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are no longer restricted to the goldfish, trout, bluegills, and a few other local species. Hundreds of other species from South America, Asia, and Africa are now equally available and often prove to be more easily obtained and handled as well as more amenable to more diverse laboratory approaches, than the few kinds formerly used. Up to a third and perhaps a half of all experimental research papers utilizing fishes are now based upon species obtained through the aquarium trade. As a result, our knowledge of fish biology, which has traditionally been based almost exclusively on the fish of the temperate or cold climates of Northwestern Europe and Northeastern North America, is being enriched by studies based on fishes belonging to taxonomic groups or ecological assemblages quite different from those previously accepted as the norm among North American and European researchers.

The old *Aquarium Journal* took a leading part in making the influx of exotic aquarium fishes known to the public. Its transformation into an ichthyological journal thus emphasizes a trend that is becoming notable in the younger generations of American ichthyologists. Whereas ichthyologists of the past often got their first knowledge of fishes through observing local, native species, those of the present day are more likely to have been introduced to fishes through keeping exotic species in an aquarium at home. As a result of aquarium observations, they perhaps start out with a broader personal experience with fishes, their biology and their behavior than did their predecessors.

Except for one Japanese publication, we know of no scientific journal devoted solely to ichthyology in its broadest sense. It is the aim of both our publisher and our editors to fill that gap. Any original scientific contributions having to do primarily with fishes and fishlike vertebrates will be considered for publication — ranging from fish taxonomy, morphology, physiology, ecology, behavior, pathology, geography, paleontology, and conservation, to fishery biology and studies of water chemistry and physics as they directly affect fishes in the wild or in aquariums. However, papers dealing primarily with the commercial or human nutritional aspects of fishes, or upon fishery statistics or technology, are not invited.

It is our belief that the editorial policies of many scientific journals have become so narrowly and severely conventional that they do not meet the needs of the sciences they serve as well as they might. This is not always the fault of the editors of these journals, for most of them have limited funds and more papers submitted than they can

publish; also, the complete restriction of most journals to formal research papers giving formal "results" is in many ways an unfortunate limitation. While we are not sure that economic considerations will not eventually force us to such restrictions, we do not propose to put them into effect at this time. Editorials, comments, and book reviews will be included, and longer reviews of current progress in more or less restricted segments of ichthyology will be welcomed. Moreover, we hope occasionally to reprint useful or historically important ichthyological papers which are in demand but cannot now be obtained easily. Finally, and in line with our criterion of usefulness to the ichthyological profession, we intend to print papers not only on ichthyological history, but also occasional contributions which represent useful work but which do not conform to the usual standard by presenting concrete "results" or "conclusions." It is forgotten occasionally, for example, that the proper *setting* of a problem may be quite as important an achievement as the routine work which goes into its solution. In any event, we hope that our efforts will be welcomed by all students of fishes.

While we do not offer *honoraria* for contributions, we do offer one inducement to contributors. Each author of an accepted and printed paper will receive (*gratis*) 250 reprints of his article. Moreover, we welcome colored photographic transparencies and drawings, for the printing process to be used allows us to produce color. Finally, in conformity with general scientific practice, our journal will not be copyrighted.

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The Smithsonian Institution and T.F.H. Publications, Inc. are pleased to announce the publication of a reprint, including the color plates, of the Philippine Bureau of Science's three Monographs on Philippine fishes: No. 1, Jordan and Richardson's Checklist, 1909; No. 23, A. W. Herre's Gobies, 1927; and No. 24, Montalban's Pomacentridae, 1927. These rare historical works are available in a clothbound volume for \$5.50.

Two earlier numbers in this reprint series are: Jordan and Evermann's "The Fishes of North and Middle America," U. S. Nat. Mus. Bull. 47, Vols. 1-4, 1896-1900, \$25.00; and Smith's "The Freshwater Fishes of Siam or Thailand," U. S. Nat. Mus. Bull. 188, 1945, \$2.00.

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Two newcomers and a rarity

New and Unusual *Corydoras* Species from Brazil

BY FRITZ RÖSSEL,
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Germany

At the present time there have been identified about 60 *Corydoras* species. Separating them has at times given a great deal of trouble, because with this genus there are only a few morphological differences, and most species are differentiated only by their markings. Some species are so varied in their markings that one finds, for instance, spotted as well as plainly-colored dorsals and caudals among the spectrum of variability for the same species. So far it has not been determined how far these individual variations can go. Meantime it is impossible to do more than estimate in each case if the differences between two forms are really great enough to justify setting up different species. In this case I consider it proper to describe the two species as new because I have been unable, even taking into consideration the variations, to place them in the ranks of any known species.

I am grateful to Messrs. Schwartz, Schultz, and Axelrod for this valuable material.

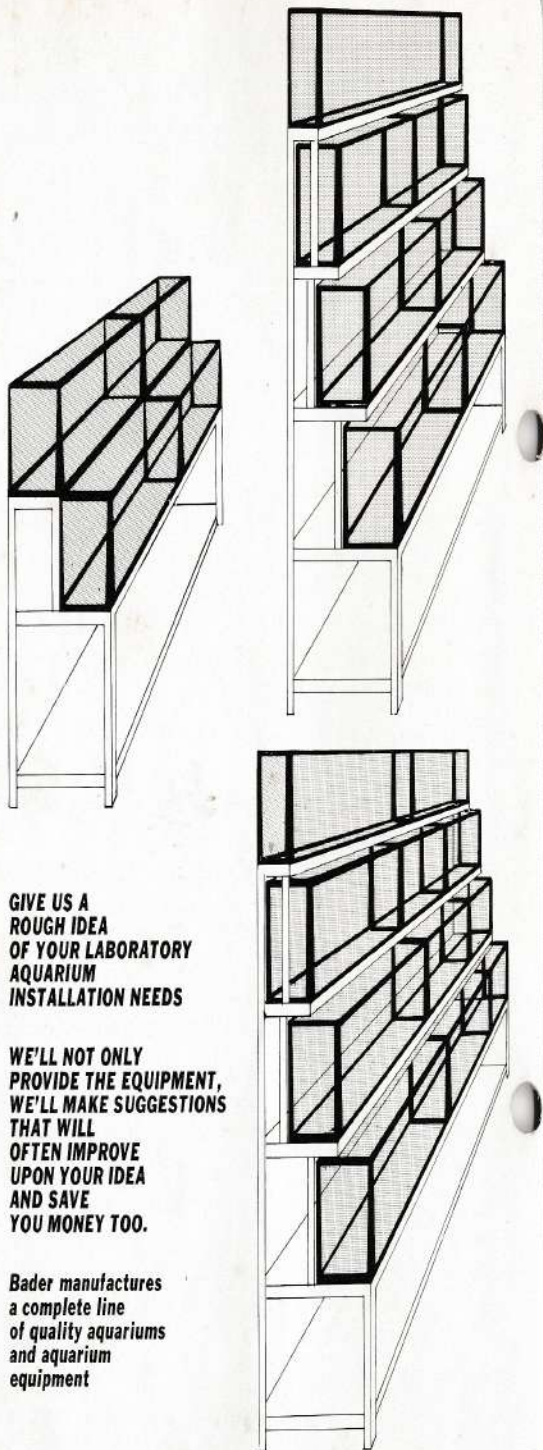
Corydoras schwartzi

Material: 12 specimens, holotype SMF 6425, 11 paratypes, SMF 6426-36. Brazil, mouth of the Rio Purus; H. W. Schwartz, H. Schultz, 1962.

Measurements (in millimeters): Total (to the end of the middle caudal rays), holotype 43 (paratypes 30-38); standard length 36 (24-30); head (to the upper end of the gill slit) 11 (8-11), body height (at the dorsal base) 14 (9-14), dorsal rays 12 (6-10.5), spine 12 (6.5-10.5), diameter of eye 3.8 (2-3), eye protrusion 5 (3.5-5).

Diagnosis: A short-snouted species of the genus *Corydoras*, which is distinguished by 3 parallel horizontal stripes on its sides and an elongated dorsal ray.

Description: D I, 7; lateral plates 23/21 (21/20-23/21). Profile of the head rises steeply in the first half of the snout and then bends to become straight to the dorsal ray. The length of the head is contained 3.2 (3.0-3.1) times in the standard length, and the body height 2.6 (2.3-2.7) times. The eye diameter is 1.2 to 1.5 that of the length of the snout, and the eye protrusion



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the same. The circumorbital ring is narrow, about 2.5 times repeated in the eye diameter. The supraoccipital process is wide, its base somewhat larger than its length. The fontanel is about one eye diameter in length. The front end lies on a line which runs through the center of the eyes.

The dorsal spine is long, reaching when folded to the middle of the three unpaired little plates just ahead of the adipose fin. The first soft ray is a little longer than the stiff ray. The pectoral spine is the same length as the dorsal spine and almost as long as the head. The pectoral spine is provided with teeth on the inside. It reaches as far as the end of the ventral fin. The coracoidea cover the bases of the pectoral fins, almost completely surrounding them. Between these there lie many small irregular bony plates. The barbels at the corners of the mouth, if brought back, would extend to about the center of the eye.

Coloration: In alcohol the basic color is a dirty white, with a brown head. On the sides there are three horizontal stripes. The first one begins, sometimes with a large dark spot, at the dorsal base and ends at the base of the adipose fin; the center one runs over the center of the sides from the beginning of the plates back to the caudal base. The lower stripe begins a bit further back and ends in the caudal base as well. Some specimens show a few additional irregular blotches below this stripe. The top and bottom stripes are sometimes irregularly formed. A black band runs through the eye. The base of the first dorsal rays and in some specimens the rays as well are black. The deeply-forked caudal fin has 2 or 3 bands across it and as many on the lobes. There are a few dark spots on the anal fin, and the paired fins are colorless.

Living Colors (after a color photo by Harald Schultz): The basic color is silvery gray, markings black. The underside of the body is yellowish.

Variability: After some consideration I have placed two additional specimens (SMF 6437-38) to this species, which were brought into Germany a aquarium fishes. They were supposed to have come from Manaus. Both specimens vary from the others in the following manner: the snout is longer and narrower, its length (in profile) approximately $1\frac{1}{2}$ times the eye diameter and half the length of the head. The bony plates on the belly are weaker than the others. The coloration is considerably brighter than in the types of *C. schwartzi*. The horizontal stripes are wider, and the upper stripe is pushed up. The caudal markings are also stronger. The first dorsal ray and the first soft ray are white in alcohol, but in the living fish they are a gleaming yellow.

