

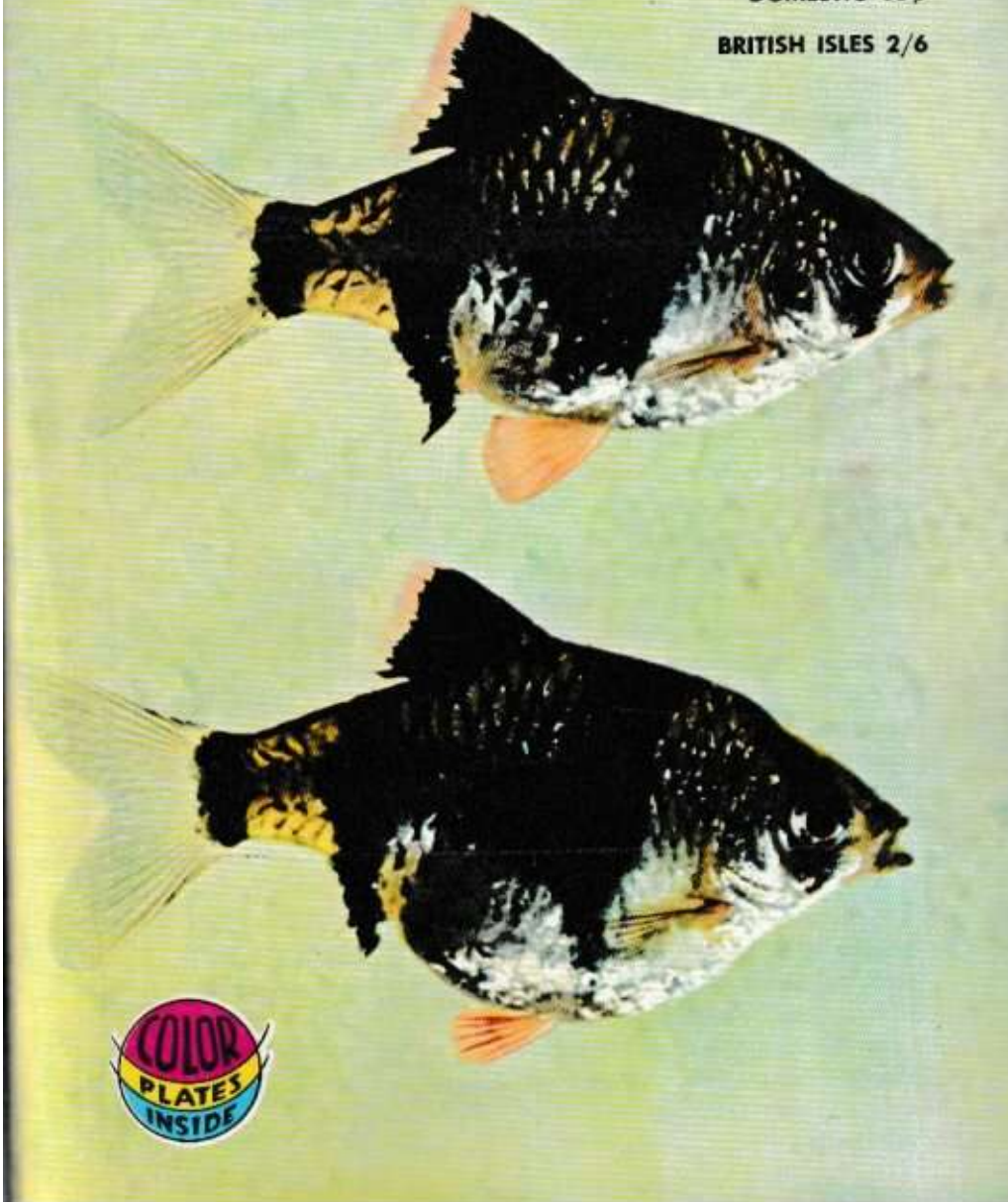
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HOBBYIST

JANUARY, 1965

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The many species of characid fishes making up the group popularly known as piranhas have a solid and devoted following within the aquarium hobby. Beginners and experts alike at some time or other determine to find out for themselves whether piranhas are the dangerous marauders legend has made them or whether they are merely suffering from the exaggerations of folklore.

Harold Schultz, famous Brazilian scientist-explorer, knows the truth about piranhas and tells it in his fascinating account of the life habits of these endurably popular aquarium specimens. But part and parcel of the value of *Piranhas* is the book's masterful presentation of both text and photographs that enable hobbyists to tell the many piranha species apart, to separate the relatively dangerous fishes from the completely harmless ones. Vividly illustrated with 18 full-color natural photographs in addition to its many informative black and white illustrations, *Piranhas* gives a comprehensive view of the sub-family Serrasalminae from all angles of importance to hobbyists.

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COVER

The Tiger Barb, perhaps the most popular of all barbs because of its color and active habits, has always been bothered by a reputation for fin-nipping, but the fish (male above, female below) shown on the cover this month, one specimen of the Tiger Barb, showing in the Tiger Barb's good points but lacking its temperamental. For an account of the development of this new aquatic fish, see the article beginning on page 49. Photo by Dr. Herbert R. Axelrod.

EXOTIC TROPICAL FISHES SUPPLEMENTS

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January, 1965

EDITORIALLY . . .

"Why doesn't TFH come out twice a month? I enjoy reading each issue so much that I hate to wait a whole month for each one!" This question has been asked not once or twice, but many, many times. We can't do this, but we can make the one we put out a little larger. Since October, you will notice that your magazine is now 16 pages bigger. This means more expense: more paper, more ink, more type, more weight to mail and more labor costs. Looks as if I were leading to a mark-up in price, doesn't it? Well, I'm not! TROPICAL FISH HOBBYIST is still your best buy in a fish hobbyist magazine, and the price still remains the same. You get more color illustrations in each issue of TFH than in all of the world's fish hobbyist magazines combined!

We now have more space to devote to your favorite features, and to draw on our huge picture file to give you more of what you want. Year after year we work to give everyone their money's worth; we don't kid ourselves that everyone is going to like everything. The fish hobby is so varied and many-faceted that such a thing would be an impossibility, almost. But rest assured that we're always in there trying.

William Vorderwinkler

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January, 1965



The Pearly Jawfish, *Oplithognathus aurifrons*. The Jawfish's common name is derived from its capacious mouth, which the fish puts to good use in excavating under rocks and coral to build a home. Photo by Dr. Herbert R. Axelrod.

The Pearly Jawfish, a Sea Nymph

BY ROBERT P. L. STRAUGHAN

Like a beautiful sea nymph, the Pearly Jawfish dances on its flowing velvet tail in the quiet depths of the rolling sea. Only the experienced skin diver is ever likely to gaze upon this startling beauty in its home, for the Pearly Jawfish is a deep-water fish. Its natural habitat is at the very bottom of the ocean out in the blue Gulf Stream, in depths ranging from forty to a hundred feet or more. Aqualungs or other deep-diving gear are usually necessary to observe or collect these delicate creatures, but if a skin diver is in

good physical condition and can free-dive down to fifty feet he can glimpse the little sea nymph on his quick trip to the bottom. Catching them is another matter.

The little Jawfish lives in holes it constructs on the sea floor. The holes are about half an inch across and a foot or more deep; the tops of the holes are lined with tiny pebbles to keep them from caving in. The little Jawfish will hover six to eight inches above the hole, fanning its tail and moving its fins to keep in position, and will turn its head com-

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Curious, a Pearly Jawfish peeks out from his home beneath a piece of living fire coral. The Jawfish is a beautiful creature with a pale yellow body and huge blue-brown eyes. When viewed under a soft light, the body sparkles with iridescent mother-of-pearl hues. Photo by Robert F. L. Stroughan.

pletely around to make certain that there is no danger about. It feeds on small bits of food that come floating by. But if a large fish (or a skindiver) comes too close, it darts into its hole, usually tail first. It will stay just inside the entrance, pecking out with its huge blue eyes, but if the danger comes too close, it will retreat down into the hole completely out of sight. It is a fascinating sight to watch a colony of Jawfish dancing on their tails a few inches above the bottom of the sea, and at first it will take sharp eyes to see them, for their pearly yellow color almost blends perfectly into the sea floor. The easiest way to see them is to swim to the bottom and lie flat so that you glance out and upward from the bottom. Then, if the sea nymphs are dancing, you will see them grace-

fully swirling their lacy fins to the slow rhythm of the sea. Pearly Jawfish grow to a maximum length of about four inches, but the average size is about two or three inches. They are fine aquarium fish, and despite the fact that they live in deep water out in the sea, they will do very well in the home aquarium. They are also peaceful and will seldom bother other fish, unless the fish are very small. In this case, they will just swallow them whole with their cavernous mouth. The Jawfish will also eat small chunks of fresh shrimp or lean beef, as well as lobster or crab meat. Although it normally lives in deep holes, it will quickly hole up under a shell or piece of coral in the aquarium, and it will move sand or gravel out of the way to suit its needs.

