

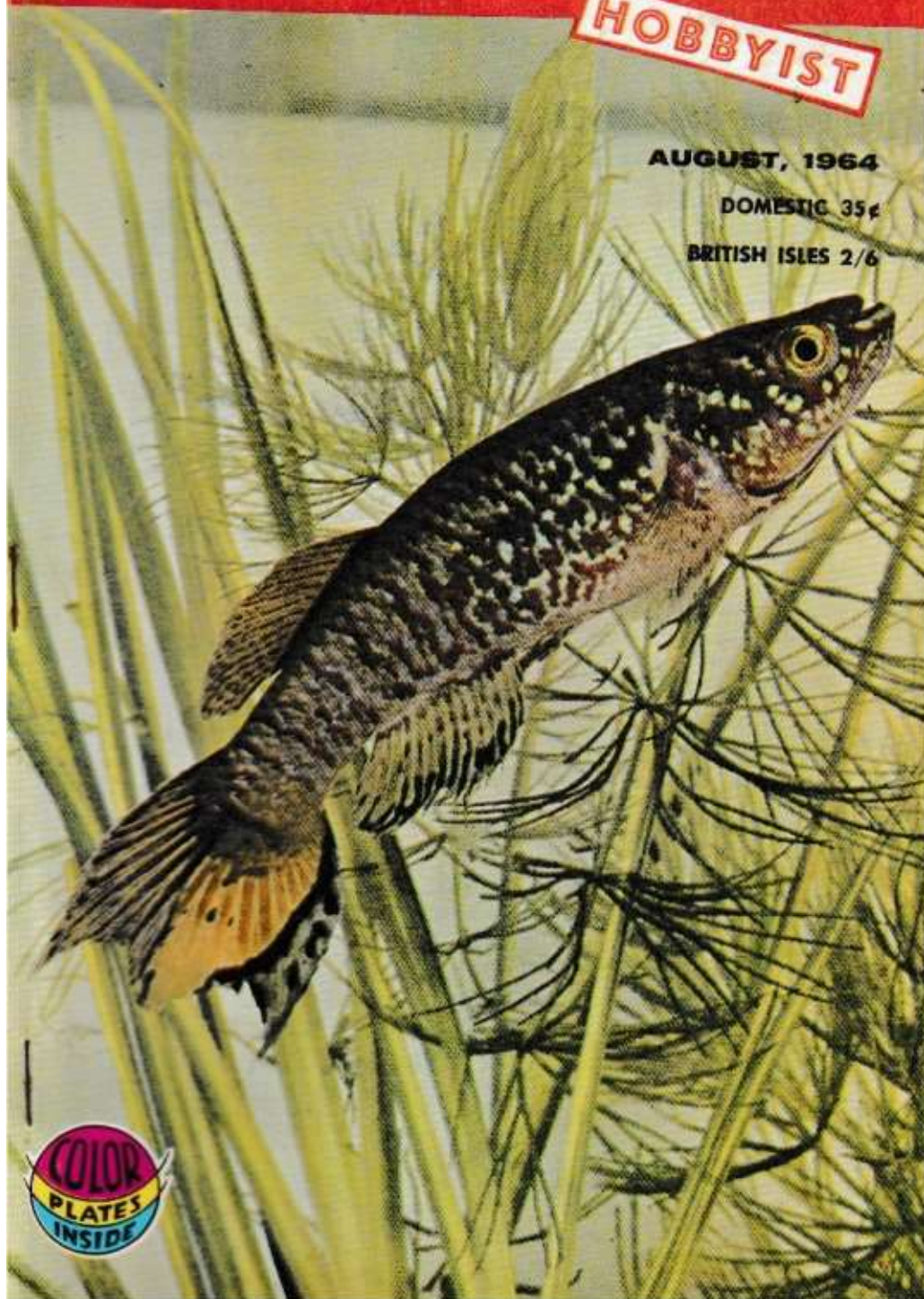
TROPICAL FISH

HOBBYIST

AUGUST, 1964

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TROPICAL FISH HOBBYIST

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COVER

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August, 1964

EDITORIALLY...

