2 / 1964 • 50 CENTS

aquarium journal

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Volume XXXV
Number 2
February 1964

aquarium journal

The Magazine Aquarists Believe In

Published by the
San Francisco Aquarium
Society, Inc.

Published monthly by San Francisco Aquarium Society, Inc., Steinhart Aquarium, Golden Gate Park, San Francisco 18, California. Telephone BAyview 1-0054. **Subscription rates:** $5.00 yearly in U.S., Canada, and Latin America, elsewhere $5.50.

Entered as second-class matter February 11, 1948, at the post office at San Francisco, California, under the Act of March 3, 1879.

contents

cover photograph

Phenacogrammus interruptus, *a pair of handsome 2 to 3 inch characins from the Congo, as seen through the color lens of photographer-aquarist Gene Wolfsheimer, F.A.I.*

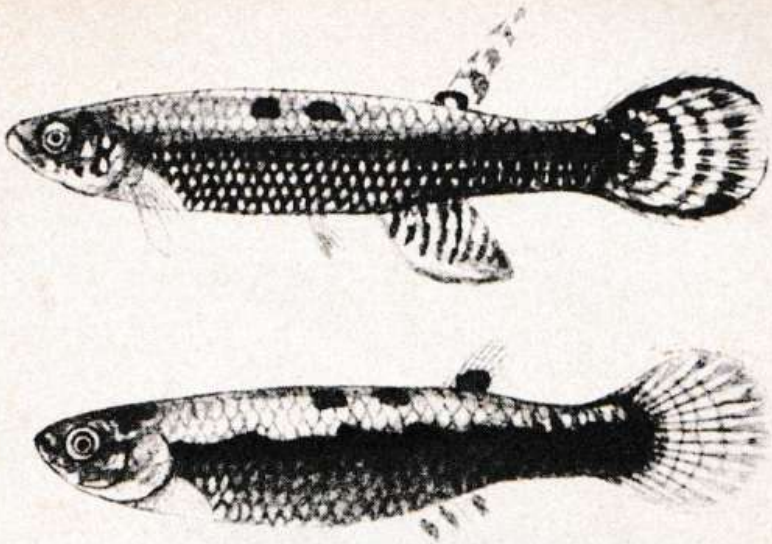

Figure 1.

Rivulus peruanus is discussed here

by astute aquarist Albert Klee

New Fish from Peru

Albert J. Klee
West Chester, Ohio

THE NUMBER of species of *Rivulus* currently known from Peru total four, viz., *Rivulus micropus, R. urophthalmus, R. peruanus,* and *R. beniensis.* These four species include representatives from each of the three main groups of the genus as proposed by the Dutch ichthyologist, J. J. Hoedeman (i.e., *breviceps* group, *marmoratus* group and the *cylindraceous* group) [3]. The writer has recently reported upon and added to the original description of *Rivulus beniensis* [4], a fish whose range is now known to extend from at least northern Peru to northern Bolivia.[5]

Since that time, another Peruvian rivulid has come into my possession, viz., *Rivulus peruanus* (pronounced PER-ROO- AY'-NUS). This fish is a member of the *isthmensis* complex of the *marmoratus* group consisting of the following four fishes (together with their type locality and in order of discovery):

Figure 1. Rivulus isthmensis, male above, female below (from Arnold & Ahl).

R. isthmensis – (1895, Rio San Jose, Costa Rica)
R. peruanus – (1903, "Perim," Peru)
R. hildebrandi – (1927, Boqueta, Panama)
R. volcanus – (1938, Chiriqui, Panama)

Until now, only *Rivulus isthmensis* (figure 1) has been known as an aquarium fish (imported under the erroneous name of "*Rivulus flabellicauda*" in 1909) but it has not served this purpose for many years and now is all but forgotten. *Rivulus volcanus* is a slender species of reported uninteresting coloration (figure 2) and *R. hildebrandi* even less so (there is no drawing extent of this species [5]).

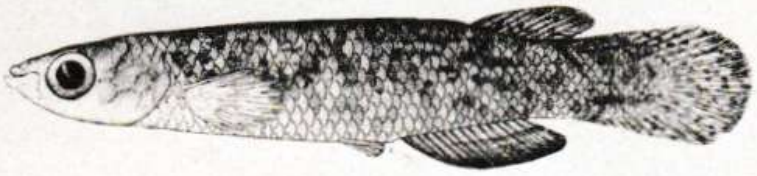

Figure 2.

Rivulus peruanus was described by Regan [6] in 1903 as coming from "Perim," Peru. However, no subsequent investigator has been able to locate this place on any map and therefore, its type locality has been a minor mystery. It is known, however, that its collector, Simons, operated from Huaras which is located on the Pacific coast of the Peruvian Andes. The original description was rather brief and devoid of any illustration and therefore, the following short account serves to redescribe the fish, especially from life, and to provide hitherto missing locality, ecological and behavioral information.

Regan's original account gave the following information: "Dorsal 10-11, Anal 14-16 ending below last 2 or 3 rays of the dorsal." A subsequent account, however,[7] changed these figures to "Dorsal 9-10, anal 13-15." My own specimens averaged dorsal 10, anal 16 with the anal fin edging below the second from the last ray of the dorsal.

These fishes were taken in Tournavista, Peru, located in the lower left hand quadrant, 8° to 9° latitude, 74° to 75° longitude (see figure 3). This town is located only about 190 miles from Huaraz and borders the Rio Pachitea not too far from the latter's junction with the Rio Ucayali. The nearest town (the one on most maps, that is), is Pucallpa, Peru.

A description of a live male (see figure 4) is as follows:

Body – heavily pigmented; reddish-brown dorsally, sides greenish, belly reddish-violet; orange-red marking on gill covers and sides (upper forward markings are in longitudinal lines, tending towards isolated, rust-colored blotches lower and/or rear).

Fins – green of body extends into caudal middle and lower half; caudal heavily pigmented and is overlaid with several moon-shaped series of reddish blotches; upper caudal edged in rust-color, lower caudal edged in deep purple; dorsal fin with orange markings and edging; ventrals tiny with lower portions edged in black; pectorals colorless to yellowish; anal with series of orange dots near base, base of anal greenish, edged in black.

A description of a live female is as follows (see figure 5):

Body – also heavily pigmented; reddish-brown dorsally and on sides, violet

Figure 2. Rivulus volcanus (from Pizzini).

Figure 3. Habitat of **Rivulus peruanus.** Sketch by the author.

on belly; reddish spots on sides more regular than in male, also smaller and more numerous (however, they are much lighter and less noticeable); several blackish spots on dorsal surface of caudal peduncle forming a caudal ocellus but this part of body usually so dark that it doesn't appear especially prominent.

Fins – dorsal, anal and caudal yellowish with rust-colored markings; pectorals colorless to yellowish.

These specimens were collected from behind the Tournavista compound of Verco Tropical Fisheries by Mr. Jon Krause of Columbus, Ohio, the pioneering collector in this area. They were found in a moderately fast-flowing stream, over a rocky bottom, with no additional fishes present other than sundry Loricariidae (*Plecostomus* types). The water was 78° F, pH 7.2 and clear. In such a habitat, *Rivulus peruanus* were found in groups near the surface.

Some of my adult males measure 3½ inches overall (including tail) but it is known that they do grow somewhat larger. The species is large and robust but takes well to captivity. During the long transit from Peru they suffered heavy fin damage, mostly due to fighting amongst themselves, but quickly responded to standard treatment for fin rot. My specimens avidly take frozen

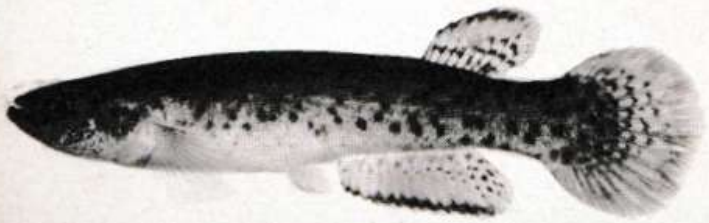

Figure 4. Rivulus peruanus. male. Photograph by author.

brine shrimp (adult), and ½ inch fry of *Fundulus olivaceous* were consumed quickly also.

Breeding was successfully attempted in a bare-bottomed, 3-gallon aquarium equipped with an inside filter and three, circular nylon spawning mops. A trio, one male and two females, was used. It cannot be emphasized strongly enough that male *R. peruanus* are extremely hard on females (as in the case of *R. beniensis*). Females must be provided sufficient shelter so that they may safely retreat when necessary. An excess of spawning mops serves this purpose nicely. It has been noticed that when the mops are removed to be examined for eggs, the male often takes the opportunity to badger the females which then, of course, have no refuge. However, females which are "full" suffer little or no damage, while those not ready to spawn suffer most.

Rivulus peruanus lays eggs in the "large" *Rivulus* category (the writer categorizes *Rivulus* eggs as follows:

"large" – 2.0 mm, e.g., *R. milesi*

"medium" – 1.7 mm, e.g., *R. hartii*

"small" – 1.5 mm, e.g., *R. urophthalmus*), since they average 2.00 mm in diameter. They are yellowish and possess the usually-sticky threads. Figure 6 shows a photograph of a newly-laid egg alongside of an egg of *Epiplatys macrostigma* (diameter 1.0 mm) for comparison purposes. Not too many eggs are laid daily, 2 to 4 being the average under the conditions described. The eggs are laid at the top of the mop or else in the vicinity of the top.

As might be expected the fry are large (hatching after 10 days at 75° F) and can immediately be given brine shrimp

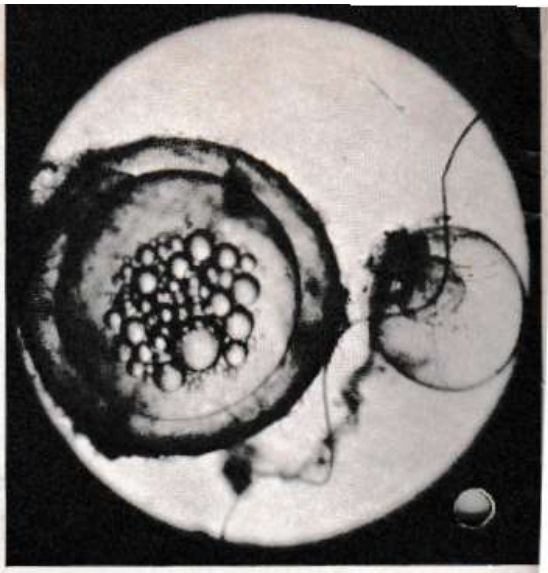

Figure 6. Egg of **Rivulus peruanus** (large) compared with egg of **Epiplatys macrostigma** (small). Photo by author.

nauplii. They grow fast, also. *Rivulus peruanus* can be kept together with fishes their own size and disposition without too much trouble. They are active and robust, however. If kept with a fair number of their own species in a tank of 10 to 15 gallons, damaged fins will be kept to a minimum. Since *Rivulus peruanus* is a large, very attractive rivulin, the extra effort needed is well worthwhile. ◄

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Figure 5. Rivulus peruanus, female. Photo by the author.