Related Species: *C. schwartzi* is similar to *C. armatus* (Günther) by its long stiff dorsal ray, but varies in its coloration.



Corydoras schwartzi. Photo by Dr. Herbert R. Axelrod.

Corydoras evelynae

Material: 1 specimen, holotype SMF 6107. Brazil, upper Rio Solimoes. Dr. H. Axelrod 1962.

Measurements (in millimeters): Total length (to the end of the middle caudal rays) 49.2; standard length 40.7; length of head (to the upper end of the gill slit) 12.5; body height (at the base of the dorsal spine) 16.5; dorsal spine 10.8; pectoral spine 12.0; diameter of eye 4.0; eye protrusion 6.

Diagnosis: A short-mouthed species of the genus *Corydoras*, which is distinguished by a row of large spots a little under the dorsal ridge and two horizontal stripes on the sides.

Description: Dorsal I, 7; lateral plates 22/21. Profile of the head is round as far as the dorsal fin, and only above the eyes is there a short straight area. The head length is contained 3.6 times in the standard length, the body height 2.5 times. The eye is large, one-third of the head length, and protrudes about 1.5 times the diameter of the eye. The circumorbital ring is a half eye diameter deep. The supraoccipital continuation is as broad as it is long, distally somewhat wider than half the eye diameter. The fontanels are $\frac{3}{4}$ the eye diameter in length. The front edges extend over the straight region through the rear edges of the eyes; they reach the supraoccipitals, but not their

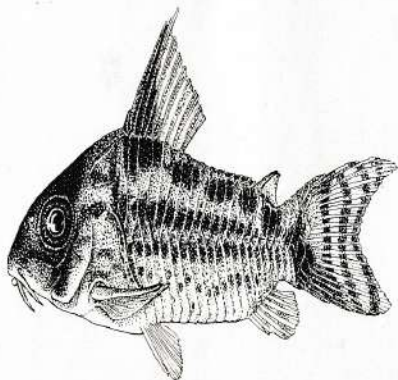
continuations. The unpaired predorsal plate is large; its length, median measurement, is about $\frac{1}{2}$ the eye diameter. The dorsal spine is short and smooth, outside as well as inside. Folded over, it covers the dorsal base and three lateral shields. The first soft ray is longer than the spine. The dorsal base is equally long as the distance away from the adipose fin. Ahead of the adipose fin there are 5 unpaired plates. The pectoral spines are longer than the dorsal spine and almost as long as the head. There are small teeth on the inside. They extend to the last quarter of the ventral fins. The coracoidea extend over much of the pectoral bases, those which are not completely covered. Between there are many irregular tiny skin ossifications. The upper caudal lobe is longer than the lower.

The specimen on hand no longer has any barbels.

Color: In alcohol the basic color is yellowish brown, with black markings. The snout is dusky brown, with a black band running through the eye. There is no median connection between the lateral stripes on either side. On the body there is a broad dark stripe somewhat below the back line, broken up into a row of dots. At the caudal base it bends down and forms a spot. Above and below the connecting line of the lateral plates one finds a narrower dark horizontal stripe. The upper one runs to beneath the adipose fin, while the lower one forms a row of dots and blends into the spot at the caudal base. Beneath this stripe there are some more dark spots scattered at random. There are 3 dark bars on the caudal fin, with a fourth faintly indicated in the lobes. The front part of the dorsal fin is black, also the base of the first four soft rays.

Life colors (after a color picture by Dr. Axelrod): The basic color is a light yellowish brown, the markings black. Between the eye and mouth there is a shimmering bluish green stripe; the operculum gleams golden yellow and the belly is a dirty white.

Corydoras evelynae. Drawing by Ingeborg Weirich.



Related Species: *Corydoras evelynae* belongs to the large group of short-snouted, high-backed *Corydoras* species for which the main criteria for identification are the markings. It seems questionable if it will ever be possible to set up true groups of relationships.

Gosline's key (1940) would take us through *evelynae* to *melanistius* or *palzatus*, two species which have greatly different outlines. There is a great similarity to *arcuatus* not only in markings but also in the profile and the position of the pectoral spines. However *evelynae* is wider, especially in the head.

Corydoras multimaculatus Steindachner

1907 *Corydoras multimaculatus* Steindachner, Anz. Akad. Wiss. Wien, 44:291.

1913 *Corydoras multimaculatus* —, Ellis, Ann. Carnegie Mus. 13:411, plate 29, fig. 4.

Steindachner described this species from the system of the Rio San Francisco. From the same region come the specimens mentioned by Ellis. Since these two authors, nobody has reported on them. One form from the Amazon region I put with *C. multimaculatus* in spite of a few differences which exist and are almost totally limited to the markings. It could be a separate sub-species, because the origins are far apart. Unfortunately the material necessary for such differentiation is not yet at hand.

Material: 1 specimen, SMF 6108, Brazil, upper Rio Solimoes; collected by Dr. H. R. Axelrod in 1962.

Measurements: Total 43.6, standard length 35.3, head 11, height 14.3, dorsal spine 10.4, pectoral spines 12.5, eye diameter 4, protrusion 5.5.

Description: The body is sturdy and compressed, its greatest height 2.25 times contained in the standard length, the height of the caudal base 6.4 times. Head short, contained 3.2 times in the standard length. The short snout is 1.2 eye diameters long, exactly the size of the eye protrusion. The circumorbital ring is half the size of the eye diameter. The fontanel is $\frac{3}{4}$ the length of the eye diameter. It begins between the pupils. The supra-occipital process is very wide, its base somewhat wider than its length. The dorsal spine is only a little shorter than the head, while the pectoral spines are somewhat longer; these are equipped with tiny teeth on the inside. The first soft rays in the dorsal as well as the pectoral are somewhat longer than the spiny one. The pectorals almost reach to the end of the ventrals. The dorsal fin when folded reaches to the first little plate ahead of the adipose fin; there are three such unpaired plates. The caudal fin is rounded. The coracoidea are separated from each other by 1.4 eye diameters and between them there are tiny irregular bony plates. The barbels no longer exist on the specimen at hand.



Corydoras multifaculatus. Photo by Dr. Herbert R. Axelrod.

Color: The basic color in alcohol is brownish yellow. On the body lie three or four irregular rows of dark violet dots. The fore part of the dorsal is black and on the hind edge there are some dark dots. At the base of the dorsal there is a black triangle which extends down to the upper third of the body. There is a black bar through both eyes which meets on top of the head. On the caudal fin there are two wide dark bars which extend through and several irregular ones which do not. The other fins are irregularly spotted. The markings vary somewhat on both sides.

REFERENCES

ELLIS, M. (1913): The plated nematognaths—Ann. Carnegie Mus., 13: 384-413, Plate 25-31.
 GOSLINE, W. A. (1940): A revision of the neotropical catfishes of the family Callichthyidae—Stanford Ichthyological Bull., 2: 1-29.
 STEINDACHNER, F. (1907): Bericht über eine neue *Corydoras*-Art aus dem Rio Preto.—Anz. Akad. Wiss. Wien, 44: 290-293.

Endemic characoid fishes from the upper Rio Cauca at Cali, Colombia

by Jacques Géry¹

The upper Rio Cauca in Colombia was once explored by Eigenmann, who reported several new forms of fishes (1912, 1913 and 1922). Amongst the characoids², a number were characterized by peculiar specializations, owing to the isolation of the river (which is separated from other rivers by high chains of the Andes, the "cordillera occidental" and the "cordillera central"—see for map and discussion: Eigenmann, 1920).

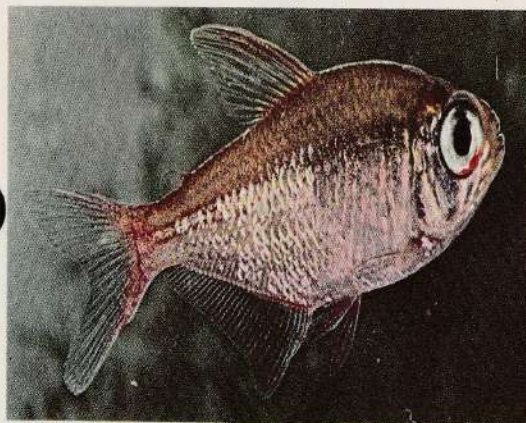
During the 1964 T.F.H. Colombian Expedition, Dr. Herbert R. Axelrod was fortunate enough to collect some topotypes of these highly interesting, endemic forms. Their critical redescription is the subject of the present paper. All were collected around Cali, in the Rio Grande (into upper Cauca) in November, 1964 (about 3,300 feet, 3°27'10" lat., 76°23'30" long.). Representative specimens were deposited in the U.S.N.M.

(1) *Astyanax (Astyanax) daguae* Eigenmann, 1913 (fig. 1)

(4 ex., largest 47.4 mm in standard length)

They are higher than the types, from the Rio Dagua, a coastal (Pacific) river, at Cordova. Depth 2.26 in the standard length in the largest; anal iv 26; scales 8/36/6; predorsal irregularly scaled; premaxillary teeth 4/5, maxillary teeth 4.

Fig. 1: *Astyanax daguae* Eigenmann (Photograph by Dr. Herbert R. Axelrod).



¹ Contribution No. 45 to the study of characoid fishes.

² *Brycon hemi*, *Astyanax microlepis*, *fasciatus* and *aurocaudatus*, *Hyphessobrycon poecilioides*, *Hemibrycon dentatus*, *Bryconamericus caucanus*, *Creagrutus caucanus*, *Argopleura magdalenensis*, *Gephyrocharax chococensis* and *caucanus*, *Genycharax tarpon*, *Roeboides cauae*, *Characidium caucanum* and *fasciatum* (?), and *Parodon caliensis*.

Steindachner described the same form, two years later, as *Astyanax* (*Aequidens*) *fassli*; it is a pure synonym. The name *Aequidens* is apparently a typographical error for *Astyanax*.

In its form and coloration, *A. daguae* suggests a *Moenkhausia*. It is rather far from the "generalized" *Astyanax*-type. The fins, as well as the abdomen, are rosy; it also has two faint, brown humeral spots, followed by a longitudinal band or line of the same color.

