

# TROPICAL FISH

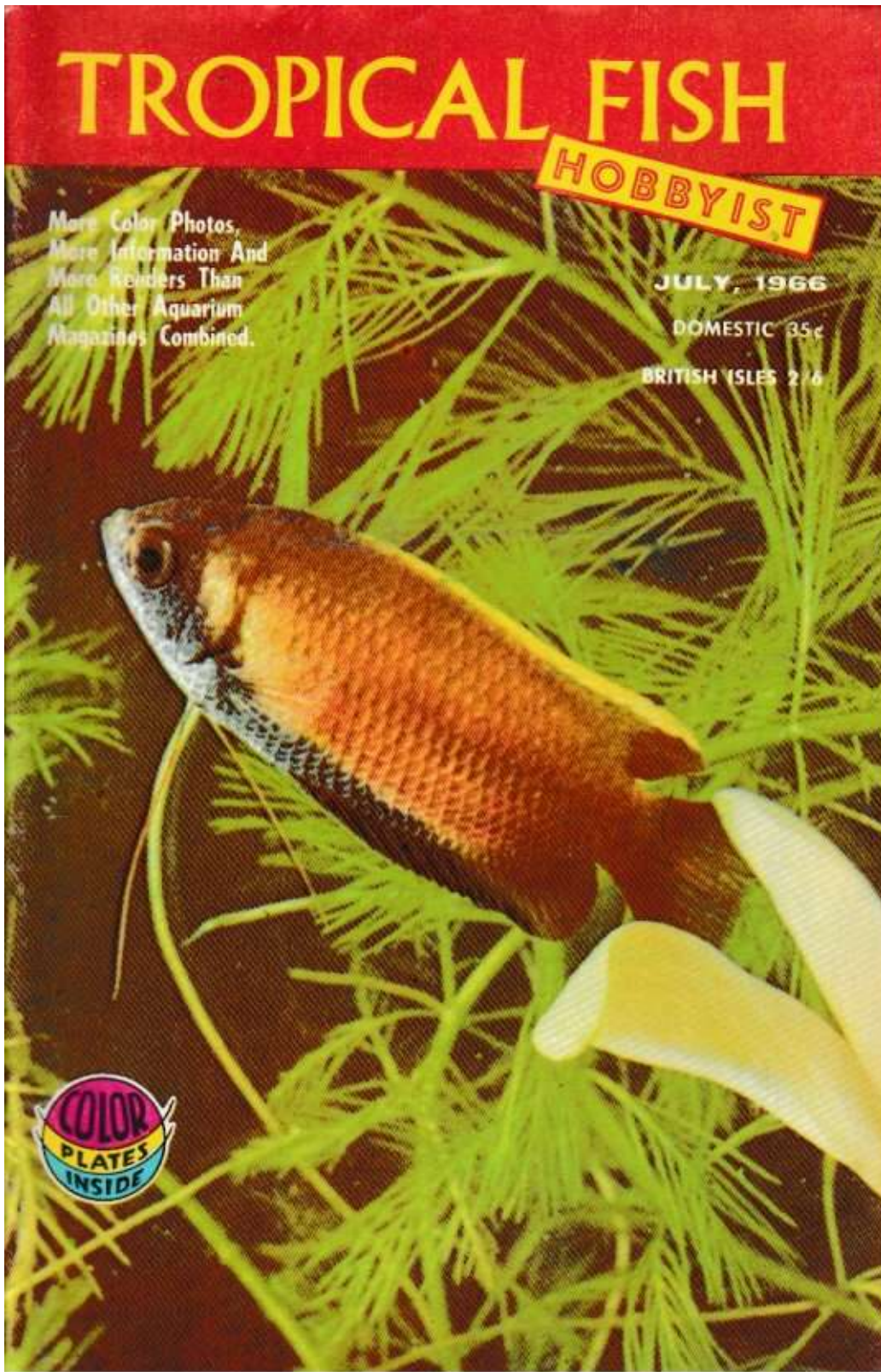
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In his excellent book *Garden Pools*, author Paul Stetson leads the reader through the intricacies of setting up both formal and informal garden pools, describes the most popular and beautiful of the many colorful water lilies that can be grown in garden pools, and lists some of the other animals and plants that can be given homes in water gardens. Apart from the information given on general good water gardening practice, author Stetson gives many helpful suggestions and answers some of the most practical questions that would be of interest to anyone contemplating livenship up the landscape of his home with a garden pond. For example, the book has a complete section devoted to ordering fishes and plants.

Besides being a valuable guide to water gardening as it is concerned with water lilies and other plants commonly associated with garden pools, this book is also valuable for its treatment of Goldfish and the new hybrid Carp developed by Japanese breeders, Koi. There are sections on feeding and breeding Goldfish.

Other topics covered in the book include: the construction and care of garden pools, planting and care of water lilies, and summer care and maintenance of the pool.

## TROPICAL FISH HOBBYIST

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**FEATURES**  
Mail Call, p. 53; Cover Corner, p. 64; Suits From The Seven Seas, p. 67; Your Fishes, p. 69.

**COVER**  
Several errors were made in the story "Emphysematosis" which was our cover story for March '66. On page 10, the measurement 1 1/2 to 1 3/4 should have been 3/4 to 1 1/4. On page 9, the measurement 1 1/2 should have been 1/2. Our mistake in the author, Mr. E. Bickel, who brought the errors to our attention. This month's cover picture is of a more honey dwarf gourami, *Colisa chuna*, in breeding colors. Many people think that the dwarf gourami, *Colisa lalia*, is the only gourami that ever shows any really striking coloration. This cover should prove that wrong. For the complete story on how to breed the honey dwarf and some beautiful color showing photos, turn to the story that begins on page 4. Photo by Rudolf Zukal.

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July, 1966

## EDITORIALLY . . .

In this issue we are starting a new feature which should find favor with a great many of our readers: "Your Fishes' Health," by Mike Reed. This column will treat with a wide variety of related subjects, such as disease prevention, recognition and treatment, nutrition, aquarium management, and many other things. The advanced aquarist as well as the rank beginner will find much of interest here, and there are some things which will probably stir up a little disagreement. I warned Mike that he might get a good deal of mail from indignant hobbyists who disagree with whatever he says, because no matter what you say in this game, somebody can always tell you you're wrong and what is more, prove it in a manner that seems pretty darned conclusive (to him!). One thing we must keep constantly in mind: we are always learning new things, and some of the new things make the old so-called "facts" look pretty silly. Then we must also remember another thing: As with all living things, with fishes you cannot make a set of hard-and-fast rules to which there are absolutely no exceptions. If you happen to run into an exception, don't make it try to swing the general rule, like a tail wagging a dog.

*William Vanderwinker*

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Tropical Fish Hobbyist



A mature *Colisa chuna* pair. The male is easily identified by his intense spawning colors. Photo by Rudolf Zukal.

## Breeding the Honey Dwarf Gourami *Colisa chuna*

BY TERRY D. SOLE

*Colisa chuna*, the honey dwarf gourami, is a peaceful little anabantid of which many fish fanciers have never heard. This little fish is native to India, from where we get such other species of the genus *Colisa* as *Colisa lalia* (dwarf gourami), *Colisa labiosa* (thicklipped gourami), and *Colisa fasciata* (giant gourami). *Colisa chuna* is a very shy little fish and, in a dealer's bare tank, may have a very dull and washed-out appearance. If this fish is given a

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July, 1966



Above—The male inspects the nest he has just completed. Below—The male poses stiffly in front of the female in an attempt to lure her to his nest. Photos by Rudolf Zukal.



