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Jobertina eleodrioides n. sp. (Characidiinae) from French Guiana with considerations about the genus and redescription of the type-species[1])

Contributions to the study of the characoid Fishes (Ostariophysi) III.

by J. Gery

When H. Travassos (1952) undertook the revision of the subgenus *Jobertina* of Pellegrin 1909 (Characidium with incomplete lateral line), he expressed some restrictions as he did not have the possibility to examine the type-species (= *interruptum)*, the unique specimen being in Paris. Thanks to Professeur Guibé of the Museum National d'Histoire Naturelle, I had this opportunity in the course of a new revision required by the discovery of a species from French Guiana. The purpose of this paper is then to give a redescription with figure of the type, the description of the new species and to end with some taxonomical and phylogenetic hypothesis.

I. Redescription of Jobertina interruptum (Pell, 1909)

Holotype: ♂ (?) 32.5 mm standard length, collected by M. Jobert in 1878 in Brazil. Paris Museum: N° 09—309.

Exact locality unknown, as the „Serra d'Estrello" referred to by Pellegrin seems to be a „fantasy name". From the relation of the travel of Jobert in the two papers of Pellegrin (1902 and 1909), it is yet possible to situate with some probability the type locality:

In his first publication Pellegrin says that the greater part of the collection was made in the Amazon River and his tributaries, whereas a smaller lot was taken in the meridional provinces, at Rio Grande and at Rio de Janeiro. In the 2nd publication that second lot is referred to: „Rio Grande and foot of the Serra d'Estrello". It seems logical, by elimination, to believe that the said „Serra" is in the vicinity of Rio de Janeiro. Nowhere is it mentioned „Rio Grande do Sul" which is a State about 1000 km South of the River Rio Grande: it is then impossible to follow Regan (1913) who attributes as the type locality a „Serra d'Estrella" in the Rio Grande do Sul.

Counts and proportions (followed in brackets by those of Pellegrin).

[1]) Contribution of the „Institut français d'Amérique tropicale" in Cayenne (Guyane française).

D. 2/9 (2/9); A. 2/7 (2/6); P. 1/10? (12); V. 1/8 (9);
Sq. lat. 10+22 (9+23) = 32
Sq. tr. 5½—1—4½ (5½—5½); 3 to pelvics.
Sq. predorsal 10 (10); Sq. around caudal peduncle 14 (14)
Head 4 (3.5) and depth 3.8 (3.5) in standard length
Eye 2.9 (3), snout 5.15, interorbital 8 in head.

Description: Head relatively short with a large eye, a short snout and a very narrow interorbital space; mouth small with a short and broad maxillary just reaching the anterior border of the orbit. (fig. 1a, 1c)

One series of teeth on the premaxillary: about nine long cylindrical teeth (non colored) with a pointed apex (pigmented), separated from the body of the tooth by a little bulge, like a sketchy tricuspid structure.

Probably no teeth on the pterygoid.

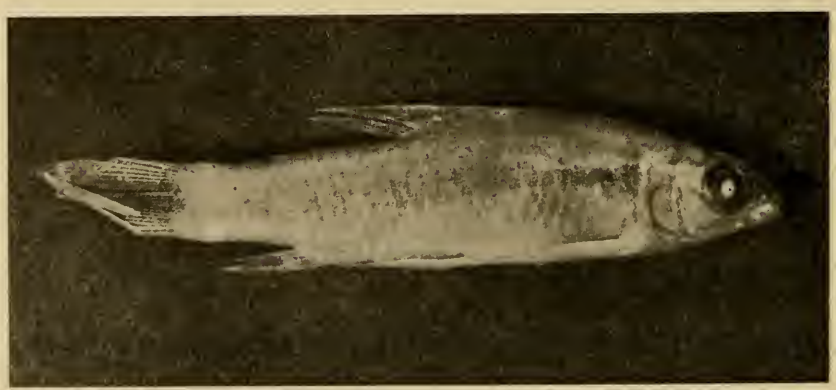
Two series of teeth on the dentary: those of the outer series numbering about eight, slightly but clearly tricuspid; those of the inner serie very small, conical, numbering about eight, clearly visible but difficult to count without damaging the unique specimen (which is somewhat brittle after having spent 50 years in alcohol).

