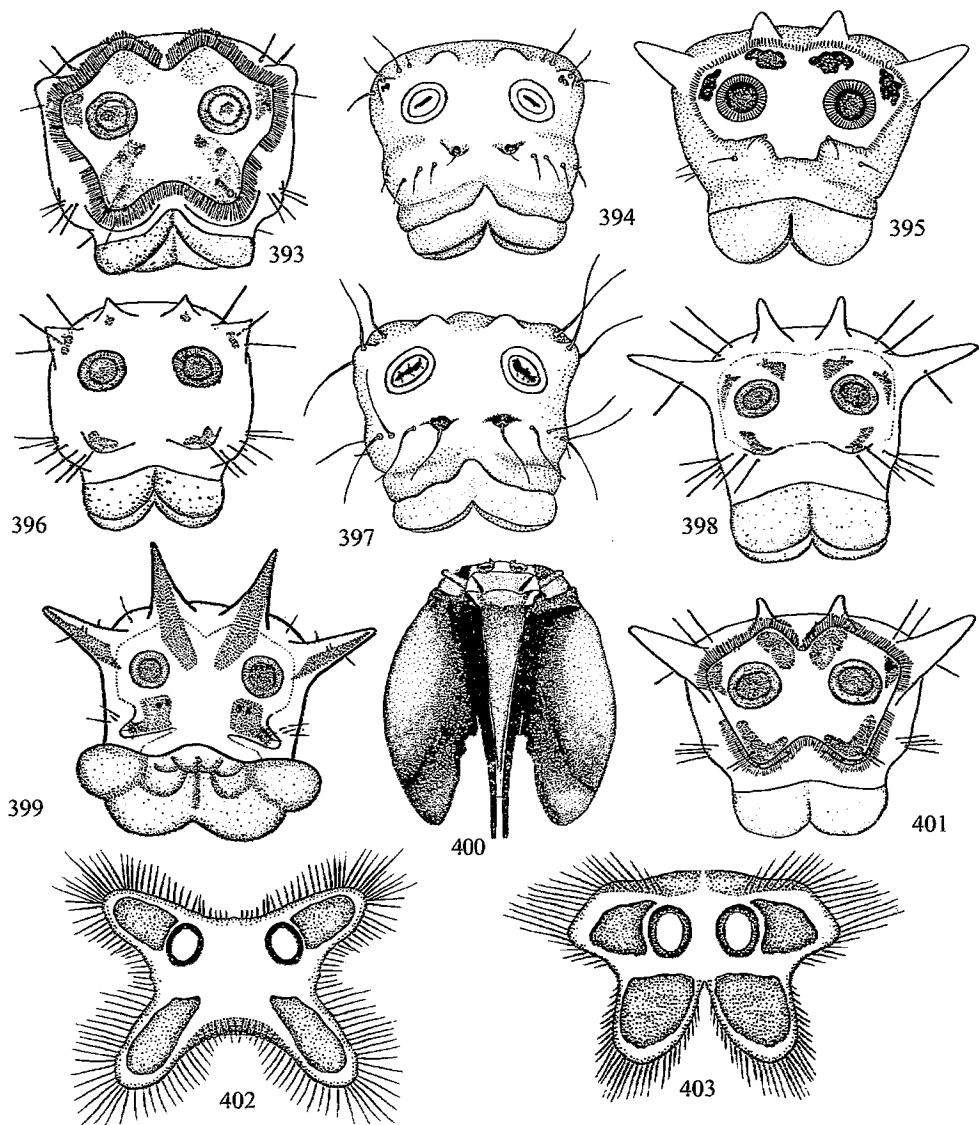


Рис. 393—403. Tipulidae и Trichoceridae, стигмальное поле и голова личинок (по: Chiswell, 1956; Кривошеина, Мамаев, 1967):

393 — *Ctenophora (Cnemoncosis) ornata* Meigen, 1818; 394 — *Tanyptera (Tanyptera) atrata portschinskii* (Enderlein, 1912); 395 — *Ctenophora (Ctenophora) tricolor* Loew, 1869; 396 — *Tipula (Dendrotipula) flavolineata* Meigen, 1804; 397 — *Tanyptera (Tanyptera) nigricornis* (Meigen, 1818); 398 — *Dictenidia bimaculata* (Linnaeus, 1761); 399 — *Tipula (Lunatipula) selene* Meigen, 1830; 400 — *Tipula (Vestiplex) scripta* Meigen, 1830, голова сверху; 401 — *Ctenophora (Ctenophora) pectinicornis* (Linnaeus, 1758); 402 — *Trichocera (Saltrichocera) annulata* Meigen, 1818; 403 — *Trichocera (Trichocera) hiemalis* (De Geer 1776).