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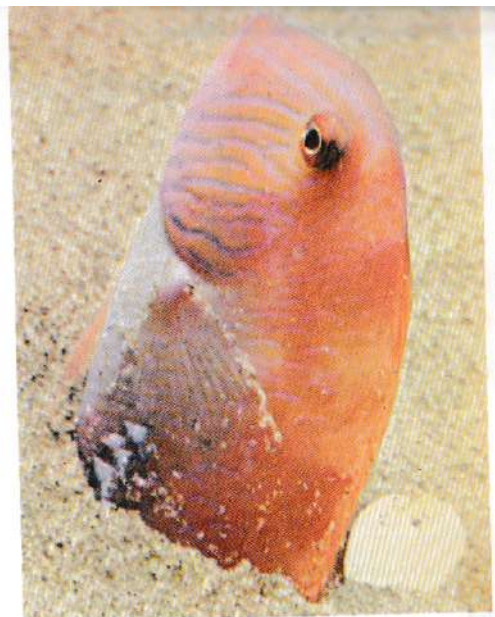
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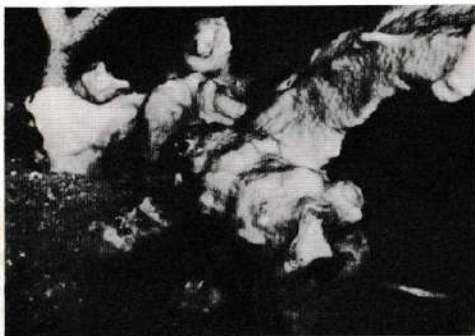
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This is *Xyrichtys novacula*, a Razorfish, not in the same family as the Jawfish but similar to it in a number of respects. Both fishes are colored similarly, and the Razorfish, like the Jawfish, uses its mouth to construct a home. This Razorfish is emerging from a pile of sand in which it had buried itself. Photo by Klaus Payson.

The Jawfish is named because of the hugeness of its jaws in proportion to the fish's size. When it opens its mouth wide it has a king-size maw that opens much wider than the diameter of the fish. The Jawfish uses its huge jaws for moving sand and pebbles; a small three-inch fish can carry nearly a teaspoonful of

sand in one gulp. It is very amusing to watch the Jawfish excavate a tunnel under a piece of coral. He is a tireless worker and will move huge quantities of sand in a very short while. He apparently uses slime from his body to keep the tunnel from caving in. Being a true engineer, he makes the hole just the right size



Here a Pearly Jawfish carries a mouthful of gravel that will be dumped outside the fish's cave. Photo by Robert P. L. Stroughton.

and shores it up inside so that it won't cave in. Since the Jawfish lives in the sand out in the sea, he should be provided with sand in the aquarium. Use an undergravel filter and place two or three inches of sand on top of it so that he will have plenty of material in which to dig. Ordinary silica sand works best, as it packs down hard enough to stay in place and at the same time filters the water. If you are using other types of sand, I would suggest that you mix it at least half with silica sand for proper filtration. Many types of aquarium sand will not filter properly if used by themselves, because they are too fine, too coarse, or too even in texture. Although I haven't attempted to keep the Jawfish without sand, it probably could be done. But I see no reason for trying; after all, what would the Jawfish do with

his jaws if he had no sand to excavate?

Although the Jawfish will normally remain on the bottom of the aquarium once he has built himself a home under a shell or coral, he will sometimes swim to the surface at night, especially if another fish disturbs him while he is at rest. For this reason, it is best to keep the aquarium tightly covered to keep your pet from leaping out.

Treat your little Jawfish with kindness and provide the necessities for a happy home, and you will be rewarded when you see him dancing on his tail. He will look at you with big blue eyes, then retreat into his hole and come out with a huge mouthful of sand. Then, if you are lucky, he will perform his elin dance, just as he does in the quiet depths of the silent sea.

They'll never be common!

Care and Breeding of *Tropheus duboisi*

BY PETER CHLUPATY
Munich, Germany

These highly interesting mouthbreeders were described by Dr. Werner Ladiges in the spring of 1959. Griem collected them in 1958 in Lake Tanganyika.

The specimens which I received were about 2 to 2½ inches long and in excellent health. I put them in a 15-gallon aquarium containing water which measured 6 DH (about 100 ppm). Next day I was astonished to find that they had folded their fins and were going into rocking motions. Things grew gradually worse, and I netted them out and placed them in another aquarium. This was filled with normal Munich tap water which had a hardness of 14 to 16 DH (about 250 to 285 ppm). In a matter of a few minutes they spread their fins and swam about in a lively manner. Live food was accepted and the plants were searched for algae. This proves the advisability of offering them vegetable as well as animal foods. *Cryptocorynes* and other tough plants are passed up. For instance, *Hygrophila* is accepted in small amounts. When I feed mine they attack their food with such greed that the water practically boils. I vary their diet with *Tubifex*, mosquito larvae, *Daphnia*, white worms and some scraped beef heart. Once a week they are given vitamin supplements in liquid form, which I let drip on the beef heart and allow to be soaked up.

The *Tropheus duboisi* thrived very well and attained an average size of 3½ to 4 inches. Females remain smaller and are easily recognizable by white spots which appear mostly in the upper half of the body. At times some spots can be recognized on both sides of the body. These spots are missing in grown males, but they develop a yellowish-brown to reddish bar which is usually visible behind the pectoral fins. If several are kept in the same tank things begin to get quite lively. They pester and chase each other, without any injuries. Hiding-places are seldom sought.

If a male is seen cleaning a stone, it is advisable to have a ripe female in the tank. If she is not ready she must be separated from the male or she will be chased and bitten unmercifully. The fins are reduced to tatters, and all parts of the back are badly attacked. I once netted out a female whose back was a mass of open wounds. Luckily the injuries healed very quickly and the fish spawned. Other fishes in the tank were not attacked. When a female guards young, all approaching fish are driven off.

Egglaying is performed while both partners swim around each other. The fins are spread to a point where they are almost torn, and both touch each other in the anal region. Mostly these are false matings, until the female releases an egg about the size of a small pea, turns with lightning speed and takes it into her mouth. In this short space of time required for the female to turn around and pick up the egg the male must fertilize it, although it is also possible that the female picks up sperm in her mouth some time previously and unites it with the egg when she picks it up. The eggs are a yellowish brown in color. It is very difficult to believe that such a relatively small creature can carry 5 to 8 such eggs for weeks in her mouth. Indeed, the female does not take as much nourishment as this. A small daily meal can be observed, however. I take this opportunity to mention that females only spawn two or three times in a year.

The white spotted pattern of the juvenile and adult female specimens of *Tropheus duboisi* is replaced in adult males with a barred pattern. This species, coming from an area rich in limestone, does well in hard water. Photo by Peter Chlupaty.



There is no complete account of a successful spawning of *Tropheus moorei*, another Lake Tanganyika Cichlid, but all indications point to its sharing in the mouthbreeding spawning method of *T. duboisi*. Photo by Dr. Herbert R. Axelrad.

As to the incubational period, I can only offer my observations. For instance, a pair spawned on September 8th. I could count ten eggs, and on the 20th of October I saw fry for the first time. In the heavily planted tank I could distinguish only eight at first. In this case we can therefore say that at a temperature of 77° incubation lasted 43 days. During this time one could observe vigorous chewing motions by the female, to keep the eggs changing position.

The youngsters are very cute, deep black and covered with rows of white spots. When the mother lets them out of her mouth they immediately hunt for food. They are about ¼ inch long and able to eat small *Daphnia*, Grindal worms, and chopped *Tubifex* worms. Otherwise they remain near the mother, where they can pop into her mouth whenever danger threatens. At first they are a bit uneasy in their new surroundings and keep crowding toward Mama's mouth, waiting to be allowed in. The mother's care lasts for 10 to 12 days, after which the female can no longer handle the young and then finally gives up her brood care. The youngsters grow comparatively slowly; a brood which hatched seven months ago is now only about 2 inches long. They are still deep black and covered with many white spots.