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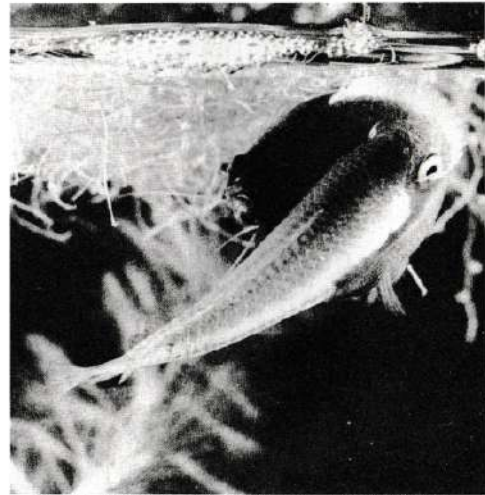


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The female swims into the male's spawning embrace. Photo by Rudolf Zekal.

well planted tank, however, it will take on remarkable colors. It may grow to a length of up to 4 inches but usually does not get any bigger than 2 inches. The female has an almost gold colored body with a dark brown to black stripe running from the gills to the base of the tail. The male has a true gold colored body with a dorsal fin containing a slight tinge of orange, and from the gills down through the chest, there is a very dark blue-green area at breeding time. Most of the time this color is not shown unless the fish is in very good condition. This fish is both attractive and very hardy.

Breeding *C. chuna* is a very simple procedure if proper conditioning precedes it. The fish are conditioned together, with some other peaceful fish in the tank (to prevent a premature spawning). Feeding dry foods, tubifex, daphnia, and frozen (or live) brine shrimp for approximately 2 or 3 weeks is usually satisfactory. At the end of this time the female will be bulging with eggs, and the male's colors will start to intensify.



Above—The male turns the female on her back so that the eggs will be expelled upward toward the nest. Below—In almost perfect position, the male begins to tighten his embrace. Photos by Rudolf Zekal.



The pair is now ready to be placed into the specially prepared breeding tank. The tank can be a small one, even 1 or 2 gallons in capacity. It should have a tight fitting cover (but with a small hole or two for gas exchange) as I have found that the nest is quite delicate, and a draft blowing over it will often destroy it. The tank should have some gravel and be thickly planted throughout except at one far corner. In this corner there should be some floating plants for the male to build his nest in and enough open space for spawning to proceed unhampered. I have found that it is best that there should not be a light in the tank; the light of an average room is enough for breeding, and the partially dark tank hurries the feeling of security of the fish. The water should not be too high, about 4 to 6 inches, with a temperature of approximately 80°F. The pH and DH are not very important. If the tank is in a heavily trafficked room, translucent paper should be placed around the outside to give the breeders privacy.

The conditioned female is placed in the breeding tank 12 to 24 hours before the male so that she may get used to the tank. Within 24 hours of placing the male in the tank, the bubble nest should be started if everything is to the pair's liking. If there are no results in 4 or 5 days, the attempt should be abandoned and the fish reconditioned to try again. *C. chuna* breeds in the typical anabantid fashion. The male will coax or chase (but seldom injure) the female under the nest, position himself under the female, and wrap his body around her. They will then roll until they are almost diagonal to each other, and the eggs are released. The eggs are light, and float up into the nest. When the actual spawning is complete, the male drives the female away and will keep her at a distance without hurting her, but the female should be removed as soon as possible after the spawning, as she is no longer needed.

The eggs hatch about 36 to 48 hours after they are laid, and the fry remain in the nest about 2 days, until they become free swimming. The male should

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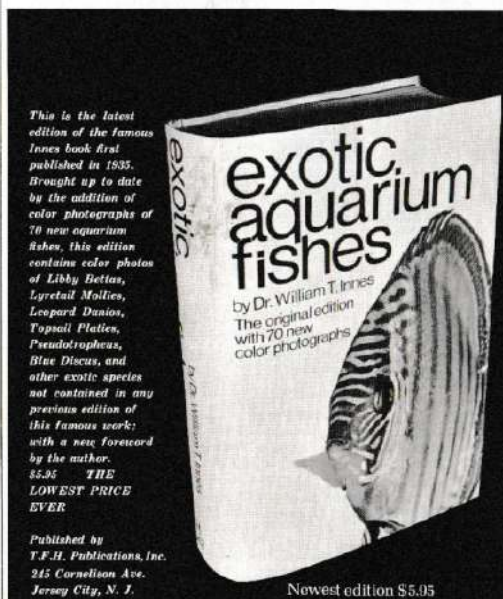
ared portholes, with light and all," were his exact words. I simply cannot imagine the fish he is speaking about. The only one that—with a great deal of poetical license—could even approach fitting his description is *Geophagus brasiliensis*, our Brazilian mouthbreeder, but that is a species my good neighbor is perfectly knowledgeable of, and which, in fact, we have caught together on more than one fishing excursion. I don't believe it could be the same fish. Or could it?

Another fellow, a student of mine, tells me of "an elongated, round-bodied red fish" he claims having seen and caught in a swamp to the south of Porto Alegre, the town where I live and work. Since "red" is a color that allows for many shades, and many fish species show quite a chameleon-like mimicry of their surroundings, it may be that he was referring to something quite common, caught at a spot where there is a red clay bottom. Or was he?

Then there is the case of a "catfish" of which, so far, in over 30 years of fishing in this area, I have caught only one isolated specimen: I had driven to a creek where *Glandulocauda inaequalis* abound and was fishing with a frame net. Suddenly, when pushing the sturdy net not only over but through the bottom sand, I saw something wiggling in it which caught my eye, for I had never seen anything like it before. An elongated, unarmored catfish with a cylindrical body, brownish-gray in color with longitudinal rows of "pinstripe" dark dots. Around the mouth was quite a number of barbels. When transferred to the aquarium, this fish showed the peculiarity of burying its head and the front half of its body in the sand, leaving its rear part exposed. Unfortunately, I was not even able to have the little pet photographed, for the day I brought a photographer home to take his photo, I discovered that he had died several days before and was quietly decaying while already buried in the sand. This was something I witnessed personally, so it could not have been a pipe-dream. Or could it?

And then there is the case of the "black" *Cynolebias*: We had been fishing for *Cynolebias adloffi* and *C. melanotaenia*, to fill an order received from Mr. Karl Stegemann, the fish exporter from S. Paulo. Suddenly I noticed that several specimens, which otherwise looked like *C. adloffi*, showed a different color scheme. While the usual *adloffi* has narrow black vertical stripes on a metallic blue-green background, with black dots along the base of the dorsal, anal, and caudal fins, this one showed white stripes on black, with electric blue spots along the insertion of the fins. Could it be a different species? Was it a color sport that up to that date had not yet been officially described? I immediately wrote to Dr. Herbert Axelrod about the matter, and was instructed to send him 50 specimens preserved in formaldehyde. (It always goes against my grain to kill a beautiful fish, but after all, when things are done in the name of science, at least there is a semblance of a justification, isn't there?). *Cynolebias* being annuals, Dr. Axelrod's reply arrived at a time when the season for the species had already come to an