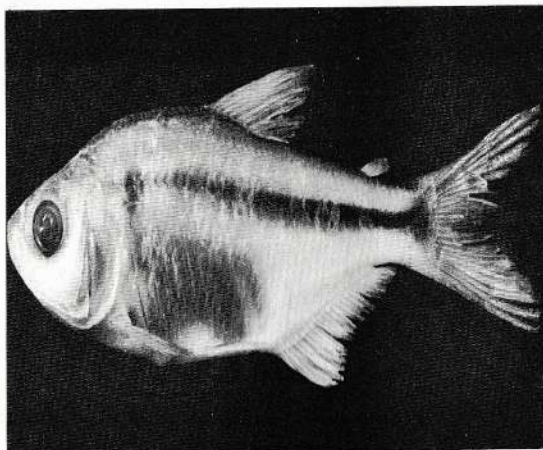


Fig. 2: *Astyanax microlepis* Eigenmann.

(2) *Astyanax* (*Astyanax*) *microlepis* Eigenmann, 1913 (fig. 2)

(4 ex., largest 51.0 mm. in standard length, topotypes)

Depth about 2.8 in the standard length; dorsal fin distinctly in advance of the middle of the body; anal iv 18-22 (last ray double), the males with numerous sexual hooks on the last unbranched ray, up to the 10th or 11th branched one; scales 9/49/8, predorsal regularly scaled, with a series of 14 scales; premaxillary teeth 4/5, those in the inner row large, with seven cusps; maxillary very short, with one, or two, broad teeth; snout rather pointed, with the dentary included.

A. microlepis is a "typical" *Astyanax* in its form and pattern; it is rather plain, with some red on the caudal lobes only; a small, black humeral spot, a rather broad longitudinal band, probably silvery *in vivo*, somewhat expanded on peduncle.

(3) *Hyphessobrycon poecilioides* Eigenmann, 1913 (fig. 3)

(1 ex., 42.2 mm. in standard length, topotype)

This is a curious fish, rather far from the "generalized" type of *Hyphessobrycon*. It converges, in the form of its body and of its head, to the small curimatids of the genus *Curimatopsis*. Indeed, the mouth is very small, the snout flat and the maxillary very short.

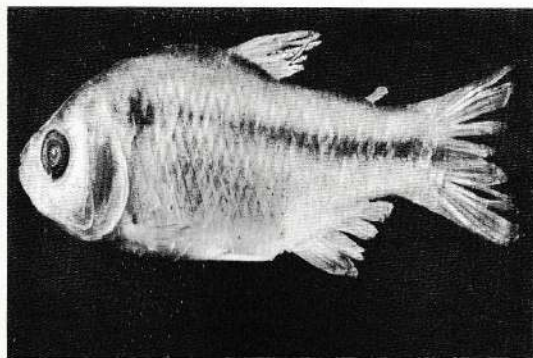


Fig. 3: *Hyphessobrycon poecilioides* Eigenmann.

Depth about 3.4 in the standard length; dorsal fin slightly in advance of the middle of the body; anal iv 14; scales 6/(10)32/5 (the type has 36 longitudinal scales); premaxillary teeth 4 or 5/5, the inner ones with five or seven cusps, excavated in front, i.e. with an anterior concavity as in some *Astyanax* spp.; one maxillary tooth; dentary with 4 broad, frontal teeth, followed on sides by a number of relatively broad, tricuspid ones (not conical as usual); third suborbital entire. Plain, the pattern agreeing well with Eigenmann's description, no color on the specimen at hand.

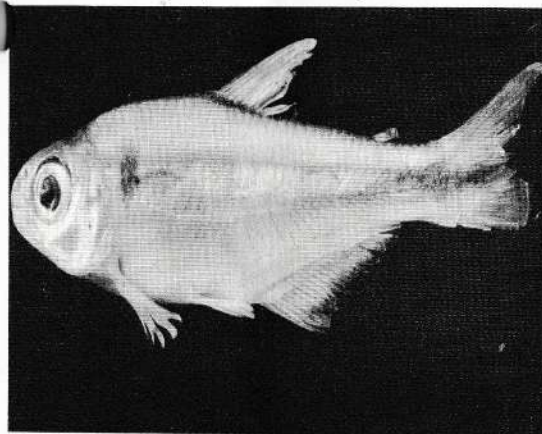
If the genus *Hyphessobrycon* is ever split, there is actual evidence that *poecilioides* would be amongst the separated forms.

(4) *Bryconamericus caucanus* Eigenmann, 1913 (fig. 4)

(4 ex., largest 44.8 mm. in standard length, topotypes)

Dorsal fin slightly beyond the middle of the body, rays ii 8; anal fin iii 24 or 25, last ray double; scales 5½ or 6/39/5 or 5½

Fig. 4: *Bryconamericus caucanus* Eigenmann.



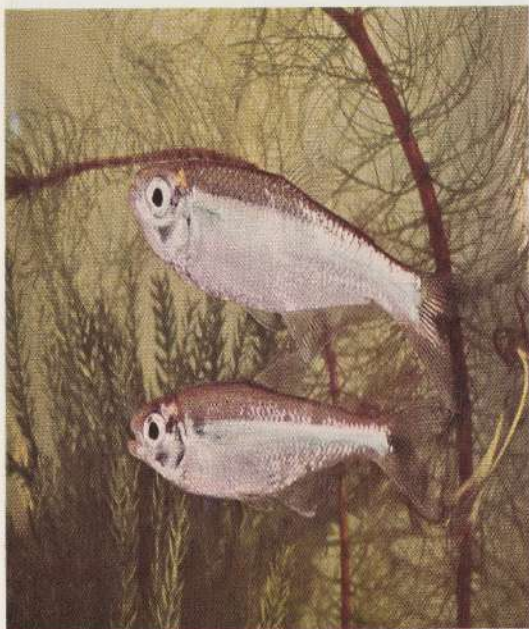


Fig. 5: *Bryconamericus alpha* Eigenmann? (the lower fish; the upper one is *Bryconamericus loisae*—photograph by Dr. Herbert R. Axelrod).

Fig. 6: Anterior profiles of *B. caucanus* (left) and (right) *B. alpha*?

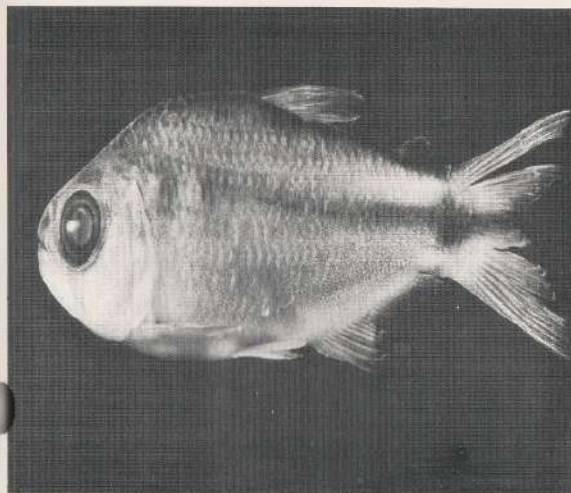
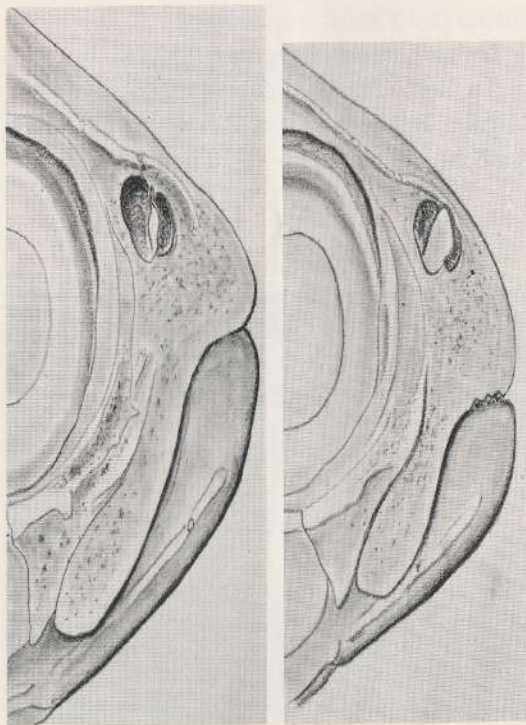


Fig. 7: *Bryconamericus* sp. from upper Cauca.

Fig. 8: *Gephyrocharax caucanus* Eigenmann (Photograph by Dr. Herbert R. Axelrod).



These specimens, being from the typical locality, are very useful for a direct comparison with specimens from the upper Rio Méta (cf. Géry, 1963), which is the typical locality of *B. alpha* Eigenmann (fig. 5).

The upper Méta population has the snout distinctly more rounded, the maxillary shorter and the eye relatively larger (for the same size of fish) (fig. 6). The taxonomic level of the two forms, specific or, more probably, subspecific, could only be evaluated after an ecotaxonomic study of the whole genus, which evidently groups several, more or less intercalated, Rassenkreise.

(5) *Bryconamericus* sp. (fig. 7)

(2 ex., largest 51.6 mm. in standard length)

Depth about 2.70 and head about 3.25 in the standard length; dorsal fin slightly beyond the middle of the body; peduncle remarkably deep and short, its depth more than its length and about 2 in the length of head; eye large, equals interorbital, a little more than maxillary, about 2.8 in the length of head; dorsal ii 9; anal iv 22-24, last ray double; pectorals reaching ventrals, ventrals not reaching first anal ray; caudal naked in Eigenmann's sense, but with a broad scale on base of the lower caudal lobe; largest specimen, a male, with 6-8 rather large hooks on last, unbranched anal ray, as well as on first eight branched ones; scales $7/36-38/5$ or $5\frac{1}{2}$, about 11 in (irregular) predorsal series; head heavy, *Hemibrycon*-like, the dentary rather thick; anterior fontanel short and narrow; third suborbital entire; outer premaxillary teeth 4 or 5, in a wavy line; 4 broad, quincuspid teeth in inner premaxillary series; maxillary reaching to level of pupil, with one or two teeth at its angle; dentary with 4 large frontal teeth, followed by a series of smaller ones on sides.

Body yellowish, caudal yellow; adipose fin black; a faint humeral bar and a dark longitudinal band (silvery in life?), ending in a conspicuous caudal spot, which is prolonged on the middle caudal rays.

These specimens are perplexing. They may represent a new form of the imperfectly-known group with six to nine scales between lateral line and dorsal. They would have approximately the same meristics as the old species *peruvianus*, with the body-form approaching that of *simus*, *emperador* or *scleropardius* (which were never recorded from the Cauca). On the other hand, they may be young *Hemibrycon* with still few maxillary teeth (the number of maxillary teeth is perhaps correlated with age in some *Hemibrycon* species, as in *Pseudochalceus*). Apart from *dentatus* which is quite different, only one *Hemibrycon* was reported as being found together with *Bryconamericus caucanus*: it is *H. boquiae*, from "foot of Mt. Tolima," on the Magdalena side of the central Cordillera. The latter species is so badly known that any reference of the present specimens to it would be a mere guess.