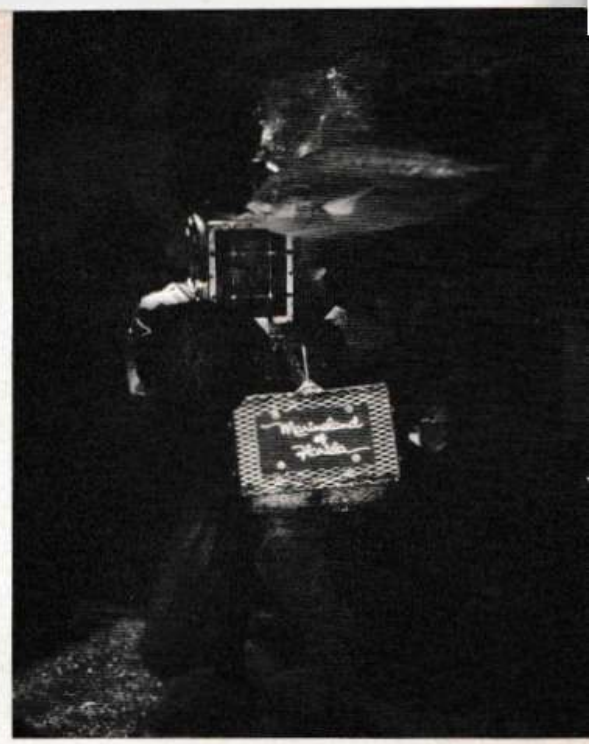

Photo: Diver in large tank feeding fishes at Marineland of Florida.

Marineland of Florida was closed —
so author Straughan joined the Navy!

Aquarists' Paradise

Robert P. L. Straughan
Coconut Grove, Florida

IN 1942, I MADE A TRIP from Massachusetts all the way to Florida to see Marine Studios and when I got there, everyone was gone and the place was closed. The war had started and all hands turned to help their country. I was quite disappointed for I had read about the huge oceanarium in a travel folder and was so anxious to see it, but when I realized I would have to wait until the war was over, I joined the Navy and became a U.S. Navy Photographer.

About one year later, I flew over Marine Studios in a dive bomber and took aerial photographs of the giant aquarium. The tanks had been drained dry and the place was quietly at rest waiting for peace to return to the world. Four years later, I returned to Marine Studios and this time it was open. I spent two days there enjoying to the utmost, a most intriguing underwater show. Unlike most aquariums, where one is familiar with seeing a few fish displayed in individual tanks, Marineland

was one giant fishbowl with huge schools of fish swimming contentedly about their underwater home. Instead of the few dozen fish usually displayed in aquariums, here were thousands of fish of many types and descriptions.

Although I have visited Marine Studios many times since that first time, I will never forget how impressed I was on my first visit.

Marine Studios is the world's first oceanarium and although their fabulous exhibit has been copied by other aquariums, the originality and finesse of their attraction shines through in their incredibly clear water. The sparkling exhibits and superior health of all their specimens from the huge porpoise and whales right on down to the tiny gobies and coral fishes make this one of the finest exhibits in the world. The entire exhibit is done in first class fashion. The rest rooms are cleaner than in most people's homes and the fish exhibits are superb, with water so clear that it looks invisible. The fish sparkle in their healthy, clean atmosphere and they are as contented as they are out in the ocean. No fish is ever displayed unless it is in

CLUB NEWS

San Francisco Aquarium Society, Inc.

The next regular meeting of the S. F. A. S. will take place at Steinhart Aquarium, California Academy of Sciences, February 6, 1964, at 8:00 p.m., according to President Robert P. Dempster.

Program for the meeting will be announced in the meeting notice, Frank Tufo, program chairman, announced.

Fish-of-the-Month for the February meeting: (1) Miniature aquarium arrangement, 30-minute time limit; (2) Goldfish varieties, (3) Dwarf cichlids, (4) *Panchax, Epiplatys, Aplocheilus, Rivulus, Pachypanchax,* according to Joe Zins, Fish-of-the-Month chairman.

At the December 1963 meeting of the S.F.A.S. Board of Directors, Robert P. Dempster, president, and other incumbent officers were re-elected to their posts for 1964. These include Frank Tufo, vice president; Treva Bell, secretary, Ted Steinhauer, treasurer and Ray Cabrera, librarian.

★ IDEAS ★

BY HOBBYISTS

The Journal will pay $5.00 for original ideas published. Keep less than 200 words. Send your idea today!

Fish Remover

We all, and this includes the best of fishkeepers, have dead fish from time to time, and removing them from the tank without disturbing all the plants can be quite a problem. Here is a remover that can be made from a scrap piece of wire that has served me well for this purpose. Take a piece of baling wire about 18 inches long; with a pair of pliers start to bend the end round and round like a Catherine Wheel till you have a mat of wire about 2 inches across. Pull down the center till it makes a small pocket, now bend the remainder of the wire at right angles, and adjust the length to suit the depth of your tank. This allows you to net dead fish, snails, etc.; with a minimum of bother and because it is open wire is easier to manipulate than the orthodox net. — *Fancy Guppy Association, Great Britain*

perfect condition and although this doesn't mean as much to the general public, it is an important thing to the millions of aquarists who can quickly spot a torn fin or diseased fish. Other aquariums could certainly take an example from Marineland of Florida.

The author has been in correspondence with Marineland's curator, Mr. F. G. Wood Jr. for many years and he is one of the world's most outstanding aquarists. "Woody" as Mr. Wood is known to his many friends, keeps many of his delicate specimens for years on end. Even relatively short lived creatures like the banded coral shrimp surpass the year mark easily under the expert guidance of Mr. Wood. In fact, many of the colorful gems of the sea live far longer in the aquarium than they would in the sea due to the expert care they receive. This is a wonderful thing but it doesn't always please me since I collect many of the small colorful fish for Marineland. They don't need fish very often because they keep them alive so long.

Marine Studios is particularly interesting to aquarists for here they can see many, many types of fishes that exist and view them in comfort. Although the general public looks mostly at the big fishes, aquarists are usually

★ IDEAS ★
BY HOBBYISTS

The Journal will pay $5.00 for original ideas published. Keep less than 200 words. Send your idea today!

Cleaning Tanks Effectively

I have found the following method of cleaning my tropical fish aquarium to be very effective: Use a sponge with a wooden handle (the type that can be bought in aquarium supply stores) and wrap the sponge with a piece of nylon net about 8 inches square, securing it around the handle with a rubber band. Wipe down the inside of the tank carefully on all sides, pressing down firmly. I find that this is an excellent method of keeping algae from forming on the glass and also that any floating algae or other matter will cling to the net and can be easily removed from the tank. The sponge then rinses off quickly under running water. — *Bill Lampkin, San Jose, California*

Join the S.F.A.S.

CLUB NEWS

Norwalk Aquarium Society
(Norwalk, Connecticut)

Officers for 1964 include: Robert D. Havenstein, president; John Flanagan, vice president; Virginia Reed, secretary; Jack Adinolfi, treasurer; Robert Reynolds, sergeant-at-arms, and Frank Vitting, librarian. ◄

more interested in the small fishes, and quite often, the very small ones for these he can picture in a small tank in his own living room.

Marineland has thousands of colorful fishes of a large number of species in their huge rectangular oceanarium, a king sized aquarium one hundred feet long by forty feet wide by eighteen feet deep and holding 450,000 gallons of water. That's enough to fill forty five thousand ten-gallon home aquariums! In this giant fish bowl you can see hundreds of spectacular angelfishes, butterflyfishes, Spanish hogfish, spadefish, lookdowns, porkfish, rock beauties, queen triggerfish and a large percentage of the reef fishes found in the Florida or Bahama waters. Even tiny blue neon gobies live in this giant tank and a careful observer can watch them clean parasites from many of the larger fishes. There are also huge numbers of blueheads and other wrasse that swim about in tremendous schools and add much activity to the display. The fish are very active and behave in a very normal way for they are in good health and are well fed.

Marineland also has a huge circular oceanarium that is seventy five feet in diameter and this houses the playful porpoise, giant jewfish, rays, sawfish and other large sea creatures. This is one of the show areas of the exhibit and is where the high-leaping porpoise perform their breath-taking leaps into the

Photo: Aerial view of the famed Marineland of Florida, showing large tanks, amphitheater and parking lots across the highway.

air where they snatch a fish from the hand of the attendant. It is a thrilling sight, even if you have seen it a hundred times or more. There is also a large porpoise stadium where the porpoise perform more elaborate tricks, like jumping through hoops, towing a bathing beauty on a water sled, play basket ball, and other amusing feats. The show is always a little different and people who visit Marineland year after year are always rewarded with something different.

In between the huge rectangular aquarium and the circular tank are the small "jewel" tanks which are the pride of Mr. Wood the curator. These contain the real gaudy gems of the sea, clownfish, dragonfish, royal grammas, delicate butterflies, octopus and many other interesting creatures. Fishes that are especially beautiful and that would ordinarily be lost in the huge tanks are shown to their best advantages in these "jewel" tanks. This is the part that often is most interesting to the aquarist for here the fish may be observed at close range and in surroundings that closely imitate the coral reefs from which they were obtained. Attendants are always on hand to dispense accurate information about the many specimens displayed and no questions are left unanswered. Marineland is probably better known than any other single aquarium in the world and they have contributed enormously to the general

Photo: A closeup of the amphitheater at Marineland of Florida, taken from across the highway. Dolphins can be seen performing their tricks in the large tank.

knowledge of undersea life with their films, books and other literature. At no charge to aquarium societies they have film available that will make everyone want to pack immediately and head for Florida to see their exhibit. Anyone interested in aquariums should make it a point to visit Marineland of Florida on their next trip south. It is located just south of St. Augustine on highway A1A which is the scenic ocean highway, and a most beautiful drive along the blue Atlantic. It is a paradise for aquarists. ◄

A Thirty-one-Year-Old Aquarium Mystery Solved

PART II

Albert J. Klee
West Chester, Ohio

IN ALL instances in Table III, then, fertilization was not achieved. When males were allowed to regenerate their anal fins, however, they were then found to be able to fertilize females. When this fin was regenerated, so were the hooks. In two experiments in which the hooks only were removed, and in which the males were left with the females for a period of one month, micropipette examination of the females showed no sperm transfer whatsoever. This clearly demonstrates that the hooks are absolutely necessary to sperm transfer.