Body deeper than most of the species of *Characidium* and somewhat compressed (width about 7.5 times in standard length); dorsal profile clearly convex and relatively high, but ventral profile almost straight and horizontal; caudal peduncle much longer than deep (1.62). (fig. 1a)

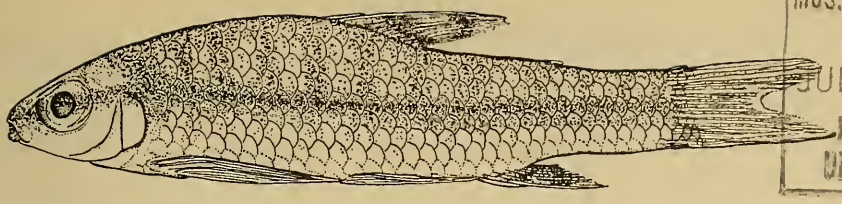
Dorsal fin in advance of the middle of the body, his height 3.1 times in standard length, 2 simple rays and 9 branched rays; adipose fin minute; anal fin short, his longest ray 5.3 in standard length, 2 simple rays and 7 branched rays; pectoral fins very long, 3.5 times in standard length, exceeding the origin of the pelvics, rays breakable and difficult to count (probably 1/10, but Pellegrin says 12); anyhow the first rays are not enlarged and the fins, though very low, have their base somewhat oblique: pelvic fins long, exceeding the origin of the anal, one simple and 8 branched rays. The inferior lobe of the caudal fin is scaled at his base.

Lateral line piercing 9 scales on one side, 10 on the other side, followed by 23 and respectively 22 scales in longitudinal series. Five to 5½ scales above and 4 to 4½ below the lateral line, 3 scales to the origin of the pelvic; 10 scales from occiput to dorsal fin and 14 scales around the caudal peduncle. Chest and isthmus clearly scaled.

A scale taken under the lateral line shows the following structure: height equals length (1.8 mm), outlines without incisures or lobes: nuc-



Jobertina interruptum, Type × 2,5



1a

1b

1c

Fig. 1. *Jobertina interruptum*, a: type (× 3), b: scale under the lateral line (× 20) and c: head with premaxillary-(above) and dentary-(below) tooth (× 40)

leus basad, reticulated; radii apicad, horizontal or slightly divergent, relatively numerous (more or less 13); basal circuli clearly divergent, apical circuli minute, numerous, directed backwards, slightly fan-like in the same way the radii but more irregular and wavy (fig. 1b).

Coloration: It is always hazardous to describe the coloration of specimens kept in alcohol for more than a few years. Such was the case: if I did not find again „a dozen of dark bands on the back and on the sides" as indicated by Pellegrin, on the other hand there is now a faint but clearly visible lateral band, as in all known species. This band is somewhat divided backward (both pattern are outlined on the text fig. 1).

Comparisons: *Characidium (Jobertina) dubia* was based by Travassos (1952) on a single differential character, namely the presence of two series of teeth on the dentary. My examination of the type species shows that there is but one slight difference with the microphotographs and descriptions of Travassos, viz. the more pronounced tricuspid structure of the superior teeth in *dubia;* otherwise the number of all the