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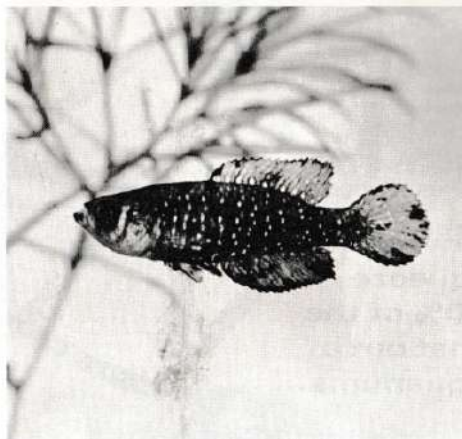
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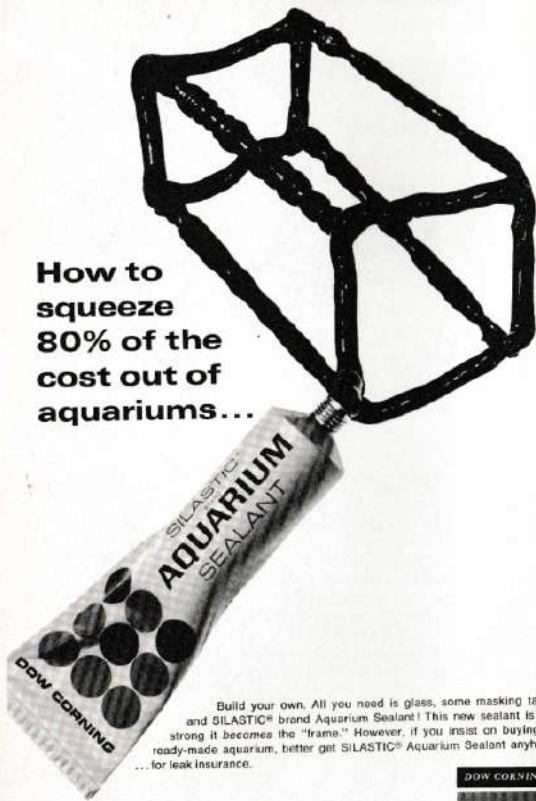
*Cynolebias adloffi* male. Photo by G. J. M. Timmerman.

end, and I had to wait till the next year's winter to go out after them again.

When August came again—remember, August is winter in the Southern Hemisphere—I organized a veritable expedition, taking along my wife and children in the sidecar of my trustworthy motorcycle, and drove to the same spot I had been at the year before. We spent a whole week there, sleeping at a wayside inn, and having lots of fun fishing and shooting ducks. The general yield of the trip was quite satisfactory, what with fishes caught and aquatic plants found. I even found a place where there were tons and tons of plants, including cabomba, myriophyllum, and ceratophyllum. But of the "black" *Cynolebias*, the whole harvest was a total of two specimens only, and up to this date I have not been able to catch any of them at any of the other locations where one finds *Cynolebias adloffi*. Since then, I have not been able to return to the original spot again. Maybe I will be able to do so soon.

These, and many others, are the "Phantom Fishes" I have been after. I sincerely expect that some day I will be able to find a new species right here in the middle of this otherwise quite well worked-over area. Or will I?

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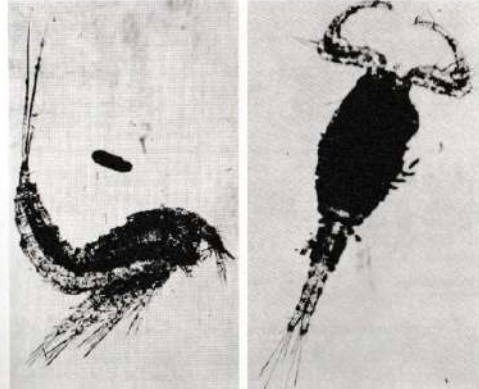
## Copepods of the Entomostraca Group

BY KURT LEBCH  
Jena, Germany  
Photos by the author

The designation "copepod" is used for all the oar-footed creatures which belong to the subclass Entomostraca and live in open water. The nutritional value of the copepods, which are related to daphnia, as fish food is relatively high. The shells are comparatively thin, giving them a low percentage of undigestible chitin. They store fatty, vitamin-containing substances as a reserve food supply. The nauplius stage of copepods is an important food for newly hatched fry. Copepods are easily sifted and fed in their various

Copepods can be divided into groups according to the way they move. These groups are the "hoverers", "swimmers", and "wrigglers." This is a wriggler (magnified) as seen from the side.

Male Cyclops (magnified) with antennae in clasper position.



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sizes. Anyone who has ever bred glassfish (*Chanda ranga*) surely knows that the spawning is never successful unless there are some *Diatomus* copepod nauplii at hand.

The copepod body is elongate and clearly jointed, but, on the other hand, in most copepods, the head is not clearly separated from the rest of the body. In the center of the head there is found the unpaired eye. There is also a pair of feelers and antennae and, after the pectoral joint, two pairs of maxillary feet. Behind the head there are five pectoral divisions with five pairs of rowing feet. The abdomen is also composed of five divisions, of which, in the female, the first three are rigidly joined. The rear of the body ends in a short forked tail, and the forks frequently have considerably elongated bristles. It is here that the females carry their eggs (in egg sacs) until the nauplii hatch. The male carries the spermatophores, the sacs which hold the sperm, here.

During mating, the male clasps the forked tail of the female with his antennae, which, at this time, are used as claspers. He then bends back and fastens a spermatophore near the female's genital opening. Fertilization takes place during the passage of the eggs from the ovarian tube into the egg sacs.

Like daphnia, copepods are capable of laying two kinds of eggs, some which hatch quickly and some which require a rest period before they begin to develop. The later type of eggs serve to carry the developing organism through unfavorable periods. Some copepods are also capable of forming a cyst over their eggs, thus protecting them so that they survive a dry season. Copepod multiplication is accomplished solely through fertile eggs. For this reason, there are always both males and females to be found in any large number. In contrast to daphnia, incubation time is quite long. While the common "water-flea" (*Daphnia pulex*) requires only a few days from hatching to maturity, copepods need several weeks, during which time there would be 12 larval stages to be gone through. Newly hatched copepods are called "nauplii." They have only three pairs of legs. Additional legs are developed after each shedding, until the final adult form is attained. Copepods can be found the year round in open waters. Even in the winter they can be caught through the ice. Quite a few species continue to multiply despite the coldest weather.

Copepods can be divided by the way they move into "hoverers", "swimmers", and "wrigglers." The "hoverers" can be distinguished by their extra-long antennae. The thorax is elongated and clearly divided from the abdomen. The females have only one egg sac. Propulsion is accomplished in a quick hop by the simultaneous use of five pairs of legs. They also move in a gliding motion by beating the second antennae and the mandibular feelers. Most of the "hoverers" belong to the genus *Diatomus*.

The "swimmers" of the copepods propel themselves through the water in short arcs that remind the viewer of hops and cause the German hobbyists to refer to them as "*Hüpfertiere*" (hoppers). Their antennae are not as long



Mature female Cyclops (magnified).



Fully grown male Cyclops (magnified). One spermatophore was pushed away during preparation for photographing.

A male Cyclops clasped to a female. The attached spermatophore may be seen clearly on the hind part of the female. (Magnified.)



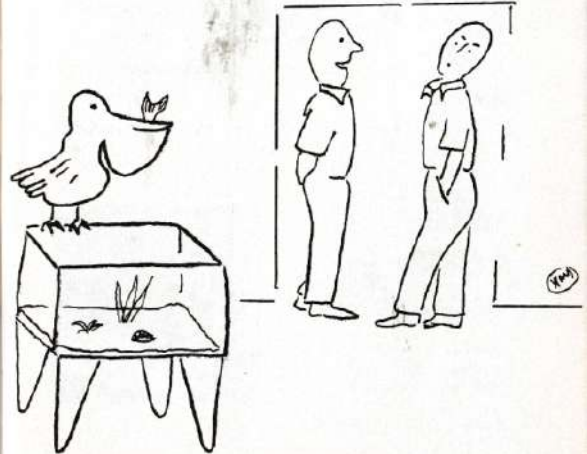
Female Cyclops (magnified) with egg sacs.

as those of the "hoverers." Most of the "swimmers" belong to the genus *Cyclops*.

The "wrigglers" creep along over the bottom or tangles of plants. The antennae are very short when compared with the other copepods and the head is distinctly divided from the thorax. Because of their method of living they are seldom collected and are not well known. They belong to a distinct family, the Harpacticidae.

