

The species of the genus *Macrostomum* (*Turbellaria Rhabdocoela*) SSSR
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- V.N. BEKLEMISHEV - [8]1951

ARMONIES

The numerous species of *Macrostomum* presents to be voracious, small, rapacious (carnivorous? animals) and undoubtedly they are playing a part in the life of some basins. In the same time, thanks to many primitive features of its organism (system) and its development this genus is of interest ~~to~~ in the comparative-morphological way. The last 10-12 years many new species of the genus *Macrostomum* were described especially originate from Finland and N.America. Yet with many taxonomical opinions by the foreign authors one cannot agree, in particular with F.FERGUSON (14). In the same time a very rich fauna of *Macrostomum* of SSSR is poorly presented in literature. It is the reason of the present article, which is based on the informations accumulated during many years of my study of *Turbellaria*. In this article I examined all the limnic and brackish species of *Macrostomum* Fauna of SSSR. and nearly all are figured)

By the way 2 foreign sp. are described.

Hitherto more than 60 sp. and subspecies of *Macrostomum* were described, including 22 species from the territory of the SSSR (including the species, which are for the first time described on these pages). The nomenclature of the species *Macrostomum* presents a raw of difficulties. The descriptions of the authors of the first part of the XIX century are very insufficient and to decide with which species precisely out of the determined now species they have dealt with is impossible. In this way during many decades all the forms of *Macrostomum*, which have sharp and hooked stylet of the penis, were called *M.hystrix* OERSTED 1843 or *M.appendiculatum* O.FABRICIUS 1826. But now it is known, that a row of clearly distinct species have the stylet which corresponds to this description. Which of these species ought to be denominated as *M.appendiculatum* FABR. ?

From the work of O.FABRICIUS one sees, that he has studied the inner organism of the form he has described, one can say only, that his *Planaria appendiculata*, according to the exterior aspect is really a representative of the genus *Macrostomum*. In this way *Planaria appendiculata* FABR. never can be known thoroughly, and we have ^{no} reason to designate by this name no one of sp. *Macrostomum*. I.L.GRAFF (18), when he has confirmed that *hystrix* OERST. is a synonyme of *M.appendiculatum* FABR., was in error.

M.hystrix is characterised somewhat better, it has a hooked stylet of the penis; but the figures of this stylet made by OERSTED and by other old authors (29, 30) are sketched roughly, in this way to decide ~~which~~ with which sp. out of determined now sp precisely they have dealt with is also impossible.

We see, that F.FERGUSON, quite arbitrary, takes as *M.appendiculatum* FABR. syn. *M.hystrix* on sp., but A.LUTHER (22) with a little more reason, takes an other one. I think it should be more correct to consider also *M.hystrix* OERST. as a species dubia, till the moment, when the investigations from the place from where it was described shall not prove which sp. his author has dealt with? Likewise the following informations concerning the habitat of *M.appendiculatum* or *M.hystrix* in this or an other land ought to be verified henceforth. In fact on the territory of SSSR., are inhabiting at least 4 sharply distinct sp., which are denominated by all old authors, including me in my old works, as *M.appendiculatum* FABR. (1,3,4 and 5 of the present list) at least 2 species were taken as *M.viride* v.BEN. and so on.

At present I think it should be suitable to give to all these species own names.

-) With the exception of 5 sp. of the black sea, which v.ULIAMOV (10), S.PEREYASLAWZEWA (27) and F.FERGUSON (14) have described.
-) A.LUTHER (22,p.11) emits a very plausible conjecture, that the form, which M.SCHULZE (30) has described from the S. of Balticum, as *M.hystrix* OERST. is identical with his form from the Gulf of Finland. But nothing proves, that the Baltic form of SCHULTZE refers to the same limnic sp. *Macrostomum hystrix* OERST. and *Planaria appendiculata* FABR.

To subdivide the *Macrostomum* into subgenera is not yet the proper time. For the sake of commodity i am uniting here described species into atificial groups, using the stylet of the penis as the best studied part of the copulatory apparatus of *Macrostomum*.

- A. ~~Serp~~ Group *Macrostomum hystrikinum* -
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The stylet is gradually tapering into a thin tip (point), hooked with a no-terminal ori:

1. *Macrostomum hystrikinum* nom.nov.