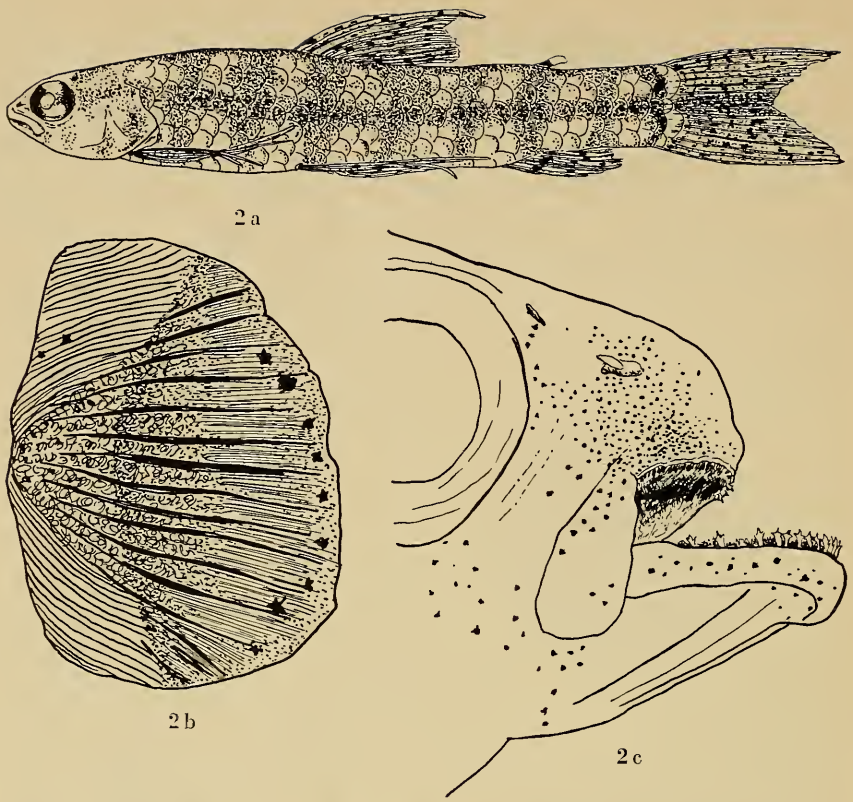


Fig. 2. *Jobertina eleotrioides* n. sp., a: type (× 4), b: scale under the lateral line (× 40 and c: head (around × 20).

teeth and the form of both inferior series are alike; better yet, only the type of *dubia* has 12 rays on the dorsal fin instead of 11 for the nineteen examined paratypes.

Ch. dubia differing only from *J. interruptum* by the absence of one scale in transversal series (above lateral line), I strongly believe that *dubia* is a synonym of *interruptum*.

Concerning the other „dubious" species, *Jobertina lateralis* (Boulenger), I am very inclined to follow the opinion of Miss Trewavas (who kindly examined some of the syntypes at my request): she considers the said form as specifically distinct (though near to *interruptum* in the number of dorsal rays and of scales), in consideration of the very different structure of the teeth, the presence of pterygoid teeth and mainly the absence of a second serie on the dentary.

II. Jobertina **eleotrioides** n. sp.

Material:

1) Holotype ♂, 20.5 mm standard length (in my collection No. Che. 08-14-02) collected by me Oct. 16th 1957 in a little brook between „St.. Patawa" and „St. Grand Bacou", Middle-Mana, French Guiana, (bet-

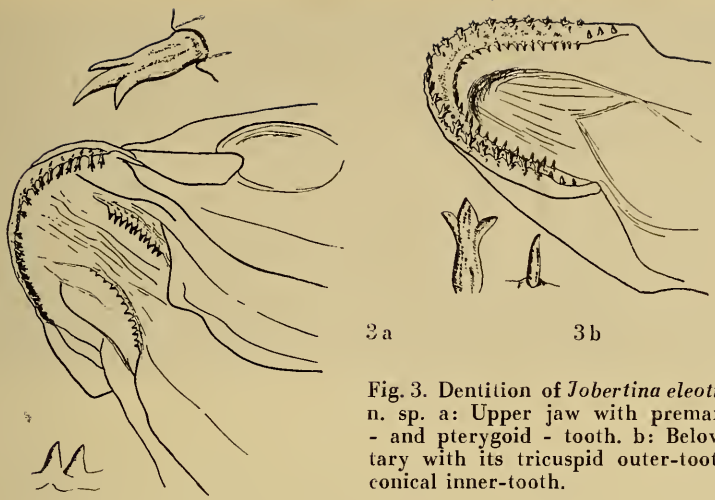


Fig. 3. Dentition of *Jobertina eleotrioides* n. sp. a: Upper jaw with premaxillary - and pterygoid - tooth. b: Below dentary with its tricuspid outer-tooth and conical inner-tooth.