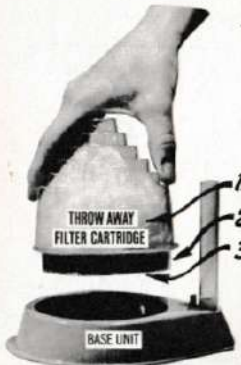
The method of eating also varies. The "hoverers" sift the smallest plankton (nanoplankton) from the water, while the "swimmers" and "wrigglers" catch their prey and gnaw at it. In addition to living foods, they also eat partly decayed and crumbling foods. It is well known to the breeders among the aquarium hobbyists that grown *Cyclops* attack newly hatched fish fry.

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This is where the expedition started. Dr. Jacques Géry, Evelyn and Mrs. Géry, at breakfast in southern France.

## The T.F.H. International Expedition to South America

BY DR. HERBERT R. AXELROD  
Black and white photos by the Author

I was laughing . . . laughing so hard that I almost tore the thick rope that held my hammock a bare two inches above the floor. There in front of me, stark naked and white as a ghost, stood Dr. Fritz Terofal, the ichthyological chief of the Munich museum. He was in a panic. His delicate white body, as white as only a blond Teuton's can be, was literally covered with red welts from bug bites. I don't think there was one square inch of his whole body that didn't have a welt of one kind or another. And, to make matters worse, they itched . . . and Fritz scratched . . . and they became infected . . . and Fritz screamed. . . .

And there he was in front of me begging me to do something about the bugs in Brazil! The more he screamed, the louder I laughed, until I could hardly control myself.

But the real story starts in southern France at the University of Paris' Laboratoire Arago. Dr. Jacques Géry and his beautiful wife, were having

Continued on Page 35



Larry Konig reports . . .  
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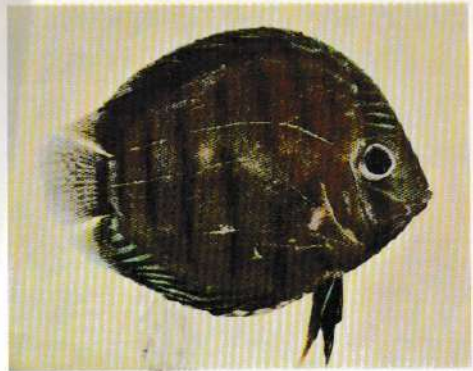
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The *Symphysodon oequifasciatus axelrodi* from Tapui. Photo by Dr. Herbert R. Axelrod.

Continued from Page 31

breakfast with Evelyn and me, when Jacques said that it was lucky we were leaving in a few days, for he expected Dr. Fritz Terofal of the Bavarian State museum to spend a few weeks with him to study the fishes of the Mediterranean Sea. Why was it lucky? Because there was but one bedroom for guests . . . and we were in it!

Needless to say, Fritz arrived and far from being the stuffy German we expected, he turned out to be a grand guy about to be married. After spending a few hours listening to Jacques and me spinning some tall tales about the magnificence of the various jungles around the world where all you have to do to find new fish is drop a bucket into the water and pull out a few new species, Fritz decided he wanted to go on a T.F.H. expedition, too. So, right on the spot, we organized one. Fritz would represent Germany, Jacques would be our Frenchman, Harald Schultz would be our Brazilian, and I would be the American. We made a date to meet four months later 1500 miles up the Amazon, in Manaus, Brazil. Everyone made it except Jacques Gery . . . he went to Africa instead!

Back to the same Amazonas Hotel in Manaus, a mighty, elegant hotel sticking high into the air in the middle of nowhere . . . as usual it was the dry season and there was no water . . . the toilets didn't work, but that

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didn't stop most of the Brazilians from using them . . . and Fritz received his first lesson in Brazil.

"If you wanted to live like a German in Brazil," Fritz said, "you'd go mad!"

But the excitement was running high now and we were all itching to get started. Around-the corner from the hotel is Willy Schwartz' famous *Aquario Rio Negro*. Willy collects more discus and cardinals than any other South American firm, and his tanks are always full of new species collected by his men from half a dozen motorized boats which sometimes spend a month running up uncharted rivers.

I felt a closeness to Willy for many reasons. (I was the one who started Schwartz in the fish business in the first place.) Because Willy was always so kind to me and most fish collectors who needed help with the Indians and caboços of the Amazon, his compound was always a meeting place. My mail was sent to Willy; I always left my fish poison and other collecting gear with Willy; and Willy always had some very interesting and accurate tales to tell about the rivers which feed the Amazon.

This is the Rio Purus from a height of 500 feet. Note how low the river is.





The yellow-finned *Chalceus macrolepidotus* from Tapauá. Photo by Dr. Herbert R. Axelrod.

The red-finned *Chalceus macrolepidotus* comes from the Guianas. Photo by Dr. Herbert R. Axelrod.






The clear-finned *Chalceus macrolepidotus* from Colombia. Photo by Harald Schultz.

This time it was to be the Rio Purus, a very long and little-known river. We were lucky, too, for Willy told us about the American group known as the "Summer Institute for Linguistics" which had an airplane in Manaus, and this airplane flew into remote jungle areas bringing food and supplies to the missionaries who were attempting to study the Indian languages. One of Willy's men sought out the pilot, and in short order we convinced him to fly us into the speck on the map called "Tapauá on the Purus." It took only a few days to gather the rations we needed . . . spaghetti, canned tomato paste, sugar, coffee, salt, penicillin and other medical supplies, nets, traps, fish poison, and some hard candy for the Indian children.

Our meeting place for the plane was the Texaco refinery dock upriver from Manaus where, after some hours of negotiating with a very suspicious plant manager, we convinced him to sell us aviation fuel and allow us to use their dock to load our seaplane and take off for the trip into the deep Brazilian jungle south of Manaus.

The ride down was very comfortable. I flew as co-pilot being the only one beside the pilot who knew anything at all about planes. We had a map which showed the area as "uncharted." No radio. No weather reports . . . and the only alternate landing strip we had was whatever body of water we could find. The bush pilots of the Amazon are a strange breed of men, and ours was no exception. He flew low, 50 yards over the trees,

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and in a few hours we saw the exotic settlement we were looking for. Here was Tapauá . . . all eight houses of it!

The city lay at the intersection of the Rio Tapauá and the Rio Purus. It was about 300 feet above the river on a typical embankment. I say "typical" because every tiny Brazilian jungle town has three distinct characteristics. It has a very large tree which can be seen for many miles away and which is used by the townspeople as a landmark. It has a large old mango tree which was the reason the first Indian settled there. And it is always high above the river so as to be safe from flash floods which always hit in the Amazon with little or no notice.

As our plane circled low over the river with all eyes looking for floating logs which would be a landing hazard, the townspeople anxiously gathered by the river clearing . . . waiting to see what sort of strangers were coming to their village. We were amazed to find all of them very well dressed, and when we taxied up to the beach, the whole town congregated before us . . . just waiting.

I quickly jumped out of the flying boat onto the pontoon. A big smile from a few youngsters and a wave of greeting from me was all that was needed to bring the whole town into a wave of hysterical laughter, and the barricade of strangeness was broken once and for all. We were instant friends! The town fathers gladly helped us carry our gear from the plane, and we climbed the steep hill to the top of the embankment.

A tall well-dressed man came forward and in perfect Portuguese greeted us with a very beautiful welcome to his village. "I am Daniel Albuquerque, mayor of Tapauá. My village is at your disposal. How can we show our hospitality?"

"You've already been kind enough," I said. "We are scientists studying fish. May we build a lean-to in which to place our hammocks?"

Mayor Albuquerque laughed. "Your Portuguese is very good. Are you English or American?"

"I'm an American. But how did you know?"

"Because only Americans are so polite," he replied in very fine English!