Syn. *Macrostomum hystrix* OERSTED., LUTHER 1905. *Macrostomum appendiculatum* (O.FABRICIUS LUTHER 1947. *M.appendiculatum* (O.FABR.) BEKLEMISCHEV (1,6), BEKLEMISCHEV (11).

A.LUTHER (1905) (21) made a detailed description of the specimen from the Golf of Finland. I have obtained such one in Caspian Sea and in the Sea of Aral too. The stylet fo the Penis of this sp. (fig.1-12) is conical and broad, ends by a thin sharply bent tip. The length of the bent part is only 1/4 - 1/5 of allthe length of the stylet. The angle of the bent part in certain limits can vacillate about 90°. The distal opening is placed on the convex side of the bend. The length of the stylet according to LUTHER is 32µ, the breath of the bas is 22µ. On the Caspian Shore ? als well as on the shore of the sea of Aral I have obtaine numerous specimen of this species. Some individual distinctions ~~in~~ in the form of the style are present, but they are impotant.

No variants, approximate to some other known species of *Macrostomum* (with the exception of *M.parthenopeum*) did not occur.

At Baku i examinde in details the anatomy of this species and have found, that it is corresponding to the description of LUTHER. In this way the identity of the form from Balti with the Aralo-Caspian one is doubtless.

M.GIEYSZTOR (1) has obtained an analogue form and, probably an identical one, in Spain, in the basins with fresh water near the sea shore in Valencia, and denominated it as *M.apped iculatum* "a typical from".

Habitat: Baku the overgrowthes on the piles of the port, Juli, August 1914. August 1946; on t the stone in the littoral near t.Brailov. August 1914. Lenkoran on the piles of the port, Aug.1946. T.Aralsk July-August 1920 (every where). In every place, as far as the maximal in vestigated depth of 8m.

Figures.

Fig.1-13 *M.hystrikinum*, F.1-6: the stylet of the penis of a specimen from Baku. F.7-8. The same stlet from 2 differenent sides of a specimen of Lenkoran, 1946. F.9-12 Specimen from t.Aralsk, 1920. F.13 an eye from a sepcimen fr.Baku, 1914. F.5-6 are made by means of a drawing apparatus eye-glass Leitz 2, object lens of Reichert 4 and during the reproductions x 4/5. The other drawn by hand, inparts and in differenent scale.

2. *Macrostomum parthenopeum* n.sp.

Form all relations it differs by the presence in the epithelium of grains of brownish-re pigment, which is forming a concetration in the shape of transversal stripe before the eyes The parenchyma is lightly yellow with dark concentrations. The eyes are black, placed on the same level with the brain. The rabdits are in the derma. The ravidits ways, the mouth, the female pore are similar to the other species of the genus. The basis of sensibility I did not see. The intestine was filled with diatoms. The stilet of the penis (fig.16) remind this one of *M.hgstricinum* but its outlines are very regular. An important difference: the brims of the funnel at the pasis are bent inside and are forming a diaphragma, when it is harg pressed with a cover glass the hend becomes straight.

Habitat: The golf of Neaples, on the stones of the shore, Via Partenope, among the weeds, 30/8 1927.

Figures:

F.14. *M.phytophilum* - two bundles of dermal rhdits from the same specimen, Petrograd 1916. F.15 *M.fergussoni* - the stlet of the penis, Orenburg 1920. - F.61 *M.parthenopeum* - the stlet of the penis, Neaples 1927. - Fig. 17 *M.ensiferum* - the drawing is made to the pressed animal ces cerebrum, i=intestine, p=penis. O = a fully developped egg in the atrium, ov=ovar te=testis, Lenkoran 1914. - Fig.18 *M.phytphilum* the szstem according to the pressed animal: a=theatrium f of the female, oe=the eyes on the side of the fig. one sses an eye strongly magnified. ph=the gullet, ov=theovray, pe= the stylet of the penis. Fig.19. *M.rossicum*. the stilet of the penis 1921. - F.20 *M.contortum* an eye, Lenkoran. --- All the figures are hand-

3. *Macrostomum fergussoni* nom.nov.