Figs 393—403. Tipulidae and Trichoceridae, spiracular disc and head (after Chiswell, 1956; Кривошеина, Мамаев, 1967).

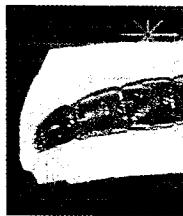


Фото 1. Anisopoda
Photo 1. Anisopoda

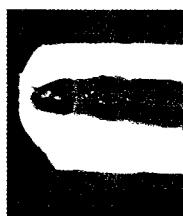


Фото 2. Anisopoda
Photo 2. Anisopoda



Фото 3. Axymyiidae
view. Photo 3. Axymyiidae



Фото 1. Anisopodidae. *Sylvicola fenestralis* (Scopoli, 1763). Личинка, вид сбоку.
Photo 1. Anisopodidae. *Sylvicola fenestralis* (Scopoli, 1763). Larva, lateral view.



Фото 2. Anisopodidae. *Mycetobia pallipes* Meigen, 1818. Личинка, вид сверху.
Photo 2. Anisopodidae. *Mycetobia pallipes* Meigen, 1818. Larva, dorsal view.



Фото 3. Axymyiidae. *Protaxymyia melanoptera* Mamaev et Krivosheina, 1966. Личинка, вид сбоку.

Photo 3. Axymyiidae. *Protaxymyia melanoptera* Mamaev et Krivosheina, 1966. Larva, lateral view.

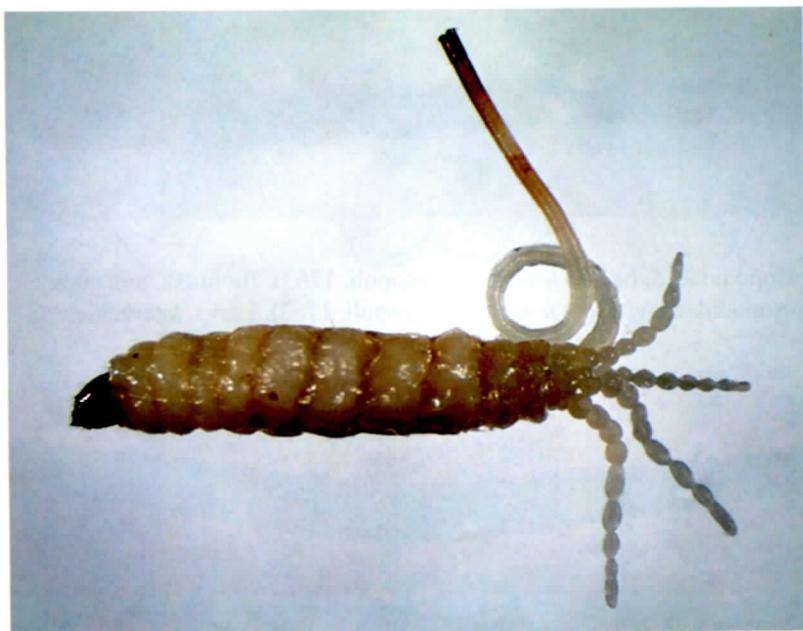


Фото 4. Axymyiidae. *Mesaxymyia kerteszi* (Duda, 1930). Личинка, вид сбоку.
Photo 4. Axymyiidae. *Mesaxymyia kerteszi* (Duda, 1930). Larva, lateral view.



Фото 5. Bibionidae. *Bibio* sp. Личинки второго возраста
Photo 5. Bibionidae. *Bibio* sp. Larvae of the 2nd instar.



Фото 6. Bibionidae. *Bibio pomonae* (Fabricius, 1775). Личинка, вид сбоку.
Photo 6. Bibionidae. *Bibio pomonae* (Fabricius, 1775). Larva, lateral view.



Фото 7. Bibionidae. *Bibio pomonae* (Fabricius, 1775). Задний конец тела.
Photo 7. Bibionidae. *Bibio pomonae* (Fabricius, 1775). Posterior end of body.