ween 53—54° W and 4—5° N); 12 paratypes, same locality No. Che. 08-14-01 to 13), of which two are in the collections of the Zoologische Sammlung des Bayerischen Staates under the No: 19355 & 19356, (the others in my collection).

2) 4 paratypes, Maroni and his tributary, the Ouaqui (Nov. 22th and 30th, 1957); No. Che. 08-25-14 to 16 & 08-32-17 (in my collection).

3) 1 paratype, Orapu Basin (Oct. 4th, 1957); No. Che. 08-1-18 (in my collection).

Diagnosis: Very minute (max. 21 mm) but typical *Characidium* with an elongated and compressed body, pectoral and pelvic fins quite developed and low, pointed tricuspid teeth in outer series forming a sort of filter, conical teeth in inner series (the superior inner series is represented by the pterygoidal teeth); differing from all known species of *Characidium* by the incomplete lateral line, and from the species with incomplete lateral line (Jobertina) by the proportions, counts, teeth, position of the pectoral fin etc., being in a different group; resembling to a young *Eleotris* (i. e. the name *eleotrioides).*

Counts and proportions of the holotype

D. 3/7 + 1; A. 3/5 + 1; P. 4/4 (right), 4/5 (left); V. 1/6

C. (4) 2/7 + 6/2 (3); Sq. lat 28 (of which 5 perforated)

Sq. tr. $3\frac{1}{2}$—1—$3\frac{1}{2}$; (2 to pelvics);

Sq. predorsal 9; pre-adipose 8; post-adipose 4;

Sq. preventral 10; around caudal peduncle 10;

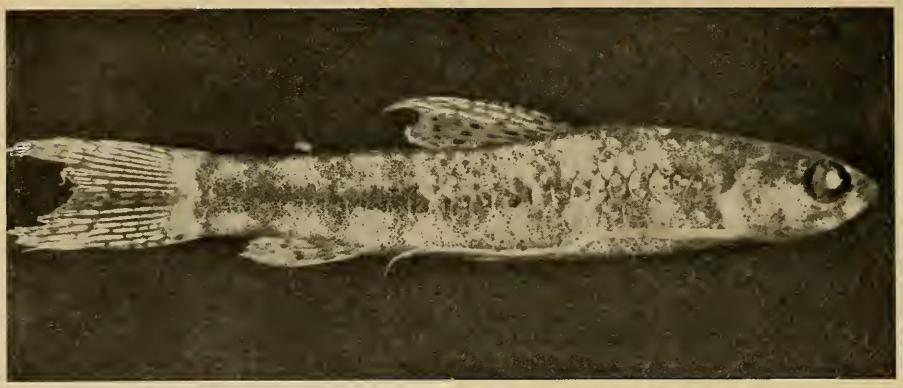
Head 3.9, depth 5.45 and width 9 in Standard length;

Eye 3.75, snout 5.25 and interobital 6 in head.

Description - Head relatively short, eye intermediate, situated forwards and above; snout short and rounded; interorbital narrow (about one-third of the width of the head); maxillary reaching the anterior border of the pupil; dentary prominent when the mouth is open. Nares widely separated. (fig. 2c)

Teeth on the premaxillary in one series of 9—10 on each side, tricuspid, every denticle being acute and sometimes curved toward the inside.