Tradition is a wonderful thing, to a point - we do things unquestioningly because our parents, and perhaps their parents before them, found them to their liking, like voting Republican. Some thing with a person who decides that he wants to spawn a certain species of fish. He bred them before by giving them a certain set of conditions. These conditions, he argues, are the only correct ones, because they worked for him. He even goes so far as to write about it and tell the world that he spawned his beauties by giving them water which was exactly pH 6.5 and a temperature of precisely 78°. So far, so good. People may go on for years imitating his conditions and getting fair to middling results. Then somebody comes along and upsets the applecart by telling how he always uses water which is alkaline and gets better results with the temperature at 83°. Which account is correct? Both are, of course. This is why we have so little patience with the fellow who says: "You've got to do it my way, because my way is the only one that works!" Fish, thank goodness, can adapt to many conditions and even spawn under a variety of conditions. The fellow who says that we can spawn a certain fish in only one way is sure to get conked in the face with a meringue pie, because someone will come along and make a liar of him by doing it, perhaps better, in another way! A male fish which is full of milt and a female full of roe don't particularly care what kind of water they're swimming in, they're going to spawn! We hobbyists are frequently prone to take credit which we don't particularly deserve: we say, "I spawned my Neons," instead of saying, "My Neons spawned for me!" Getting them into a condition where they are ready to spawn is the only bow we're entitled to, if indeed we got them there at all.

William Vorderwinkler

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August, 1964



Metynnis maculatus combines red shading with its pleasing black-on-silver body pattern. Photo by Hanns-Joachim Franke.

Observations on Three *Metynnis* Species

BY HANNS-JOACHIM FRANKE
Gctra, DDR

Since 1953, when I first reported a successful spawning of *Metynnis roosevelti*, which to the best of my knowledge has remained the only successful spawning, scarcely anything has been written about this lovely Characin. All that one could read was an expedition account now and then which mentioned capturing one species or another. For instance, Harald Schultz (6) told very briefly about the capture of a tiny *Metynnis* with grotesquely elongated dorsal and anal fins. In the same article there is a color picture of an unknown *Metynnis* species. Further, Schultz (7) pictures a pair of a beautiful *Metynnis* species where the female has a black edge on all the unpaired fins.

The Director of the Wuppertal Zoological Gardens, Herr Schmidt (5) successfully spawned *M. schreimulleri* in 1952 as well. As I was also able to

5

spawn this species the following year, and as I have been asked to report on the accomplishment by American aquarists, I am doing so gladly.
 H. Frey (4) describes the genus thus: "South American genus of Disc Characins, belonging to the family of the Characins or Characidae, of high, nearly perfectly rounded build, strongly compressed laterally. The belly edge is sharp and provided with pointed keeled scales. The adipose fin is well developed, often even relatively long. The anal too is long. In front of the dorsal fin is located a spine which is tilted forward."

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A description of the colors is superfluous, as they can be seen well in the accompanying photos. The *Metynnis* species are closely related to the Saw Characins (Serrasalminae). They do not lead such a predatory existence as for instance the genera *Serrasalmo* and *Pygocentrus*. Their preferences tend toward gnat larvae, *Tubifex* worms, *Daphnia* and copepods. They also consume great quantities of vegetable matter, which applies equally to all three of the species kept by me—*M. roosevelti*, *M. schreimmuelleri* and *M. maculatus*. All bright green plants, those which contain much chlorophyll like *Hygrophila*, *Nomophila*, *Valisneria*, and many others are eagerly eaten, as also reported by W. Vorderwinkler (9). Green lettuce leaves, however, are taken eagerly, and it is a beautiful sight to see 8 to 10 of them with their heads down over a lettuce leaf that has been weighed down with a stone, eating away. In a few hours only the stem remains. This sort of feeding is necessary, at least at times, to keep the plants in the aquarium from being damaged too badly. Plants with an apparently bitter flavor, such as *Ceratopteris*, are not eaten.