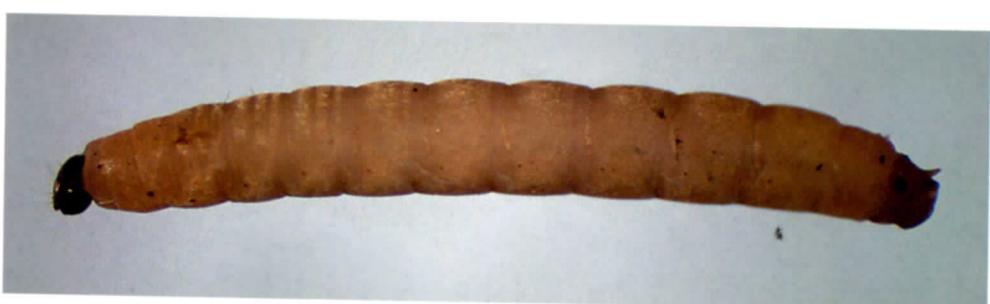


Фото 8. Bibionidae. *Dilophus femoratus* Meigen, 1804. Личинка, вид сбоку.
Photo 8. Bibionidae. *Dilophus femoratus* Meigen, 1804. Larva, lateral view.



Фото 9. Bibionidae. *Plecia thulinigra* Hardy, 1961. Личинка, вид сбоку.
Photo 9. Bibionidae. *Plecia thulinigra* Hardy, 1961. Larva, lateral view.



Фото 10. Bibionidae. *Plecia thulinigra* Hardy, 1961. Головной отдел личинки спереди.
Photo 10. Bibionidae. *Plecia thulinigra* Hardy, 1961. Head and thorax anteriorly.



Фото 11. Bibionidae. *Penthetria funebris* Meigen, 1804. Личинка, вид сбоку.
Photo 11. Bibionidae. *Penthetria funebris* Meigen, 1804. Larva, lateral view.

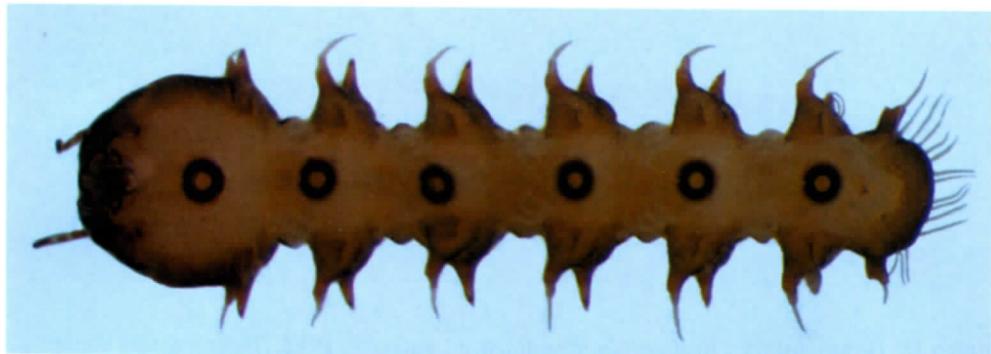


Фото 12. Blephariceridae. *Agathon* sp. Личинка, вид снизу.
Photo 12. Blephariceridae. *Agathon* sp. Larva, ventral view.

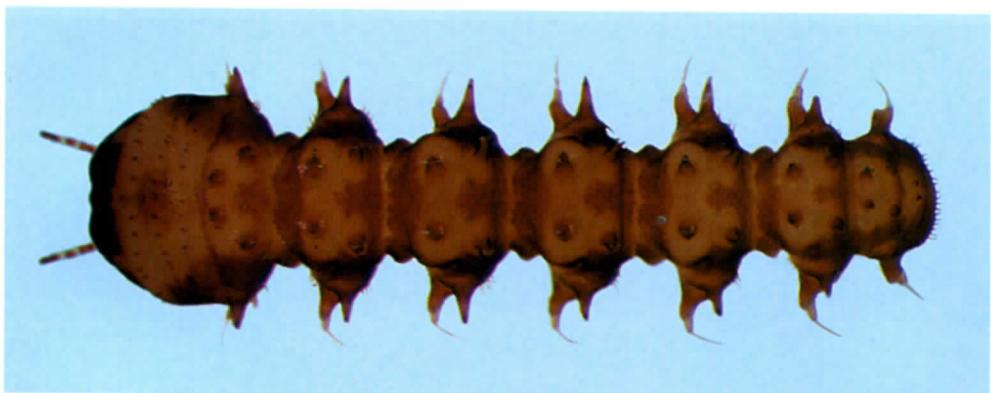


Фото 13. Blephariceridae. *Agathon* sp. Личинка, вид сверху.
Photo 13. Blephariceridae. *Agathon* sp. Larva, dorsal view.