Bredygobius nana (also called *Brachygobius xenothorax*) is the most often seen species of the various Bumblebee Goby species offered for sale in the hobby. Photo by G. J. M. Timmerman.

Busy Little Bees

BY DIANE SCHOFIELD

A short time ago I was standing in Ye Friendly Neighborhood Tropical Fishes Shoppe mooning over a pair of ridiculously priced but nonetheless attractive *Danioideis microlepis* when I heard the dealer say to a customer, "If you don't feed live food, you can't have these fish!" Admittedly, such candor is refreshing, since I have at times seen dealers sell small Bullhead Catfish to go into a baby Guppy tank, so I was mentally applauding the dealer as I turned to see just what fish he had been talking about. The dealer and the customer he was instructing were standing in front of a little "hive" of Bumblebeefish; true enough, he was saving at least a pair of them from gradual starvation caused by an enforced diet of dry food.

In spite of their name, the little Bumblebees don't cotton to honey at all, or really very much to any of the non-living foods. On the other hand, they adore nothing better than to "inhale" with one of their characteristic short jerky movements a plump squirmy little gob of *Tubifex* or perhaps a sleek, fat white worm. Although their lack of grace in locomotion makes swooping after *Daphnia* or brine shrimp a bit more difficult, they nonetheless do manage to do it admirably. I once had a member of our aquarium society

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tell me that "I never feed my Bumblebees live food and they're doing just fine!" However, upon looking at her poor little Bees, the "just fine" meant that they had gotten noticeably shrunken at the sides and probably were not long for this world.

It is true that some Bumblebees will occasionally eat dry food, and it is also true that some of them won't touch it with a ten-foot pole with a five-foot feather on it. If they will eat it at all, the dry food should have a high content of animal material in it, but even with this nourishment the Bees still need good wiggly "on the hoof" live food, especially if you intend to spawn them.

There has been much confusion concerning the proper scientific names to be applied to the different species of Bumblebees imported. Names are used interchangeably, with some authorities claiming that some species with two separate names are actually identical; others maintain that each species previously catalogued is indeed different from the others.

Although small in size, the Bumblebee is big in oddity and drollness. The two separate dorsal fins themselves, a characteristic shared by all Gobies, are especially worthy of interest, as this characteristic is not shared by many other common aquarium fishes. But the Bumblebee's most interesting Goby-like feature is his pair of ventral fins, which have been fused into a kind of a funny "plumber's helper". With this suction cup arrangement, the little

Bredygobius aggregatus is recognizable by the fact that its pattern is more splotchy than barred. Photo by G. J. M. Timmerman.



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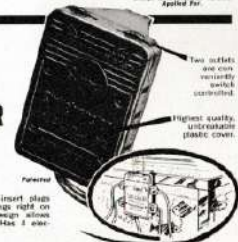
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All of the Bumblebee Gobies are able to use their modified ventral fins as suction discs to attach themselves to objects within their tank. This one was photographed while attached to the side glass of its aquarium. Photo by G. J. M. Timmerman.



Bumblebee is all set to clamp himself onto the side of the tank, a leaf, or a nearby rock. Moreover, he can attach himself rightside up, upside down, or even sideways, and still be perfectly comfortable. Another endearing feature of the Bumblebee is the eyes; moving them at will, *Brachygobius* is able to peer quizzically at his owner. It makes you wonder who is watching and who is being watched.

A slow and graceless swimmer, the Bumblebee moves reluctantly, and then only when prompted to it by badgering from his tankmates or the search for food. There is none of the seemingly aimless dashing of the Zebra or Tiger Barb. For his part, *Brachygobius* prefers to stick to his perch and let the world go by. Accordingly, it is hard to see how the Bumblebee has gotten a reputation for fin-nipping, but it has. This is in direct contradiction to my own experiences; over the years I have kept literally swarms of Bumblebees, but I have never encountered even one fin-nipper. It is much more likely that they are the ones which will be nipped at, for they are not aggressive, and they are often elbowed away from the dinner table by more pushy fishes. This is one reason why they should be kept separate from other species.

If several Bees are kept together, there is a chance of being able to spawn them through group spawning, although spawning them isn't easy. If the spirit moves them, they will; if it doesn't, they won't. It's that simple, although heavy feedings of live food sway them somewhat toward the spawning side of the score card.

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The methods advocated for sexing Bumblebees are almost as varied as those given for Angels—some say that the female is larger around her "waist", others that she is slightly less yellow in her last band, still others that she is of a smaller size, and so on. It is sheer folly to pick out what you assume to be male and female as you would with other fish—a much better course is to place at least six in a tank and hope for the best under the laws of probability.

A 10-gallon tank can be used, filled only to the half-way mark with water to which 1 teaspoonful of salt to the gallon has been added. This water should be quite old and of a temperature about 80°. The tank should be sparsely planted and should contain a flower pot lying on its side, a half of an old coconut shell tipped up on a rock, or a piece of slate slanted so as to make a small cave. Should the female prove irresistible to a male, they'll soon get down to work, this work being the laying of the eggs. When they are in the spawning mood, the usual process is reversed—the female becomes darker and the male seems to pale. The female places the eggs one at a time on the underside of whatever object you have thoughtfully placed in the tank for this purpose. She'll swim upside down, attaching the eggs by small threads. The male does his part by following along afterwards and fertilizing them.

As soon as this whole procedure has been neatly buttoned up, the male will oust the female. Some accounts say that this is the other way around and that the female shows the male the door, but unless you're observing most carefully and haven't taken your eyes off from the pair for a moment, it's very easy to mistake male for female and vice versa, because by this time the sides of the female are probably as flat as her mate's and the intensified or paler colors have returned to normal. In any event, it's wise to remove all other fishes from the tank to simplify things for the guarder, no matter what the sex. Bumblebee fish rarely feast on their progeny.

In common with some other types of roe, the Bumblebee eggs are very prone to fungus, so steps should be taken to save as many eggs as possible. Enough methylene blue can be added to color the water a light robin's egg blue, or the eggs can be taken out and hatched artificially. In this way a bit more methylene blue is added and any fungused eggs quickly picked off with tweezers so that they don't contaminate the still healthy spawn.

Approximately six days after the eggs have been laid, the extremely small fry should emerge if everything has gone according to Hoyle. In another 2 days the yolk sacs should be absorbed and the babies free swimming. Now comes the crucial point of things—since these are the babies of carnivorous fish, they must be fed accordingly, but the joker is to get adequate food of a size that the tiny fry can eat with ease. Only the smallest infusoria should be fed. Once the baby *Brachygobius* get to the point where they can eat newly hatched brine shrimp, it's all clear sailing. With a little luck, the Bumblebee is among the longest-lived of the common aquarium fishes.

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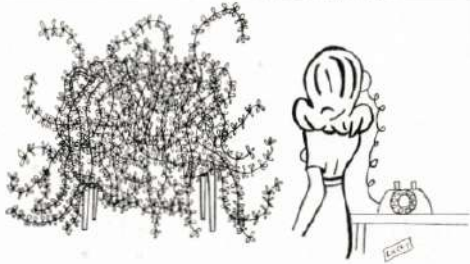
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"Hello, Amc Pet Shop! About that aquarium plant tonic you sold me...."

Intelligent Guppy breeding.

Problems in Guppy Breeding

BY DR. E. SCHMIDT
Bad Homburg, Germany

Certainly quite a few hobbyists who read this article will begin by laughing at the title and wondering what sort of a problem this could be, but in actuality there are still a number of unsolved problems for the serious Guppy breeder. I have during my life kept many hard-to-breed freshwater fishes and gotten them to spawn; I can for this reason back my statement that the Guppy is a problem fish of the first order with the authority born of experience.

It is not particularly difficult to get a pair of Guppies to propagate. When breeding according to hereditary laws and with certain ideals of beauty in mind, those set down as standards by the international Guppy societies, however, certain problems come up which can be solved only with patience and much thought. I would like to go into some of these difficulties.

There are three possibilities when breeding Guppies: **A.** Unrelated crossing. **B.** Inbreeding. **C.** Linebreeding.

A. The first possibility consists of pairing two fish which are not related. This is not suited to our purpose, because the possibility of variation in the resulting young is so large.