(6) *Gephyrocharax caucanus* Eigenmann, 1912 (fig. 8)

(8 ex., largest 32.5 mm. in standard length)

Elongate, very compressed, with a narrow, almost keeled abdomen; anal

iii 33(i), with sexual hooks from the last, unbranched ray to the 8th or 9th one, on males only; the males also have the peculiar caudal structure of the genus (cf. Myers in Eigenmann & Myers, 1929, pl. 88 fig. 4).

Premaxillary teeth in two rows, the external one with 4 or 5 tricuspid teeth, the internal one with, generally, only 4 quincuspid teeth (the fifth one, mentioned in the original diagnosis, not apparent here); a small, conical maxillary tooth; dentary with 4 quincuspid, frontal teeth, followed on sides by about 7 much smaller, conical ones.

Judging from the above described dentition, the genus could well have derived from some *Bryconamericus*-like ancestor. Some of the males, if not all, have curious red spots on abdomen, which could be sex-signals.

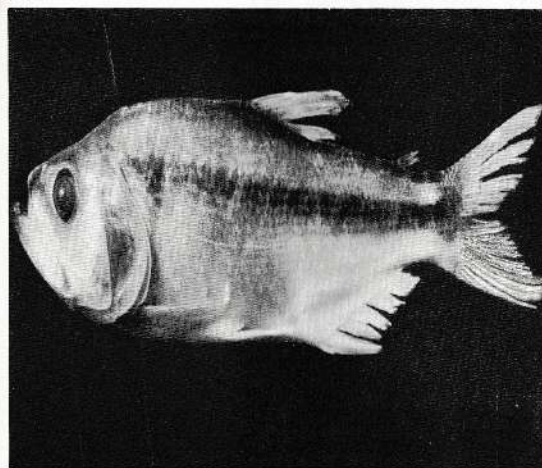


Fig. 9: *Genycharax tarpon* Eigenmann.

(7) *Genycharax tarpon* Eigenmann, 1912 (fig. 9)

(1 ex., 93 mm. in standard length)

Depth about 3.25 in the standard length; dorsal fin slightly behind the middle of the body; rays ii 9; anal fin iv 21(i); scales $12/69/10\frac{1}{2}$ or 11; gill-rakers 8/1/11.

Head (fig. 10) rather flat above, with the mouth distinctly upturned; third suborbital not covering entire cheek; anterior fontanel narrow, elongate, reaching to almost front of eye; dentition (fig. 11) very peculiar: teeth all conical, the premaxillary ones in two series (one tooth between the rows), the outer row with 13 or 14 forward pointed teeth, the inner one with only six, much larger, backward recurved ones; maxillary broad, blade-like, with six teeth; mandibular teeth uniserial, numbering about 22 on each side, backward recurved as in the inner premaxillary series; no teeth on palate. In life, anterior lobe of anal, as well as caudal lobes, orange.

The phylogeny and taxonomic position of *Genycharax* are uncertain.

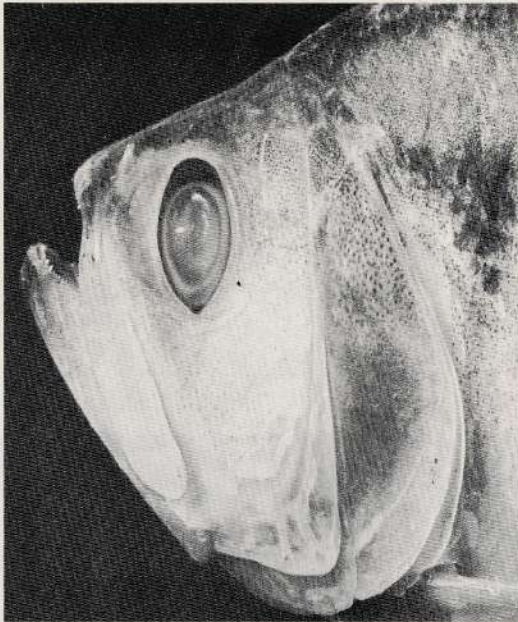


Fig. 10: Close-up of the head of *Genycharax*.

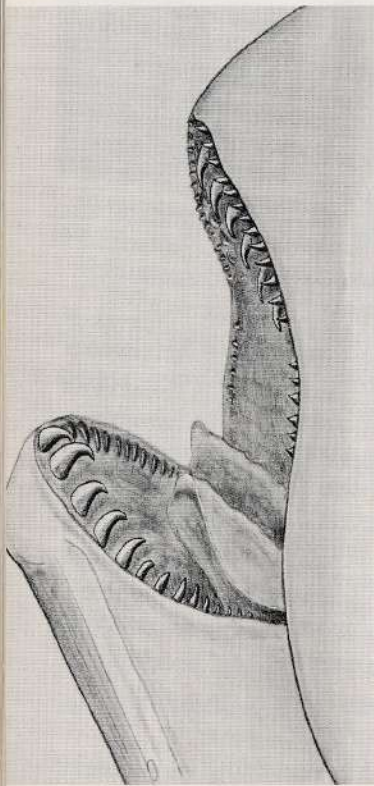


Fig. 11: Dentition of *Genycharax* (½ schematic)

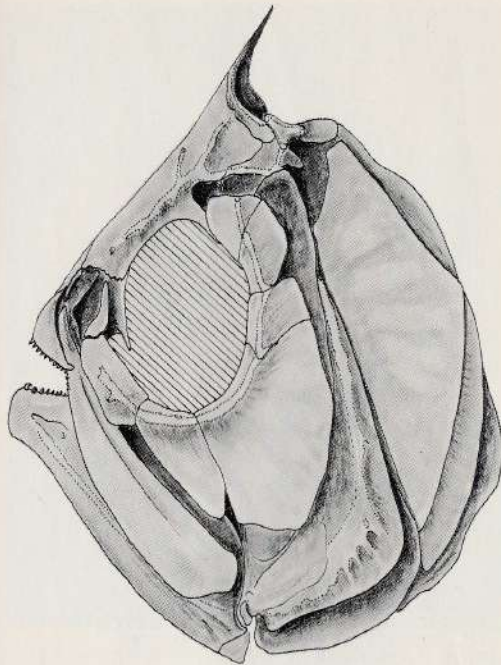


Fig. 12: Lateral view of the skull of *Genycharax* (½ schematic).

Eigenmann placed it at the end of his Tetragonopterinae, near *Scissor*, suggesting a link between the Tetragonopterinae proper and *Exodon* in the Characinae. Although the dentition seems only convergent with that of *Exodon* or *Roebooides* (the latter figured below), the structure of the skull and of the scales would still support a similar hypothesis.

The skull (fig. 12) is of a rather specialized type, with some regressive features, namely the disappearance of the supraorbital and the very rudimentary nasal; the antorbital is rather large, covering partially the proximal part of the large, blade-like, scarcely toothed maxillary; there is a sixth circumorbital, or dermosphenotic; probably no supra-preopercular (which is altogether very rudimentary, even in the most primitive characoids). As a whole, this is not very different from the structures found in some Tetragonopterinae like *Astyanax*; on the other hand, there exist certain Characinae, *Oligosarcus*, for example, which do have a rather similar skull.

A scale of the side (fig. 13), taken above lateral line, has the following structure: scale higher than long, about 25/20 tenths of a millimeter; basal border not incised, rounded, with well marked angles; nucleus apparently large, not delimited, clearly basal; apical circuli converging to an antero-posterior line; radii purely apical, slightly diverging. Again, this is suggestive of the structure found in *Astyanax abramoides* for instance, on the one hand, and some Characinae, like *Oligosarcus* (and also *Exodon*), on the other.

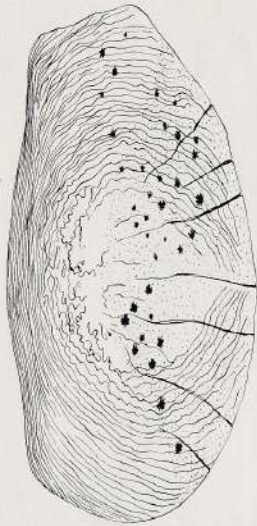


Fig. 13: Scale of *Genycharax*
(the basal border is at the left).

(8) *Roeboides caucae* Eigenmann, 1922 (fig. 14)

(3 ex., largest 48.5 mm. in standard length, topotypes)

Depth 3 in the standard length; anal base shorter than its distance to the snout, 44-46 rays (total); dorsal and anal fins approximately on the same level; scales about 16/64-66/14 or 16 (up to anal).

Dentition very irregular, probably varying with age; about 10 teeth on premaxillary, in two or three irregular rows, with two external "tooth-like prongs"; about 6 proximal teeth on maxillary, followed distally by about 7 larger ones, more or less external; about 7 teeth on dentary, in two or three rows, with one (or no) external tooth.

Fig. 14: *Roeboides caucae* Eigenmann.

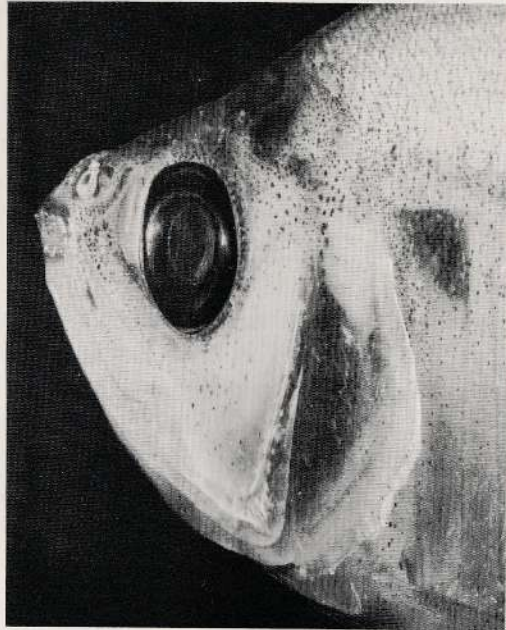
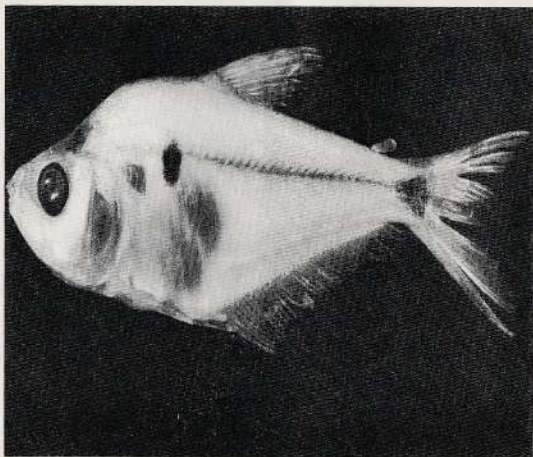
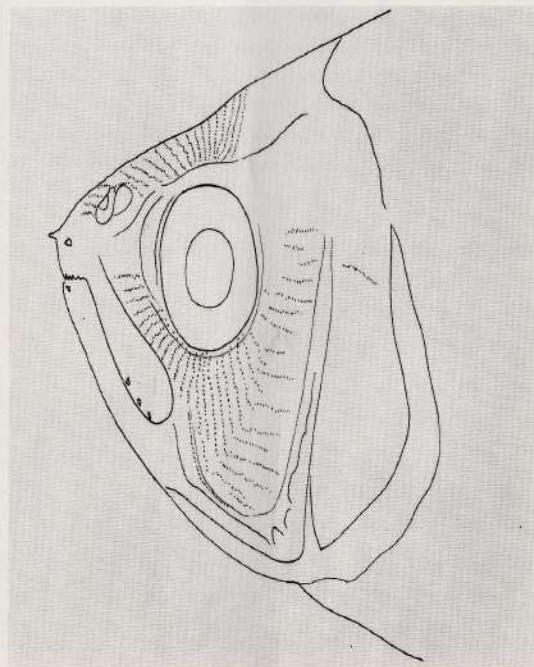