According to Professor Sterba (8) the genus *Metynnis* consists of some 22 species, of which only about 10 have been imported into Germany. Their rounded body shape has inspired the German popular name "Scheibensalmier" ("Disc Characin"), which seems very appropriate. (Translator's note: in the U.S. they are frequently referred to as "Silver Dollars"). According to Arnold-Ahl (1) and Sterba (8) the maximum lengths of the *Metynnis* species lie between 4½ and 7 inches. Smallest is *M. roosevelti* with 4½ inches, next is *M. maculatus* with 4½ to 5½ inches, and finally *M. schreimmuelleri* with a length of 5 to 6 inches. Surely some get larger in their native waters, but the given sizes will seldom be exceeded in the aquarium.

The home waters of all *Metynnis* species is the Amazon Basin, and unfortunately most accounts of the places found are highly inaccurate. *M. roosevelti* is supposed to come from the Amazon near Santarem and Manaus, as well as the Beni and Madeira Rivers. Surely the range is very great.

Distinguishing the sexes of all three species with mature specimens is very simple according to my experience. The males have a sort of deepening of the front half of the anal fin, while the anal fin of the females is equally deep overall. Besides, the males have a deeper color on the edges of the fins, and especially on the gill-plates.

All *Metynnis* species are distinctly school fishes; most pronounced among the three species in my possession is *M. schreimmuelleri*. Sterba (8) has this to say: "I once had the opportunity, in Wuppertal, to watch a shoal of about 200 *M. schreimmuelleri* and I would like to add that never since have I seen such a fascinating picture. The whole shoal behaved as one, moving in perfect unison; not one fish disturbed the harmony, not one attempt to swim an independent tack; hundreds of lovely, glittering fishes in graceful, silent, mutual understanding."

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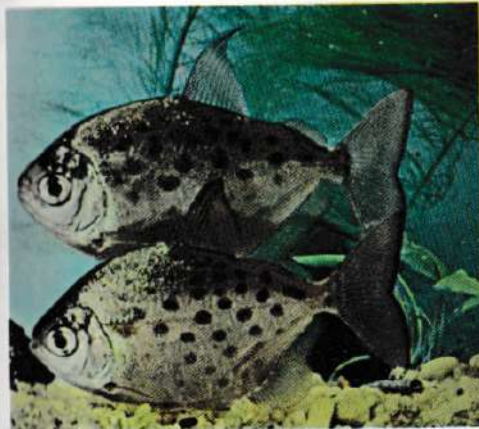
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The male of this pair of *Metynnis roosevelti* is in the foreground. Photo by Hanns-Joachim Franke.

M. roosevelti and *M. maculatus* also are fond of swimming in groups, and especially then can the beauty of form and colors be fully appreciated. Therefore these fishes should always be kept in a group and never in an aquarium less than 3 feet in length. They are very active and love to keep moving. Kept by themselves they usually cover motionless in the far corner of the aquarium and will not make an appearance until the room is absolutely quiet. Single specimens should be combined with larger fishes such as Angelfish, Discus, Flag Cichlids, or other peaceful species, and they soon join them.

They have little sensitivity to hard water or pH changes, but their water temperature should never go below 75° F., or their activity will lessen and their colors become pale. But now to the mating behavior of the *Metynnis* species. As was already stated, I repeatedly spawned *M. roosevelti* and later *M. schreimmuelleri*. Of *M. maculatus*, which I still have today, there remains only one female. The male jumped out of the tank, and for this reason I have not been able to get a spawning.

I was particularly surprised when I found that two so nearly related species showed such different breeding behavior. While *M. roosevelti* is a pronounced plant-spawner, the matings of *M. schreimuelleri* always take place on the bottom.

I put the *M. roosevelti* in a group (3 males and 2 females) and my patience was put to a severe test. After many days the males began to circle the females with beautiful butterfly-like motions. Every time two males met in the 50" x 20" x 20" aquarium a wild chase began, both showing their loveliest colors. Then they returned to the females and tried to lure them into a large bundle of *Myriophyllum*. Unfortunately the females showed not the slightest interest in the activity of the males, even though they showed that they were carrying eggs. This can be most easily observed by looking at them from directly behind, where a swelling on the sides of the body is easily seen. In contrast to many other Characins, the ventral line of *Metynnis* ends in a sharp angle, so that the ventral region cannot be round.