B. The second possibility, that of inbreeding, is accomplished by breeding brother to sister or by breeding back the offspring to a parent. This method is used if the father or the mother has traits that are desirable. In the course of a number of inbred generations there will be, if proper culling is carried out, always more similar traits which have been transmitted from the parents. This is referred to as homozygosis. After 10 or more generations the progeny keep looking more alike. In order to get completely similar young, one generally requires more than 30 generations.

Besides having many advantages, inbreeding also has considerable disadvantages which almost always lead to failure. When we aim for certain characteristics by inbreeding, a number of traits become irrevocably lost. Loss of vitality would head the list. It always appears when a state of tension exists which affects the hereditary traits. A well-known example from the world of botany is apropos here: if one crosses a medium-sized and a small variety of corn, the results are hybrids which surpass both parents in size and the amount of kernels. This is what is called heterosis. The opposite takes place when inbreeding. Inbred Guppies become weaker from generation to generation. In contrast to luxuriating, the stock can be said to be pauperized. This weakening can be explained by the fact that the desirable traits such as

body size, vitality, intensity of color, conformation to standards, and resistance to disease are almost impossible to pass on equally to coming generations.

Another example serves to show that it can sometimes be impossible to combine two favorable qualities. We find the most highly differentiated color patterns with Guppies of small size. The best known in Europe are the unusually lovely emerald green Vienna Guppies. If we attempt to carry over this finely etched pattern to the larger-bodied Guppies, it becomes pulled apart and the innate character of its delicacy is lost. This is why we have never seen the American Veiltails with a really fine body color design. For this reason we should never regard a maximum body size as the highest standard of excellence. In time these things can be overcome with linebreeding.

C. How do we go about linebreeding? From a brood of selected Guppies we pick two or three good pairs which we breed separately. If we get characteristics which are not desirable from the first pair in the forthcoming generations, they can be eliminated by crossing into fish from the second or third pair.

It is advisable for the hobbyist who has limited space to confine himself to a single standard type and to breed these in two or more lines. Even for these he will require a large number of tanks in order to raise the offspring with the sexes separated, as must be done. If the expense entailed is too great for one hobbyist, the breeding lines can be handled successfully by several hobbyists. This latter method was used around Frankfurt, and males as well as females were exchanged. The good results attained by the Frankfurt hobbyists in shows speak very well for this type of linebreeding. Paul Hahnel breeds his world-famous Veiltails in a sort of linebreeding as well. He keeps his well-known Red Veiltails separated in a number of tanks. In order to avoid too much inbreeding, he changes males and females after certain periods of time.

In closing, I would like to describe still another method which gives a certain effect of heterosis by crossing two distantly related inbred strains. We inbreed a standard type, selecting for two traits, for example shape and swimming ability. A second related strain is bred for color and body size. If both of these strains are crossed, the first crossed generation will result in fish which will surpass by far the strains which have gone in. The favorable traits of both strains have united. This somewhat tricky breeding method succeeds only in such cases where both strains have characteristics that harmonize. The important thing is that they be distantly related. Only experiments will show whether or not two strains are harmonious. Naturally one cannot expect that two unrelated but expensive strains will produce outstanding specimens. This is a well-known fact among all animal breeders. The reason could very well be that our Guppies are descended from several geographical races.

All these discussions are naturally silly if one does not have in mind, as one should, building up a good strain. I would like to make these suggestions:



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Provide yourself a virgin female with a well-colored tail. If you cannot do this, pick out a few virgin females from the first brood of a fertilized female. These are crossed back to the father or to another male from the same strain. After two or three back-crossed generations you can go over to the line-breeding procedure already described.

Only a few hobbyists can imagine what it means to pull a Guppy strain through the years with many disappointments and financial outlays and come up with something that gets an award of some kind at the international shows. A really interested Guppy breeder is also encouraged in distributing his females among others. The really interested Guppy breeder can by means of back-crossing produce outstanding show specimens in a relatively short time.

NOTES FROM ALL OVER

TFH EXPEDITION MAKES STARTLING FISH DISCOVERY

A brief communique received from the TFH Colombian expedition led by Dr. Herbert R. Axelrod and William Riese advises that the expeditionary group discovered Cardinal Tetras, *Cheirodon axelrodi*, in northeastern Colombia. Along with the Cardinals, Dr. Axelrod reports that he found a solid red Cardinal.

This fish is the same size as a Neon Tetra but is all red, with a small black dot at the caudal peduncle. It is an undescribed species and will probably be described in a future article in this magazine. Also found in the same area was a fish which is silver from the nose to middle of its body and blood red on the lower half of the body. This also is an undescribed species as far as Dr. Axelrod can ascertain in the field.

The communique describes the expedition as the "most fruitful" ever undertaken by TFH. Since they left in October, the expedition members have found more than a dozen new species of outstanding merit for the aquarium. The group will return by the end of 1964 and will begin issuing its reports in TROPICAL FISH HOBBYIST by March, 1965.

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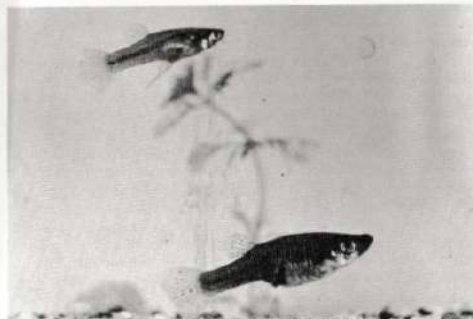
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Inoffensive in appearance, these *Gambusia affinis* (male above) are none the less dangerous to the continued existence of more valuable species into whose waters they have been haphazardly introduced. Photo by G. J. M. Timmerman.

Gambusia, The Fish Destroyer

BY DR. GEORGE S. MYERS

Few tropical fish hobbyists nowadays try to keep *Gambusia affinis* in their aquariums, except for occasional black-spotted individuals. In the early days of the hobby, when comparatively few kinds of fishes were available, this little livebearer from our southeastern states was often seen, but hobbyists soon discovered that *Gambusia* was much too hard on other kinds of fishes. And thereby hangs a tale.

About the turn of the century, not long after it was discovered that mosquitoes transmit both malaria and the deadly yellow fever, public health officers and doctors in many parts of the world began to take an interest in reducing or eradicating those diseases by introducing into local waters certain small fishes known to feed on the aquatic larvae of mosquitoes. Among the first of these fishes to be used for that purpose in tropical countries was the guppy, which was known as the "millions fish" in Trinidad and other Caribbean islands where it occurred. Guppies were introduced into even such remote places as Malaya.

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However, American research on mosquito-destroying fishes was concentrated mostly on our own mosquitofish, *Gambusia affinis* (and its subspecies, *holbrooki*), and *Gambusia* gradually became known throughout the world as THE fish to introduce in the fight against mosquito-transmitted diseases. Unfortunately, this earlier American research was not as well conceived as it might have been, and it missed several important points. It was pointed out that because *Gambusia* does not normally penetrate thickly matted aquatic plants, such plants must be periodically removed if *Gambusia* is to control mosquito larvae effectively. This is quite true, but it entirely missed the point that other available small fishes penetrate such aquatic plant growths and assist *Gambusia* in controlling mosquito larvae which cannot be gotten at by *Gambusia*. Among such inhabitants of thick plant growths are *Gambusia*'s close relative in our southeastern states, *Heterandria formosa*, and, in tropical America, *Rivulus* (see my article on *Rivulus* in the December TROPICAL FISH HOBBYIST). Moreover, it was also pointed out that *Gambusia* and similar fishes cannot exist long in temporary ponds which dry up in the dry season, and must be re-introduced when the ponds again fill up with rainwater. Again true, but it was not known at that time that annual mosquito-larvae-eating fishes exist (even in the temperate climate of Argentina), which survive drying up of their ponds in the form of eggs buried in the crusted mud and hatch out and grow rapidly when the rains come again. And the destructiveness of *Gambusia* to other fishes was simply not recognized.

However, relatively few physicians and health officers were aware of even such research as had been done, and *Gambusia*, because of its success in a few widely scattered countries, gained world renown and was uncritically accepted as a sort of panacea for mosquito troubles. Introductions were made in many new places throughout the world, and they are still being made, despite what we know now about *Gambusia*.

The fact is that *Gambusia* is a very dangerous fish to introduce into a place where it does not occur naturally, and is little or no better as a mosquito destroyer than many other species (including the guppy) which are somewhat less dangerous. *Gambusia* is a very destructive creature, not only to fishes of its own small size but also to much larger fishes.