Syn. *M.appendiculatum* (O.FABR.) FERGUSON (14). *M.appendiculatum* (O.FABR.) BKLEMISCHEV

When describing a range of species of this group F.FERGUSON for some reason or other thought possible to refer one of them as a specimen *M.appendiculatum* (O.FABR.) but as it was proved above, there are no reasons for such a denomination and I am proposing to denominate the form, which F.FERGUSON had described, by his name. The stylet presents to be a long funnel, bent in the shape of a Σ lying in the same plane with the proximal edge, which is sharpened and cut obliquely, its base is slightly inclined obliquely, the proximal edge lightly creased. The resemblance between my sketches (fig.15) and those of FERGUSON obliges to admit the identity of both forms, in spite of the distance between the places where they were obtained and the differences in the description (figure) of the distal opening: these differences, probably, are based on the sketches which are not exact.

Habitat: ancient bed of the river Ural covered with stagnant water, weeds Nuphar, near the t. Orenburg (now Chkalova), 1/8 1920

4. *Macrostomum rossicum* n.sp.

Syn. *M.appendiculatum* (FABR.) BEKLEMISCHEV (2,3,4)

The length reaches 2mm. Exterior resemblance with *M.hystericinum* m. The length of the stylet of the Penis 70-75 μ . The diameter of the base 20-25 μ . It is bow-shaped in all its length, the opening is subterminal the proximal end is cut obliquely, its edge has longitudinal folds (creases). The shape of the stylet is very constant one and the specimens from different regions have the same (fig.19 and 21-24). The food: Arcella, Rotatoria. Is widely spread in the stagnant basins of the forest-regions of the European part of the SSSR and Western Siberia.

The places of Habitat: vil. Sudimir (near the t. Gisdra (Yizdra) in aditch near the rail 16/6 1915. The st.Siverskaia near Leningrad a marshy meadow 30/6 1918. Town Perm (now Molotov) the bank of the river Kama the Lemna among the reed-grass (sedge) in the area of the shore of a marshy overgrown with sedge 17/6 1921, Town Tomsk a marshy basin on a meadow on a bank of the river Tom, Lemna und Agrostis stolonicens among Phragmites, 17/7 1919.

Figures

Fig.21. *M.rossicum* the stylet of the penis. F.21 a specimen of t.Perm 1919. F.22-23 a specimen from St.Siverskaia, 1918 made with apparatus for drawing, eye piece 12,5, object-lens 4 Reichert, 1/2. - F.24 a specimen from Tomsk 1919, drawn by hand.

Fig.25-26 *M.inflatum* the stylet of the penis, Perm 1919, drawn by hand

Fig. 27 *M.ensiferum* - the stylet of the penis, Lenkoran, 1914, drawn by hand.

5. *Macrostomum inflatum* n.sp.

Its exterior appearance remains the *M. hystericinum*. The stylet of the penis (fig.25-26) the character of the bend reminds this of *M.rossicum*, but its proximal part is more elongated and more straight, the base of the stylet is narrower, the proximal end has tooth-like notches. Characteristic is the muff-shaped swelling at the proximal third part of the stylet. By the shape of the stylet *M.inflatum* is approximate to the group of *M.ruebushi* FERGUSON (l.c.) but it does not coincide with any one of the species of the group.

It was obtained: t.Perm, the stagnant basins at the bank of the r. Kama 22/5 1919

6. *Macrostomum ensiferum* n.sp.

The length is 1,5 mm. It is transparent, colourless. The intestine is yellow-brownish, without lateral outgrowths, it is perpetually contracting. The head and the lamella of the tail are well isolated (fig.17). The thadites of the derma are numerous, the ways of the rabbits are not well visible. The black eyes are placed behind the brain. The gullet is comparatively small. The yolk glands are elongated. The yolks of the female adult specimen take up all the second quarter of the body. The ovary is chain-shaped. A fully developed egg with a shell, it is slightly irregular. The stylet of the penis is long (fig.27) tapers gradually into a thin tip, slightly bow-shaped, it differs from all the stylets of the known species.

Habitat: t. Lenkoran, the river Lenkoranka near its fall into the Caspian sea, in the grass of the bank 12/7 1914.

7. *Macrostomum contortum* n.sp.