Teeth on each pterygoidal crest in one series, numbering 11—12, minute, conical, pointed, growing larger and splitted forwards (fig. 3a).



Jobertina eleotrioides n. sp., Type × 4

Teeth on the dentary in two series; those of the outer series numbering 11 on each side, tricuspid, each lateral denticle spreading exactly like a fleur-de-lis; those of the inner series numbering 13—15 on each side, minute, conical, slightly hooked, smaller and more tightened on the sides than forwards (fig. 3b).

The aspect of the little fleur-de-lis in close line suggest a filter, which should have something to do with the nutrition of the animal (and other species of *Characidium).*

Body elongated (more than 5 times in the standard length) and compressed (9 times), with the dorsal and ventral profiles slightly convex; caudal peduncle much compressed, much longer than deep (1.66) (fig. 2a).

Dorsal fin in advance of the middle of the body (9/11 as seen from the top), his height 3.5 in standard length, his base non scaled. First ray simple and short, very thick, non segmented (basilar article); 2nd and 3rd non ramified but segmented, progressively longer, thin; First ramified ray the longest, almost filamentous, its length equals head: 2nd to 7th progressively shorter; last ray non ramified but segmented (formula iii 7 + i = 11).

Adipose fin small, above anal.

Anal fin short, his base non scaled, beginning behind the tip of the last dorsal ray: lst ray simple, non segmented, 2nd simple and segmented, on the following 6 branched rays, the 2nd is the longest and the last is generally simple (formula ii 5 + i = 8).

Caudal fin quite developed, not deeply forked; base with, above and below, one enlarged scale, very characteristic; upper lobe with 6 non ramified rays (4 rudimentary and 2 developed) and 7 branched rays; one branched ray on the middle of the fin; lower lobe with 6 ramified rays, 2 simple long rays and 3 rudimentary.

Pectoral fins very low and horizontal, their length 3.3 in the standard length; 4 simple segmented rays, the last being the longest, almost a filament, exceeding the origin of the pelvic fin; 4 or 5 ramified rays (formula iiii 4—5 = 8—9).

Pelvic fins low and horizontal, inserted at the same level as the dorsal fin; 1 simple ray, short, followed by 6 branched rays of which the 3rd is the longest, almost a filament, just reaching the origin of the anal fin (not quite on the holotype).

Lateral line visible on only 5 scales, followed by a longitudinal series of 23 scales; there are only 3½ scales above and below, and 2 from the lateral line (excluded) to the origin of the pelvic. The medial pre- and post-dorsal series (9 and 12 scales) are regular. Isthmus and chest regularly scaled, 10 scales from isthmus to pelvics.

A scale (taken as usual under the lateral line) shows a somewhat exaggerated *Characidium* structure: scale higher than long (1.5/1.1 mm). outlines with a rudiment of a basal incisure; nucleus reticulated, very near of the basal border; radii numerous (about 15), fan-like; circuli almost parallel and directed backward, but slightly divergent (fig. 2b).

Coloration: Basic colour: faded lemon.

1. Longitudinal pattern: One maroon longitudinal band, astride on the two medial scale-series (width ½ scale + ½ scale), slightly wavy and following the dorsal profile, beginning at the 3rd scale behind the superior part of the opercle and finishing almost at the end of the peduncle. Forwards, its direction is continued through the eye to the snout: there, its coloration is no more maroon, but black; it is interrupted at the postero-superior part of the opercle.

2. Transversal pattern: two small bands under the eye, in reversed V, a spot on the opercle, continuing in the direction of a third band beginning at the nape (and interrupted by the horizontal band).

One plain band after the opercle, a 2nd one in front of the dorsal, a 3rd one at its level, a 4th behind, a 5th in front of the anal, a 6th at its level and just before the adipose fin, a 7th on the peduncle and, at last, a 8th slightly crescent-shaped thinner and darker band, immediately at the base of the caudal fin. All those 8 bands are black, always present but more or less intensive, practically vertical and covering 2 to 3 scales.