This was first called to my attention 30 years or so ago, when the crew of the California State Fish and Game Department's black-bass hatchery at Friant had to discontinue using *Gambusia* as a "forage fish" with which to feed the bass. *Gambusia* was destroying a large proportion of the young bass! Through the years, such information has slowly accumulated. Almost everywhere that *Gambusia* has been introduced, it has gradually wiped out most or all of the smaller native mosquito-destroying species. It has also almost certainly taken

Continued on Page 53

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Indian legends—second in a series.

How a Fish Became a Boy

As told to HARALD SCHULTZ, Museu Paulista, São Paulo, Brazil

An Umutina Indian woman went to the stream to fetch water. In the shallows she saw a small, beautifully-colored fish, to which she was so attracted that she caught it and wrapped it in a straw mat. She took it home and laid it in a corner.

Soon afterward, she heard cries coming from the mat. She went there to investigate. Unfolding the mat, she found that the beautiful little fish had changed into a wonderful little boy. The woman was married, but her husband paid her little heed, and they were not blessed with any children. She had gone to the stream and caught the little fish in the hopes that it would change into a son for her.

The woman raised the son as her very own, and as the boy grew up he would often call:

"Father! Father! Come here, dear father!"

But the husband did not listen to him. One day he left to go hunting, and the boy ran with him. He could not travel as fast, and soon fell behind and became very frightened.

"Father, wait for me! Father, please do not walk so fast!"

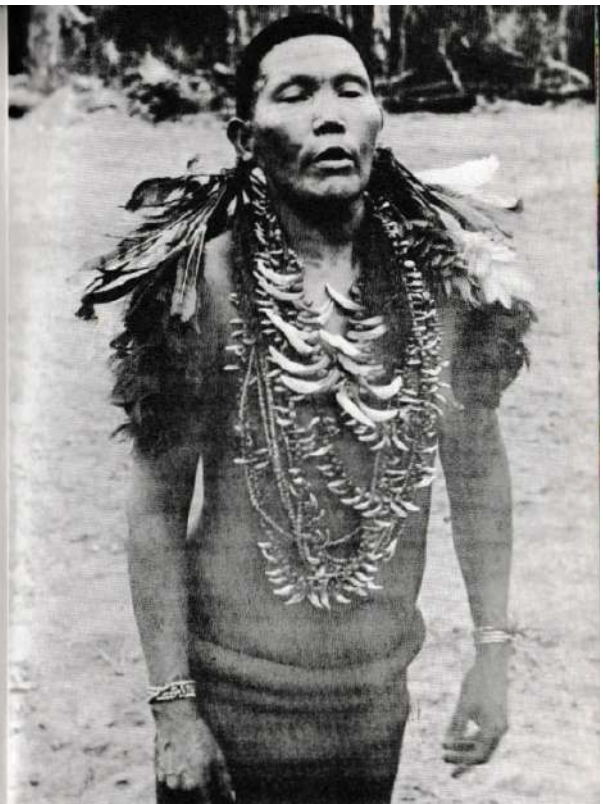
The man went on whistling and did not pay any attention to the little boy, who finally became so discouraged that he turned around and went back home. He told his mother what had happened, and added, "He isn't my father!"

The woman kept her secret and assured him that the man was really his father. The boy doubted her and said, "If that man were my father he would have waited for me. Instead, he walked away from me whistling, without caring what happened to me!"

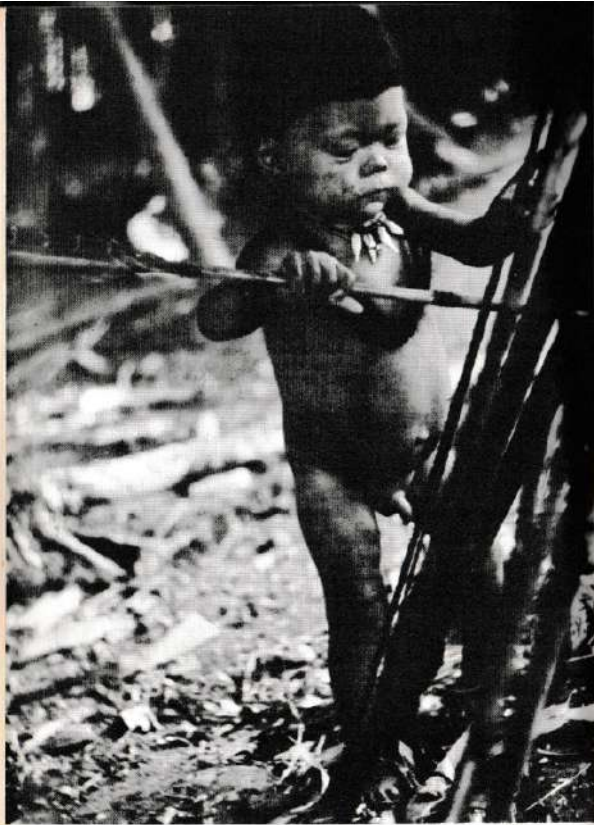
Then the mother confessed to her son that because she had no child, she had gone to the stream and caught him when he was a tiny, beautiful fish.

"So that's why he didn't wait for me," said the boy half to himself, very sadly. "I wish I were dead!"

The woman tried to comfort him, but the boy was inconsolable. He went away and searched for a tree he could climb. As tall as a man, perhaps! He climbed up and jumped down. His fall was unlucky, and he broke his skull and died. The mother cried and cried disconsolately for a long time. She missed the child so! When the father came back he paid no attention to her. He was very tired from hunting, and did not utter a single word. He acted as if nothing had happened.



The Indian woman had no children. For this reason she went to the stream and caught a small, beautiful fish. She took it with her to her hut and there changed it into a little boy, whom she accepted as her child.



Whoever wishes to be a master must begin to practice early. From a very tender age the Indian children begin to practice with their bows and arrows. They shoot their arrows at such a target as a piece of melon rind or a green ear of corn. They soon accompany their fathers on hunting trips. This little boy is still too small.



With a specially-made little bow which was turned out by his father or his uncle, Ikodo, the little "fish-boy" goes along to shoot fish. Ikodo is especially adept at finding fish which have hidden in the thickets.

The wife became very angry and reproached him. Why hadn't he waited for the boy? Now he was dead. She buried the lad in her own hut, according to the racial custom. She placed her straw mat atop the grave and slept on it. Soon afterward the hut was abandoned and became the boy's cemetery. That summer the dry season was so intense that everything caught fire. The fields, forests, and the old straw hut caught fire. As soon as the first rains moistened the earth, there grew the most wonderful field produce from the earth of the boy's grave! His eyes became beans and peppercorns, his arms and legs became manioc roots, and his male organs became sweet potatoes.

None of these things had existed previously. They were provided by the Indian boy who had been a pretty little fish!

In the Indian's world of imagination it is nothing special that animals change into people, or people into animals. This is an expression of their deep consciousness that there is a connection between man and beast. Both are native to the open fields and forests, the lakes and streams.

When the old tales are told, there is a constant reference to "the days when people still understood the language of the animals." Or "such and such a person turned himself into a certain animal." This is how the pretty little

Tropical Fish Hobbyist

fish became a son for the childless woman. But her wishes were not enough by themselves to effect such a transformation. A knowledge of magic is necessary for such a transformation. This magic, according to the Umutina, lies in their straw sleeping-mats. They sit on these when working in the daytime and sleep on them at night. When they die they are wrapped in them and buried, so naturally the Indians tie this in with life, death, and resurrection. Haifuku, the godlike ancestor of the race, was said to have woven such a straw mat from wild honey and on this mat to have created the first people.

The Umutina bury their dead in their own huts, because they want to keep the souls of their loved ones near them. They even keep animals which they believe to be carrying the souls of their dead.

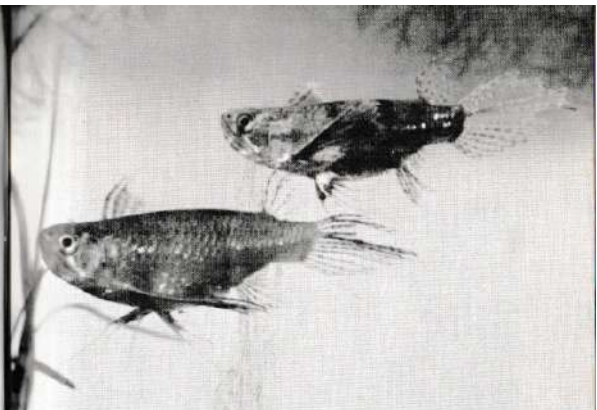
When the summer comes with its sometimes frightful dry periods where months go by without a single drop of rain, many great fires break out naturally and destroy everything in their path for hundreds of miles—forests, fields, and homes—until the life-giving element of water comes in the rainy winter and gives new life to the dead landscape.