One night at about 11 o'clock the excitement of the males reached a high point. The first matings took place under weak electric lighting, in the upper regions of the *Myriophyllum* thicket. Unfortunately they were false matings between two males. They took a head-to-head position pressed against a *Myriophyllum* stalk and one folded his caudal base over the dorsal line of the other, just at the rear end of the dorsal fin. Then there was a short pause and with one motion the fish jerked apart. This state of affairs lasted for several hours and the rear glass, which was covered with algae, was also used occasionally.

After about two weeks the females finally became interested in the activity of the males and followed them to the *Myriophyllum*, where the males had already had their false matings, and I could see three or four very large eggs about 4 mm in diameter being dropped. They had very little adhesive power and sank to the bottom. There were probably 150 to 200 eggs laid, of which I could pick up about 120 with the hose. Of these I put about 60 in soft water of 6 DH and a pH value of 6.5. The others remained in the tank water (about 30 DH and 7.5 pH) in which the parents had spawned. In both these test containers at a temperature of 79° 10 eggs developed, of which one died later. Exactly four days later the embryos hatched and another four days later 19 youngsters hunted for the larger *Cyclops* nauplii which were fed. At the time they began swimming they were already 1 cm long and had the normal shape of Characin embryos. Already five days later they took small *Cyclops* and grew very rapidly. After a month they were 3 to 3½ cm long (about 1½ inches) and showed the rounded form of the parents. At this time they also took vegetable nourishment and with good feeding they were grown after seven to eight months.

Exactly two weeks after their first spawning *M. roosevelti* spawned again, this time resulting in at least 100 eggs. Of these 11 hatched and I was able to raise 10. Altogether I now had a swarm of 23 young *M. roosevelti*, which made a beautiful picture.

In the years 1955 to 1958 I was able to spawn several batches of *M. schreimuelleri*. Basing my actions on the account of the first breeding by Schmidt (5) I placed the breeders in pairs in a large tank 60" x 20" x 20". On the bottom fine sand was used and in the middle a large bundle of *Myriophyllum*. In spite of the fact that also *M. schreimuelleri* has a belly that comes to a point, the sides of the body in the females were considerably full and they ate large amounts of white worms, glass larvae and *Tubifex* worms daily. One could see before they spawned that these fish were far more productive than *M. roosevelti*.

After days of driving by the males, which usually took place in front near the bottom, the *M. schreimuelleri* spawned one morning. They swam restlessly alongside of each other and then stopped quickly and the male pressed to her side at the bottom. While doing so he folded his anal fin like

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Mylossoma argenteum, greatly resembling the various *Metynnis* species in body form is similar in habits to them and has the same general requirements. Photo by Hans-Joachim Franke.

Metynnis schreimuelleri, one of the three *Metynnis* species spawned by the author. Photo by Hans-Joachim Franke.



a pocket under the female's oviduct. I could never determine how many eggs were expelled each time. Then with a vigorous motion the male stretched out his fin, causing the sand to fly up among the eggs. The eggs fell into the resulting depression and were frequently covered with sand. They are very large, about 2 mm in diameter and light yellow in color. I could never observe that the *Metynnus* ever ate any.

The fry hatched after four days and became free-swimming after another four days. Raising them was done in the same manner as that described for *M. rosevelti*. Although one spawning resulted in about 2,000 eggs, by far the greatest number became fungused in a few hours. The hardness of the water obviously had no influence, because I placed the eggs in several tanks with varied water hardness and pH values and had about the same percentage spoil in each case. Altogether I raised almost 300 youngsters from four spawnings.

For quite a while I kept a *Mylossoma argenteum* with my three *Metynnus* species. These fish, which are closely related to the *Metynnus* species, have a still more circular body form and are very similar in their demands to the *Metynnus* species. Unfortunately they have not yet been successfully bred in the aquarium (3).