In summary then, and in answer to our first question, the male uses his anal fin hooks to hold onto the female's anal fin or ventral scales enabling him to draw his genital papilla (the equivalent of the female's ovidepositor) closely enough, and for a sufficient length of time, to permit sperm transfer. In this, his genital papilla serves as a sort of penis. The answer to our second question is that the paddles are only ornamental organs, serving at most to attract the female and have nothing whatsoever to do with sperm transfer.

At one time it was thought by some that female swordtail characins swallowed bundles of sperm known as "spermatophores," thus effecting fertilization. This is, of course, patently untrue. In a fertilized female, sperm is found everywhere in the genital system and in especially great quantities in the oviduct (figure 4). Mostly, they are found clustered in groups but never are such groups found surrounded by a covering or membrane-like capsule which defines the word "spermatophore." Instead, such clusters or groups of sperms are held together by a mucous-like substance, most likely secreted by the sperm duct of the male. The correct term is, therefore, "sperm parcle" or "sperm package" (in my 1961 article I had incorrectly used "spermatophore" as a synonym for "sperm parcle," although I noted that no membrane was present). Nor are spermatophores found on the genital papilla or in

the male, either. In the male, the sperm is agglomerated into groups as in the female. Some fishes (e.g., *Horaichthys*) do have true spermatophores, equipped with "helping" organs, the sperm being subsequently released by the action of the oviduct fluid, but *Corynopoma* is not one of them. The survival time of the sperm inside of the female *Corynopoma* is quite long, Dr. Kutaygil having shown in additional experiments that, on the average, it is 8.7 months with a minimum of 7.5 months and a maximum of 10 months for a series involving six different females.

When left together night and day, insemination of the females is virtually assured within 10 days, something breeders might note. Furthermore, insemination is apt to take place during hours other than the daytime (probably twilight or the early hours of the morning). Table IV shows the results of leaving

males with females only during daylight hours.

Table IV (after Kutaygil)
Insemination in females left with males only during the daytime (examination by micropipette)

Exp. No.	Time together	Last and before last times examined	Female insemi-nated?
1	9 days	9th, 6th days	yes
2	28 days	28th, 15th days	yes
3	31 days	31st, 21st days	yes
4	40 days	40th, 25th days	yes
5	60 days	60th, 50th days	no
6	62 days	62nd, 60th days	no

The time to achieve insemination is somewhere between each pair of numbers in the third column of Table IV in the first four females (the last two never became impregnated), and as can be seen, these figures average considerably higher than the maximum time of 10 days for females left with males continually.

The swordtail characin is a member of the subfamily, Glandulocaudinae, a subfamily characterized not only by decided external differences between the sexes, but also by the presence of a fairly large pouch under the tail fin, made up of glandular tissue, in the males. Figure 5 shows this gland and how the lateral line bends to miss it. The pouch contains secretory cells but their function is not known. It will also be noted that a spur is present under this fin; again, in the male only.

Yes, after 31 years, the mystery of the swordtail characin is finally solved and the explanation brings to mind something that Epictetus once said in his discourses:

"Things either are what they appear to be; or they neither are, nor appear to be; or they are, and do not appear to be; or they are not, and yet appear to be. Rightly, to aim in all these cases is the wise man's task." ◄

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★ IDEAS ★
BY HOBBYISTS

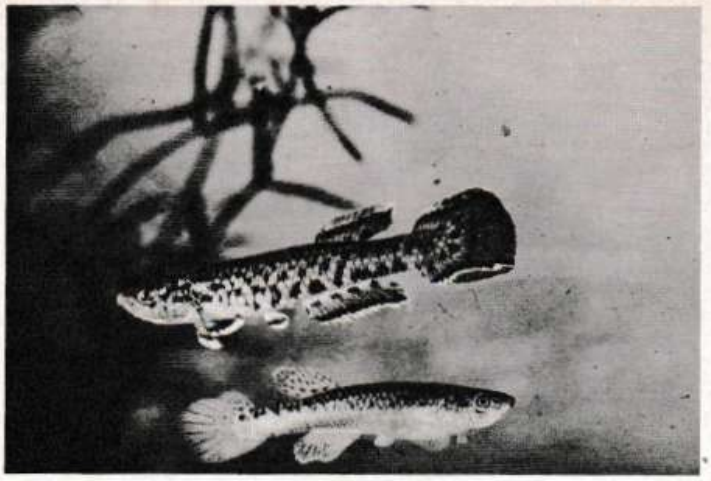
The Journal will pay $5.00 for original ideas published. Keep less than 200 words. Send your idea today!

The Battle Against Algae

For fighting algae I use a nylon scouring pad, similar to steel wool except that it won't scratch the glass or fill your tank bottom with slivers of steel. It's made by the Minnesota Mining & Mfg. Co. and is called "Scotch Brite," and is priced at 25 cents.

All or part of the pad can be glued (with contact cement) to a glass scraper made for aquaria, or simply held in the hand. Using it either way sure takes care of the algae. I went one step further and made a special 14-inch stick and glued a double thickness of the pad to one end. Using the long stick means that I no longer cause turbulence, uproot plants or frighten fish when cleaning the glass of algae.

I hope this helps your readers like it helps me! — *Jack Snedden, Fresno, Calif.*



"Living jewels" are not too shy,

nor very difficult to spawn!

Aphyosemion calabaricum

Franz Werner

Grosse Pointe Park, Michigan

THE FIRST IMPORTATION of *Aphyosemion calabaricum* was to Germany in 1935. The last part of its name refers to its place of origin near Calabar in Southeast Nigeria. Because its shape resembles to a certain degree the "Cape Lopez" *(Aphyosemion australe)* of the Germans, they immediately dubbed the fish the "Blue Lopez." With them and subsequently fanciers everywhere it has remained a favorite.

Printer's ink can't always do justice to the real beauty of many of our tropicals and *Aphyosemion calabaricum* is a good example. The changing hues, under somewhat subdued light, make our subject stand out like a living jewel. The basic color is a sparkling steel blue to blue green with many intense red dots. The red lines in the dorsal fin with a yellow band adjoining the red line in the caudal fin are particularly beautiful. The female is a drab grey, small dark dots occur on fins and body and at the upper part of the base of the tailfin is a black spot.

Because of its general shape, it is often compared to *A. australe*, but the similarity ends right there. Our subject is not a show-off as the former but somewhat reserved. A tank of 3-5 gallons capacity will do nicely for a pair. Planted to provide a chance for hiding, with some floating plants for head cover and rather subdued light, the fish will thrive. In

Photo: A pair of **Aphyosemion calabaricum** as photographed by Franz Werner.

such surroundings; they "feel at home," show their striking colors, and generally present a beautiful picture. Also, if sudden vibrations, knocks on the tank, jerky motions, quick changes from darkness to bright light are avoided by attendants and viewers and replaced by slow deliberate motions near and at the tank, the fish will not be shy. Some time ago, while visiting Dick Buttner at Oceanside, California, I saw Dick, in answer to a fancier's remark about the shyness of *calabaricum*, reach into the tank with his hand, slowly maneuvering a big beautiful male right to the front. There that fish did some real "strutting" and displayed beautifully.

On a varied diet of mostly live food, A. *calabaricum* will develop into well shaped specimens, quite different from the spindly looking fish one often finds in their keepers tanks. A tight fitting cover on the tank is a necessity. If there is a small crack along one edge, even if it's only one-quarter inch, out he goes. Any small opening in the cover seems to be an invitation to leave. If some day you are the proud possessor of a pair of these living jewels, and after a time you find the male dried up on the floor, you'll remember the warning expressed here. I should know, it happened to me and it's always the best one that jumps. Incredible how a fish its size can get out through such a small opening but time and again it happens and it is usually the male.

The water should be between 6 and 10 DH and have a pH of slightly acid to neutral. Temperature about 70° F. or preferably down to 68°. Higher temperatures will be detrimental to the fish.

Reports about difficulties in spawning, hatching the eggs, and raising the fry are plentiful but if consideration is given to the different behavior of individual pairs, difficulties can be avoided. To begin, they are bottom or soil spawners. If the soil is not to their liking (for example coarse sand), they will place the eggs on and near the bases of bushy plants. Most of the eggs above soil may

Photo: A plastic container with water and spawning mop. Pairs of **Aphyosemion calabaricum** are spawned in the container.

fungus due to their apparent sensitivity to light. Hatching time is 2 to 3 weeks. Some females will produce at certain times a certain number of eggs among the regular spawn which will remain dormant for weeks, even for months. These eggs are fertile and sound but don't show early development. However, after a certain time, their actual development and hatching is usually as in any normal eggs. At times however, such eggs develop to a certain stage in the formation of the embryo, but then stop. These too may later continue development and hatch, but unfortunately many of them never do. The cause for this peculiarity is not known. I have had pairs which produced a large proportion of "resting eggs" (dormant may express it better) and other pairs that hardly ever produce resting eggs.

If spawning is observed, begin looking for the fry two weeks later. While dark, a light held beside the tank and below the water level will reveal fry near or just under the surface of the water. If you desire to obtain as large a number of young as possible the procedure is quite different as will be explained.

I obtained my first *calabaricum* in the

★ IDEAS ★
BY HOBBYISTS

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Building Plastic Tanks

Plastic tanks are easy to make and cost little. They serve as good quarters for young fish and are very satisfactory breeding tanks for many species. They also provide a good place to age water or raise live foods.

In constructing one of these tanks the common type of sheet polyethylene plastic used in greenhouses, for paint tarps, etc. is the type used. Varying thicknesses of this plastic are available at most hardware stores. A thinner plastic will fit better into the corners of a square frame, but a thicker one won't be as apt to leak. A thin sheet used double will solve both of these problems in many cases. The plastic needs some sort of form into which it can be fit, and anything that is fairly solid and not too irregular in shape will work. Special wooden frames can easily be built for the purpose, and standard wooden boxes work fine for smaller tanks. Plastic can also be used in outdoor pools, built in the ground, if the hole is either lined with newspaper or rags. In especially deep tanks the water pressure may be too great for the plastic, but otherwise tanks can be built any size.