Fig. 15: Close-up of the head of *Roeboides caucae* (the pseudotympanum is the triangular dark area just behind the opercle).

Fig. 16: Sketch of the head of *Roeboides caucae*, to show the disposition of the pit-lines; owing to the very small pores, these pit-lines are scarcely apparent on the preceding photograph— $\frac{1}{2}$ schematic.



Humeral and caudal spots both conspicuous; pseudotympanum apparent at a cursory examination (fig. 15); unpaired fins, as well as ventrals, orange *in vivo*; body lemon colored.

The twenty or so nominal species of the genus *Roeboides* are in need of a critical revision. They form probably some Rassenkreise in parallel with *Bryonamericus* and *Hemibrycon*, and an ecotaxonomic study would reveal that biospecies are much less than twenty. The present form *cauae* is itself very near *magdalenae*, differing only by the presence, in the former, of a humeral spot.

Some *Roeboides*-species, at least septentrional ones, including *cauae* and *salvadoris*, have a remarkable net of cervical pit-lines (fig. 16), more or less zigzagging, on the top of the head and on the circumorbital region. This is a rare event in characoids. Poll & Lambert recently (1964) discussed it, concerning the african genus *Congocharax*. *Crenuchus* (American) has some transverse pit-lines on the "pad" covering the foremost part of the frontal. Other occurrences of similar structures in South-American genera have not yet been reported, as far as known.

REFERENCES

- EIGENMANN, C. H., 1912: Some results from an ichthyological reconnaissance of Colombia, South America—*Indiana Univ. Stud.* X (8), No. 16: 1-27.
- EIGENMANN, C. H., 1913: Some results from an ichthyological reconnaissance of Colombia, South America, part II—*Indiana Univ. Stud.* No. 18: 1-32.
- EIGENMANN, C. H., 1920: The Magdalena Basin and the horizontal and vertical distribution of its fishes—*Indiana Univ. Stud.* VII, stud. No. 47 B: 21-34, pl. II.
- EIGENMANN, C. H., 1922: The Fishes of western South America, part I. The freshwater fishes of northwestern South America, including Colombia, Panama, and the Pacific slopes of Ecuador and Peru, together with an appendix upon the fishes of the Rio Meta in Colombia—*Mem. Carnegie Mus.* IX (1): 1-346, pls. 1-38.
- GÉRY, J., 1963: Preliminary descriptions of seven new species and two new genera of characoid fishes from the upper Rio Meta in Colombia—*Trop. Fish Hobb.* XII (5), Jan. 1964: 25-32, 41-48.
- MYERS, G. S. in EIGENMANN & MYERS, 1929: The American Characidae, part 5—*Mem. Mus. comp. Zool. Harvard* XLIII: 429-574, 11 pls.
- POLL, M. & LAMBERT, J., 1964: *Congocharax gossesi* sp. n. du Gabon (Ogooué)—*Rev. Zool. Bot. afr.* LXX (3-4): 336-340 (fig. p. 407).

Pseudochalceus kyburzi, a New Characid Fish from Colombia

BY LEONARD P. SCHULTZ

Recently Dr. H. R. Axelrod asked me to identify a characid fish that he had collected in the Río Calima, Cauca Valley, Colombia, South America. His specimen represented a new species referable to the genus *Pseudochalceus* Kner, and it is described in this report. An attempt is also made to review the genus *Pseudochalceus* resulting in referral of the nominal genus *Hollandichthys* Eigenmann as a synonym of *Pseudochalceus*.

Pseudochalceus kyburzi, full view. Photo by Dr. Herbert R. Axelrod.



Pseudochalceus Kner

Pseudochalceus Kner, Sitz. Akad. Wiss. München, vol. 2, p. 225, 1863 (type species, *Pseudochalceus lineatus* Kner).—Kner and Steindachner, Abhand. Bayer Akad. Wien., vol. 10, pt. 1, p. 35, 1864 (type species, *P. lineatus* Kner and Steindachner).

Hollandichthys Eigenmann, Repts. Princeton Univ. Exped. Patagonia 1896-1899, vol. 3, pt. 4, p. 432, 1910 (type species, *Tetragonopterus multifasciatus* Eigenmann and Norris).

The genus *Pseudochalceus* is distinguished by the presence of strong conical teeth along the entire exposed margin of the maxillary and an incomplete lateral line.

Hollandichthys is referred to the synonymy of *Pseudochalceus* because I am unable to find any important anatomical differences other than those that distinguish the two type species, *lineatus* and *multifasciatus*.

Key to the species of *Pseudochalceus*

1a. Color pattern 9 to 12 lengthwise blackish streaks along the side of the body, parallel to rows of scales.

2a. Anal rays iii or iv, 28 to 31; oblique scale rows from head to midcaudal fin base 38 to 42.

P. multifasciatus (Eigenmann and Norris)

2b. Anal rays iii or iv, 25 or 26; oblique scale rows from head to midcaudal fin base 34 to 36.

P. lineatus Kner

1b. Color pattern of scattered brownish spots, some as large as pupil; anal rays iii, 23 or iii, 24; oblique scale rows from head to midcaudal fin base 30 to 35.

P. kyburzi, new species

Pseudochalceus multifasciatus (Eigenmann and Norris)

Tetragonopterus multifasciatus Eigenmann and Norris, Revista Mus. Paulista, vol. 4, p. 358, 1900 (Cubatão, Brazil).—Eigenmann, Repts. Princeton Univ. Exped. Patagonia 1896-1899, vol. 3, pt. 4, p. 432, 1910 (Cubatão).—Eigenmann, Mem. Mus. Comp. Zool., vol. 43, pt. 1, pl. 2, fig. 4, pl. 95, fig. 8, 1917.—Eigenmann, Mem. Mus. Comp. Zool., vol. 43, pt. 3, p. 225, pl. 64, figs. 1, 2, 3, (legend for 4 in error), 1921.

Pseudochalceus affinis Steindachner, Kaiser. Akad. Wiss. Wien no. 5, p. 29, 1908 (Rio Jaraguá, near Joinville, S. Catharina, Brazil).

Pseudochalceus perstriatus Ribeiro, Kosmos, vol. 5, no. 2, (no pagination), fig. 5, 1908 (Iporanga).

This species is distinguished from *P. lineatus* and *P. kyburzi* in having more anal rays, iii or iv, 28 to 31 and more scale rows 38 to 42. It occurs in southeastern Brazil.

Pseudochalceus lineatus Kner

Pseudochalceus lineatus Kner, Sitz. Akad. Wiss. München, vol. 2, p. 225, 1863 (Western slope of Andes in Ecuador).—Kner and Steindachner, Abhand. Bayer Akad. Wien, vol. 10, p. 35, pl. 5, fig. 1, 1864 (Ecuador).—Wagner, Abhand. Bayer Akad. Wien, vol. 10, pt. 1, p. 98, 1864 (Ecuador).—Günther, Catalog Fishes British Museum, vol. 5, p. 332, 1864 (Ecuador).—Eigenmann and Eigenmann, Proc. U.S. Nat. Mus., vol. 14, p. 54, 1891 (Ecuador).—Eigenmann, Repts. Princeton Univ. Exped. Patagonia 1896-1899, vol. 3, pt. 4, p. 432, 1910 (Ecuador).—Eigenmann, Mem. Mus. Comp. Zool., vol. 43, pt. 3, p. 227, pl. 64, figs. 4, 5, (legend for 3 in error), 1921 (Ecuador).—Eigenmann, Mem. Carnegie Mus., vol. 9, pt. 1, p. 140, 1922 (Ecuador).

This species is distinguished by having 9 to 12 lengthwise dark streaks on the side of body, whereas *P. kyburzi* has brown spots on the body. The scales and anal rays are intermediate in number between *P. multifasciatus* and *P. kyburzi* (see key for further details).

Pseudochalceus kyburzi, new species

HOLOTYPE.—USNM 257403-F27, standard length 78 mm, Río Calima, Cauca Valley, Colombia, Nov. 1964, Dr. H. R. Axelrod.

PARATYPES.—USNM 171751, standard length 36.5 mm, Río Anchicaya, (Pacific drainage) Colombia, Wm. A. Kyburz and Harry H. Hutchins; USNM 258173-F1 standard length 40.5 mm, Río Dagua, near Buenaventura (Pacific drainage), Colombia, June and October 1964, Wm. A. Kyburz thru Ross Socolof.

Also two specimens, 46.5 mm and 44.7 mm, with same data as USNM 258173-F1 in the collection of Dr. J. Géry, Saint-Geniès, Dordogne, France.