It seems that Mayor Danny went to the University of Miami and settled in this small village, where he married an Indian girl and brought real civilization to the group.

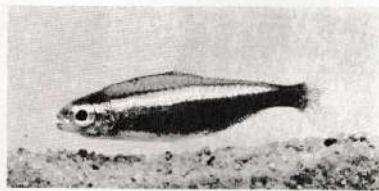
He wouldn't think of our sleeping in a lean-to, and he quickly made arrangements for us to have the use of one of the houses for as long as we cared to stay.

We were Danny's guests at his home for all meals, and every place we went, Danny went with us.

Danny was scientifically oriented, too. He was the town's doctor, mayor,



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recorder of events, since he was the only one who could write, and the big businessman of the area. Danny owned hundreds of huge Brazilnut trees and sent tons of them downriver every year. He also sponsored fishermen who brought in *Arapaima*, the largest fish in South American fresh water, and he traded in rubber, too.

This being the dry season, river travel was difficult, for everywhere to be seen were shallow spots, too shallow for boats of any size. We had to

inside the jungle right near town, Fritz poses with his fishing party. "Fritz" is Dr. Fritz Terofal, now Chief of the Division of Fishes for the Bavarian State Museum in Munich, Germany. He is specializing in cichlids. Note the size of the huge banyan tree.



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Tropical Fish Hobbyist



The three-lined pencilfish, *Nanostomus trifasciatus*. Photo by Harald Schultz.

fish right there in the immediate area, and where else could we be so very comfortable?

Our first fishing trip was right at the beach, and a bit of meat on the end of the hook produced a piranha in less than one minute flat. This, of course, didn't stop everyone in town from bathing and swimming there (they hadn't read the reports from California where all the "experts" are afraid that piranhas will escape from a home aquarist and eat everyone alive), and in short order we had a whole entourage watching us fish. Within the hour I had a fine string of piranhas, *Metynnus*, and *Prochilodus*. Almost as soon as I caught them I rushed them into my photo tank and preserved them for further study. Fortunately, thanks to Danny's hospitality, we didn't have to eat many of our specimens.

The villagers were wonderful. Our neighbor next door presented us with a magnificent turtle, the sweetest tasting variety. Turtles are a very important part of the diet in the Brazilian jungle, for this is the only wild game that can be captured and stored for weeks alive until it is eaten. Turtle meat is fine. It is fatty and when mixed with rice and other starchy foods which the Brazilians love, it makes a very healthy addition to the diet.

The following day we fished in a small stream which flowed into the Rio Purus. We didn't expect to find neccs, *Hyphessobrycon innei*, but we

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July, 1966



*Anostomus trimaculatus*. Photo by Harald Schultz.

*Iguenodectes spilaris*, a magnificent fish. Photo by Dr. Herbert R. Axelrod.



47



**Does this fish eat TetraMin?**

The Catfish (*Ameiurus nebulosus*), or Horned Pout, is a harmless member of the fish family called Siluridae. A brother fish, the Silurus glanis, however, is quite a different story: it lives in the Caspian Sea where it grows as long as 16 foot and is reputed to be a wild robber who wreaks considerable damage among commercial fish. The Catfish, you might guess, does not eat TetraMin.



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did . . . and Fritz Terofal caught the first one. Imagine his screams of delight when he, the great cichlid man, found the beautiful neon! I was surprised to find neon tetras more than 1,000 miles from the usual range near the Peruvian-Colombian-Brazilian border, but here they were, and there was no question that these were real neons (later verified by Dr. Jacques Géry). Along with the neons were the usual hatchfish, *Copeina*, leaffish, *Hoplosternum*, and numerous small tetras which had to be carefully studied to classify them. Our trip was very interesting that day, for Danny had planted hundreds of different types of trees in the jungle behind the village. Fritz saw his first cashew. The cashew is a bright red, soft fruit with a very sweet juice. At the end of the fruit is a crescent shaped nut familiar enough to most civilized people. The juice is used to

Inside the jungle it is very dark, and Fritz ventures out to try his luck in a dugout. He fooled us all by not falling in!



*Crenuchus spilurus*. Photo by Dr. Herbert R. Axelrod.

sweeten the cashasa, a potent clear alcoholic drink which burns through the strongest of men to warm their toes. Danny had all kinds of fruit trees and scores of tiny palm trees, many of which I had never seen before.

The next day we fished in a deeper area and found a sort of brownish *Symphysodon* which looked like *S. aequifasciata axelrodi* but had a touch of green in it. We weren't able to bring any back alive since the water was too dirty and the temperature too hot.

We took a canoe the following day and went downriver. A few miles down we came across a small clearing in which we saw two houses. Again we experienced some wonderful Brazilian hospitality (found in the jungles only, by the way), and after a nice coffee and chat, we walked inland to a large lake. The bugs were terrible, eating all of us alive, but that didn't stop us for a minute. For just looking into the water we were able to see beautiful little *Corydoras* scooting about, while on top of the water was a magnificent variety of *Chalceus macrolepidotus* with a bright yellow tail.

Our expedition was a great success, and we found 114 species on this short trip, and rather than imply that our greatest find was some fishes, I would rather say that our great find was the sincere, warmheartedness of the Brazilian people. Danny's wife cooked every meal for us. She cut the sweetest pineapples, killed the fattest chickens, fried the juiciest fishes and treated us with the utmost of kindness.

If you ever have the chance of going to Brazil, visit the Amazon. Rent a boat and go upriver for a few days. Stop at almost any village. You'll find history turned back a few hundred years in terms of modern appliances . . . but they are hundreds of years ahead of the "civilized world" when it comes to brotherly love and respect for their fellow man.

# MAIL CALL

By William Vorderwinkler

If you have an aquarium question that you would like answered, send it to MAIL CALL. Each month the most interesting questions received and their answers will be published in this column. Letters containing questions cannot be acknowledged or answered personally. Address all questions to: MAIL CALL, T.F.H. Publications, Inc., 245 Combs Avenue, Jersey City, N. J. 07310.

**High summer temperatures**

**Q. 1.** I often see you advising hobbyists to keep the temperatures in their tanks down for one reason or another. My problem is that I find this hard to do, because in the hot summer months the temperatures in my tanks are high. Is there anything I can do to keep them down?

letter and wants to discuss the problem with its writer.

**Jim Farrell,**  
Wanamassa, N.J.

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A. 1. Comes the usual summer question, which I must answer many times every year. About your aeration by turning up the air or adding another airstone; if your tank is covered, substitute the glass or plastic cover with one made with plastic mosquito netting. Another suggestion that I have heard which seems a bit drastic is to put a couple of ice cubes into a little plastic bag and float it in the chamber that holds the filtered water in your outside filter (if you are using one). Although I wouldn't recommend it without reservations, I have had many reports that it works very well.

2. It is not at all unusual for two male swordtails to go into all sorts of threatening gestures and then fight. Unless they tear fins badly, they need not be separated.

3. Sometimes I get letters which don't even want me to use their reader's name. If a letter were to arouse an unusual amount of interest, the reader could easily

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be a flood of mail which might take the poor hobbyist a month to answer.

**Kissing gouramis**

Q. I. I have two kissing gouramis that kiss every so often. Does this mean that they are a male and a female?

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2. I have one large angel fish and one medium-sized one in a 30-gallon tank. The big one always picks on the other. Does this mean that they are the same sex?

James E. Farrell, Wanamassa, N.J.

A. 1. "Kissing" among kissing gouramis has no sexual significance. It is just a sort of a game; one fish swims up to the other, and the two pucker up and push against each other to see who can push harder. Just because it looks like a human "smooch" is no cause to suspect the act as a romantic one.