Continued on Page 50

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Meet The Hobbyist . . . Fred Samuelson

BY BOB PARELLA

In the spring of 1963 a Brooklyn hobbyist named Fred Samuelson entered three pairs of red-tailed three-quarter black Guppies in a one-day bowl show. His fish took first and second place in the competition and launched Mr. Samuelson on a spree that has returned 21 trophies in a span of seven months, including first place in the recent International Guppy Show in Germany (three-quarter black, three-of-a-kind).

As a result of his skyrocketing success with these fish Mr. Samuelson has been looked upon alternately as the aquarium counterpart to Luther Burbank and as an alchemist who has found a secret formula enabling him to mass-produce not only the three-quarter black Guppies but also the large and well

formed reds, greens, and multicolors that flit through his tanks as well. Neither, of course, is true. "Any success that I've had with Guppies I owe to luck, persistence, and Paul Hahnel," he says.

An army veteran of World War II and now sales manager for an industrial chemical maintenance firm, Mr. Samuelson kept several tanks of veiltail Guppies in his home. Like many other hobbyists, he considered the Guppy a challenge, and like many hobbyists he had two problems . . . lack of space and lack of any real success. The first problem was taken care of when he set up tanks in the back room of his office. He has 80 there now and is planning to set up at least two dozen more. The second problem was solved when he broke away from the rigid patterns of accepted Guppy raising after the "Father of the Veil Tail Guppy," Paul Hahnel, told him: "Genetics apply to Guppies only up to a certain point . . . then throw away the book."

Mr. Samuelson did just that. Except for three hard and fast rules that he passes on to all hobbyists (do not overcrowd, do not overfeed, and keep the filters clean) he maintains that different strains of Guppies require different conditions and that only by the time-tested method of trial and error can the hobbyist discover the conditions that suit his particular strain.

A pH test of Mr. Samuelson's tanks reveals that while one strain of fish is doing very well in 6.6 water another strain, closely related, spends its life span in water with a pH reading of 7.4. He has found that most of his fish also prefer fairly soft water. There is a copper penny in each tank, for he feels that the tiny amount of copper oxide given off by the penny helps to reduce the bacteria population. Except for a tablespoon of salt per 5 gallons of water, he uses no chemicals in his tanks except for the standard medicinal ones used to cure ailing fish.

Proper nutrition, Mr. Samuelson feels, is the real key to his successful raising of Guppies. He says that a fish can be brought to its peak by proper feeding and has spent years testing the effects of various foods on his Guppies. He is convinced that the right diet has a telling effect on the fish being fed and is extremely important to insure having good stock in future generations.

The main staple for his fish is a high-protein paste food combining both animal and vegetable elements; he alternates the use of this paste with a dry food basically made of the same ingredients, once a day feedings of baby brine shrimp, and commercial flake tropical fish foods. He feeds *Tubifex* worms occasionally to his adult fish, but he cautions against indiscriminate use of the worms by the hobbyist. "It's a good food when used properly," he says. "But the worms are loaded with bacteria and must be thoroughly cleaned before being introduced into the aquarium." Mr. Samuelson keeps a large pan of *Tubifex* in his refrigerator for a week before feeding them to his fish. During this time he washes them frequently with cold water and further cleanses them by mixing 2 tablespoons of milk in a quart of water, pouring

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it over the worms, and letting the mixture stand overnight. The milk, he says, acts as a laxative to clean out their digestive tracts.

Although all of Mr. Samuelson's different types of delta-tail Guppies are well proportioned and highly colorful fish, his particular forte is the red-tailed three-quarter black. More than half of his tanks are devoted to them, and he has a waiting list of hobbyists wanting to buy the few pairs he sells to meet expenses. The fish was developed two years ago when he bought several pairs of the original German half-blacks in a pet shop. The fish intrigued him even though they were tiny and the males had no tail width. Like many Guppy fanciers, he soon found out that the half-blacks had two dominant genetic characteristics in addition to their color: a high percentage of crooked backs and deformed tails. These traits probably account for the scarcity of these Guppies on the market today, even though so many breeders have been working with the fish.