The death of the little boy who began life as a little fish—probably some species of *Hyphessobrycon*—gave the Umutina their most important agricultural products, still cultivated in their fields.

to all of our readers from
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Season's Greetings
best wishes for the New Year



Drab in coloration but elegant in finnage, these graceful Butterfly Fish are an attraction in any aquarium, but their restrictive diet keeps them out of the "easy" class. Photo by Gustaf Senft.

A real African oddity.

About the Butterfly Fish, *Pantodon buchholzi*

BY KLAUS FRUHAUF

One day in a Leipzig store I made the acquaintance of the Butterfly Fish. I almost overlooked them, so quietly did one of them (in this case the male) remain at the surface with almost folded fins in the small, dimly-lighted aquarium. With his black and brown coloration it was difficult to distinguish him from the dark background. According to the few pictures and sparse descriptions which had come into my hands, I had imagined that the color would be different, lighter. The view of the somewhat larger female was partially blocked by the price sticker. She was a little darker in color, entirely motionless. As soon as I had convinced myself that the two fish were a pair, I dug deeply into my pocket and walked away with some trepidation but with a deep joy of ownership.

Both fish were given a well-planted, not too brightly lighted 50-gallon tank. The water's surface was covered with floating plants and overrun with emerged *Sagittaria* leaves. The fish were kept in Leipzig in water of 12 DH; with me they found water of similar hardness (softened with oxalic acid) which was filtered through peat and had taken on a yellowish color and slight acidity (pH 6.5). Nourishment in the store they had come from consisted solely of mealworms, which doubtless were not the ideal food.

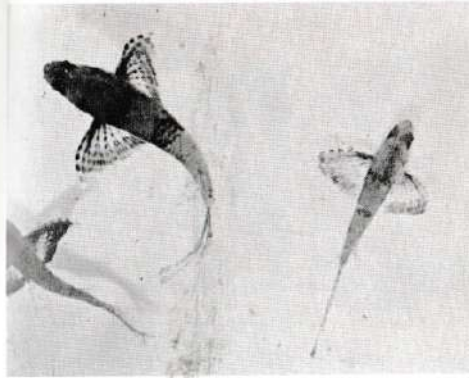
Now my entire family was pressed into service hunting flies and spiders. It is unbelievable how many of these uninvited guests can be found even in a well-ordered household. The fish immediately accepted food in the lighted aquarium, a sign that they had not gotten sufficient natural nourishment. Today, now that they have been well fed, such a hunt is not required for many days at a time.

The food is grasped with a lightning-quick motion, and the search renewed as soon as an insect is swallowed. When night approaches, both swim restlessly about just below the surface, remaining close to each other. Food which does not swim but is held at the surface for a short time by surface tension, like some insects and sowbugs, is eaten only if the fish manages to grasp it firmly at the first snap. If anything sinks to the bottom it is ignored. If the food is only a tiny distance below the surface it is no longer recognized as such.

I was able to observe these fish exactly while they were hunting food. The body is elongated oval. The dorsal outline is almost straight all the way back to the dorsal fin, which is placed far to the rear. It then drops slightly to the beginning of the caudal fin. The abdominal outline forms a curve back to the end of the anal fin, which is most steeply curved from the chin to the edge of the gill-plates. The caudal base is relatively high, the back flattened and the belly sharply keeled. The large pectoral fins are almost always carried horizontally or tilted slightly upward. The ventral fins are small, but each fourth ray is greatly elongated. With these elongations just about everything is examined; even a finger held against the glass is an object for the fish's curiosity.

The mouth is very large, with the lower jaw turned far down. When it is opened, the mouth reminds one of an opening drawbridge. The skin of the throat is very flexible, forming a sort of pouch. When several insects are fed the fish does not take the time to eat them but stores them in this pouch and eats them at his leisure when he has returned to his accustomed spot. Insects flying above the water's surface or resting there are caught with great efficiency by means of accurately estimated leaps.

My fish were not easily acclimated. On the first day they tore all living foods right from my tweezers, and then for a few days they were very shy, and at the slightest disturbance they disappeared into the plants. This habit, however, was lost in time, but now they eat only seldom in the daytime and



This aerial view shows how the pectoral fins stand out from the body, resembling greatly the wings of a butterfly. Photo by Wilhelm Hoppe.

more at night. Spiders, butterflies and mosquitoes seem to please them best. In second place come small flies, and lastly the really big flies. Mealworms can be considered as no more than an emergency food.

After some time it could be observed that the pair had become more interested in each other than before. In daylight as well as at dusk one of the pair would swim suddenly and vigorously toward the other. The male always held his ground against the female, blocking her way squarely and wriggling like a male Cichlid. If the female swam at her mate, he usually butted her side below the large pectoral fin, during which act both fish swam slowly in circles. Then the male tried to work his throat above the female's back and thereby push her down from the surface. I presumed that these were preliminary attempts at courtship, even if they did not culminate in the described spawning activities. The male is distinguished from the female by his deeply indented anal fin, the middle rays of which form a tube with advancing age. The female's anal fin is in a straight line.

I fervently hope that I will be successful in spawning these fish. *Panodon buchholzi* is worth the trouble, being one of the most unusual members of the fish world, but the fish will no doubt always remain a rarity.

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Gambusia

Continued from Page 32

a heavy toll of the young of important larger food or game fishes. Unfortunately, because nobody has paid much attention to this probability, there is no first class research to back up what is so strongly suspected.

From my own almost daily observations of a garden pond in San Jose, California, during seven consecutive years, I can give the following data: The pond was approximately ten by fifteen feet, two and one-half feet deep in the center, shelving to three inches at the margins. It had a heavy growth of *Elodea* and pond lilies. It was stocked with eleven goldfish and approximately 250 *Gambusia*, and the fishes were fed with fair regularity. The goldfish spawned each Spring, and the *Gambusia* produced regular broods. At all times, the biomass of goldfish in the pond exceeded that of *Gambusia* in a ratio of approximately two to one. Goldfish were seen occasionally to eat smaller *Gambusia*. The *Gambusia* population remained comparatively stable in size. So did the goldfish population, with an average increment of one young goldfish every two years, which exactly equalled the death rate of the older fish. After five years the *Gambusia* were removed, resulting in an increase in the number of surviving goldfish to 30 at the end of the year and an approximate doubling of that number the following year! At the end of the seventh year of observation, the biomass of goldfish in the pond was approximately three times as great as when *Gambusia* was present, and was still increasing, which indicated what *Gambusia* can do to cut down the population of a much larger, stronger species.

The reports are ominous. In certain of our southwestern streams, the native *Poeciliopsis* is gone; *Gambusia* was introduced. In the canals of Bangkok, Thailand, the common native *Aplochelichthys* is now rare and the unique little *Phenacostethus* (known only from there) has disappeared; *Gambusia* is common. In the creeks around Laguna de Bay, in the Philippines, *Gulaphallus* is gone and *Gambusia* reigns. In the lower Nile, the native *Micropanchax schoelleri* cannot be found; but *Gambusia* is common. And so it goes. No one has yet assessed the damage.

Why should *Gambusia* do this? Why does it not wipe out other small species and affect bass and other larger fishes in its native haunts? The answer lies in what ecologists call, somewhat roughly, "the balance of nature." In our southeastern states, a balance has been evolved through the ages. *Gambusia* is kept from too much destruction by its naturally evolved enemies, and smaller fishes have learned to hide from it. But when placed in a new situation, where natural checks do not occur and native species have evolved no defenses, many introduced species of animals will take over and become pests which crowd out the natural fauna. The introduced house sparrow (English spar-

row) in North America is one example. The pest of introduced rabbits in Australia is another.

Why should we worry? It is simply that such tamperings with nature often have much more serious repercussions than we can foresee. Rabbits, introduced as an apparently harmless addition (who can imagine a "bunny" being a plague?) to the Australian fauna, eventually overran vast areas of the continent and caused such damage as to cost the Australian people untold millions of dollars. We are not sure that *Gambusia* will not eventually turn out to be quite as expensive a plague in many places.