By experimenting, most hobbyists would find that these tanks are very useful and can be adapted to many kinds of particular problems. — *Larry Peck, Port Gamble, Washington.*

PRODUCT NEWS

Buchanan Products

Robert A. Geier & Associates, 2133-A West Chapman Ave., Orange, California has been named to handle advertising and public relations for Buchanan Products, Inc., 2840 Gundry Avenue, Long Beach 6, California, according to B. J. Buchanan, president of the firm. The appointment is effective January 1, 1964.

Buchanan Products, Inc. are manufacturers of Torsion Air, Tropic, Topper, RB-1 and RB-2 Aquarium Aerators. They distribute throughout the United States and in many foreign countries.

Buchanan was recently elected Vice-President of the Western Wholesale Pet Supply Association, Inc. He is also a member of the American Pet Products Manufacturing Association. ◄

late thirties from one of the most experienced and successful breeders, Karl Berthold in Saxony. Much of my early successes and what I came to know in the years following I owe to him and his teaching. The outbreak of World War II ended my fishkeeping but with the return of normal times, when shipping facilities improved, my desire and efforts to have these beauties again in my tanks and breed them produced good results. Here, E. Roloff, a European authority, explorer and collector was the source. Over the years I have evolved a certain procedure resulting in consistently good results. There is nothing difficult about it. Most of the procedures depend on continued observation and experience.

Time and again I have heard complaints that these fish, as well as certain other aphyosemions, are hard to spawn. This is true with certain "strains." Search for the cause, in several instances, led to the knowledge that such strains were tank raised for years. Reproduced generation after generation with never any introduction of wild stock. Constant inbreeding together with little or no culling will produce poor stock. On the other hand constant inbreeding with constant and severe selection of superior breeders with superior color can produce a fine sturdy strain. To do this properly is hard work, requires constant attention, and is rarely accomplished.

Just a few days ago I had a letter from a breeder who has had considerable experience. He wrote, partially in humor, with regard to an old but beautiful killie; "can't get them to make an egg. Tried snow water with and without salt, dark peat water, softened water, even whistled a few bars of the Liebslieder to get them in the mood." At times breeding these fishes really is exasperating. Under such circumstances a breeder has to resort to some tricks and I hit upon one of them some years ago

(Continued on Page 99)

CLUB NEWS

Potomac Valley Guppy Club

(Washington, D.C.)

The Annual Spring Show of the P. V. G. C. will be held along with the National Capitol Flower and Garden Show at the National Guard Armory, Washington, D.C., March 5 through 11, 1964, according to Julia Menges, retiring secretary. National participation in the show of guppies is invited. For details, write Dr. Eugene MacCastin, 8813 Victoria Rd., W., Springfield, Virginia.

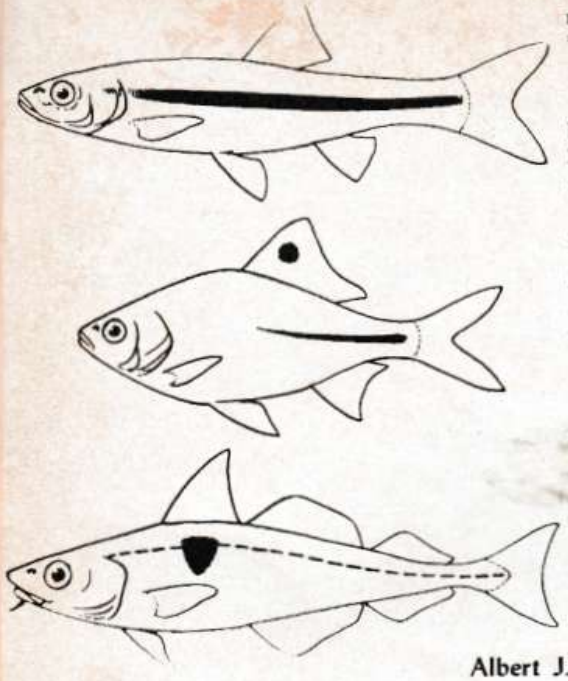


Figure 1. Recognition and orientation markings of schooling fishes (after Nikolsky).

being introduced species to that State. Previous to this I had successfully sent cichlids, characins and killifishes (some spiny eels, also) through the mails but not only was now another category added, but the distance involved was tremendous. The cost, incidentally, was a bit over $2 to mail all 7 fishes. A heavy dose of tranquilizer (Metab-O-Fix) was used but a few hours after release into their new quarters, the effect of the drug had completely worn off. One ancillary result of this experience was that our local postmistress wrote an article for one of the postal magazines, describing these little boxes containing live fishes that stream past her desk each month! While on the subject of shipping live fishes, I have noticed

Albert J. Klee

looks

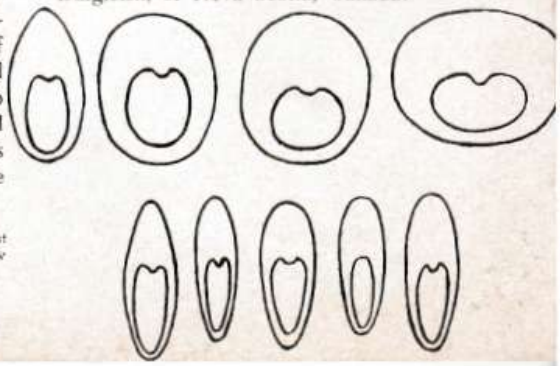
• Under the Cover Glass

NOT INFREQUENTLY my mailbag contains some rather remarkable surprises. As an example, consider a letter received from Lt. Rodney R. Guidry, USN, of Honolulu, Hawaii. I had not known Lt. Guidry previous to this but his letter stated that he had read of the technique that I had developed for shipping live fishes through the ordinary mails (see my Under the Cover Glass column for June, 1962) and had decided to test it out by shipping me some Hawaiian fishes. Now Hawaii is not exactly just around the corner from Ohio so my immediate reaction was, "Bye, bye little fishes." Well, I should have been of better heart for Lt. Guidry's fish arrived in excellent condition, spending just two days in shipment! There were a total of 7 fishes sent, a mixture of various *Limia* and *Gambusia* species, these

Figure 2. Top (round sections): fishes from fast waters. Bottom (flat sections): fishes from slow waters (after Nikolsky).

that there has been a tendency to use the new, molded (and beaded) polyfoam containers to an increasing extent lately. These containers generally work well but it is recomended that they still be encased in an outer container made of cardboard for added protection. The polyfoam containers are not very strong by themselves and I have found many of them to split open during shipment.

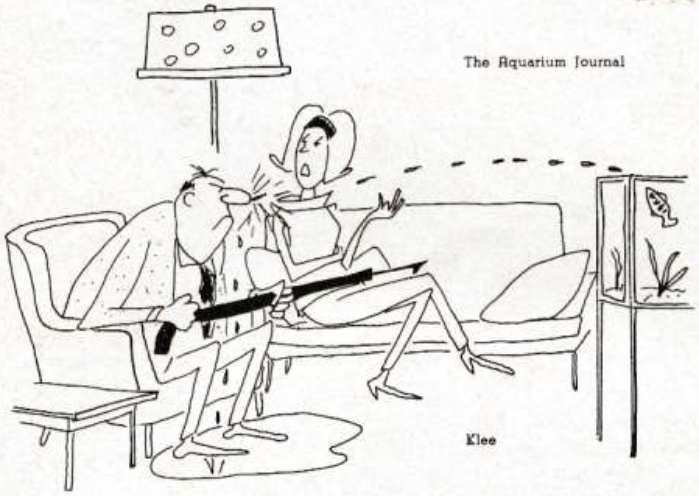
The following is an excerpt from a letter received from a friend, Mr. Ted Dalgleish, of Nova Scotia, Canada:



"I think my first killie was Aplocheilus lineatus *and I have had them "off and on" during the past twenty years. I wished to pass along a rather recent anecdote concerning this old acquaintance, if you think it would be of interest to your readers, especially those concerned with the "fragility" of eggs. While preparing two small tanks I placed a couple of three-quarter grown pairs (about 2½ inches) in a half-empty aquarium, unheated, in the basement. It contained a few skimpy strands of Fontinalis. I removed the pairs in about one week and transferred them into their new quarters and, as I needed their temporary home for another purpose, I siphoned it out completely and washed it and the sand with warm water and salt. I then filled the aquarium with soft, acid water, adjusted the thermostat, planted it and left it to settle for a week. Imagine my surprise to find over a dozen tiny* lineatus *cruising about the surface a few days ago! As eggs, they had survived several temperature changes (and extreme ones), drying, and a brisk scouring through the sand. Undoubtedly a number of them didn't survive but there is an obvious conclusion, i.e., that it would take an extremely violent natural upheaval to completely eradicate this particular species."*

Incidentally, Ted has an excellent sense of humor as his following comment on my own *faux pas* in addressing a letter to him once as "Mr. Daglefish," attests:

"I should mention that your spelling of my name brought back a rather fond memory of a friend whom I have not seen for years, who has always called me by that name, following an incident when I was paged by loudspeaker in his presence by a hospital clerk who also had difficulty with Dalgleish. He had a good reason to guffaw . . . his name is Danylyshyn!"



"Henry . . . why don't you and the archerfish stop this silly feud?"

The patterns (lateral band, dorsal spot, body spot, etc.) shown on the fishes in Figure 1 are quite common among aquarium fishes. Ever wonder why? In his book, "The Ecology of Fishes" (Academic Press, 1963), G. V. Nikolsky ex-

plains that such patterns are particularly distinctive and are frequently used by schooling fishes to orient individuals in the school to each other. Want a clue as to whether an aquarium fish in nature is an inhabitant of fast-flowing waters or slow-moving waters? Figure 2 shows cross sections of a number of fishes from both types of waters. In fishes which inhabit waters with slow currents, their body is more flattened, and they are not such good swimmers as the inhabitants of fast streams. All this, of course, is by way of recommending this interesting book to all aquarists. It contains a wealth of information presented in a very readable manner.

In the November 1963 issue of Pet Shop Management, an article titled "Pet Shops vs. Veterinarians," caught my attention. One section of particular interest was a quote from the new Illinois Veterinary Medicine and Surgery Act:

"Section 3. Any person shall be regarded as practicing medicine and surgery within the meaning of this Act who:

1) Directly ar indirectely diagnoses, prognoses, treats, administers to, prescribes for, operates on, manipulates or applies any apparatus or appliance for any disease, pain, deformity, defect, injury, wound or physical or mental condition of any animal or bird, or for the prevention of, or to test for the presence of any disease of any animal or bird . . . ."