By its exterior as well as by the fundamental features of its internal anatomy it reminds *M. hystricinum*, though a row of differences exists.

The length attains 1.5 mm. The body is colourless, the intestine is yellowish, the eye are black with a crystalline (fig.20). On the front brim some sensitive braids are present. On the posterior end some small, gluish cells. Numerous are the long, narrow dermal rhabdits situated by broad bundles, maximum 7 pieces in each. The rhabdits ways are present, but not well seen. The vesicula granulorum is partly placed in the funnel of the stylet and partly outside it (fig.30). From the opposite side into the v.granulorum falls a long, straight vesicula seminalis by a short narrow duct, its walls are muscular, it is surrounded by granulous glands. The stylet of the penis is curved in a complicated way (fig.28 u 29). The first curve is bow-like and is situated in the middle third of all the length of the stylet; the distal half of the stylet is thin and its end is sharply bent in a plane, which is perpendicular to the level of the first curve. Thanks to it the stylet has movement of a screw (fig.29).

The glands of the females's atrium are strongly developed, their clusters are running across the body; the shape of their rhabdits you see at the fig. 50. The single oviduct is gone with thin walls, the paired oviducts are short and narrow, they took the function of ductus spermatici and it happens, that from every of them sticks out into the single oviduct a large bundle threadshaped, mobile spermatozoans ?

The stylet resembles this of *M. contortum*. M.GIEYSZTOR has described it according to species from Spain and denominated it as *M. appendiculatum* "an atypical form".

Habitat: Lenkoran, the overgrowthes, composed of alger and other aquatic plants on the piles of the port. August 1946.

A near relation, and seemingly an identical form is inhabiting along the Eastern Shore of the Caspian Sea: t.Krasnovodsk. On the piles of the port 14/8 1914, The gulf of Astrabad 28/8 1914.

Fig. 28-30 *M. contortum*. Fig.28 and 29. The stylet of the penis Lenkoran 1946. The hand-made drawings in different scale. Fig. 28 a more hardly pressed specimen. Fig.30 The copulatory organ of the male. Made with a drawing apparatus eye-piece 2 Leitz. the object lens 4 Reichert x 2/3. The granular secretion is from another specimen. Krasnovodsk, 1914. Fig. 31-36 *M. phytophilum*. Fig.31-32 the stylet of the penis. Petrograd 1914. Fig.33-34 The copulatory organ of the male. Fig.33 Perm 1919, Fig.34 The mouth of the river Neva 1917. Fig.35 The stylet of the penis. The mouth of Neva 1917. Fig. 36 the stylet of the penis, its end and is lying on the penultimate joint, Perm 1919. All the figures of *M. phytophilum* are hand-made.

8. *Macrostomum phytophilum* n.sp.

Syn. *M. viride* BENEDEN, BEKLEMISCHEV (2,3,4,5)

The body is colourless, its shape reminds *M. hystricinum* (fig.18). The lamella and the tail is well developed. The eyes are black. On the front end numerous braids of touch are present. The dermal rhabdits attain 15 μ of length. The length of rhabdits of the Atrium's glands of a female of the same specimen varies from 2,5 - 7 μ . Perm.

The stylet of this species (fig.31-36) is also as a thread of a screw but the radius of the pitch of the screw in comparison with the length of the stylet of the *M. phytophilum* is considerably shorter, than this of *M. contortum*. In virtue of this the shape of the stylet of both species is considerably distinct. Besides, the stylet of ~~both species~~ the *M. phytophilum* is thinner and gracefully shaped. Its length (in a direct line) is 45 μ . The basal edge of the funnel usually has longitudinal creases, but *M. contortum* is lacking them. Different also is the construction of the copulatory organ in the whole (fig.33 and 35) The base of stylet is only close to the spherical receptaculum of secretion, but the latter does not fall inside the funnel of the stylet. The mass of granulous secretion is garnishing like epithelium, the walls of the receptaculum. Ves. seminalis is very close to the receptaculum of secretion, whilst *M. contortum* has them connected by a thin canal, like this of *M. hystricinum*.

The stylet of *M. phytophilum* is rather not variable, any transitory form to other species I did not found.