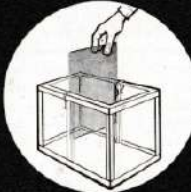
In addition, tropical fish hobbyists should, above all people, be concerned with the possible extinction faced by hundreds of species of small fishes in many parts of the world where man has introduced *Gambusia*. Many of these threatened species are potential aquarium fishes, many are far more attractive than *Gambusia*, and many are unique and interesting species which many aquarists as well as ichthyologists might hope some day to see alive. Alas, it seems possible that many of them are already extinct. And for no good reason, because other less dangerous fishes can almost always destroy mosquito larvae quite as effectively as *Gambusia*. Thus does man's ignorance often destroy what nature has taken millions of years to produce.

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Angelfish spawning.

Q. I am greatly interested in breeding Angelfish. I purchased four about three months ago and after reading all the books I could on the subject I think I have two males and two females. Now they are a little bigger than a half dollar, not including the dorsal and ventral fins. Here's my problem: in all the books I've read it has said that the breeding tank should be at least 25 gallons in capacity. As I have neither the space nor the money to get a 25-gallon aquarium, would it be safe to breed them in a 10-gallon tank? I also have a bread-leaved plant which I have planted on a slope. The gravel keeps gradually falling down and exposing the roots so that once a week I have to push it back up. Please tell me how to keep it from falling.

Frank Moore, Cocoa, Fla.

A. Your Angelfish aren't going to change their breeding habits just because you can't provide an adequate space for them. They may spawn in a smaller tank, but you'll need the space if and when they do to raise the young in any case. If you cannot provide proper con-



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Spawning Angelfish

attention for whatever fish you have, you shouldn't have chosen this type of fish in the first place. You have two choices as to what to do with your plant: eliminate the slope, or put the plant elsewhere.

Molly crosses.

Q. 1. What is the likelihood of having *Mollisium sphenops* interbred with *M. latipinna* when a good number of both species is kept in the same tank?

2. What "scavengers" may be used in *Mollisium* aquaria other than snails, inasmuch as *Corydoras* species cannot tolerate saline water? I consider TFI the finest aquarium magazine available, both from the scientific and practical standpoints, well worth the money.

Gary K. Rose, Cottonwood, Calif.

A. 1. Practically none. As long as they have their own kind to mate with, they are not likely to mate with any others.

2. Filters are an efficient and so commonly in use nowadays that there is not the need for "scavengers" that there used to be, especially snails. Get a good filter, keep it going, and forget about "scavengers." Thank you very much for your kind words of praise.

Poecilia vivipara.

Q. As a subscriber to your magazine I enjoy the thorough way you cover the fish that you write about. Do you have any material on *Poecilia vivipara* that you could give me? Last April I captured a few of these fish in Puerto Rico and brought them home with me. I have finally succeeded in breeding them but would like to acquire more knowledge of them. Anything that you have will be appreciated.

George Farren, Rochester, N. Y.

A. *Poecilia vivipara* is native to northeastern South America, in brackish as well as fresh waters. The male is almost half the size of his mate, and there is not much color except for a spot at the base of the male's dorsal fin and some bars in the after end of his body.

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Poecilia vivipara

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Zebra spawning.

Q. In the September issue of TFH you have an article "Dealing in Danios" by Carol Honnold. She said that you must put marbles on the bottom of the tank. I would like to know if it would be possible, after repeated boilings, to put in screen which had just big enough holes in it to let the eggs get through and hold back the hungry parents.

Gordon Patton,
Baie d'Urfe, Quebec, Canada

A. Professional breeders use a system like this. They have a box with a screen bottom such as you describe and float it in a pool. What you must do is to use a screen of non-poisonous metal. The use of glass marbles eliminates this. The point that Carol makes is that enough marbles must be used. You

can also use glass or plastic rods set about an inch above the bottom and spaced to let the eggs, but not the breeders, through. You will never save all the eggs, but the fish breed so prolifically that a few less make no difference.

Brackish water tank.

Q. My problem is maintaining aquatic plants in my brackish water tanks. Can you recommend any particular plants which adapt to this type of environment? I keep Scats, Monos, and Sailfin Mollies, all of which are pleasing fish for the time I manage to keep plants alive. I've been trying for five

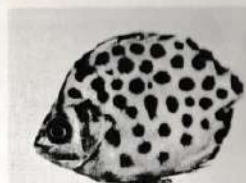


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Scat

months for the answer. Hope you can help.

John E. Fairlie, Jr.,
Long Island City, N. Y.

A. Most plants can tolerate mildly brackish water, but when you get past a certain point they fold up. Much as I hate to recommend artificial plants, the only answer in your case would be the plastic ones.



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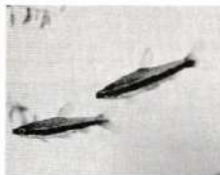
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Nannostomus beckfordi.

Q. A short time ago I purchased a pair of what appeared to be *Nannostomus beckfordi*; they were sold as "Pencil." However, in my 15-gallon tank with fluorescent light I see that one is an entirely different species. It at first glance appears similar, but it shows no red in the ventral fins and has a rounded tail instead of the typical Characin tail. Can it be a species of *Aphyosemion*? The horizontal black line of this fish is not quite



Nannostomus beckfordi

as definite as in the *Nannostomus*. Could it be a male, or female, as I should like a mate for it; naturally it pays no attention to its present "mate."

W. Smith,
Shawnee Mission, Kans.

A. You are on the wrong end of the fish if you suspect that your female is one of the *Aphyosemion* species. *Nannostomus* has a pointed mouth, whereas the *Aphyosemion* species have a blunt, much larger mouth which turns up. Many of the female *Aphyosemion* species are so similar that even an expert would be hard put to identify them.



Female *Aphyosemion*

Sulphur water.

Q. I would like to know if Goldfish can live in sulphur water. If they can not, what can I put in the water to make it safe for them? Our

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Mrs. Robert Anderson,
Ferriaburg, Vt.

A. Goldfish are fairly durable eaters and can stand most water that is drinkable. It probably would help some if you aerated the water for a couple of days before putting in the Goldfish.

pH changes.

Q. 1. A fortnight ago I bought a pH test kit and found that the water in my tanks was 7.4-7.6. As this wasn't what I wanted, I started putting sodium biphosphate in the tanks (small pieces at intervals of 4 hours). I did this for about a week. The week following I found I had a film of what looked like grease on the surface of the water. I removed it as soon as I had noticed it, but it was there again the next day. This has been going on for over a week, and I am worried about the fishes.

2. Can tropicals stand up to a sudden change in the pH of their water? If not, how can you move a fish from one tank to another without changing the pH?

R. D. Crompton,
Liverpool, England

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A. 1. Adding sodium biphosphate to aquarium water often results in a precipitate which forms at the surface. Breaking it up with mild aeration is the answer in most cases.

2. A sudden change in pH is dangerous, in many cases even fatal. When moving a fish from one tank to another with a different pH, make the change gradual by adding the water from the new tank in small quantities, thereby giving the fish a chance to adjust. A fish can adjust to pH changes if it can do so in easy stages.

Aging water; Rasbora trilineata.

Q. 1. What is the chemical and generally scientific explanation for the process of "aging" water, other than to remove harmful gases? Does it matter that when, for hypothetical purposes, we use a glass jar, we keep it covered with a cap, just any kind of surface cover, or not cover it at all?

2. Can an infusoria medium be kept covered, or do the infusoria need oxygen?

3. Are there any disadvantages to using nylon for a spawning medium in place of living plants, especially when breeding such fish as Barbs and the Black Tetra?

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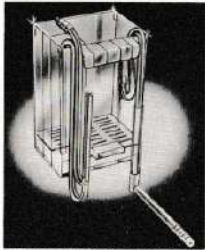
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4. Can you give me detailed instructions on breeding the Scissortail, *Rasbora trilineata*? I have exhausted my possibilities for finding such information, other than one source which said: "It's so called because when it swims, its tail fin closes like a scissors... that the male is much smaller and more slender than the female... that they will spawn in lower temperatures than others, about 70°F." I have been unable to find any information on factors such as: water quality (pH; hardness; aging; temperature; aeration); size of tank; plants (will nylon do?); lighting; should the pair be introduced into the tank simultaneously or not? Are the eggs adhesive? Will the parents eat the eggs? If I should be so lucky as to get fry, raising the fry (what is their first

food? How long to feed that; their next food, etc.).