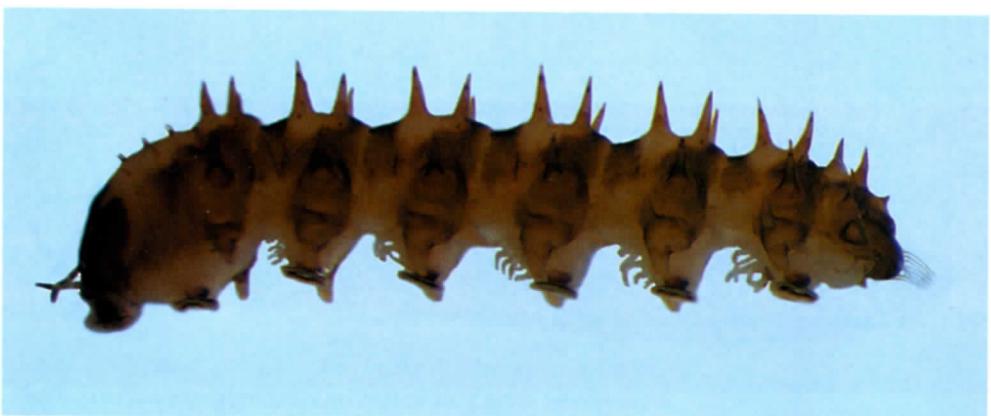


Фото 14. Blephariceridae. *Agathon* sp. Личинка, вид сбоку.
Photo 14. Blephariceridae. *Agathon* sp. Larva, lateral view.



Фото 15. Bolitophilidae. *Bolitophila nigrolineata* Landrock, 1912. Личинка, вид сбоку.
Photo 15. Bolitophilidae. *Bolitophila nigrolineata* Landrock, 1912. Larva, lateral view.



Фото 16. Bolitophilidae. *Bolitophila rectangulata* Lundstrom, 1913. Личинка, вид сверху.
Photo 16. Bolitophilidae. *Bolitophila rectangulata* Lundstrom, 1913. Larva, dorsal view.



Фото 17. Canthyloscelidae. *Hyperoscelis* sp. Личинка, вид сбоку.
Photo 17. Canthyloscelidae. *Hyperoscelis* sp. Larva, lateral view.



Фото 18. Cecidomyiidae. *Catotricha marinae* Mamaev, 1985. Личинка, вид сбоку.
Photo 18. Cecidomyiidae. *Catotricha marinae* Mamaev, 1985. Larva, lateral view.



Фото 19. Ceratopogonidae. *Sphaeromias* sp. Личинка, вид сбоку.
Photo 19. Ceratopogonidae. *Sphaeromias* sp. Larva, lateral view.



Фото 20. Ceratopogonidae. *Dasyhelea* sp. Личинка, вид сбоку.
Photo 20. Ceratopogonidae. *Dasyhelea* sp. Larva, lateral view.



Фото 21. Ceratopogonidae. *Probuzzia seminigra* (Panzer, 1798). Личинка, вид сверху.
Photo 21. Ceratopogonidae. *Probuzzia seminigra* (Panzer, 1798). Larva, dorsal view.

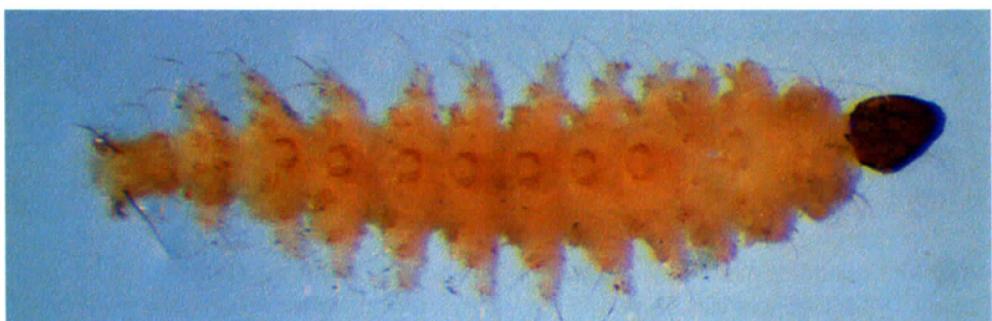


Фото 22. Ceratopogonidae. *Atrichopogon* sp. Личинка, вид сверху.
Photo 22. Ceratopogonidae. *Atrichopogon* sp. Larva, dorsal view.