3. Fins pattern: each ray of the dorsal fin is covered with 5 to 7 maroon spots, more or less regular, forming 3 to 5 transversal bands; in the same way, the rays of the pelvic, anal and caudal fins have respectively 3, 3 and 8 lines of spots; the spots of the caudal fin, tighter and more regular, are brace-shaped.

The adipose is strongly maroon at its base, hyaline at its tip.

Variations. Different paratypes from the Mana, the Orapu and the Maroni River were examined (9 ex.). They show the following variations.

D 10 to 11 (3 or 2 nonbranched rays);
A 7 to 9 (first and last ray, nonbranched, inconstant);
P 8 to 9 (4 or 5 branched rays);
Sq. lat. 27 to 29, 5 (6) perforated scales;
Sq. transv. constant, around peduncle 9 to 11, preventral 10—11;
Head 3.8 to 4.5 in standard length;
Depth 5 (♀) to 6 (♂) in standard length;
Eye 2.8 to 3.75 in head;
Snout 4.75 to 5.8 in head;
Interorbital 6 to 8 in head;

Beside the interorbital which can be narrow to very narrow, there is no great variation in the sample examinated. The species (which is evidently a mutation from a typical *Characidium)* is apparently fixed, if one considers that some specimens were taken 400 km apart from each other.

Biology: It is easy to see that a so small species is not at its place in the middle of a big river, (anyhow, in this case, it will be impossible

to be captured): all the specimens were taken in brooklets („criques") where the water is often fast-running, clear, well oxygenated, very soft, at about 26° C. They live there with another typical bottom-dwelling Characids like *Characidium catenatum*, on sand or rocks. But the species may adapt itself in slow or non-running water, having also been found in half-dried „criques" in association with typical inhabitants of this ecological niche: *Copeina arnoldi* mixed with *Pyrrhulina filamentosa*, *Rivulus* (2 sp.) and cf. *Eleotris*.

Like *Ch. catenatum* already cited, it is a perfect homochrome in its environment (seen from above); this homochromy can be easily deducted from the typical pattern of both species (and many other in this particular group). Their homologue is found in Africa where *Nannocharax* duplicates *Characidium*, though probably being of a different phyllum.

Nothing is as yet known about its nutrition and reproduction, the species (as many other animals living mostly in streams) being fragile and, till now, impossible to acclimate.

III. Classification of the species of Jobertina and position of Jobertina itself.

If one compares the species already described (i. e. *interruptum* Pell. 1909; *lateralis* Boul. 1909; *rachovi* Reg. 1913; *dubia* Trav. 1952; *theageri* Trav. 1952; *eleotrioides* n. sp.) one can see at first sight that there are two groups:

The first, which I may call non-typical, or „incomplete" or non-specialized *Characidium* s. lat., gathers several meridional species which have in common an „incomplete" dentition (simple conical or slightly tricuspid teeth, absence of one or the other series etc..), a relatively high body and non-specialized pectorals: as stated by Miss Trewavas (in press) they are mid-water species.

The second group, which is till now represented by only one septentrional new species, is obviously derived from *Characidium* s. str., with complete dentition, elongated body and low, horizontal, filamentous pectorals and pelvics. This group is connected with the *„Etheostoma*-like" group of Eigenmann (1909), although one should not take for granted the words „rock-inhabiting" or „Mountaineers" as I could realize it in French Guiana (where there are no „mountains" at all and where the only real rock-inhabiting species is *Characidium blennioides*, which lives right in the middle of the river).