2. No. Bullying can be done by either sex if one fish is larger than the other.

**Oscar behavior**

Q. I purchased three oscars about 6 months ago from a local dealer. At that time two of them were around 2 1/2 inches and the other about 1 1/2 inches long. First they were kept in a 10-gallon tank, but later they were put in a 55-gallon tank together with some Dempseys, firmouths, convicts, silver dollars, etc. Right now two of them measure about 6 inches. (The third one was placed in another tank.) Both big ones are getting their red marks, which, I assume, is an assuring sign that they are both males.

All the other fishes are much smaller in size, except one Dempsey. I have been hearing a lot of tales about their vicious behavior, but have never seen my

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oscar go after any of their tankmates or even bothering to look at them. Their food consisted of meal worms and chicken liver and hearts, all of which

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were consumed at a terrific rate until last week when one of the big oscars suddenly lost his appetite. After looking him over, I noticed a large swelling on the left side of his mouth. He was given a terramycin treatment, which failed to reduce the swelling. I had no other choice but to take the fish out and drain the infection, which by that time just about covered the entire side of his head. I've used iodine to disinfect the wound and avoid getting any fungus on it. After placing him back in the tank (which was a mistake, but I had no other available room for him) the fish swam to one corner and lay there unmoving. The rest of the fishes in the tank, sensing that the fish would be unable to defend himself, started to pick on him. All of a sudden the other oscar showed up and chased away all the other fishes. It then positioned itself directly above the sick fish. Thinking

that it came to claim the fish for itself alone, I hurriedly proceeded to remove the sick oscar. As soon as I came close to it with the net the second oscar attacked with such a vicious rush that the net was torn clean out of my hand. I tried to lure the fish away with food. Although he had not been fed for about 12 hours, he refused all kinds of food. He would not leave his sick pal. I have failed to mention that the two fish were inseparable even before, eating and swimming around together without ever leaving each other's sides. I must repeat again that all signs indicate that both of the fish are males. This might sound a bit fantastic, and I guess it is hard to believe, but from now on I will never underestimate the intelligence of our finny friends. Have you any comments?

George Feder, Fairview, N.J.

A. In the first place, do not be too sure that

you have two males. Females also get some red markings, but they generally are not as intense or as widespread. The injured fish no doubt sensed that one of its own kind was being picked on, and protected it. This action I would consider more instinctive than intelligent.

**Room for a piranha**

Q. I recently purchased a Holland piranha (*Serrasalmo hollandi*). I would like to know if the 5-gallon aquarium I now have him in is big enough. He is about 1 inch long now. How big will he get in a 5-gallon tank at maturity? At his present stage, will he eat a young guppy? He is very shy, so if I want to see him eat, I must watch from about 6 feet away. Will he eventually overcome this shyness? Are there any other fish that can be kept with him? He seems so nervous; is there a chance he might

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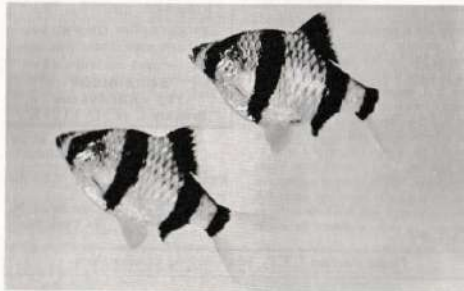
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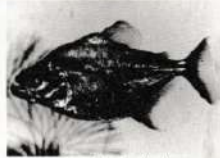
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**A.** You must remember that your piranha is going to grow, and even though he is only 1 inch long now, he is going to put on another 5 inches or so. As he gets bigger, he is going to need bigger quarters. You can figure on him getting to be about 3 inches long in a 5-gallon aquarium, but maturity is reached at about 5 inches. You may have to get him a bit hungry before he will eat young guppies. I would not keep any other fish with him. Don't expect any fish never to jump out. A cover for your aquarium is very cheap insurance, which not only keeps your fish from jumping out, but also holds in some of the heat which would otherwise be lost. In addition, it cuts down your water loss by evaporation.

**Algae**

**Q.** I have a 15-gallon tank with a 15-watt fluorescent light. The tank is well planted on three sides, and the front, naturally, is planted very sparsely. Here (in front) is where my algae is starting

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to grow. I had this problem start up in my tank a few months ago. The algae finally covered my plants, and they eventually started dying off. Now I have a completely new setup, and the algae is starting all over again. I feed the plants

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fertilizing tablets, and there is no direct sunlight on the tank. Could you please suggest something to help me avoid this algae problem?

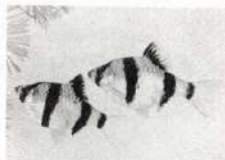
**2.** I have three young tiger barbs (about 1 inch to 1 1/2 inches long). They seem to continually chase and nip at each other. (a) Could this indicate opposite sexes? (b) How big do they have to get to breed?

**3.** What is the secret for developing beautiful long fins on young male bettas?

**Richard L. Jeffery,**  
Blacksburg, Va.

**A. 1.** Naturally you could expect to find the greatest amount of algae where the most light occurs. Try cutting down on the tank lighting. Also, remember that by fertilizing the plants in the tank, you are also helping the algae to grow. Also, keep your scraper busy on the front glass.

**2.** Tiger barbs are very active and playful, so this activity does not necessarily



Tiger barbs.

indicate the presence of opposite sexes. Tiger barbs begin spawning when they are about 1 1/2 inches long.

**3.** No secret; in the first place you must remember that a silk purse cannot be made from a sow's ear, and use the best quality breeders. Then when you have bred them and are raising the youngsters, don't try to raise them all; cull out the runt frequently; it is better to raise a dozen really good fish than a hundred that are just so-so.

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**African aquatic frogs**

**Q.** I have some questions about African frogs:

1. What do they eat?
2. Are they scavengers?
3. Have they ever been mated?
4. How are differences in sex determined?

African frogs.



**5.** Are they peaceful enough for a community aquarium?

**John Sergio, McCook, Ill.**

**A. 1.** African frogs, *Hymenochirus bouengeri*, eat all sorts of live foods; they seem to be very fond of live tubifex worms.

**2.** No.

**3.** Yes. They lay eggs among the top plants. The tiny tadpoles grow very quickly.

**4.** The females are considerably larger and heavier than the males.

**5.** Yes, as long as they are not kept with fish they can rival.

**Raging Robinson Crusoe?**

**Q.** In a community tank where breeding is of no consequence, is it absolutely necessary to keep fish in pairs? Why not keep just males, due to their finer coloration and fin formation?

**C. Smith, Jr.,**  
Warrenton, Va.

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A. I have frequently advised keeping fish in pairs. A male without a female is a pretty lonely proposition, especially if it is a young and vigorous male in its prime. This holds good not only in the fish world, but in the entire animal kingdom. A male fish with a healthy set of reproductive

organs that has been deprived of an outlet for his sex drive is very likely to become a nasty, belligerent individual that attacks other fish for little or no reason. When he wrote: "Itha laddie needs a lassie," Robert Burns was merely putting into words one of the primary laws of nature. Of course, the law works both ways: lassies need laddies just as badly. So when you set up a tank, don't just consider what pleases you; keep your little fishy kindred happy and healthy besides!

**Swordtail characins**  
Q. I recently purchased a pair of swordtail characins.

1. At what temperature should these fish be kept?
2. What is their scientific name?
3. What country do they come from?

Thomas Timberlake, Sheffield, Ala.



- Swordtail characin pair
- A. 1. 75 to 78° is best.  
2. *Corynopoma rislei*.  
3. Trinidad and northern Colombia.

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### Peaceful bettas

Q. I have two male bettas that are about a year old. They are the same size and are brothers who have lived together all their lives. But they don't fight! Sometimes they run after each other. Could you tell me why they don't fight?

Joe Currie, Los Angeles, Calif.