Barry Yelen, Carlisle, Pa.
A. 1. Water from a tap has been under pressure. The purpose of "aging" is to release the chlorine and other gases which have been trapped there. Using a jar with a cap defeats this. The idea is to get rid of the gases, not to trap them in the same jar by capping it.
2. A good infusoria culture needs oxygen.

3. Nylon "mops" and bundles of nylon fibers or even nylon plants have been used for years. The advantage is that they can be sterilized or even boiled clean any number of times without damage.

4. Scissortails are not as particular about their water as most

Black Tetras



Rasbora trilineata

other fishes of their genus. They spawn like barbs in soft, slightly acid water. They might spawn at 70°, but I would give them 75°. Parents may be introduced into the breeding tank at the same time; to prevent egg-eating they should be removed when spawning is finished. After four or five days an infusoria, the fry do very well on newly-hatched brine shrimp. A 15-gallon tank is fine for breeding, nylon fibers may be used, and after the young are free-swimming aeration is a help. The eggs are adhesive, but some will drop to the bottom.

Guppy Corner



By Paul Hahnel

Uninterested male, and water sprite.

Q. 1. I just paid a good sum for a pair of beautiful veiltail guppies. The male alone is over two inches long. I was told that they were only five months old. The only thing is that the male won't have anything to do with the female. He just hovers and shakes his long tail. How could I get him interested in her? I keep six types of plants in my 10-gallon tank. Would it help if I took out some of these plants? The pH is 7.2 to 7.4. Temperature is 74°. I feed only freshly hatched brine shrimp.

2. How could I get water sprite to grow to any height? It just grows a little and dies. My tank is located in the west window for sunlight

and gets at least four hours of fluorescent light at night. Could it be that my water is too hard or soft?

Don Hudson, Princeton, Ind.
A. 1. A male guppy 2 inches long at the age of 5 months suggests that he is a male and therefore not interested in a female. This is one explanation. Do not overcrowd your tank with a variety of plants. The pH could be on the acid side, and the temperature should be between 75 and 78 degrees. Brine shrimp are fine, but use kind of food is not sufficient. Try a variety of dry, frozen, and live foods.

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2. Water sprite is a very popular plant, and with good conditions will grow 2 1/2 to 3 feet high. I use only incandescent lights. There is surely something wrong in the chemistry of your tank water if the young water sprite plants die.

Mixing guppy strains.

Q. 1. If I breed a plain tail guppy with a veiltail guppy, will the babies have veiltails?

2. If I breed a half-black plain tail guppy with a veiltail guppy will the babies have black veiltails? If not, what will they be like?

Jim Streetman, Marianna, Fla.

A. 1. If you breed a veiltail male to a plain common female, only some of the babies may show a promising tail. The babies which look best to you are the ones I advise to use for future breeding.

2. If one parent is a veiltail and the other a half-black guppy with a plain tail the babies will carry some characteristics of both parents, and I suggest you do what I advised in the first answer.

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Salts From The Seven Seas



By Alfred A. Schultz

Q. Recently I obtained a jellyfish and a hermit crab from the Gulf of Mexico. These are the only two inhabitants of my 5-gallon marine tank. The umbrella of the jellyfish has a diameter of about one inch, and the tentacles, when extended, are 3 to 4 inches long. The hermit crab is barely half an inch in length. I know that the majority of marine fishes available to me will have to be excluded from this tank because the jellyfish has already killed two adult male Guppies. My questions are as follows:

1. What would be the compatibility of this jellyfish and an octopus of approximately the same size in a 5-gallon tank?
2. Would adult Guppies prove sufficient as food for the octopus and the jellyfish?
3. Would a fish with the peculiar structure of a Seahorse be safe in this tank?

Cary Ragsdale, Huntsdale, Ala.
 A. 1. I don't think you could find an octopus that is one inch in size.
 2. The size of the jellyfish indicates that baby Guppies would be a better food.

3. Seahorses should be kept in a tank by themselves. They are very slow eaters; if kept with other fishes they would soon starve. Because the other fishes would consume all the food before the Seahorses made up their minds to start eating.

- Q. 1. Which is the best medium, artificial sea water or real sea water? I have read that pure sea water decomposes in the aquarium and will soon cloud the water.
 2. I have been told that tap water is better to add to the aquarium than rain water. Is this so?
 3. How long will epoxy cement last before it starts to break down?
 4. The only time I can feed my fish is at seven o'clock in the morning and again at seven o'clock in the evening. I can then feed them a little later. Wouldn't it be a good

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Idea to use a prepared food in the first 12-hour interval?
 3. What is the adaptability and hardness of Moorish Idols and Platex?



Platex

Harvey Edelman, Jamaica, N. Y.

- A. 1. Any commercial salt preparation is better to use than sea water.
 2. Either tap water or rain water can be used.
 3. I have never known epoxy cement to break down in salt water.
 4. Marine fish should be fed once daily and then not with a dried food.
 5. The Moorish Idol is a difficult fish to keep, while Platex is hardy and lives long in a marine tank. This fish requires a large aquarium.

Q. 1. Can Seahorses be kept with Pterocla Clowns and a Blue Demosella? If so, how many?

2. How many Sea Anemones can be kept in a 15-gallon aquarium?
 3. How many other salt-water fishes can be kept in a 15-gallon aquarium?
 4. Is there any way to obtain a Moorish Idol?
 5. What is the correct hydrometer reading for a Sea Anemone?
 6. I use a big outside filter on my tank. How long should it run?

Alfred Winterton, Tacoma, Wash.

- A. 1. No. Keep them in separate aquaria.
 2. Two small ones.
 3. Six small fishes.
 4. It can be gotten on a special order, but you will find it very expensive.
 5. 1.025.
 6. Continuously.

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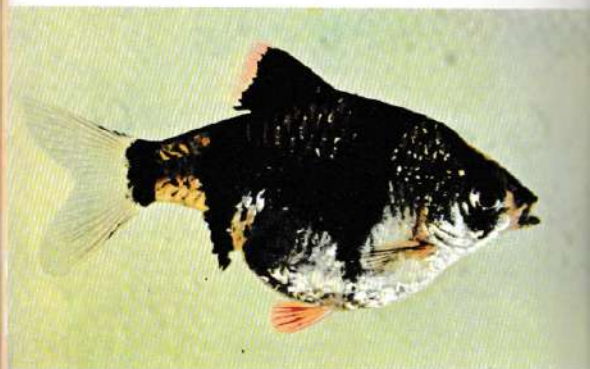
A male of the new Tiger Barb variety called the "H-Barb". Photo by Dr. Herbert R. Axelrod.

A New Tiger Barb

by WILLIAM VORDERWINKLER

The new tiger barb mentioned in the title of this article is not a new genus, nor even a new species; it's just a new color variety. Danny DiCocco brought us a batch of these very attractive barbs, jokingly telling Dr. Axelrod that he had developed a fish with his initial, "H," on it. This is our old friend *Capoeta tetrazona* with an extra blob of black that frequently appears on only one side, between the vertical black bar which originates on the back just ahead of the dorsal fin and crosses the belly, and the one behind this which drops from behind the dorsal fin to the fore part of the anal fin. This marking sometimes takes the shape of a horizontal stripe and does form a perfect "H," but in many cases it's less distinct. Danny currently is working to improve future stock so that the "H" marking will become more definable.

I was curious to see how the new variety would behave, so I took home five to observe. They acted just like the ordinary tiger barbs, with the exception that they did not and still do not nibble



The "H" marking on this heavily egg-laden female H-Barb is well defined, giving the fish its distinctive marking. Photo by Dr. Herbert R. Axelrod.

Hatching takes place in 24 to 36 hours. About another 3 days later, the fry have absorbed their yolk-sacs and are swimming about in a dense school. Food at this time is not much of a problem, because both dust-fine dried foods and infusoria are accepted.

Barbs grow quickly, especially when they are well fed. As soon as youngsters are large enough to eat them, brine shrimp make a more substantial food which is just as eagerly accepted. These of course are the newly-hatched brine shrimp, or nauplii, and the frozen ones can be purchased in almost any petshop if the live ones are not convenient.

To my mind, one of the prettiest sights the aquarium world has to offer is a large, well-planted tank with two or three hundred half-grown tiger barbs hustling and hustling about in it. At about three-quarters of an inch in length they are gorgeous creatures with a lovely contrast between the light and dark areas and the red fins. You don't need a "wet thumb" to spawn barbs successfully. Even if you can't get "H-barbs" the ordinary tiger barbs or most of the small or medium-sized ones are just as satisfactory. Why not try them?



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