DESCRIPTION.—Strong, simple conical teeth along margin of maxillary, 18 on right side, 19 on left, the first tooth a little enlarged, then a wide space, followed by evenly spaced teeth; premaxillary with 2 rows of teeth, outer row with 3 tricuspid teeth on each side, inner row with 6 (5 on some paratypes) teeth on each side, the first 4 pentacuspids, and lateral 2 tricuspid, all have the middle cusp largest. Dentary with 6 strong pentacuspids (on some of the paratypes these teeth are tricuspid) on each side in a single row, followed posteriorly by about 8 small simple conical teeth in a single row. Gill membranes free, connected to isthmus far forward; a row of scales along base of anal rays, ending on seventh branched ray, no scales shielding bases of other fin rays except on caudal fin where 2 or 3 scales extend outward on middle area of base of each lobe; lateral line incomplete, curved ventrally, ending about over base of pelvic fin; rear nasal opening large, separated from small anterior one by a very narrow dermal isthmus; vertical line thru dorsal

origin passes about equidistant between rear of pelvic base and anal origin; vertical line thru adipose origin passes thru base of about third from last anal ray.

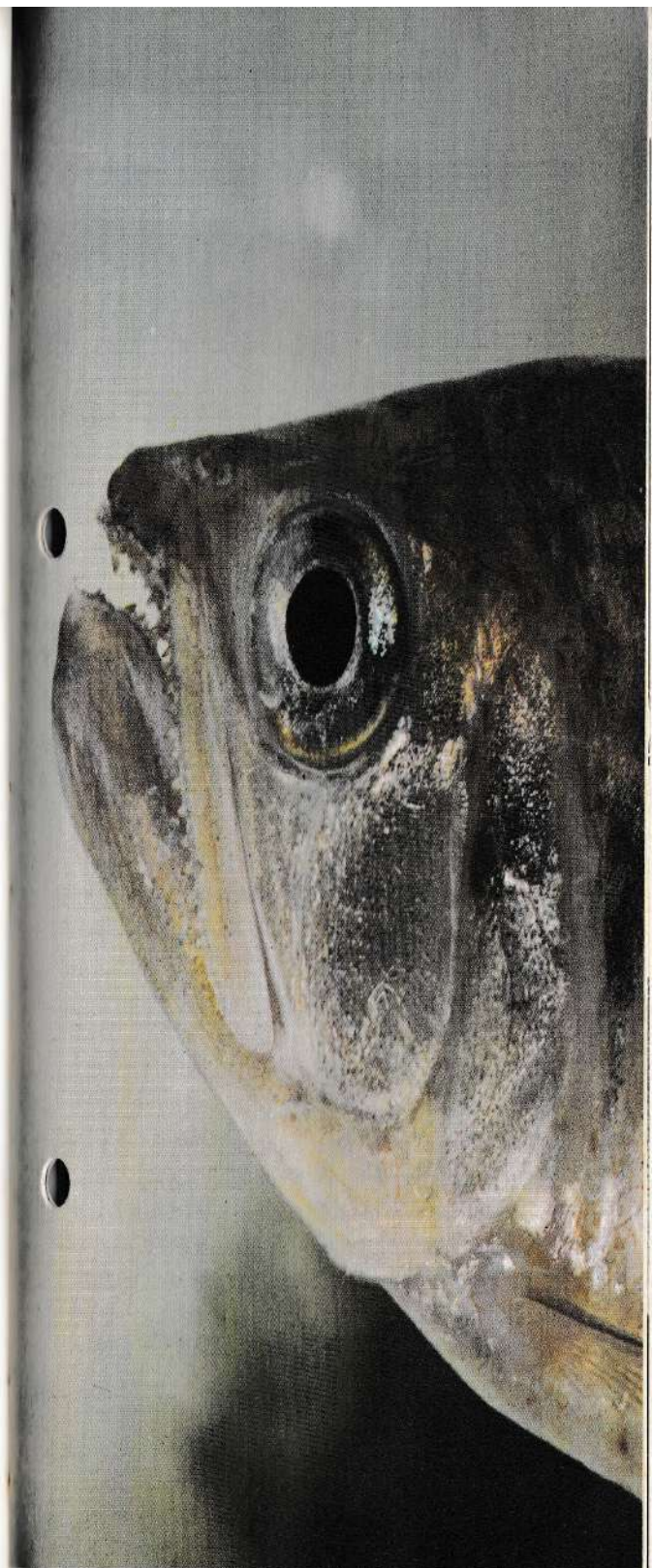
Detailed measurements were made and these data, expressed in thousands of the standard length, are recorded first for the holotype, then for the paratypes, respectively. Standard lengths in mm are 78; 46.5; 40.5; 44.7 and 36.5.

Greatest depth of body 359; 377; 378; 380; 342. Length of head from snout tip to rear edge of soft opercular membrane 308; 321; 302; 313; 307. Diameter of eye 82; 103; 99; 107; 112. Tip of snout to: eye 81; 92; 82; 89; 82, and to rear edge of maxillary 200; 178; 173; 195; 165. Greatest width of head 147; 147; 148; 143; 137. Width of hard interorbital space 99; 88; 91; 98; 82. Rear edge of eye to rear edge of opercular membrane 149; 155; 141; 150; 137. Eye to rear edge of posterior nasal opening 26; 22; 25; 25; 16. Tip of snout to base of: dorsal fin 513; 550; 554; 544; 554, anal fin 583; 638; 632; 604; 548, adipose fin 862; 867; 874; 848; 874, pectoral fin 399; 302; 304; 329; 302, pelvic fin 450; 452; 482; 466; 477. Least depth of caudal peduncle 139; 127; 133; 134; 123. Length of caudal peduncle between vertical lines through rear of anal base and base of caudal fin 103; 95; 101; 107; 90. Length of base of: dorsal fin 160; 131; 143; 152; 134, and anal fin 324; 323; 322; 307; 302. Longest ray of: dorsal fin 257; 237; 329; 320; 304, anal fin 150; 194; 193; 195; 219, pectoral fin 205; 209; 210; 201; 227, and pelvic fin 173; 179; 156; 152; 151. Shortest caudal fin ray of holotype 158, others broken.

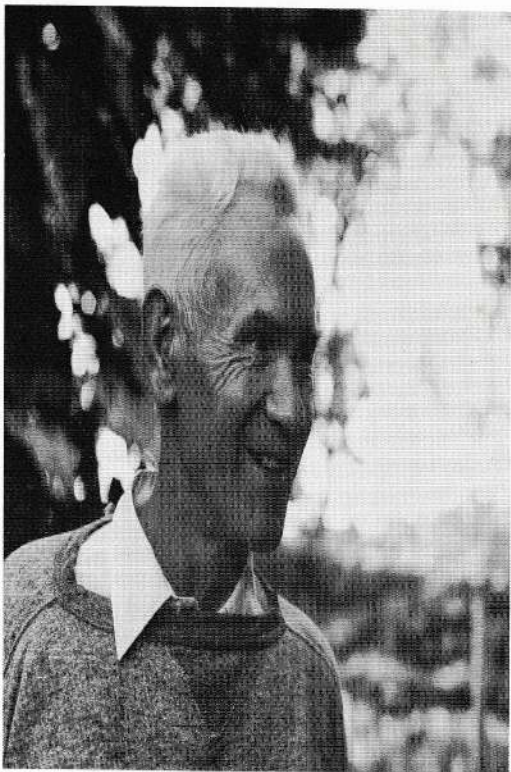
The following counts are recorded first for holotype then for paratypes, respectively (same order as for measurements). Dorsal always ii, 9; anal iii, 23; iii, 24; iii, 24; iii, 24; iii, 23; pectoral i, 11; i, 12; i, 12; i, 11; i, 11; pelvic always i, 7; branched caudal rays 9+9 on holotype and on 36.5 mm paratype, tails broken on others. Pores in lateral line 8; 11, 9; 5; 12. Scales from lateral line to dorsal origin 11; 9; 10; 9; 9, and to insertion of pelvic 5; 6; 6; 6; 5. Median scales in front of dorsal origin 13; 13; 15; 13; 15, zig-zag scale rows around caudal peduncle 18; 18; 18; 18; 17; scales between bases of dorsal and adipose fins 11; 12; 12; 12; 10; oblique scale rows from rear of head to midbase of caudal fin 32; 33; 35; 34; 30.

COLOR.—Back yellowish brown, mid side light purplish, lower side and belly greyish white, tinged with pink, dorsal and adipose fins light yellowish, upper and lower rays of caudal fin tinged with rosy-grey, spots purplish-brown.

HABITAT.—Wm. A. Kyburz supplied the following information about this new species in a letter dated December 21, 1964. "Habitat: Freshwater-creeks, about 20 to 25 kms inland from Buenaventura, well outside of tidal influence. The fish was found first in a tiny affluent of río Potedó which empties into río Anchicayá about 6 kms below confluence with río Zabaletas, and this year in a very small creek emptying into río Dagua, about 14 kms



Pseudochalceus kyburzi, view showing teeth. Photo by Dr. Herbert R. Axelrod.



William A. Kyburz, after whom the subject of this article was named, passed away on January 24 of last year. Photo by Dr. Herbert R. Axelrod.

inland, but also definitely outside of tidal influence. It was never found in larger bodies of water which might indicate that it is highly vulnerable to the many predatory species of that region."

REMARKS.—This new species may be distinguished from the other two members of the genus mostly by the color pattern of light brown spots instead of blackish lengthwise streaks on sides as in *P. lineatus* and *P. multifasciatus*.

The color plates have been supplied by Dr. Axelrod and three paratypes were loaned by Dr. J. Géry for study. To these gentlemen I extend my thanks for their kind cooperation.

The new species is named *kyburzi* in honor of William A. Kyburz, its first collector.

About a *Hemigrammus* from the Amazon

BY HAROLDO TRAVASSOS

Museu Nacional,
Rio de Janeiro

Among some material sent by Dr. Herbert Axelrod we found four fish specimens collected near Leticia, in the River Solimões, which we identified as being *Hemigrammus hyanuary* Eigenmann, 1918, described originally from Lake January. Up to the present this species had not been found again, even in the locality of the type. According to Pinto (1898) it occurred in a slough off the left bank of the River Solimões which connects with the Rio Negro. Our specimens were collected within this same region, where lakes and sloughs are produced during the flood season.

We thank Dr. Herbert Axelrod for the specimens and Mrs. Layla Leitao de Carvalho for the translation into English.

HEMIGRAMMUS HYANUARY Eigenmann, 1918

HEMIGRAMMUS HYANUARY Eigenmann, 1910 3(4): 436 pro Durbin

HEMIGRAMMUS HYANUARY Eigenmann, 1918, 43(2): 151 pl. 18 fig.

HEMIGRAMMUS HYANUARY Fowler, 1948 3(1): 102 fig. 11. sin.

HEMIGRAMMUS HYANUARY Travassos, 1960 4(2): 22 disc.