Фото 23. Ceratopogonidae. *Forcipomyia* sp. 1. Личинка, вид сверху.
Photo 23. Ceratopogonidae. *Forcipomyia* sp. 1. Larva, dorsal view.



Фото 24. Ceratopogonidae. *Forcipomyia* sp. 2. Личинка, вид сбоку.
Photo 24. Ceratopogonidae. *Forcipomyia* sp. 2. Larva, lateral view.



Фото 25. Chaoboridae. *Chaoborus obscuripes* (Wulp, 1859). Личинка, вид сбоку.
Photo 25. Chaoboridae. *Chaoborus obscuripes* (Wulp, 1859). Larva, lateral view.



Фото 26. Chironomidae. *Procladius* sp. Личинка, вид сбоку.

Photo 26. Chironomidae. *Procladius* sp. Larva, lateral view.



Фото 27. Cramptonomyiidae. *Pergratospes holoptica* Krivosheina et Mamaev, 1970. Личинка, вид сверху.

Photo 27. Cramptonomyiidae. *Pergratospes holoptica* Krivosheina et Mamaev, 1970. Larva, dorsal view.



Фото 28. Cramptonomyiidae. *Pergratospes holoptica* Krivosheina et Mamaev, 1970. Личинка, вид сбоку.

Photo 28. Cramptonomyiidae. *Pergratospes holoptica* Krivosheina et Mamaev, 1970. Larva, lateral view.



Фото 29. Culicidae. *Anopheles claviger* (Meigen, 1804). Личинка, вид сверху.
Photo 29. Culicidae. *Anopheles claviger* (Meigen, 1804). Larva, dorsal view.



Фото 30. Culicidae. *Culiseta* sp. Личинка, вид сверху.
Photo 30. Culicidae. *Culiseta* sp. Larva, dorsal view.



Фото 31. Culicidae. *Tripteroides* sp. Личинка, вид сверху.

Photo 31. Culicidae. *Tripteroides* sp. Larva, dorsal view.



Фото 32. Culicidae. *Tripteroides* sp. Задний конец тела.

Photo 32. Culicidae. *Tripteroides* sp. Posterior end of body.



Фото 33. Cylindrotomidae. *Phalacrocerata replicata* (Linnaeus, 1758). Личинка, вид сбоку.
Photo 33. Cylindrotomidae. *Phalacrocerata replicata* (Linnaeus, 1758). Larva, lateral view.



Фото 34. Cylindrotomidae. *Cylindrotoma* sp. Личинка, вид сбоку.
Photo 34. Cylindrotomidae. *Cylindrotoma* sp. Larva, lateral view.



Фото 35. Cylindrotomidae. *Diogma glabrata* (Meigen, 1818). Личинка, вид сбоку.
Photo 35. Cylindrotomidae. *Diogma glabrata* (Meigen, 1818). Larva, lateral view.



Фото 36. Deuterophlebiidae. *Deuterophlebia sajanica* Jedlička et Halgos, 1981. Личинка, вид снизу.

Photo 36. Deuterophlebiidae. *Deuterophlebia sajanica* Jedlička et Halgos, 1981. Larva, ventral view.



Фото 37. Deuterophlebiidae. *Deuterophlebia* sp. Куколка, вид снизу.

Photo 37. Deuterophlebiidae. *Deuterophlebia* sp. Pupa, ventral view.



Фото 38. Ditomyiidae. *Symmerus annulatus* (Meigen, 1830). Личинка, вид сбоку.

Photo 38. Ditomyiidae. *Symmerus annulatus* (Meigen, 1830). Larva, lateral view.



Фото 39. Ditomyiidae. *Symmerus annulatus* (Meigen, 1830). Куколка, вид сбоку.
Photo 39. Ditomyiidae. *Symmerus annulatus* (Meigen, 1830). Pupa, lateral view.

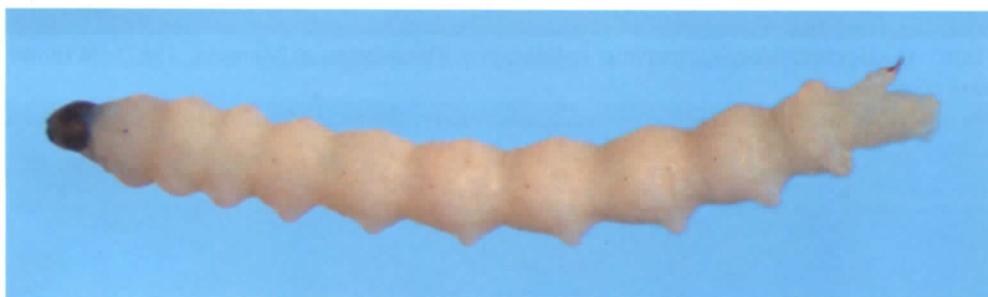


Фото 40. Ditomyiidae. *Ditomyia* sp. Личинка, вид сбоку.
Photo 40. Ditomyiidae. *Ditomyia* sp. Larva, lateral view.