The screw shaped motion of the stylet brings nearer the form (and also *M. contortum*) to the *M. viride* BENED., as GRAFF (19) has described it. Yet van BENEDEN himself (31) says nothing about the screw-like bend of the stylet of his form, he says only that it is bent in the shape of a S. The drawing made by van BENEDEN gives no possibility to estimate distinctly the form of this organ of *M. viride*, but in any case, it is not very like the stylet of *M. contortum* and this of *M. phytophilum*.

Both our species differ from the form, which A.LUTHER has described in details (21) and denominated it as *M.viride* BENED. But F.FERGUSON has denominated it as *M.ruebushi* var *finnlandense* and in the last work of A.LUTHER (22) it is indicated als *M.appendiculatum* var *finnlandense* FERGUSON. The stylet of LUTHERs form is considerable larger and more massive, than this of *M.phytophilum* and it differs from both our species by the character of the bend and by this of the distal opening.

Strikingly distinct are also the soft parts of the male' copulatory organ of LUTHER' form from those of *M.phytophilum*. This form is undoubtedly a good one, which ought to be denominated as *M.finnlandense* FERGUSON.

Habitat: Perm (now Molotow), a little lake on the meadow of the r. Kama, Lemna and sedge 28.5.1919. Petrograd (now Leningrad) the aquarium of the zool.stydy of the Univ. 12III. also the pools on the sandbank of the isle Elagin (vicinity of Petrograd) 13.5.1918. Pavlovsk (near Petrograd) a pond on the leasure grounds, among the Elodea, June 1918. Teryoki the mouth of the river Neva, stones with aquatic plants in the depth of 4-5 m, 2. .1917. Tomsk a lake on the meadow, among the macrophytes, 22.7.1919. Town Sudimir near Zizdra (Gisdra), among Potamogeton and Nymphaea 12.7. 1915 River Buzulu 31.8.1921. V.Gamaleevka 1.9.1921: River Emba near the st.Emba., 7.8.1920. In the last 4 among the weeds of *Macrophytum*.

B. The group of *Macrostomum orthostylum*
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The end of the stylet is cut off, the opening is terminal, its brims are not swollen.

9. *Macrostomum orthostylum* M.BRAUN 1885

For the first time it was described by M.BRAUN from the lake of Pekov. N.HOFSTEN (20) has found in the lakes of Switzerland a form, which, he thought, was identical with this of BRAUN according to the structure of the penis, but this identity is not clear for me. HOFSTENS form was obtained in Tirol by MEIXNER and studied in details. I think, that in water of Europe exist many forms of *Macrostomum* with a straight, obliquely cut off stylet in formal way they correspond with the general diagnosis of *M.orthostylum* Br. this diagnosis is too common (not precise). I succeeded to obtain many times two formes, which refer to above mentioned. 1) a form approximate according to the stylet (fig.37 and 38) to that described by N.HOFSTEN. The animal is transparent, colourless. The body is short, the posterior end is tapered. The black eyes are drawn near to one another (fig.45). In the intestine was found: oligochaeta, thread-shaped aquatic plants, grains of quartz, a specimen of *M.orthostylum* was placed with a small typhlopanide, which it swallowed immediately.

Habitat: Vammeljoki, near Terijoki, the Black river 8.8.1917, 4 specimen.

2) A form which has the sides of the stylet sloping and on both sides they are obliquely cut off (fig.39). The length is only 26μ (the stylet of the first form is 140μ). Only one young specimen was obtained, and perhaps its stylet was not yet fully developed. The body is transparent, narrow, its length is less than 1 mm. The bundles of rhabdites in the derma contained 3-4 rhabdites each. The intestine is yellow, with deep lateral insisions

Habitat: Perm the bank of river Kama, a permanent basin with stagnant water, 29.4.1919

3) The third form is possibly a typical *M.orthostylum* BR. Its stylet is less sharp and comparatively with a small distal opening of the latter. I never found this form.

I think it is before its time to give names to all these forms, but I suppose, at the per time, their independence as species shall be proved.