It appears that in Illinois at least, any person involved in the above activities is "practicing veterinary medicine." Since "animal or bird" (apparently the veterinarians who helped draft this bill had some doubt as to whether a bird is animal, vegetable or mineral!) also includes fishes, aquarists are subject to this law also. Now I understand perfectly well that the Illinois law was designed to regulate primarily other than hobbyists but the fact remains that hobbyists are still subject to it. Furthermore, although any good ichthyologist could run rings around any veterinarian when it comes to fish diseases, the former also is restricted under this law. There are two ways to look at the situation. Firstly, if veterinarians intended to include hobbyists then it is a sorry law indeed. I have never yet met a veterinarian (other than also a fish hobbyist) that could even pronounce the name of a

★ IDEAS ★
BY HOBBYISTS

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Sopping Up Tanks

Sopping up tanks by holding the hosepipe on them can be exasperating to say the least to the aquarist in a hurry. Here is a tip, simple to make, that can enable you to do other jobs while sopping up. Bend a piece of plastic (heavy grade) tube in hot water to the shape of a letter 'U,' simply affix this in the end of the hose and hang it over the angle iron on the tank . . . . . simple, but effective, leaving your hands free, to clean glasses or do the hundred and one other jobs of tank maintenance. — *Fancy Guppy Association, Great Britain*

fish disease, let alone diagnose and treat one. Secondly, if veterinarians didn't intend to include hobbyists, then the situation is even sorrier. A law that says something it doesn't mean, is a bad law indeed. Aquarists should watch developments like this carefully. Before we know it, it might well happen that similar laws could force remedies from the shelves of our dealers, or prevent dealers from dispensing advice as to the treatment of a fish disease. Sound ridiculous? Well, it happened to bird fanciers in Illinois already, in fact, it has also happened to bird fanciers in California. Just listen to this quote from a member of the House of Delegates of the American Veterinary Medical Association with regard to birds:

"In the Chicago area we have several veterinarians who are qualified to treat birds and we feel they are the only people who have the training to properly look after the medical and surgery problems of birds."

Just imagine, "several" vets to deal with the bird problems of a city of well over 3 million (and goodness knows how many birds)! We wonder how many "qualified" vets there are in the Chicago area who can treat fishes? ◄

★ IDEAS ★
BY HOBBYISTS

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If you have a daphnia culture, you will find that the debris which is collected in filters is excellent for feeding them. This partially decayed animal and vegetable matter creates an exceptionally fine infusoria upon which daphnia thrive. I just pull out the glass wool and swish the top layer in the culture. – *Fraser G. Tulk, Brooklyn, N.Y.*

It is no easy task to remove the cracked glass in a tank and replace it. If the glass is only cracked, get a new piece that will fit snugly inside the frame. Apply Silastic R T V 732, a new silicone rubber adhesive and sealant, around the frame edges and set the new piece of glass in place. This makes a neat water tight job because 732 adheres to glass and metal. It has worked on tanks up to twenty-five gallons. This product is put out by Dow Corning Corp., Midland, Michigan. (Try your local electrical distributor.) In bolting up with washer bolts in liners, a coating of 732 seals the bolts and stop leaks.–*Bester C. Weed, Westboro, Mass.* [Editor's note: We publish this without any knowledge of the possible toxicity of this product. We doubt that there will be any toxic effects, nevertheless we advise caution in using any product in the aquarium if that product has not been tested extensively.] ◄

A professional collector in South America asks a provocative question!

Annuals vs. Perennials

William A. Kyburz
Cali, Colombia, S.A.

AN "ANNUAL" killifish is usually thought of as a member of the subfamily Rivulinae which lives from 8 to 11 months in rainwater pools, deposits its eggs in the mud, and dies when the pools dry up. The process starts all over again with the next season's rains. Simple, isn't it? You go to the right country, for example in Colombia the Atlantic coast, the Goajira Peninsula and the Llanos Orientales . . . and you just start ladling them out of roadside puddles.

Well, it doesn't work that way, but just how it does work, I shall probably never know. In Colombia, roadside ditches are out for three reasons, each of them independently adequate: (1) the water doesn't last long enough to allow the fish to complete a cycle, (2) the water heats up to around 104° F., (3) they are so shallow that fishes would be defenseless against herons and other fish-eating birds.

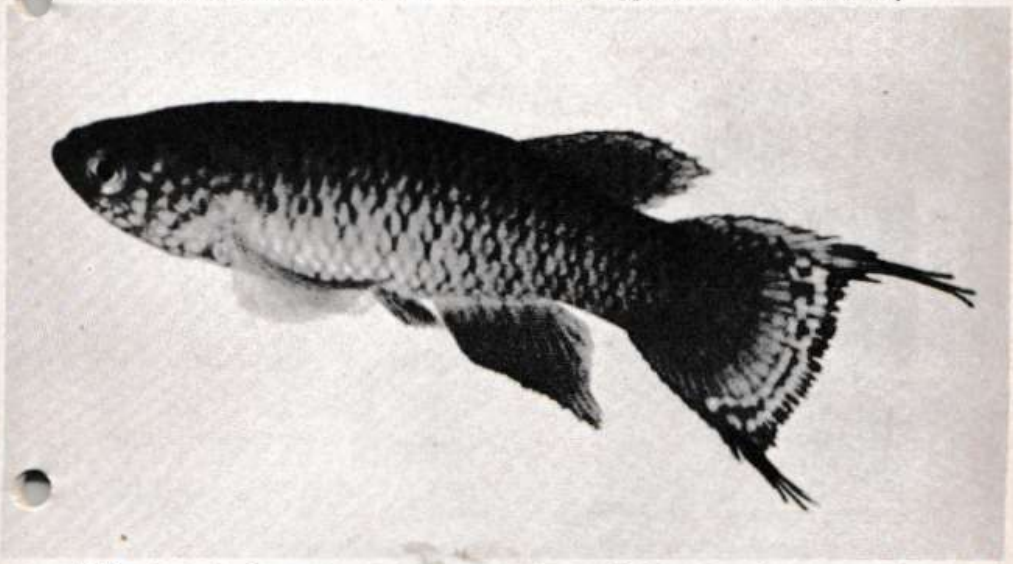
The country around Barranquilla is almost level, much of it with gently rolling hills. The Magdalena River is the only true river until one nears the Sierra Nevada de Santa Marta, whose glaciers and eternal snows give birth to ice-cold, crystal-clear brooks. Both the flat and the low hill country have depressions which are filled during the heavy rain storms but which are by no means as common as I was once led to believe. In fact in the period from September 27 to October 7th, during which I explored these temporary ponds with mounting frustration, I got mildly soaked from rain only three times. Everybody was emphatic that all ponds (barring a few genuine swamps fed by the Magdalena River) dried out during the dry months. September is about half way through the rainy season and all ponds were reasonably full, although the rainy season had been light this year.

My main interest was a swamp on the outskirts of the town in a district of rather poor reputation called Barranquillita, by the Esso storage tanks. However, my companion-helper-driver (of his own Ford jalopy) suggested we first examine the ponds near the airport of Soledad. These were interesting-looking blackwater ponds, and they had both floating and submerged vegetation such as *Eichhornia, Pistia, Elodea.* The yield in fishes was: two species of characins (silvery tetras worthless for aquarists), one cichlid, one gymnotid, one species resembling a goby and a 6 inch freshwater stingray. The latter made me rather thoughtful and I decided against further stumbling around in the deep bottom mud. Even if temporary, these ponds obviously became stocked by the river when in high water.

We then proceeded to the Barranquillita swamps. It was not one pond but several, some of them interconnected, and they were rather close to the Magdalena River and a short canal used by the Esso barges. They, too, had abundant aquatic vegetation. Furthermore,

they contained two species of viviparous cyprinodonts, the same two silvery characins found at Soledad, two species of cichlids, and one species of annual but in such small numbers that among the three of us fishing, we caught only six, the first two being mine of which I was rather proud. How do these swamps get their fish population, apart from the annuals? All the people watching the strange spectacle of people catching small fishes swore that all of these ponds dried out during the dry months. Are they restocked by the river every year? Or are they left with small water holes hidden beneath the rotting vegetation where small young fishes of the three "perennial" types might survive until fresh rains would allow them to grow and multiply? We disliked these ponds too, for they were too choked with vegetation, and being near civilization, there were too many rusting cans and broken bottles on the bottom to allow using a seine.

The next day, and for nine days more, we ranged wide in all directions. Towards Santa Marta, we found no annuals at all, only livebearers and cichlids. Some promising-looking holes were black with *Anopheles* mosquito larvae and nothing else. On the road to Juan Mina, we checked several promising blackwater pools, but they only contained the standard assortment of livebearers, cichlids and tetras until we came to a rainwater course, a kind of brook that flows only during rains but leaves isolated puddles, many of which are quite durable. The water was yellow, muddy and very warm. It was free of aquatic vegetation. It contained a different type of livebearer of a very pale, metallic blue. But when we seined the shady part underneath the concrete bridge of the Juan Mina road, things started getting exciting! The haul included: crabs, transparent shrimps, the previously mentioned livebearer, and an annual resembling *Austrofundulus myersi*. Although we went on for many miles, checking ponds and another course, we found no more annuals.



On another day we went over an un-

Photo: Rachovia splendens, an annual from Sincelejo, Colombia. It is closely related to **Austrofundulus.** Photo by J. A. Klee.

finished road in the direction of Pueblo Nuevo, through deep, soft sand and when we churned past a truck solidly stuck, we wondered how we would make out on the way back (we made it!). We had investigated two rather large ponds of blackwater with negative results, and came to a small, circular pond completely covered by a small floating plant. Underneath, the water was cool and fairly deep . . . I was up to my armpits and still only a few yards from the shore. We used the seine, collecting hundreds of pounds of floating plants. After dragging it gently to the shore, we found to our great joy a few fish . . . an annual of a species I had not seen before. We kept on seining until only plants were obtained. This pond had no other kinds of fishes and it was the only one that went "by the book." We continued on to Pueblo Nuevo and past, but found no other body of water containing annuals.

However, the mystery of the "perennials" had now grown insoluble. For these ponds and courses were far inland, well above the level of the Magdalena River and often surrounded by hills, making any restocking from the river a matter of absolute impossibility. What happens to the "perennials" in March and April? Have they learned to estivate? If so, in what manner?