Фото 41. Dixidae. *Dixa* sp. Личинка, вид сбоку.
Photo 41. Dixidae. *Dixa* sp. Larva, lateral view.



Фото 42. Dixidae. *Dixella* sp. Личинка, вид сбоку.

Photo 42. Dixidae. *Dixella* sp. Larva, lateral view.



Фото 43. Hesperinidae. *Hesperinus rohdendorfi* Krivosheina et Mamaev, 1967. Личинка, вид сбоку.

Photo 43. Hesperinidae. *Hesperinus rohdendorfi* Krivosheina et Mamaev, 1967. Larva, lateral view.



Фото 44. Keroplatidae. *Keroplatus* sp. Личинка, вид сверху.

Photo 44. Keroplatidae. *Keroplatus* sp. Larva, dorsal view.



Фото 45. Limoniidae. *Teucholabis esakii* (Alexander, 1924). Личинка, вид сверху.

Photo 45. Limoniidae. *Teucholabis esakii* (Alexander, 1924). Larva, dorsal view.



Фото 46. Limoniidae. *Rhypholophus haemorrhoidalis* (Zetterstedt, 1838). Личинка, вид сбоку.
Photo 46. Limoniidae. *Rhypholophus haemorrhoidalis* (Zetterstedt, 1838). Larva, lateral view.



Фото 47. Limoniidae. *Epiphragma ocellare* (Linnaeus, 1761). Личинка, вид сбоку.
Photo 47. Limoniidae. *Epiphragma ocellare* (Linnaeus, 1761). Larva, lateral view.



Фото 48. Limoniidae. *Lipsothrix errans* (Walker, 1848). Личинка, вид сбоку.
Photo 48. Limoniidae. *Lipsothrix errans* (Walker, 1848). Larva, lateral view.



Фото 49. Limoniidae. *Lipsothrix errans* (Walker, 1848). Куколка, вид сбоку.
Photo 49. Limoniidae. *Lipsothrix errans* (Walker, 1848). Pupa, lateral view.



Фото 50. Limoniidae. *Elephantomyia krivosheinae* Savchenko, 1970. Личинка, вид сбоку.
Photo 50. Limoniidae. *Elephantomyia krivosheinae* Savchenko, 1970. Larva, lateral view.



Фото 51. Limoniidae. *Austrolimnophila ochracea* (Meigen, 1804). Личинка, вид сбоку.
Photo 51. Limoniidae. *Austrolimnophila ochracea* (Meigen, 1804). Larva, lateral view.



Фото 52. Limoniidae. *Discobola annulata* (Linnaeus, 1758). Личинка, вид сбоку.
Photo 52. Limoniidae. *Discobola annulata* (Linnaeus, 1758). Larva, lateral view.



Фото 53. Limoniidae. *Phylidorea longicornis* (Schummel, 1829). Личинка, вид сбоку.
Photo 53. Limoniidae. *Phylidorea longicornis* (Schummel, 1829). Larva, lateral view.

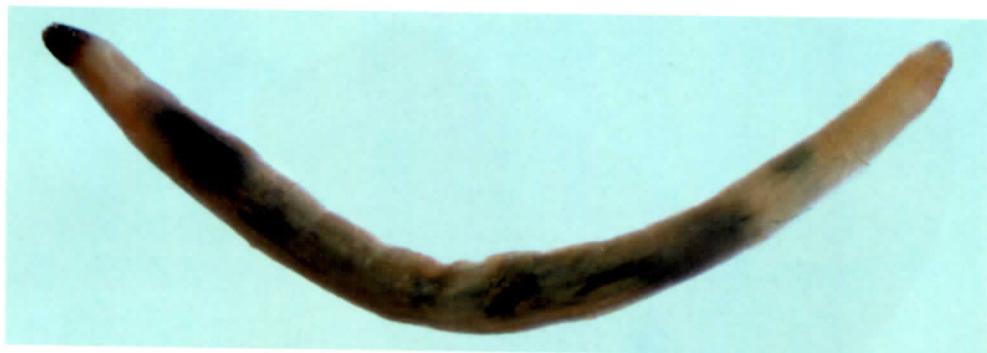


Фото 54. Limoniidae. *Rhipidia uniseriata* Schiner, 1864. Личинка, вид сбоку.
Photo 54. Limoniidae. *Rhipidia uniseriata* Schiner, 1864. Larva, lateral view.