Figures

- Fig.37-38 *M.orthostylum* - HOFSTENS form Terijoki 1917. Fig.37 The stylet of the penis, Fig.38 Copulatory organ of a male. Both drawings are hand-made
- Fig.39 *M.orthostylum* - the penis-stylet: the form from Perm 1919 hand made
- Fig.40-42. *M.mosquense* Zvenigorod 1936. Fig.40 stylet of the penis. Made by drawing apparatus, eye glass 4, object glass D.D.Zeiss 3/4. Fig. 41 the same, the terminal opening somewhat more magnified, hand made. Fig.42 the end of an stylet, strongly magnified, drawn by hand.
- Fig.43 *M.japonicum* var. *quiritium* - the end of the stylet. Rom 1927 greatly magnified.
- Fig.44 *M. clavistylum* - the end stylet of the penis. The province of Chelabinsk, 1926.

10. *Macrostomum japonicum* var *quiritium* novar.

Its exterior resembles to *M.hystricinum* or *M.tuba*. The length of the body, when extended attains 3 mm, when swimming it becomes greatly extended, when it is adhering it becomes flat. Colourless. The small black eyes are situated very near one another. On the front p

of the body the braids of sensation are present, at the posterior end numerous gluish cells are sticking like long, thin nipples. At the anterior end, besides the powerfull rhabdit-glands also frontal (mucilaginous) glands are opening. The genital female's pore is surrounded by common glands with tiny pivot-like rhabdits.

The stylet of the penis (fig.48) is long, tube shaped, slightly bent, bowlike, but not proportionately, at its distal end it is cut off slightly obliquely (fig.43). Its proximal end is also cut a little aslant. The distal end is only 3,5 times more narrow than the proximal one, in the same time the length of the stylet surpasses 10 times the breadths of its basis.

The stylet is situated at the bottom of the genital canal of the male (fig.47). It is very close to the vesicula granulorum, at the opposite stripe of the latter falls into its vesicula seminalis with thick walls, and into this one (in its turn) is falling a vesicula seminalis spuria.

The general form of the stylet and of its distal end and the relation of the stylet to the vesicula granulorum reminds greatly *M. japonica* OKUGAWA. The differences are: the stylet of *M. japonica* is somewhat swollen towards its basis and its end is bent more than this one of the species from Rom. Besides K. OKUGAWA (26) is pointing out that the cristallines of the eyes of his species are not distinctly developed, whilst these ones of our species (form) are perfectly developed (fig.49). I think that these differences could be used to form only a variety

Habitat: Rom, the Aquarium of the experimental Laboratory for struggle against malaria, numerous specimens.

Figures

Fig.45 *M. orthostylum* - form of HOFSTEN, Terijoki 1917. The general aspect of a species, which is not pressed, drawn by hand.

Fig.46 *M. mosquense* - the copulatory organ of the male; v.s.sp. = vesicula seminalis spuria Zvenigorod, 1936.

Fig.47-49 *M. japonicum* var. *quiritium*, Rom 1927, drawn by hand. Fig.47 a copulatory apparatus of a male v.s.sp = vesicula seminalis spuria, vs = ves. seminalis, vgr = vesicula granulorum. Fig. 48 The stylet of the penis magnified. Fig.49 an eye, greatly magnified.

Fig. 50 *M. contortum* - one rhabdit from a gland of a female ♂ satrium, Lenkoran 1946. Drawn by hand greatly magnified.

11. *Macrostomum amurense* BEKL. 1950


Obtained from the basins of the meadows of the river Amur, near Khabarovsk I have described it. It is rather approximate to the *M. japonicum*, but it differs: the base of the stylet is broader, its distal part is more bent and what is the more important, typical paired incisions at the end of the distal opening are present.

12. *Macrostomum korsakovi* NASONOV

Syn. *M. obtusum korsakovi* NAS. 1926, *M. nassonovi* FERGUSON 1940

F. FERGUSON has pointed out (l.c.), that this form, described by NASONOV, from a marsh of a spring near Peterhof (now Petrodvorez), presents to be an independent species. But according to the rule of priority this sp. ought to keep the name, which N.V. NASONOV has given it as a subspecies. In this way, the name given by F. FERGUSON falls on to the Synonymy.

13. *Macrostomum mosquense* n.sp.