The following key, modified after Travassos, may help in determining species:

1 - Typical *Characidium* (s. lat.), depth more than 5 times, more or less „complete" dentition, low pectorals:

eleotrioides n. sp. (French Guiana and Suriname)

- Non specialized *Characidium* (s. lat.), depth less than 5 times, „incomplete" dentition, pectorals oblique: 2

2 - D 11—12, two series of teeth on the dentary, the outer ones tricuspid.

interruptum Pell (= dubia Trav.) (Rio)

- D 11—13 or more, one series of simple teeth on the dentary: 3

3 - D 11, palatine teeth present:

lateralis (Boul.) (Upper Paraguay)

- D 13 or more, palatine teeth absent: 4

4 - Angular bone rectangular, dentary fenestrated:

rachovi Reg. (Paranagua)

- Angular bone triangular, dentary less fenestrated:

theageri Trav. (Uruguay)

Concerning the synonymy of *Jobertina*, the only case which comes into question is that of *Microcharax* Eigenmann: though mentionned before *Jobertina* in Jordans Genera of Fishes Part IV, *Microcharax* is unquestionably a synonym, as Miss Trewavas clearly demonstrated it: the Bulletin in which *Jobertina* first appeared, was put into distribution May 25th, 1909, whereas the Annals Carnegie Museum were issued August 17th of the same year.

Concerning the status of *Jobertina*, I would personnally give the generic rank to this fairly homogenous group of species. Although not convincing on an evolutionnary point of vue (see Pumphrey, 1950) the reduction of the lateral line, when constant, is a very „workable" character in separating small characid genera such as *Aphyocharax, Cheirodon, Hemigrammus, Hyphessobrycon* etc... In *Characidium* s. lat., it seems to be a better character than the structure of the dentition, which is very variable. At any case, if the taxonomy must follow to the nearest the phylogeny, both sciences are almost antinomic: the main points of the classification being the clarity, the maniability and the stability, whereas the evolution is essentially a complex and dynamic matter.

The short species (with *interruptum* as example) are probably issued from the first ecological group of *Characidium*, viz the non-specialized forms, living in mid-water, with little elongated body and, probably, simple dentition *(Characidium caucanum* for ex.).

The new species *eleotrioides* is derived from the second group, i. e. the „rock-inhabiting" species of Eigenmann *(Etheostoma*-like) with elongated body *(Ch. fasciatum* and many others..).

The third group, sub-genus *Chorimycterus* of Cope, sand-bank-inhabiting species, more or less translucent in life, with very elongated body *(Ammocrypta*-like), is till yet represented only by some *Characidium* s. str. *(Ch. tenuis, pellucidum* etc...).

In regards to the position of *Jobertina* and the whole group of the *Characidiinae* among the characoid Fishes, I would not overload the present work with considerations which will be the object of a subsequent note. May I only state that, if I entirely follow Hoedeman (1950) and Travassos (1952) who have rejected the said group from the *Hemiodontinae (Erythrinidae),* I cannot go farther and follow them in their actual meaning: Travassos (loc. cit.) who situates his *Characidiinae* „provisionnaly in a transitory situation beside *Nannostomus*" etc..., and Hoedeman (1956) who places his *Characidiidi* between *Parodon* (an *Hemiodontine!)* and *Triportheus* in his subfamily *Characinae* (together with *Brycon, Charax, Crenuchus* and *Gasteropelecus).*

The direction in which it may be looked for in the future seems suggested by the lines G. S. Myers wrote in 1927: „*Elachocharax* and possibly *Poecilocharax* also will eventually be removed from *Crenuchus* and placed near *Characidium*". These words imply a certain relationship (through the *Crenuchinae)* with the *Cheirodontinae:* a supposition corroborated by the recent discovery of a resemblance (in the dentition) bet-

ween *Characidium* and a Cheirodontine from Guiana, namely „*Odontostilbe*“ *melandeta* (the latter is certainly a new border-genus to be described later on).

These facts lead me to the conclusion that the *Characidiinae* s. lat, i. e. *Characidium, Jobertina* and possibly *Poecilocharax* and *Elachocharax*. are closer to *Aphyocharax* (and *Crenuchus)* than to any other genus: they are very probably derived from a common cheirodon-like ancestor.

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