It is pertinent to mention that last year I inspected a man-made water hole completely surrounded by low hills, about 150 ft. above the level of the Canal del Dique which joins the Magdalena River to the Bay of Cartagena. This hole contained the same two silvery characins also found around Barranquilla. There, the problem was not survival for the hole never dries out completely. The problem was, how did they get there? Not by man whose only interest was in storing water for his cattle. Eggs stuck to the feet of water birds or roaming alligators? But if that were the way of restocking all these temporary ponds, then how about the livebearers? These problems seem to me to be far more fascinating than the routine of the annuals which, after all, follow a nice, logical pattern!

Addendum by Bruce Turner, Brooklyn, New York – Mr. Kyburz sent me three species from the above described expedition. The species from Barranquilla is *Rachovia brevis* (Regan). The species from the rainwater courses near Juan Mina is *Austrofundulus myersi* (Dahl). This is the first time this species has been found outside its type locality area near Sincelejo. The fish from the blackwater pond on the road to Pueblo Nuevo is in all probability a species new to science, probably of the *Austrofundulus* type and it is a very pleasing dark maroon and indigo. The *Rachovia brevis* from Barranquillita has much more red in it than is commonly found in that species from other areas. Mr. John Gonzales of Philadelphia is currently endeavouring to make these species commercially available to hobbyists, and all inquiries should be sent to: Bruce Turner, 1817 67th St., Brooklyn 4, New York, who will forward them as directed. ◄

Screen on Filter

Many valuable fry could be lost without notice, drawn either into the outside filter or into the underwater filter container by the powerful suction of the filter operation. To prevent this, I always install a nylon netting material on the opening intake of the filter system just before the fishes are expected to spawn. Thus, the tiny fry are saved and the circulation of water is maintained too. – *C. W. Wong, San Francisco, California.*

FINNY FOLKS

By Diane Schofield

PARTICIPATING in the hobby all by one's self seems a little bit to me like trying to plan tennis alone. You can whack the ball all you want but it can't have as much merit as having someone else to whack right along with you. Many more rewarding experiences can be yours when you participate in an aquarium society, where, instead of a ball, there is information to bat around. But there is another benefit – not only is one able to learn much more about the often rather obscure art of keeping fishes, but can meet nice people. I've often wondered if it was just my imagination or whether the tropical fish hobby does have a high percentage of purely nice people. I've concluded that anyone who tries to enable living things to live more comfortably is of a decent sort.

In this column that will appear from time to time, you'll get a chance to hear what other clubs do, you'll meet new friends and you'll get an opportunity to say when you see a familiar name, "Hey, Joe, I see that you and your club got mentioned in *The Aquarium Journal* this month!"

Over a period of the last eight years, doing service as editor of 'Fin Fun,' the bulletin of the Lockheed Employees Recreation Club Aquarium Society, I have become acquainted with various clubs. Of course, a club isn't an inanimate thing – it's a collection of people or as I put it when I ran my "Fishy Dictionary" in a recent issue of "Fin Fun" – "A is for Aquarium Club, a group of assorted individuals who meet at regular stated intervals, drawn together by one common interest – to lie about their prowess with fish."

Probably the club which truly deserves the title of "Dedicated Eggheads" is the Los Angeles Aquarium Society. Just look at some of the celebrated names in the hobby who are members – Gene Wolfsheimer, Dr. Sylvan Cohen, Dr. William Deyhurst, Richard Haas, Thelma Simpson, and this just scratches the surface.

I am happy though that they finally got a place to meet commensurate with their dignity. When I first visited their group they were meeting under the Los Angeles County Museum, in a place filled with disjointed empty-faced knights in suits of armor. A year or so ago when I attended again after a long absence, I trotted down hopefully to a park in Hollywood. After making the rounds several times of all of the public buildings there, I had just about come to the conclusion that this was the wrong place. Just as I was passing a door that bore the legend, "Men's Locker Room," I caught a glimpse of Kay Ragland sitting happily inside, surrounded by jars of fishes. No wonder the male members of that society outnumbered the female!

Fortunately they now meet in a room of the Kaiser Foundation Hospital, 1505 N. Edgemont Ave., Los Angeles at 8:00 p.m. on the second Friday of each month.

Kay Ragland edited their "The LAS Newsletter-Bulletin" for many, many years. After an unfortunate hiatus, they have a new editor, Mel Boyle. This is

an excellent bulletin, containing eight pages of original material, for they are blessed in having a membership that overflows with knowledge of the hobby.

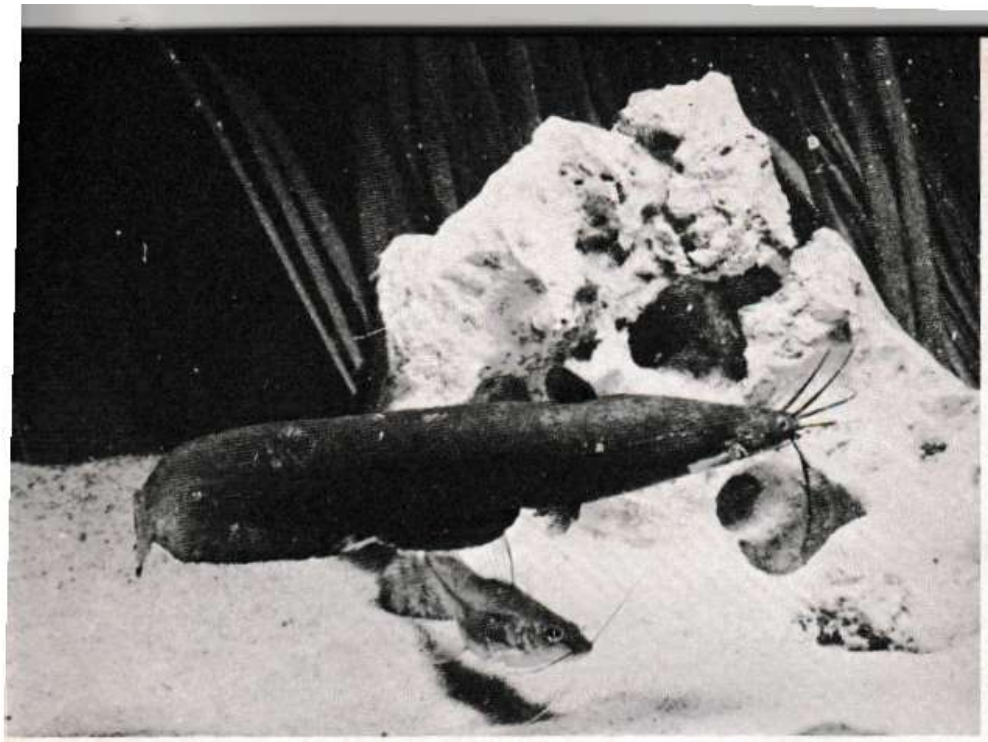
Every so often an article comes along in one of the bulletins that stops the eye cold in its path. One appeared in the November issue of "Tropic Tank Talk," the publication of the Greater Detroit Aquarium Society. Tell me how you could turn the page after reading the following title, "The Trials and Tribulations of a Hobbyist's Husband or Watch Your Step Buddy, the Ground is Slippery!" Obviously this was written by a man (Herman Duerr, by name). This is a switch – normally it is the women who weep pitiously and some of them may read with relish the turnabout situation that made Mr. Deurr write, "We brought the whole thing home, set it up, and dumped the fish. 'Well, you've finally got a hobby to keep you busy, my dear.' I said to my wife with a pitying glance at our dog, our bird, our two children, and a sink full of dirty dishes. That was three years ago. Since then I have been feeding the fish, cleaning the many tanks, etc."

Dorothy Stimson, has her new editorial hand firmly on the helm of "Tropical Topics," the bulletin of "The Aquarium Hobby Club of Indianapolis." The humor of Dot's column, "Just Fishin,'" now permeates the entire bulletin, as can be seen by a small item recently. "Somewhere in this issue there's a blank space above one of the ads. We left it for your use to note our mistakes. That's why it is so SMALL!" ◄

★ IDEAS ★
BY HOBBYISTS

A Simple White Worm Culture

Do white worms mean to you a box in the basement attracting vermin? The undesirable creatures which sometimes invade a white worm box do not appear in a culture in the refrigerator. For over a year my worms have multiplied well in a 13¼ inches by 9 inches by 2 inches pyrex baking dish covered with foil and kept in the refrigerator. Once a week I feed them an inch square of bread soaked in milk which I put on top of the soil and remove after twenty-four hours. At this time I check the dampness of the soil, and if needed sprinkle it with a few drops of water. This size culture provides a good supply of worms during a live food shortage and it is handy for regularly giving fish a varied diet. – *Mary Vetromile. San Francisco, California*



More "hair" on its snout than a movie monster; in damp weather it "swims" ashore!

Eel-like Catfish

Braz Walker
Waco, Texas

CATFISHES are one of the most interesting and varied groups of fishes available to the aquarium hobbyist. Few fishes are more handsome than the beautiful *Synodontis angellicus*, the black clown up-side-down catfish. On the other end of the stick, *Ancistris*, a plecostomus-like catfish, which has more "hair" on its snout than a movie monster, could be a candidate for "Ugliest Man" in almost anybody's contest. Somewhere in between these two extremes are members of the family clariidae, a group of eel-like catfishes from Africa and Asia.

Most serious aquarists are aware that a great number of fishes have supplementary breathing organs to help them remain alive should their water become polluted or extremely crowded. Clariids are members of the family Clariidae, and are famous for having a much more efficient breathing apparatus than most and at night they sometimes come ashore in damp weather. Their

Photo: The eel-like catfish **Heteropneustes fossilis**, as photographed by Braz Walker.

strong pectoral and ventral fins, combined with their slithering serpentine motion, makes them amazingly ambulatory, and sad aquarists sometime discover that they are also excellent climbers after finding a prized specimen in a well dried condition a great distance from the aquarium.

Heteropneustes fossilis is a member of the family Clariidae. With a face full of barbels, nevertheless in motion this fish is the epitome of grace. Possessing a relatively small swim-bladder, this fish like many of our modern jet fighters has little gliding ability and once off the bottom he must keep swimming in order to stay "aloft." The extremely long anal fin, which extends over half the length of his body, almost, but not quite, runs into his caudal fin without interruption. The serpentine action of the body, plus the rapid powerful rippling motion of the anal fin propel him through the water with amazing speed. In some clariids the anal fin is only a suggestion of the much longer and more powerful dorsal fin, but in *Heteropneustes* the tiny dorsal fin looks almost ridiculously small. It has no adipose fin.