Colourless, with black eyes, which are drawn near one another. Both ends of the body are tapered and blunt. The lamella of the tail is not large, with gluish cells. The rhabdit ways of the front part are broad. The testicles are considerably pushed backwards, they are situated in the middle of the length of the body. The stylet of the penis is placed with broad basis over the ves. granulorum and the traces of the secretion, which are arranged in the shape of a fir tree  are entering into its cavity a spherical ves. seminalis is proximate to the receptaculum (fig.46).

The stylet of the penis (fig.40) is conical, regularly bow-shaped, it is tapering quickly but proportionately. The bend is not quite flat, the distal part of it is going into another plane. The end of the stylet has the shape of a shoe and is cut off (fig.42). The terminal opening is oval-shaped and one end of it is more narrow (fig.41). The walls of the proximal end of the stylet do not grow thicker. The proximal brim of the stylet is longitudinally folded.

Habitat: ~~xxx~~ river Moskva, near Zvenigorod (The Hydrophysiological St. of Zvenigorod). A
Numerous specimen.

C. The group of *Macrostomum tuba*

The stylet with a terminal opening, its brims are thicker in virtue of this fact the end of the stylet is blunt and sometimes it is swollen, head-shaped (fig.51 u.52)

14. *Macrostomum tuba* GRAFF 1882

Syn. *M.bulbostylum* FERGUSON 1939

Thanks to the confusion, which GRAFF has made regarding this species in the Key of *Rhabdocoeloa* (19) in the following years many authors have given this name to some forms, which are quite irrelevant forms, until I have succeeded to find in Odessa the sp. described by GRAFF (17) and I have given again a correct image of its stylet (7, fig. 5 and 6). Next F.FERGUSON (4) made up his mind, that the form, which I had first described and next was described by M.GIEYSZTOR (15) at last F.FERGUSON described himself, differs from the original form of GRAFF 1882 and he has given to our form the name *M. bulbostylum*. But the differences, which he quoted, are doubtful, they can be fully carried to account of the different accuracy of observations, but that will not do to erect a new species.

M.tuba var. *minuta*, which LUTHER had described (22) presents to be an independent species which ought to be designated *M.minuta* LUTHER. To the contrary *M.tuba* var. *giganteum* OKUGI 1930 against the decisions of F.FERGUSON, can't be erected into a separate species.

What concerns "*M.tuba*" of SIBIRIAKOWA (9) it is obvious, according to her drawing, that it is not a *M.tuba*; may be she had obtained a form, which was not yet described.

Figures ~~15xxMacroxx~~

Fig.51-52 *M.tuba*- the stylet of the penis, Odessa 1926. Fig.51 A general form of the stylet Fig.52. The end of the stylet more magnified

Fig.53-55 *M.rhabdophorum*, Odessa 1925. Fig.53 The general aspect of a young species a side-view: gf=glands of the forehead, i=intestine, es = the exterior mouth, rp = the posterior ways of rhabdits (side-view on cannot see, that they are conjugate, rf = the front way of rhabdits. Fig.55 the eye strongly magnified, one sees the separate grains of pigment.

Fig.56 *M.pseudoobtusum* the stylet of the penis, Sevastopol 1924.

Fig.57-59. *M.lacustre*, Terijoki 1917, Fig.57 the copulatory organ of a male, Fig.58 The end of a stylet from the side of an opening, strongly magnified, Fig.59 the same side-view

15, *Macrostomum lacustre* n.sp.

Its exterior reminds *M.hystericinum*, the eyes are small. The stylet of the penis is very big, it represents a cone tapering greatly, which is in all its length bent as a bow (fig.58). On its proximal brim single longitudinal folds are present (it makes a difference between it and *M.rossicum* as well as *M.ruebushi* and others, which brims are covered with similar, but dense creases). A thin distal end of the stylet terminates in a small swelling (fig.58). Practically it is cut off obliquely, and the swelling is the brim, sticking over the opening, which is close to the prominent side of the stylet (fig.59). Thanks to this end of the stylet reminds somewhat this of the *M.tenuicauda* LUTHER (22 fig.43), but the stylet in whole is sharply differing from the stylet of the species from Finland: by its shape, which is bent and by its broad basis, The shape of ves.granulorum presents some differences too (fig.57) and so on.

Habitat: Terijoki, lake Shchuchye (of pikes) the weeds of *Nymphaea* 28.7.1917.