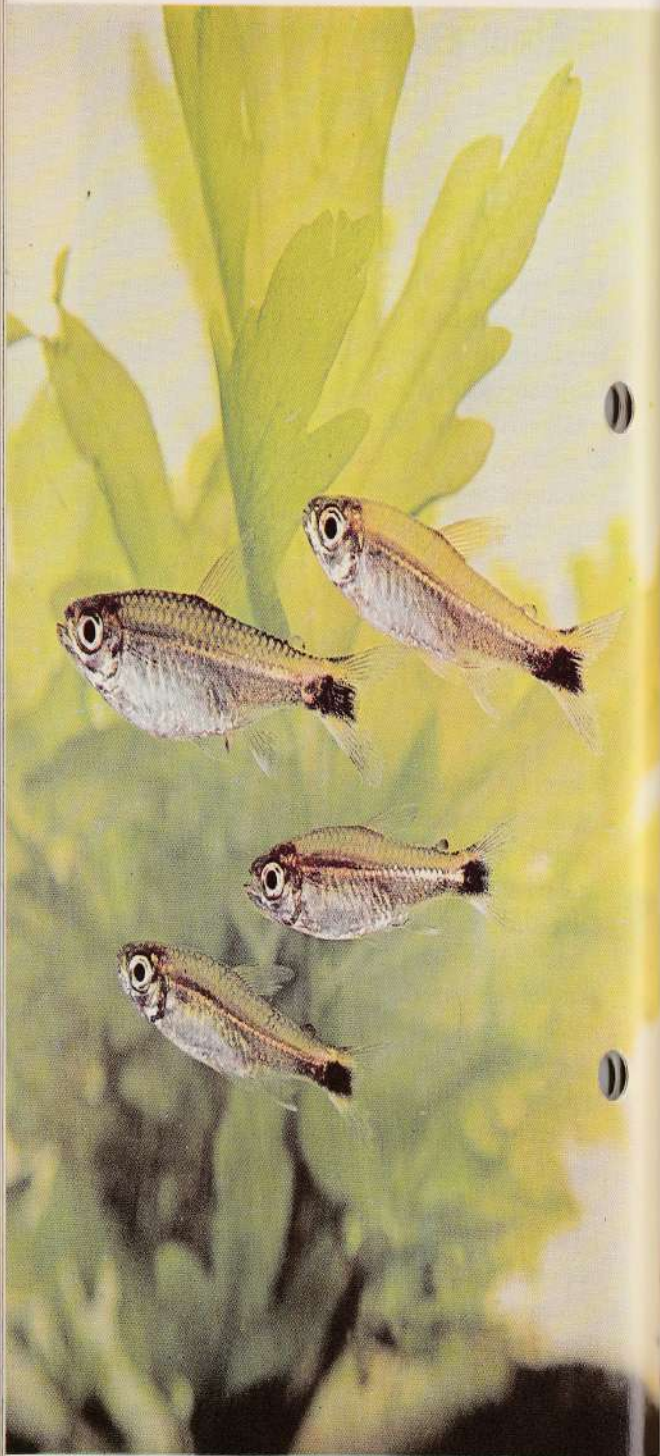
A *Hemigrammus* of median size; the anterior portion of the profile is curved; the ventral is straight. The depth decreases gradually behind the dorsal and anal fins. The profiles of the peduncle are straight and parallel. Head small; the eyes are large, exceeding the length of the snout.

In alcohol the coloring is as follows: the belly is opaline white and the back is darkened owing to a fine black pigmentation around the free border of the scales; this pigmentation is present on the dorsal part of peduncle. The mid-dorsal line of the back is black. Along mid-side of body there is a dark stripe, two scales wide which blends with the blackish base of the caudal fin, and occupies the middle and lower third of the median rays almost to the rear edge of the caudal fin. Above and below this black band is light olive colored area.

The cheek is pale but the other parts of the head, principally the dorsal part, is darkly pigmented.

The pectorals and pelvic fins are light. The dorsal, anal, adipose and middle third of the caudal fin are pigmented.

Head small, 3.5 times in body length; eyes as large as a third of head; mouth terminal, the rear extremity of the maxillary a vertical line through the anterior orbital edge; nostrils small, contiguous, situated dorsally and equidistant from the eyes to the snout. Circumocular bones well developed.



Hemigrammus hyanuary. Photo by Dr. Herbert R. Axelrod.

Fontanell present, reaching from the middle of the frontal to the extremity of the occipital process.

The mandible is almost horizontal, resembling, in general aspect, that of the genus *Deuterodon* Eigenmann; the angular bone is reduced, distinguished from *Deuterodon* by its simple articulation.

Dentition occurs on the anterior third of the jaws. The teeth are large and cylindrical, with flattened extremities. Dentary with 8 to 9 teeth, the anterior 4 largest, much longer than the 4 or 5 posterior ones which are tricuspid; the first three teeth have seven cusps, the fourth has five cusps with the median cusp always largest.

The upper jaw has a triangular shaped premaxillary; the maxillary is long and flattened in the distal three-fourths of its length, and cylindrical proximally. The maxillary has a strong bend in the region of the implanted teeth. The teeth are small, and number one or two. They are cylindrical with pentacuspoid tips.

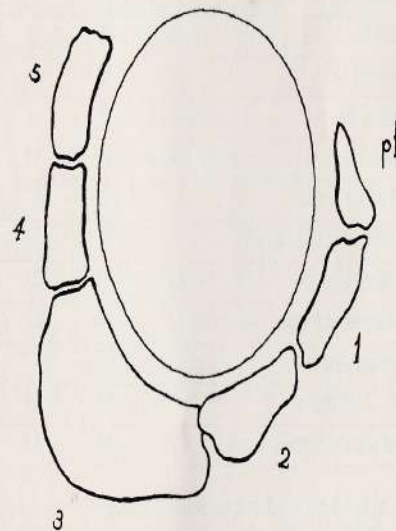


Diagram of circumorbitae bones and prefrontal (pf).

The premaxillary has a double row of teeth, the inner row is formed by five teeth, decreasing in size from the middle to the side; the proximal two have seven cusps and the others five. The outer row is formed by four teeth, the third set back behind the others. The first tooth of the outer row is between the 2nd and 3rd of the inner one; the 2nd tooth of the outer row is placed in front of the 3rd one of the inner row; the 3rd tooth of the inner row is set back and very close to the 2nd and also placed in front of the 3rd of the inner row; the 4th tooth between the 3rd and 4th of the inner row; all are tricuspid. Replacement teeth are present.

CHART No. 1

Catalogue number	9.389	9.390	9.391	9.392
Total length in mm	36.0	30.0	33.0	30.0
Standard length in mm	28.0	24.5	28.0	24.0
Head length	7.5	7.5	7.5	7.0
Snout tip to eye	2.0	2.0	2.0	1.5
Snout tip to dorsal fin	15.0	12.0	16.0	13.0
Interorbital space	3.0	3.0	3.0	2.5
Diameter of the eyes	3.0	3.0	3.0	2.5
Greatest depth	9.0	6.5	8.0	6.0
Predorsal scales	9	9	9	9
Scale rows on midsides	29	29	30	30
Scales in a transverse series	9	9	9	9
Rays of dorsal fin	11	11	11	11
Rays of anal fin	15	15	14	15
Rays of pectoral fin	11	12	13	12
Rays of ventral fin	8	8	8	8
Rays of caudal fin	19	19	19	19

A vertical line through the insertion of the pectorals passes through the opercular border; the pectoral fin does not reach the ventral fin.

The ventrals have 8 rays, and reach the anal fin origin. The anal has 15 rays, the 1st ray is of reduced size and simple. It is one fourth the size of the 2nd, and half the size of the 3rd; the 5th is the longest; the fin is slightly falcate. The adipose fin is large. The caudal fin is relatively large, clearly forked, with subequal lobes.

The discrepancy between this account and that of the original description by Eigenmann, in regard to the fewer numbers (six) of cusps for some teeth is caused by my more perfect examinations of the dentition by the maxillary in order to more accurately count the number of cusps.

We observe another little difference, a variation up to three scales in the number of the scales in the lateral line. So I conclude that the present material in hand is obviously *H. hyanuary*.

The present species approaches the genus *Moenkhausia* Eigenmann by the arrangement of the teeth and the genus *Deuterodon* Eigenmann by the shape of the lower jaw and up to a certain degree by the crown of the teeth and with the fish of the subfamily *Cheirodominae* on other aspects.

BIBLIOGRAPHY

EIGENMANN, C. H., 1910—Catalogue and Bibliograph of the fresh-water fishes of the

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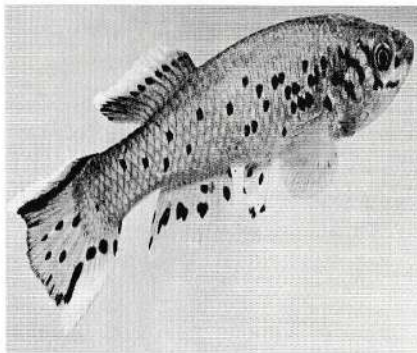
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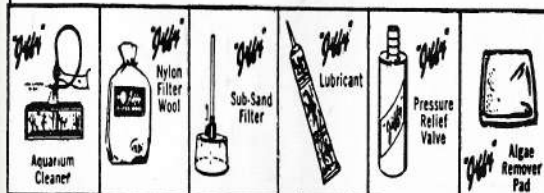
Controlled Cleaning

- Removes sediment and snails from surface or throughout the depth
- Larger valves permit passage of larger growths of algae as well as snails
- Both valves are easily accessible for cleaning
- If you wish to maintain healthy fish, the "Jiffy" Aquarium Cleaner is a necessary companion with any type of filter including sub-sand filters
- If you think you don't need a "Jiffy" Aquarium Cleaner, stir up the gravel with a stick!



"The "Jiffy" way
 is the best way"

- Original
- The Best
- The Fastest Flow
- Through a change of policy we are now accepting any legitimate jobber who furnishes adequate references.



CONTACT YOUR LOCAL DEALER, DISTRIBUTOR, OR WRITE FOR FREE CATALOG

Framar Mfg. Co. 3958 ALLA ROAD LOS ANGELES 66. CALIF



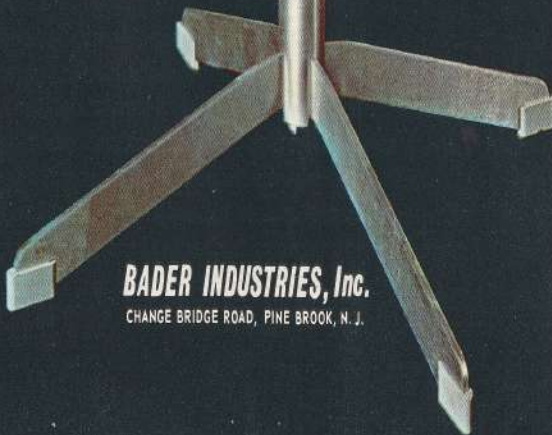
THE **Unique** **Danske**
Aquarium stand by **BADER**

DIFFERENT . . .
modern, streamlined,
attractive design.