Фото 55. Limoniidae.
Hexatoma sp. Личинка, вид
сбоку.
Photo 55. Limoniidae.
Hexatoma sp. Larva, lateral
view.



Фото 56. Macroceridae.
Macrocera sp. Личинка, вид
сверху.
Photo 56. Macroceridae.
Macrocera sp. Larva, dorsal
view.



Фото 57. Macroceridae. *Macrocerata* sp. Куколка, вид сбоку.
Photo 57. Macroceridae. *Macrocerata* sp. Pupa, lateral view.



Фото 58. Mycetophilidae. *Phronia* sp. Личинка, вид сбоку.
Photo 58. Mycetophilidae. *Phronia* sp. Larva, lateral view.



Фото 59. Mycetophilidae. *Phronia* sp. Домик-крышечка.

Photo 59. Mycetophilidae. *Phronia* sp. Case.



Фото 60. Mycetophilidae. *Epicypta* sp. Личинка, вид сбоку.

Photo 60. Mycetophilidae. *Epicypta* sp. Larva, lateral view.



Фото 61. Mycetophilidae. *Epicypta* sp. Домик-крышечка.
Photo 61. Mycetophilidae. *Epicypta* sp. Case.

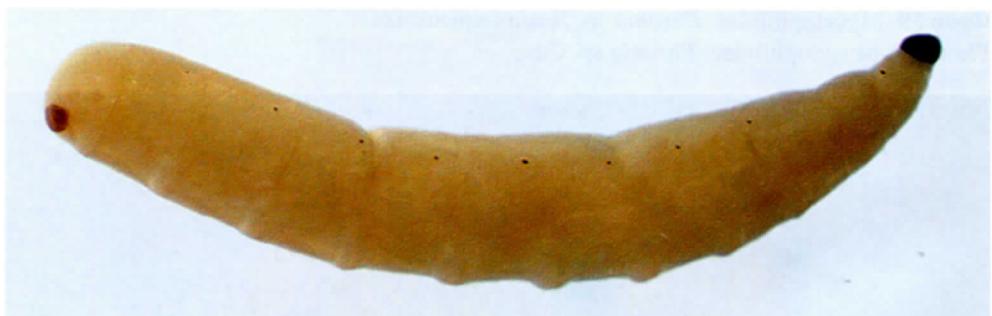


Фото 62. Mycetophilidae. *Rhymosia* sp. Личинка, вид сбоку.
Photo 62. Mycetophilidae. *Rhymosia* sp. Larva, lateral view.



Фото 63. Mycetophilidae. *Dynatosoma* sp. Личинка, вид сбоку.
Photo 63. Mycetophilidae. *Dynatosoma* sp. Larva, lateral view.

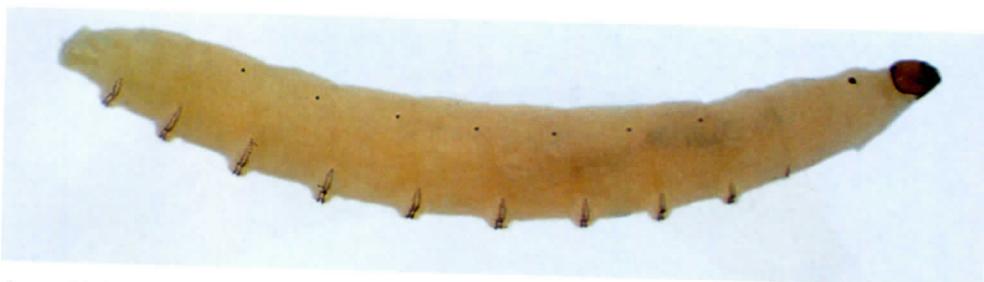


Фото 64. Mycetophilidae. *Mycetophila* sp. Личинка, вид сбоку.
Photo 64. Mycetophilidae. *Mycetophila* sp. Larva, lateral view.



Фото 65. Mycetophilidae. *Trichonta* sp. Личинка, вид сбоку.
Photo 65. Mycetophilidae. *Trichonta* sp. Larva, lateral view.