16. *Macrostomum infundibuliferum* PLOTNIKOV 1905

This species is seemingly approximate to the previous one, but its stylet is much more straight in the whole, but on the contrary, very bent at the distal end: besides, its stylet apparently differs also by the character of the thickening of its walls at the distal end.

0.39 L.GRAFF (19) brought together *M.infundibuliferum* PLOTN. with *M.orthostylum* BR, he did it without any reason, what FERGUSON pointed out also. The sp. of *M.infundibuliferum* was from West-Siberia.

17. *Macrostomum pseudoobtusum* BEKL. 1927

The form was a swollen end of the stylet and its distal opening is subterminal (fig.56) it could be referred to the group *M.tuba*, only on some conditions (conditionally). F.FERGUSON (lc.) referred it to the species dubia, supposing for some reason or other, that the stylet that I had drawn was exposed to an artificial deformation. But I confirm, that my drawing represents a natural shape of this formation.

18. *Macrostomum rhabdophorum* BEKEL. 1927

According to the construction of the stylets and the character of its end it is approximate to the preceding. But it differs by the place of the stylet's bend (fig.54). Besides a typical token of this species is the presence of posterior rhabditic ways, which are opening at the lamella of the tail (fig.53). No species of *Macrostomum* from SSSR has similar ways. The eyes are feebly developed (fig.55) and some specimens are lacking them. Very typical also is the biotope of this species: overgrowth of *Enteromorpha* over the stones on the sea-shore, they are soaked by a spray of water from a falling streamlet (Arcadia near Odessa, 19.9.1926).

19. *Macrostomum clavistylum* n.sp.

It could be also referred to the group of *M.tuba* only conditionally. Its aspect reminds this of a large *M.hystericinum*, but it is larger. The derma is overfilled with rhabdites, some rhabditic ways of the head are present. The eyes are red, which is rather an exceptional symptom. The dimensions of the ms 10 15. The stylet of the penis is very solid and 150µ long. It is conical, its base is cut off obliquely, at its distal end it is bent regularly at a right angle. The distal end is slightly swollen, cut off and has a screwlike sharp brim, it ends by a small tip (fig.44) the opening is terminal.

Hitherto only 2 species of the *Macrostomum* were described with complicated and original construction of the end of stylet. *M.timavi* GRAFF and *M.glochistylum* FERG.. But *M.clavistylum* differs from the both.

Habitat: a brackish lake Ai-Dai near the town Troizk (Trans-Ural province), 12,7.1926. Collections of Mrs. V.P. Baskina.

- C o n c l u s i o n s -
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Twenty years ago one could think, that the genus *Macrostomum* is composed of few widely spread and eurytopous species, just as some uncommon and not well investigated (25). At the present time it proves that this genera is containing many species, and they are by no means eurytopous. To the contrary, the species of *Macrostomum* in ecological way for the most part are very specialised, some of them are inhabiting the sea, other in the brackish water (basins). In the rivers, the springs of the mountains, in the lakes, numerous species are living in brooks.

It is yet time to estimate the geographical distribution of separate species. The most of them are known from one region or even from one spot. Nevertheless some forms undoubtedly have large areals, such is *Macr.rossicum*, which is spread out all over the woody strip of SSSR from the province of Bryansk till to Tomsk. *M.phytophilum*, which is widely spread over the woody strip, but it ranges also far in the step to South west. *M.hystericinum* was obtained in the gulf of Finland, in the Caspian Sea, in the Aral Sea too, and probably it is distributed still wider. *M.tuba* seemingly originates from Mediterranean, but it was often met in the aquariums, and probably it was transported with the plants from aquariums very far beyond the limits of its primitive areal. The same may be, could refer to the *M.japonicum*, *M.orthostylum* (the form of HOFSTEN), probably, it is related to the Glacial lakes of Europe from the isthmus of Karelia to the Switzerland.

The numerous *Macrostomum* sp., which are inhabiting the brooks and the springs with cold water of course have more narrow areals, which are typical for the inhabitants of such biotops. The investigations of *Macrostomum* from springs and brooks of our Southern Republics and those of the Far East could discover many new forms and possibly facilitate to make interesting zoogeographical conclusions.

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