Heteropneustes fossilis is a rather difficult fish to photograph since if hiding places are available for him (as they should be for his comfort), he will either be in one of them or swimming at such a high speed between hiding places that it is practically impossible to follow him with a camera and keep him in focus. If you are lucky enough to catch him in the right place at the right time, he has the frustrating ability to turn his tail and ripple his anal fin so that the picture gives false impression of the fish's form. When the fish is not in motion the barbels project forward and give the impression of being rather stiff. In the accompanying picture they will be seen to be curved backward by the resistance of the water against them since the fish was in motion at the time of photographing.

Heteropneustes fossilis is a native of Ceylon, Eastern India, Burma and South Viet-Nam. In nature they are said to reach a length of 2¾ feet but in the aquarium this is very unlikely. The color is variable and ranges from a light brown

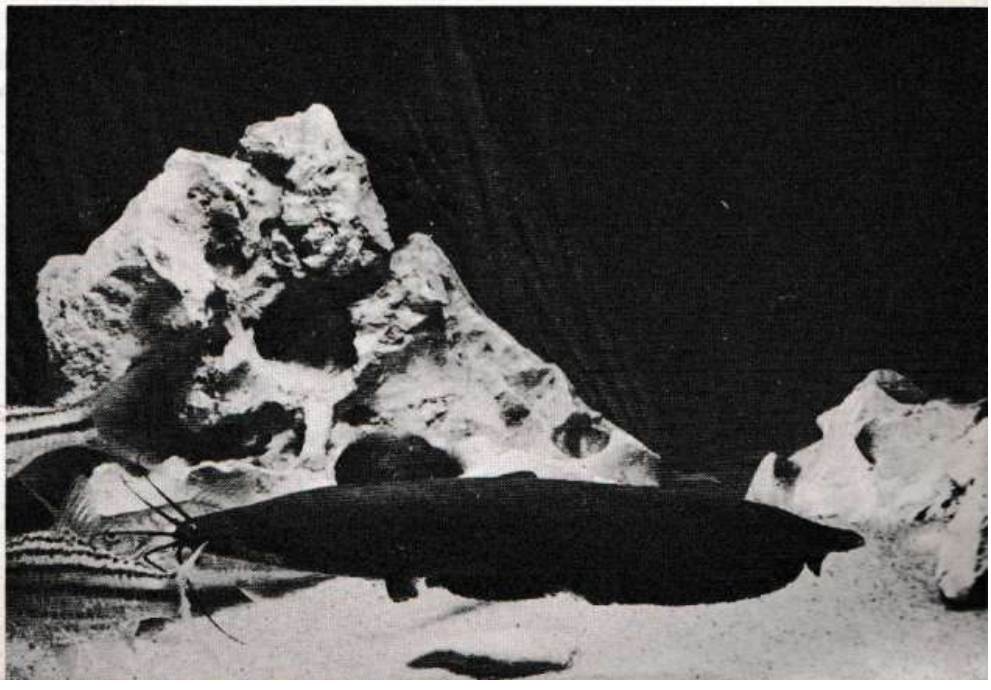


Photo: Another view of the same catfish, **Heteropneustes fossilis,** as photographed by the author.

to almost black. The yellow eye is very noticeable when lighted from the front. *Heteropneustes* is not at all fussy about what it eats and chances are whatever food you are already feeding will be just fine for him. His carnivorous nature should be considered and he should receive at least some raw lean meat or raw fish. Although nocturnal by nature he quickly learns to adjust his appetite to your feeding schedule and you will find that he will rapidly become one of the most active members in the aquarium at feeding time. This fish is among the hardiest of our tropicals. Temperatures down to 55 degrees Fahrenheit seem to bother him little, except to make him sluggish. At the other extreme a high temperature of 95 degrees F. can be tolerated with the aid of frequent use of his accessory breathing organ.

This fish is an excellent investment for the hobbyist who owns a large aquarium and does not like to bother replacing his fish often. I have kept one specimen for over eight years and he has grown from two to eight inches long. In an aquarium containing large fishes, some of which are larger than *Heteropneustes,* it seems completely peaceful, never bothering smaller fishes. When fed a lot of something to his liking its belly becomes almost unbelievably distended. When you are sure the fish has reached the point of bursting, it will often grab another piece of food and gulp it down like a fox in a hen house.

To my knowledge this fish has not been bred in the United States. The skill of European aquarists has once again proved itself and there are reports of successful spawning. Reportedly the male is noticeably slimmer than the female and the pair dig depressions in the sand, into which large amber eggs are laid. The female is said to take the sperm of the male into her mouth prior to spawning as in the case of some of

our smaller South American catfishes. After spawning is complete, the eggs are guarded and the young are protected by the parents. It is hoped that more frequent importations will make it possible for some lucky American aquarist to witness the spawning of this fish in the near future.

This catfish is not for everyone. It is a heavy feeder and needs a great deal of room to grow. However, at a small size it makes a most interesting conversation piece for the community aquarium. However, make sure you don't place him with fishes small enough to fit into his mouth. This is a good rule to follow with any fish, especially the catfishes. Although unspectacular in color, the eel-like quality of *H. fossilis* and the rhythmic grace of the undulating anal fin as it propels this bewhiskered friend through the aquarium, gives him an attraction not possessed by the ordinary fishes. ◄

Werner

(Continued from Page 79)

with *calabaricum*. I usually use 1½ gallon plastic tanks (plastic because they can be easily manipulated). These tanks can be partitioned into 2 compartments. Stock the tank with 2 pairs of the fish without the partition, and add a bunch of nitella, najas, or some other fine leaved green plant. The tank is otherwise bare, no soil or sand. Feed live food, daphnia, mosquitoes, some worms, whatever is available and observe the fish for a few days. If there is no lively activity such as grabbing the food away from each other or driving by the males, we must wake them up a little, make use of their natural greediness. Now put in the transparent partition, with the males on one side, females on the other and no food whatever for three or four days. They'll get hungry. Then drop in a few worms right close to the partition on the females' side. Being hungry they most

likely will go after the worms as they sink down, but so will the males on the other side, trying to grab them away from the females. The partition of course prevents them from doing so. Add a few more worms for the females, and further excite the males on the other side. Now do the same on the male's side. This time the females will be the onlookers and despite having a full belly they will try to grab. This is making use of the natural greediness of the fish, will make them eat a lot and can be observed in another way. One or two fishes will hardly ever gorge themselves (there are exceptions such as *Aphyosemion arnoldi*), but put several or a whole bunch of them together and they'll fight for and try to grab every morsel away from each other underneath the feeding tray. The females soon will be fed well and filling up with eggs. Then comes the big moment, and for this I have a round plastic container about 5¼ by 5¼ inches high. The lid has a few "buckles" inside to prevent a tight fit and let the air circulate. Then I take one of Jack Scheidnass' excellent spawning mops, slip on a ring of lead, cut off from a piece of lead pipe and soak the mop first in water. Then taking the mop by its apex move it up and down in the water filled container mentioned above and with a quick downward push let it come to rest on the bottom. The quick downward push results in a fanwise spreading-out of the strands on the bottom, the lower ends turning up on the sides as the picture shows. The lead ring around the neck holds the mop down. The pair selected is introduced in the morning and removed at the end of the same day. Or put them in one evening and take them out the next, but do not keep them together for a longer period. If it is a young and fully mature female that is just going into the spawning period, she may have a dozen or perhaps

about 20 eggs. Return them to their separate tanks, feed them well and then unite them again as before. You will probably find more eggs in the second spawning and the third or fourth spawning may result in 50 to 70 or (as I had them quite often), over a hundred eggs. At times it is almost unbelievable. A heavy well fed female with a vigorous male will at times expel several eggs in a cluster or string.

The advantage in the above procedure is that all the eggs will be the same age and hatch about the same time, within 14 to 21 days. They are not as hard as those of *A. australe*, and should be handled accordingly. I keep up to about 50 eggs in small plastic trays 1¼ high by 3½ inches in diameter, and uncovered. I use rain water and to each pint of this I add 4 drops of a 1% solution of Acriflavin in an isotonic solution of sodium chloride. White eggs must be removed *daily*, and should any eggs show fungus, add 2 more drops of Acriflavin per pint. Within 5 days the eye will begin to become visible and further development can be observed. During development, especially at the beginning, the eggs are to be kept in darkness but occasional exposure to light for short periods of checking won't hurt. After the eyes show and the embryo is visible, change the water. The new water needs no Acriflavin. Again change the water at the 12th day, this usually facilitates hatching. Those eggs which show full development after 21 days but don't hatch can be forced to hatch by adding a pinch of fine fish food. The bacteria produced attack the membrane, helping the fry to emerge. As they hatch, remove them with a medicine dropper to a suitable container, with 2 inches of water (half and half rain and tap water). Then immediately feed infusoria.

Raising a large number of fry may present a problem to the inexperienced. Right after they hatch they must be fed

exceptionally well. By this I mean with good infusoria, especially paramecium for the first few days, after that when their bellies show the result, follow it up with plenty of newly hatched brine shrimp. At certain times and locations tiny young cyclops occur, the water is thick with them; and when available this is the best food for fry I know of.

Experienced breeders know that not only the very first days but the first hours of the young fish's existence are decisive. A few days after they master the newly hatched shrimp, cleanliness becomes very imperative and a bare tank will greatly facilitate matters. On the one hand they have to have food always before them (shrimp are the easiest available), and on the other, shrimp live only a few hours at the most. Those that are not eaten form a source of polution. The normal waste and excrements from so many young fish, together with the dead and decaying shrimp, accumulate as a fuzzy brown layer on the bottom.

If it is not removed, it will create a dangerous mass of bacteria which must be syphoned off. When neglected it doesn't take long for the fish to be attacked and when only a few are discovered which have died it's usually too late and the rest will follow. If, through use of any of the new medicines, a few should be saved, they will be stunted and not worth the effort expended on them.