A. They have spent their days looking at each other and have never seen a mature female over which to fight. Besides, they probably have a good amount of space, and each has his own territory.

### Danio fry mystery

Q. About 4 months ago I spawned some white clouds. I got about 57 fry from the hatch, but two of these look

like danios. The white clouds were never in a tank containing danios nor were there ever any danios in the spawning tank. Could you please tell me how this could happen?

Kenneth Gabler, St. Marys, Penna.

A. There were never any danios in the spawning tank, but where did your plants come from? My guess would be that a pair of danios spawned in these plants and those two eggs survived. Often a store gets a shipment of plants, and when these are put into a tank of water, some hitchhiking fish hatch out. I have seen some nice *Chriopops goodii* which were hatched from eggs shipped on plants from Florida.

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Guppy shyness  
By Paul Hahnel

Q. I have a pair of emerald fancy guppies in a 5-gallon tank (which I know is too small, but I am going to get a bigger one). My problem is that I introduced another pair, and the female from the new pair began to become very shy. She now has all the others shy. All they do is hide, all together in a corner. How can I stop the female's shyness and stop her from making all my other guppies shy?

Barbara Suggs, New Orleans, La.

A. This problem of fish behavior is quite common, but the cause of the behavior is not a 100% established fact. Changing fish from one tank to another may be the main reason for this "nervous" behavior. I hope your new addition didn't carry any kind of disease. Try changing part of the water in the tank; it helps sometimes. The

reason for the nervous behavior of the fish after a tank change might be explained as follows: a single layer of cells (in the gills) is all that is interposed between the fish's blood and the external water. Therefore most of the body chemicals are adjusted to its given environment. Placing the fish in different water gives it the problem of adding to or subtracting from various substances within its body. The kidney, liver, etc., must adjust to the new water. This is why changes like that are often a shock to a fish.

"Throwbacks"  
Q. About a year ago we purchased a pair of red tail guppies. Since then their babies were half red tail and half red

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with swords and long dorsals. The red tail type babies were pure, except one, which had a green tail. The sword babies were not pure though, they had red and blue tails. What do you suppose mixes up the fish?

John Galway, Southampton, Pa.

A. The original wild strain of guppy frequently had the tail in the shape of a swordtail, and the guppies you bought carried swordtail genes. Our veiltail strain was originally developed from a swordtail guppy. After many years of breeding the veiltail and delta strains, I still quite often find a swordtail appearing. Guppies are known to surprise the hobbyist and breeders with unexpected color changes and combinations. The responsibility for this lies in various combinations and changes in genes and chromosomes.

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Also, certain chemical combinations in the water of your aquarium may influence your guppies' colors.

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with *each other* quite well. I have a 100-gallon tank in which there are jewel cichlids, Jack Dempseys, severums, convict cichlids, firemouths, and a number of other tough guys. They get along fine, some of them even spawning right in the community tank!

4—**Feed properly.** Overfeeding is the beginner's main problem. Be sure you are feeding only as much as your fishes can eat. You may feed as often as you like, so long as you only feed as much in any single feeding as your fishes will finish. Watch them as they eat. Often they will seem to be eating, when all they are doing is grabbing the food and spitting it out again. The excess food will sink to the bottom, and over a period of time, so much of it will build up and spoil that it will foul the water and clog the gravel, playing havoc with water chemistry and bacterial conditions to such an extent that diseased fishes will appear in great numbers. Another thing, feed a variety of foods. This assures you that your fishes are getting all their nutritional requirements (be sure you're using products of well-known, reliable manufacturers). Even if you think you have the perfect single food, remember that your fishes will get bored with *any* food they are given day in and day out. They'll get along, but they'll never be in really top condition, the kind of condition that helps them ward off diseases. Some live or frozen foods should be fed to virtually all fishes if they are to be kept in top condition, and some fishes, of course, must be fed exclusively on these foods. And it goes without saying, that all foods must be the proper size for the size of the fishes you are feeding. Medium coarseness is right for most fishes, but don't expect your fry or full-grown red devils to do well on it.

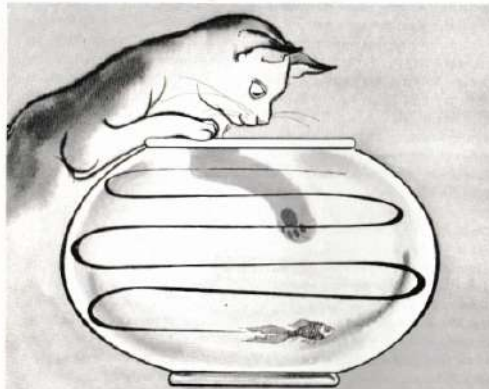
5—**Watch the water chemistry and make regular water changes.** Check the pH and hardness of your aquarium water at least once every 2 weeks. There are test kits on the market that make these checks a matter of a minute or two of your time. With the exception of a few species, all tropicals do well at a pH of 6.5 to 7.5 and a hardness of 75 ppm to 150 ppm. If your tap water is somewhere within this range, it is easy enough to keep your aquarium water within it too. If your tap water is not in the range, some slight chemical adjustment may be necessary. Keep in mind that all adjustments should be made *slowly*. Never change pH more than .2 per day in either direction or hardness more than 10 ppm per day in either direction. The pH is raised with sodium bicarbonate, lowered with sodium hiphosphate (both are available at any good petshop). Hardness is rarely too low. Aquarium water can be softened with several chemicals, but I suggest the use of a

softening pillow (also available at your petshop). Also, change some of your aquarium water every 2 weeks. This doesn't mean merely to top off to replace what has evaporated. Draw off about 10% of the water in the tank and replace it with water straight from the tap at the same temperature as the tank water. If you ever replace more than 10% of the aquarium's water, the new water (from the tap) must either be aged for a few days or treated with a chlorine remover.

6—**Check your fishes and aquarium temperature every day.** Check the temperature in your tank in the morning, after the lights have been out overnight. This will insure that you will spot a faulty heater before it does excessive damage. Also, check your fishes. Check for signs of trouble. Look for spots, white patches, growths, red areas, wounds, and strange behavior such as scratching, gasping at surface, staying at bottom, etc.

7—**Keep a small "hospital-holding" tank.** In this tank you can isolate any sick fishes from your main tank in an effort to avoid the spread of the disease and to avoid treating your entire collection unnecessarily. This tank can also serve as a holding tank for new fishes that you are quarantining before introducing them to the main tank. The pH and hardness of the water in the small tank should be kept as close to those of the water in the large tank as possible.

8—**Buy and handle new fishes with care.** Buy new fishes only at a good shop. Nothing could be less of a bargain than "bargain" fishes from a bad shop. Buy from the man who keeps his tanks clean and his fishes healthy. Always check the tank you are buying from. If there are any dead or dying fishes in it, forget the fish you want; healthy fish in a sick tank are invariably going to get sick later, and, in addition, the water that you take them home in will often carry the disease. So, what began as a bargain might end as a costly mistake with the loss of some or all of your other fishes. Also, when you buy a new fish, be ready to take a little trouble to be sure he survives. Check the pH and hardness of the water he is in. Chances are they will be close to those in your tanks if the shop in which you buy is in your area. If they are different, some adjustment may be necessary in your holding tank before you introduce the fish into it for the usual 2-week quarantine period. (If you do make adjustments, don't neglect to bring the water back to the values in your main tank *gradually* during the 2-week period.) Temperature differences between the water your new fish arrives in and the water in your holding tank can be equalized by floating the fish's container in the tank for about 15 minutes before letting the fish out.



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*Phallopsora caudemarginatus reticulatus* is one livebearer that few people have ever heard of, so less kept in their aquaria. Photo by G. J. M. Timmerman.