Mr. Samuelson's first attempts at breeding the fish brought nothing but frustration. He put the half-black males on virgin red females from two separate and proved delta-tail strains. The first crossings were complete failures and one group was abandoned. The second line was relegated to a corner of his fish room, but the experiment continued and the first degree of success came in the third generation, when females were crossed with males from the first generation.

By the end of 1962 the strain had been developed to more than twice its original size. The tails were bright red, with no trace of other coloration, and the black body color extended from the base of the tail to past the gonopodium. They were now three-quarter blacks. Even the females have a distinct black coloration running throughout their bodies, and their caudal fins are delta- or shark-shaped. The strain now breeds 90% true. Mr. Samuelson finds that these fish differ slightly from other broad-tail Guppies in that they mature more slowly, but both males and females remain virile and fertile until they are quite old.

Needless to say, when Mr. Samuelson exhibits his fish he is generally asked by hobbyists to tell them the breeding methods he uses to obtain such magnificent fish. He does this readily but cautions that there are no ironclad methods to insure the breeder of perfect fish every time.

The first thing he tells them is that a serious hobbyist wishing to start breeding should not look for his stock at a bargain counter. Buy a good pair of fish from a reputable dealer, or, if you are fortunate enough to belong to an aquarium society that has a member with good Guppies, purchase a pair from him. Virgin females are, of course, preferable.

Although only a few of Mr. Samuelson's tanks are heavily planted because of the extra work involved in keeping the tanks clean, he feels that Guppies

Continued on Page 55

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A pair of Blue Gularis, male above. The female's comparative drabness and lack of distinctive markings contrasts sharply with the splendor of the male. Photo by G.J.A. Timmerman.

The Blue Gularis

By HARVEY SIEGAL

The Blue Gularis (*Aphyosemion coeruleum*) has been with hobbyists for a very long time. In fact, this was the first *Aphyosemion* ever to be imported.

The Blue Gularis occurs in western Africa from the Lagos region of Nigeria to the upper Cameroons, where it inhabits semi-rainforest areas. Its habitat resembles very closely that of *Pachypanchax*. The Blue Gularis lives in small persistent pools which, unlike the temporary pools inhabited by annual fishes, never completely dry out.

The Blue Gularis was formerly known scientifically as *Aphyosemion gularis coeruleum*, but recently the name *gularis* has been appended to another *Aphyosemion* now in this country. This is only one

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Today the Gularis is considered a "switch breeder," a fish that will spawn at the top or bottom of the tank, depending upon the conditions provided. The aquarist can employ this characteristic to his advantage, for he can thus make a choice between using floating mops or a bottom medium of peat moss or fine sand. Though both conditions can be provided together, it is best to restrict the breeders to one type so all the eggs will be laid in one spot. Place one male with two well-conditioned females; spawning will usually start at once. The eggs are large and durable and can be handled easily. If the eggs are laid in a mop, one way to handle them is to remove them from the mop and place them in a small flat tray to which some fungicide has been added: I've found malachite green to be the best. After about sixty days the fry will emerge from the eggs.

Another way to handle the eggs is to place the whole mop in a partially filled gallon jar to which some malachite green has been added. A good strong stream of aeration placed under the mop will assure it of a constant supply of fresh water. This jar should be covered and placed away. When the first fry appear in the jar they should be netted out and placed in a small aquarium.

The third and last method involves taking the eggs from the mop and placing them in damp peat moss; after eight weeks the peat is immersed in water and the fry emerge. I've found this to be the best method, for though you will obtain more fry using the second method, I'd rather work with a number of fry all at once instead of a few today, some tomorrow, etc. In this way I know that a good many of the original fry obtained will be raised to maturity.