Syphon off the waste daily and change with aged water twice a week. Frequent changes of water are imperative depending on the number and size of fish. Also remember that a given size of tank can support only a given number of fish of a given size. *Aphyosemion calabaricum* does not grow as fast as most other aphyosemions. It will take the better part of 5 to 6 months for them to reach maturity on a good diet of predominantly live food and the emphasis here should be on variety. ◄

American Guppy News

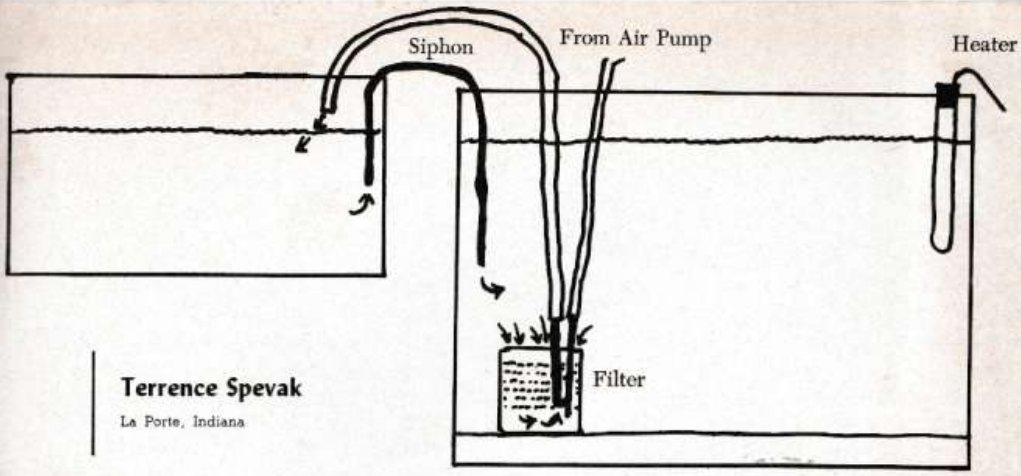
THE 1963 SEASON of showing guppies ended with gratifying results. In my opinion there were more good big tail guppies on exhibition than ever before. These exhibitions made it possible for the interested guppy breeders present at these shows to meet the people who had good breeding stock available. In the fall, The Greater Akron Guppy Show set a new record with 304 entries. Two weeks later these same exhibitors trooped off to Cincinnati and entered a record 348 entries. These two shows were one day exhibitions. One of the major benefits that is showing up, is the Female Guppy Class, that has become a permanent part of the mid-West

Photo: At the Cincinnati Show: (l. to r.) Gerald Lambdin; Lawrence Konig; Mr. and Mrs. Peter Huttee.

shows. The three popular forms in the female class are Sharktail, Delta tail and Round tail.

Due to this interest, the breeders are paying more attention to the development of the female guppy.

— *Lawrence Konig, Exec. Secty.*



Terrence Spevak
La Porte, Indiana

A simple answer to the "moving" problem!

Heating Auxiliary Tanks

FACED with the problem of having smaller fishes either eaten by larger ones by leaving them in the large aquarium or chilled to death by placing them in a small aquarium for which it is not practical to buy a heater, I sought a simple solution to the problem.

The resulting apparatus consists of an air pump of the type usually used to aerate aquaria and an inside filter. They are connected as they would regularly be. After this is done, an extra tube is placed on the filter output tube and led into the smaller aquarium. This completes the preparation of the filter. It may be used with or without the glass wool and charcoal as this has no bearing on its use in the system described here.

The aquariums are then placed in the following positions. The top of the smaller one should be above the purposed water level of the large one. A siphon is then placed into operation. It should be large enough to accommodate the volume of water pumped into the smaller tank, thus preventing overflow. It will not matter if it is too large because when the water levels even up, it will not siphon any more water until more is pumped in by the filter.

Since, in effect, this device acts as an aerator and filter, some of the properties of aeration must be considered. There are those among the aquarists who believe aeration to be detrimental to the growth of plants. These beliefs, to which I am in agreement, are primarily based on the fact that most aquarium plants live in an environment of still water, and require carbon dioxide to flourish. This system upsets the balance between the carbon dioxide and oxygen by introducing the oxygen of the air into the tank and removing the carbon dioxide at too rapid a rate. It also causes circulation of the water, to which the plants are not accustomed.

As this device was not designed to supplement the aquarium placed about the home for purely esthetic reasons, but to aid the hobbyist in separating fish, the problems of growing plants in the tanks will not be dealt with. If one desires to experiment with the system and plant propagation, it may prove fruitful.

Some of the benefits of the system's aeration of water and circulation are evident in hatching eggs of fish whose eggs are best separated from the parents and aerated. ◄

PROGRAMS

Readers and societies are invited to submit ideas to The Journal *for Aquarium Society meeting programs, including lectures, slides, films, demonstrations, etc. There is no charge for these listings.*

"Saltwater Aquarium in the Home," a new 16mm film in color. Running time, 25 min. Rental, $25. For information: Coral Reef Exhibits, P.O. Box 59-2214 Miami 59, Florida.

"Story of the Brine Shrimp," a 30-min. color and sound 16 mm film that also covers the tropical fish hobby. Rental: $10. For information: San Francisco Aquarium Society, California Academy of Sciences, San Francisco 18, Calif.

"Fascinating Marinelife of the Pacific Northwest," a visit to the Seattle Marine Aquarium. 30 color slides 35 mm. Rental: $5.00 plus postage. For information: Eric Friese, 105 NW 49th Street, Seattle, Washington 98107.

"Diane Schofield's Color Slides," a selection of different programs of color slides complete with commentary by Miss Schofield. Each program rents for $5.00. Sample programs: "Familiar and Strange Fishy Little Faces," "Fish of India," "Fish of Hawaii," "Marineland of the Pacific," "Seeing the Seaquarium," etc. For more titles and information, write Diane Schofield, 739 E. Valencia St., Burbank, Calif.

"Killifishes," a slide-tape program created by veteran aquarist George Maier of Chicago. In the West, contact Alan C. Marks, 2607 Bryant St., Palo Alto, Calif. regarding particulars.

"Aquarist Adventures in Southern California," an educational tour of aquatic topics. Local fishes, field trips, fish shows, shops, hatcheries and Marineland with society programming in mind. 50 color slides 35mm. incl. 50 narrative "read cards." Directions. Rental: $15.00 ppd. one way. For information: Gene Wolfsheimer, 4549 Tobias Ave., Sherman Oaks, Calif.

LETTERS
to The Journal

From: James McKeen
Manila, Philippines

We are interested in making shipments of small exotic, colorful fancy tropical fish to the United States. We have made several experiments and usually we find that the fish die within one or two days after capture. We are the owners of an island hacienda located on the east coast of Luzon and this island has about ten kilometers of shoreline where we find huge quantities of many different species of these colorful fishes. If you can provide us with the names of any publication which will be helpful to us, we shall appreciate it.

REPLY: Since you are primarily interested in marine fishes, we suggest you read carefully "Salt-Water Fishes for the Home Aquarium" by Helen Simkatis, price $6.00, The Aquarium Publishing Co., P.O. Box 832, Norristown, Pennsylvania.

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From: Diane M. Kruzel,
Chicago Heights, Illinois

Would it be possible for you to give me some information on the spawning of *Magalamphodus megalopterus* (the black phantom tetra)? I am interested in this fish. I have obtained a pair from our local pet shop and was wondering how I could go about spawning them. I am also interested in the dwarf cichlids. I would like to obtain a pair of *Nannacara anomala* (golden dwarf acara) but cannot seem to find any in this immediate area. Maybe some of your readers would be interested in corresponding with another enthusiast. I would enjoy very much to write to someone who is as interested in the hobby as I am, mostly from the "Chicagoland"

area. But I will write to anyone who will write to me.

REPLY: The black phantom tetra breeds like most other small characins. Keep the sexes separate in water of about 72 to 74 degrees F. with a total hardness of about 20-30 parts per million. The pH should be about 6.0 to neutral. The light over the tank should be fairly dim, not bright. Your breeders should be between 8 months and 1½ years old and you should change your water every two weeks or so. Fresh pure aerated water is necessary for breeding many characins. Breeding activity is stimulated by it. However, the fresh water should be aged, one or two weeks, in fishless aquaria with growing aquatic plants. Never use fresh tap water, even if it has the characteristics listed above. Under proper conditions your tetras will spawn on fine leaved plants. Unfortunately we cannot help you in locating the cichlid, perhaps a reader can help.

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From: Glen Nakahara, Honolulu, Hawaii

If possible I would like to know about the members of the families *Anoptichthys* and *Astyanax*. Would you list all the members which you know of and some information on each? Also, I would appreciate any suggestions on any detailed pamphlet, book, or publication which I may obtain which deals mainly or totally on the fishes of the previously mentioned families.

REPLY: Anoptichthys *and* Astyanax *are two genera, not families, and both belong to the family Characidae. Astyanax is a large genus of mostly silvery characins found in Mexico to Southern South America. Some sources say that there are as many as 75 species but the genus is inadequately known and studied and no one knows how many species there are. Most species that have been imported are hardy, large and easily cared for. Most are not too pretty. Several breed rather easily in the usual characin manner, spreading somewhat adhesive eggs over fine leaved plants.* Astyanax bimaculatus, *one of the most common, is silver with two large spots, one*

just behind its head, the other at the tail root. The common Mexican tetra Astyanax mexicanus *(or* Astyanax fasciatus mexicanus *is occasionally seen in the United States as an aquarium fish. It is mostly silvery, is very hardy and a robust rather pugnaceous fish. Although a few species of* Anoptichthys *have been described, they all are very close to the species* jordani *(named after C. Basil Jordan, and not David Starr Jordan, as at least one aquarium book states). The blind cave tetra has evolved from* Astyanax mexicanus *in caves near San Louis Potosi, Mexico. Here all intermediates between the blind* Anoptichthys *and the eyed* Astyanax *can be found. Like* Astyanax, *the blind cave tetra is hardy and easily cared for. It thrives and breeds quite well in aquaria. So far as I know, there are no pamphlets for aquarists that deal only with* Astyanax *and* Anoptichthys *but they are treated in a variety of aquarium books. Perhaps the most complete treatment in English, occurs in Gunther Sterba's "Freshwater Fishes of the World" available from Odhams Press Ltd. Basted, Seven Oaks, Kent, Great Britain for about 10 dollars. At this price the book is an excellent buy.* ◄

Salt Water Fishes

By Robert P. L. Straughan

Q.–Will synthetic resins keep the aquarium water clear?

A.–No, I doubt very much if any resins will remove color, odor, or gases from the water. This idea originated from a combination of resin and activated carbon in filters but actually the carbon does most or all of the work in clearing up the water. ◄

★ IDEAS ★

BY HOBBYISTS

The Journal will pay $5.00 for original ideas published. Keep less than 200 words. Send your idea today!

The New Coffee Cans

The new coffee cans with plastic lids are really a boon to the aquatic world. Remove tops and punch several holes in the soft plastic, then when transporting live food or mature fish from your favorite pool, lake, or pond you have a maximum of air, and a minimum of water on the floor of your car. I found it really useful this summer. – *Sandra Kraft, Salem, Illinois* ◄