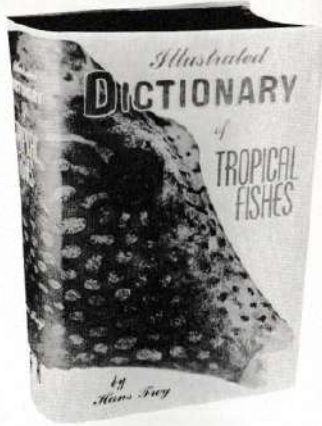
What's the matter with some livebearers?

## Our Neglected Livebearers

BY WILLIAM VORDERWINKLER

Ask any hobbyist to name four livebearers and he will immediately spout: "guppies, mollies, swordtails and platies." There are some others, he will admit, but nobody bothers with them. Seems that nowadays a great many hobbyists don't want anything to do with livebearing species because "they're too easy." The only ones that stand a chance are the four "old stand-bys" which cannot possibly be ignored because of their great beauty. One just cannot ignore, for example, a tankful of large, attractive black mollies. And many of us have been introduced into the hallowed ranks of fish hobbyists by watching the flashing beauty of a friend's guppies. My own introduction to tropical fishes took place in Brooklyn, New York, uncomfortably close to a half-century ago. The little pet store on Myrtle Avenue (I think that's where it was)

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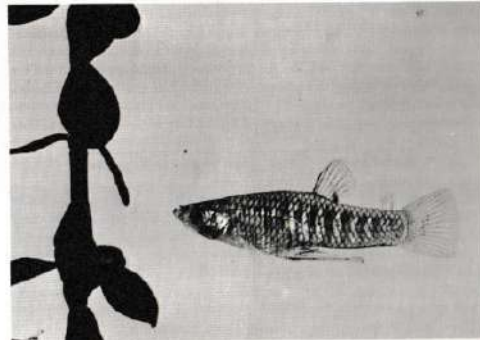
showed some swordtails in the window, where the small amount of sunlight that managed to filter through the elevated railroad tracks struck their metallic-green sides. They were just ordinary green swordtails this was long before red color was bred into "swords"), but to my eyes they were the ultimate in loveliness, and I will always remember that little cluttered store with those beautiful, beautiful fish in the window.

Many livebearing species have come and gone since those early days. Why most of them have faded into almost complete oblivion is quite a mystery to me. Let's take a close look at some of them and see if we can guess the reasons for their failure to endure.

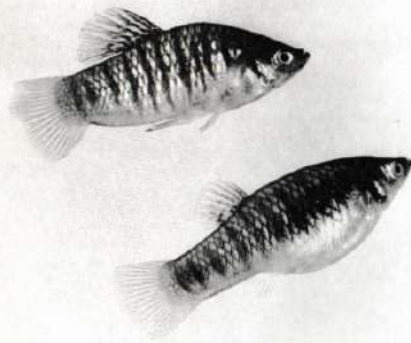
A fish I've always liked is a little one with a big name: *Phalloceros caudomaculatus reticulatus*. It could be that the long name defeated it, but the fish itself is quite attractive. Females have a slightly yellowish body and the sides and fins are peppered with black spots. Males are the stand-outs, however, with about half the body and most of the fins peppered with black. In a mature pair, the female is better than twice the size of the male. The fish are peaceful, even a bit shy in a community aquarium, and are happiest in a tank by themselves. When they give birth their babies are in little danger of being eaten unless the parents are very hungry.

Probably few of you have ever seen a good, big male humpbacked limia, *Limia nigrofasciata*, for this is another neglected livebearer species. Although

*Girardinus metallicus* is another livebearer that could be kept easily in an aquarium. Photo by G. J. M. Timmerman.



Tropical Fish Hobbyist



A *Limia nigrofasciata* pair. The male is above. Photo by Milan Chvojka.

the male's spine is perfectly straight, accumulations of fatty tissue build up on the back and lower posterior region to give him a humpbacked appearance. The fan-shaped dorsal fin and tail in some strains is an attractive yellow, and the sides have dark bars. Females have a perfectly normal appearance and are considerably bigger than their mates. Also, these fish aren't likely to bother your other fishes or your plants. In addition, their maximum size is 2 1/2 inches, so they won't outgrow your aquarium. All right, they're not as colorful as their

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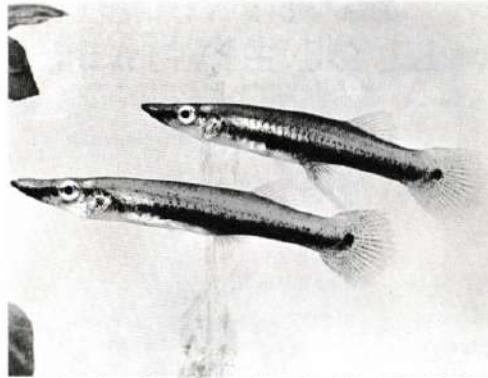
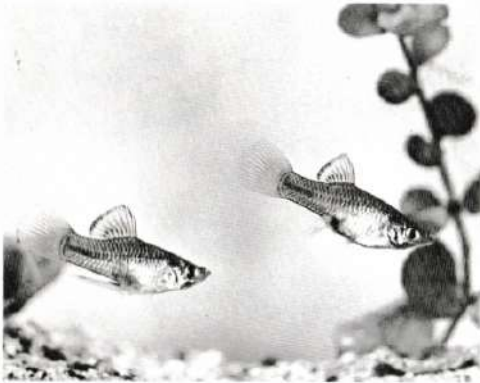
more beautiful *Limia* cousins, but they're interesting, and the male's shape sets him off as something special.

Another once-popular livebearer that is seldom seen today is the little merry widow, *Phallichthys amates*. Modestly colored fish with yellowish fins and bluish-shimmering bodies, they are well suited to the community aquarium. The males are only slightly more than half the size of the females and are distinguished by an extra-long gonopodium which extends almost to the tail. This fish's relative lack of color is probably the major factor in its fall from favor.

No list of lesser-known livebearing species would be complete without the tiny mosquito fish, *Heterandria formosa*. The males, only about a half an inch long, are practically the smallest known vertebrates. The female bears only a few young at a time, and they are hardly ever eaten by the parents. These fish are perfect for a small one-species aquarium. Their small size, however, was probably responsible for the failure in their bid for enduring popularity. Almost any other fish can swallow them whole, making them poor risks in community tanks.

The list of desirable but virtually unknown aquarium livebearers could go on and on, and only a few of the additional ones worthy of mention are

A merry widow (*Phallichthys amates*) pair. The male is the fish on the left. Photo by G. J. M. Timmerman.



The pike livebearer, *Belonesox belizanus*. Male is above. Photo by Milan Chvočka.

*Jenynsia lineata*, *Neotoca bilineata*, *Girardinus metallicus*, *Cnesterodon decemmaculatus* and several *Limia* and *Micropoecilia* species.

It is fairly obvious why some livebearers have never attained lasting popularity. For instance, there are predatory species like the pike livebearer, *Belonesox belizanus*. This fish is far from unattractive and grows to a good size. But it won't consider as edible anything that is not fairly large and does not move. This is great for a breeder who has a constant and large supply of unwanted stock to get rid of. In this case the predatory fish act as "living garbage cans" and quickly dispose of the culled fishes. But the average hobbyist would find it expensive indeed to feed these fish and would probably have to give them a large tank of their own to the bargain.

Another predatory livebearer is the half-beak, *Dermogenys pusillus*. This fish has the same drawback as the preceding species . . . it refuses anything but living foods. As an additional problem, the males are very scrappy and two of them kept together will usually fight. Besides, the species does not thrive too well in the aquarium and the females often give birth prematurely.

So, if you're tired of the usual livebearers, why not try one or two of those mentioned here? Your biggest stumbling block will be getting them but they do show up now and again. For some hobbyists, their scarcity on the market alone will make them well worth waiting for.