Bader specializes in laboratory
Quotations from

PRACTICAL . . .
interchangeable
trays for virtually
any size tank.

setups to your specifications.
your specifications.



BADER INDUSTRIES, Inc.
CHANGE BRIDGE ROAD, PINE BROOK, N. J.

January, 1966

ALWAYS DEMAND THE BEST!
for cleaner healthier aquariums
insist on
"E-Z"
The Perfect Control
**AQUARIUM
CLEANER**

ONE HAND OPERATION

- Churning action separates and removes dirt deeply imbedded in gravel.
- Elicately lifts dirt from top of gravel.
- Cleans aquarium without moving gravel, plants or ornaments.
- Durable, quality construction.
- No mechanical breakdown.
- "E-Z" to operate.

WATER AND DIRT PASS INTO FILTER BAG

CHURNING ACTION SEPARATES DIRT FROM GRAVEL

CLEAN WATER RETURNS TO AQUARIUM

PRESSURE RELEASE VALVE

EQUIPPED WITH PORTABLE 8" EXTENSION TUBE . . . Easily Snaps on for larger tanks

Manufactured by
"E-Z" AQUARIUM PRODUCTS CORP.
73 Poe Avenue, Newark, N. J.

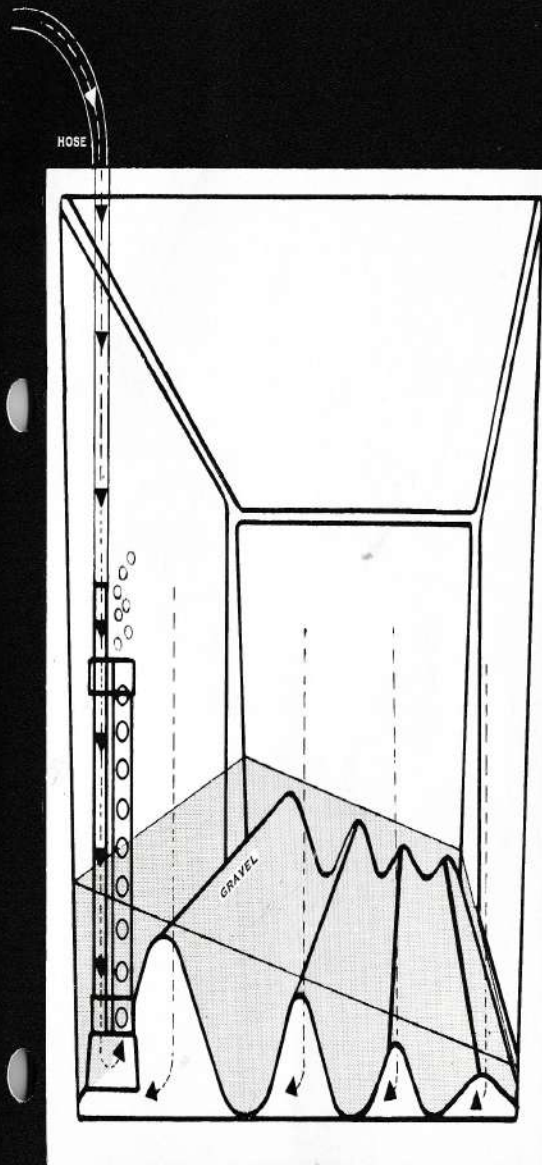
Patent Pending.

**THE
MIRACLE
HIPOWER...
DIDN'T
REPLACE
UNDERGRAVEL
FILTERS...
IT
JUST
IMPROVED
THEM
TREMENDOUSLY**

For hobbyists
who make mistakes
once in a while...
and need a filter that
gives them a margin
for error...
60% more margin
for error
For dealers
who want to
stock their tanks
to greater advantage...
with more fish per tank,
more profit per unit
For people
who appreciate how
an aquarium
should look...
clean, clear, luxuriant

**AT ALL
COMPLETE
PET SHOPS,
\$4.95**

MIRACLE PLASTICS COMPANY, 1243 W. COWLES ST., LONG BEACH, CALIF. 90813



All undergravel filters work on the same principle: they create a partial vacuum that causes the tank's water to be filtered through the layer of gravel above the filter, trapping suspended dirt. In addition, the consequent presence of oxygen in the gravel

allows colonies of aerobic bacteria to convert the filtered material into substances harmless to the fish. It stands to reason that the undergravel filter that provides the greatest filtration area does the best job. The Miracle HiPower undergravel filter is 60% more efficient than all other undergravel

filters. The Miracle HiPower Undergravel Filter is the BEST undergravel filter. And because of its unique contoured shape, the Miracle HiPower Undergravel Filter is a great help in the creation of a number of interesting, artistic, and natural aquascaping arrangements.



NEW!

General Developments Corp. of Milwaukee, Wis. announces the availability of their new aquarium algicide, **ACTION ALGI-CURE**. Aquarium hobbyists and dealers are well aware of regular ALGI-CURE, the effective, long lasting aquarium algicide. However, recognizing the need for **fast initial** algicidal action following tank cleaning or water changing, GDC's biochemists, after considerable research, have developed this **new** tablet.

New ACTION ALGI-CURE has been so formulated that there is no time lost getting an aquarium in tip-top shape. After the tank has been cleaned or the water changed, you just drop in 2 ACTION ALGI-CURE tablets per 10 gallons and you can watch it go to work! Effervescent ACTION ALGI-CURE dissolves in seconds to give fast, efficient algicidal action. (Since this new blue formulation was designed as an initial purge treatment, it does not replace or supersede regular pink ALGI-CURE. To keep a tank in constant algae-free condition, it has been proven that the most effective, economical, long lasting algae control is still provided by regular ALGI-CURE.)

Recently, Dr. George P. Fitzgerald of the "Hydraulic and Sanitary Laboratories" at the University of Wisconsin, in an investigation supported in part by Public Health Service Research Grant EF-493 from the National Institute of Health, made an impartial scientific study and wrote a paper entitled "Evaluation Techniques for the Control of the Growth of Algae in Aquaria." This paper, accepted for publication and scheduled to appear shortly in a leading national tropical fish magazine, compares the merits of ALGI-CURE and new ACTION ALGI-CURE with other competitive products in the aquarium algicide field. General Developments Corp. urgently requests that this study be carefully read by all concerned.



GENERAL DEVELOPMENTS CORP.

P.O. BOX 3675

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• GOOD NEWS FOR GARDEN POOL OWNERS •

Just Out...

Supreme[®]
POOLMASTER



**THE ONLY UNIT THAT
BOTH FILTERS and CIRCULATES
WATER IN GARDEN POOLS!**

**New Combination Filter and Pump
Keeps Garden Pools Clean and Fresh!**

There's nothing else like it, anywhere! **The Poolmaster** is a filter and pump combined, that is designed for use in all kinds of outdoor and indoor pools, including ponds, goldfish pools and fresh water minnow tanks.

The Poolmaster is placed at the bottom of the pool completely submerged and out of sight. Water is drawn through the filter and returned to the pool by the pump. Because the Poolmaster is so compact, it can be easily moved to all parts of the

pool to pick up any accumulation from the bottom.

With the Poolmaster, you can create your own beautiful waterfall or fountain by simply connecting a hose to the pump outlet.

The Poolmaster is quality-built by the foremost manufacturer of aquarium and pool products. It is constructed to give you superior, trouble-free performance year after year. **Supreme materials and workmanship are guaranteed against defects for one year from date of purchase.**

SPECIFICATIONS

115 V 60 Cycles
Up to height of 1 ft.
—pumps 200 gals/hr.
Up to height of 5 ft.
—pumps 120 gals/hr.
Weight: 5 lbs.
Size: 13½"x6"x7"



EUGENE G. DANNER MFG. INC. 1660 Summerfield Street • Brooklyn 27, N. Y.

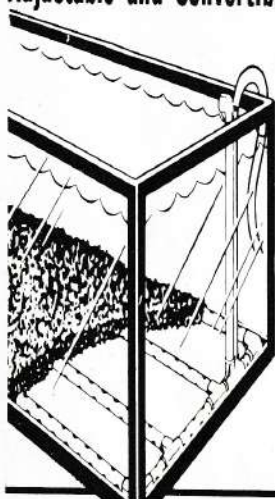


World's Finest
GRAVEL FILTER...

EUREKA AQUARIUM PURIFIER

Completely Sectional,
Adjustable and Convertible

FITS
ANY
TANK



3⁴⁹ For Tanks
up to
16" x 8"

SUGGESTED RETAIL

TANK SIZE	RETAIL
up to 20" x 14" —	399
up to 24" x 14" —	449
up to 30" x 14" —	499

SUPERIOR TO PLATE-TYPE FILTER
Eureka Purifier continuously circulates aerated water THROUGH THE GRAVEL, so there's no space below for decayed materials or gases to collect. Works years without cleaning, installs without removing fish or gravel.

POWERHOUSE VIBRATOR PUMP

STAINLESS STEEL DIAPHRAGM
NEVER NEEDS CHANGING

QUIET! LONG LIFE!
HIGH POWER!
RUNS 10 OUTLETS!

\$11.95

SUGGESTED RETAIL

2 YEAR GUARANTEE



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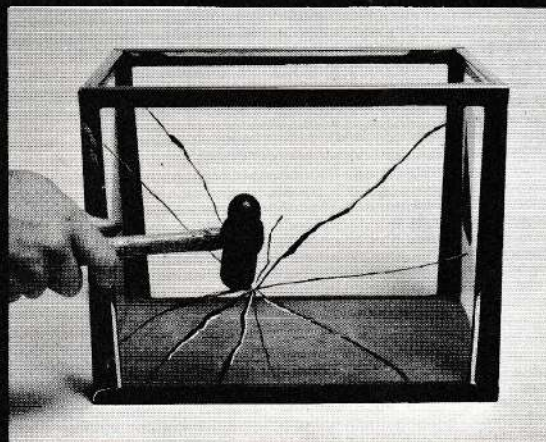
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BADGER
AQUARIUM.
TO BREAK IT
YOU HAVE
REALLY
GOTT TO TRY!**



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