Фото 66. Mycetophilidae. *Mysomya* sp. Личинка, вид сбоку.
Photo 66. Mycetophilidae. *Mysomya* sp. Larva, lateral view.



Фото 67. Mycetophilidae. *Neoempheria* sp. Личинка, вид сбоку.
Photo 67. Mycetophilidae. *Neoempheria* sp. Larva, lateral view.



Фото 68. Mycetophilidae. *Sciophila rufa* Meigen, 1830. Личинка, вид сбоку.
Photo 68. Mycetophilidae. *Sciophila rufa* Meigen, 1830. Larva, lateral view.



Фото 69. Mycetophilidae. *Leptomorphus* sp. Личинка, вид сбоку.
Photo 69. Mycetophilidae. *Leptomorphus* sp. Larva, lateral view.



Фото 70. Pachyneuridae. *Pachyneura* sp. Личинка, вид сбоку.
Photo 70. Pachyneuridae. *Pachyneura* sp. Larva, lateral view.



Фото 71. Pediciidae. *Ula bolitophila* Loew, 1869. Личинка, вид сбоку.
Photo 71. Pediciidae. *Ula bolitophila* Loew, 1869. Larva, lateral view.



Фото 72. Pediciidae. *Tricyphona immaculata* Meigen, 1804. Личинка, вид сбоку.
Photo 72. Pediciidae. *Tricyphona immaculata* Meigen, 1804. Larva, lateral view.



Фото 73. Pediciidae. *Nasiternella varinervis* (Zetterstedt, 1851). Личинка, вид сверху.
Photo 73. Pediciidae. *Nasiternella varinervis* (Zetterstedt, 1851). Larva, dorsal view.



Фото 74. Psychodidae. *Trichomyia* sp. Личинка, вид сбоку.

Photo 74. Psychodidae. *Trichomyia* sp. Larva, lateral view.

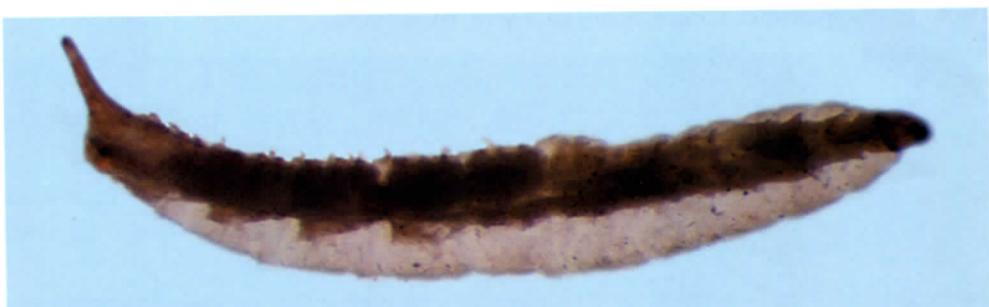


Фото 75. Psychodidae. *Psychoda* sp. Личинка, вид сбоку.

Photo 75. Psychodidae. *Psychoda* sp. Larva, lateral view.



Фото 76. Scatopsidae. *Rhexoza* sp. Личинка, вид сверху.

Photo 76. Scatopsidae. *Rhexoza* sp. Larva, dorsal view.



Фото 77. Simuliidae. *Simulium (Byssodon) maculatum* (Meigen, 1804). Личинка, вид сбоку.

Photo 77. Simuliidae. *Simulium (Byssodon) maculatum* (Meigen, 1804). Larva, lateral view.



Фото 78. Tanyderidae. *Protanyderus* sp. Личинка, вид сбоку.
Photo 78. Tanyderidae. *Protanyderus* sp. Larva, lateral view.



Фото 79. Tipulidae. *Tipula* sp. 1. Личинка, вид сбоку.
Photo 79. Tipulidae. *Tipula* sp. 1. Larva, lateral view.



Фото 80. Tipulidae. *Tipula* sp.2. Личинка, вид сбоку.

Photo 80. Tipulidae. *Tipula* sp.2. Larva, lateral view.



Фото 81. Tipulidae. *Nephrotoma* sp. Личинка, вид сбоку.

Photo 81. Tipulidae. *Nephrotoma* sp. Larva, lateral view.



Фото 82. Trichoceridae. *Trichocera* sp. Личинка, вид сверху.

Photo 82. Trichoceridae. *Trichocera* sp. Larva, dorsal view.