As soon as they're free-swimming the fry can take newly-hatched brine shrimp. They'll do well on this food, and it can be fed until the fry are too large to eat them, at which time chopped *Tubifex* can be substituted. The growth of the fry is very rapid and fairly even, but it usually takes them a long time to sex out. I've had broods in which the fish didn't sex out until they were twelve weeks old, as opposed to some *Nothobranchius*, which spawned at five. And when they finally do sex out the ratio of males to females hurts: there are usually four times as many males as females, and in some others it is even worse — no females at all!

The Blue Gularis is a fish that will be with the hobby for some time to come, although it probably will never be common. The beauty of a good specimen is almost beyond belief, and the species is hardy and very prolific. It is with all honesty that I rate *Aphyosemion coeruleum* as my favorite Cyprinodont.

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of the points of confusion in the systematics of the genus *Aphyosemion*. Anyway, *Aphyosemion coeruleum* now has basis as the currently correct scientific name of the Blue Gularis.

It appears that the Blue Gularis and the Yellow Gularis are simply color variations of the same fish, although previously listed as two distinct subspecies: *Aphyosemion gularae coeruleum* for the blue form and *Aphyosemion gularae gularae* for the yellow form. Both fishes are now treated as *A. coeruleum*.

Before 1962 the Blue Gularis in this country scarcely lived up to its name. A better term might have been "Green" Gularis. But in 1962 one of the importers in New York City received a shipment from Nigeria, and in it were four pairs of wild Gularis. In themselves the new imports were as small and poorly colored as the domestic stock, but the males that emerged from the crossing of the two lines were indescribably beautiful. The old strain of Gularis seldom exceeded three inches in length, unless raised under the best conditions, but some of the hybrid offspring grew to seven or eight inches long. The colors of the domestic stock were pale at best, while those of the new fish were bright as day.

Interestingly enough, though the males changed substantially, the females remained the same. There was no marked increase in size or coloration. The females are a light brown, with clear fins and few or no markings, although some do have red dots scattered over the body.

In the aquarium, the species is not hard to maintain, water change being their only area of sensitivity. Other than this they can be treated as one would treat any other Killie, although they are big by Killie standards and should have a tank of their own. Some type of filtration should be provided, preferably one which removes gaseous impurities. The lighting should be subdued, for in this way the fish will spend more time at the front of the tank, where they can be seen. Feeding presents no problem. The Gularis will eat any of the live foods commonly used by hobbyists, but is particularly fond of raw beef heart.

The male Gularises are not too rough on the female, so both sexes may be kept together, provided the females are well filled with eggs. Spawning this fish can be accomplished in a number of ways.

In the "good old days" (days that I've never seen) the fishes were placed in an aquarium with much *Nitella* and other vegetation, and allowed to spawn. After a week or more the adults were removed, and the aquarium covered. Every day the aquarist would check for fry, and if any were present they would be removed and raised in complete isolation. It's no wonder the market saw few Gularises!

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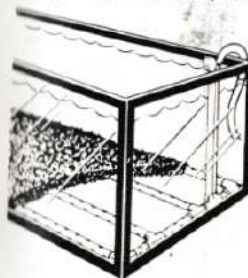
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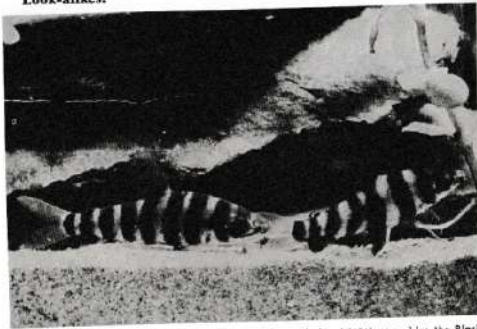
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Look-alikes.



In its young stages the Headstander *Abramites microcephalus* (right) resembles the Black-Banded Leporinus (left) and schools with them. This juvenile coloration will surely prove a case of mimicry which protects by hiding them. Photo by Dr. Wolfgang Klausewitz.

A New Case of Fish Mimicry?

BY DR. WOLFGANG KLAUSEWITZ
Frankfurt, Germany

"Mimicry" is well-known in science to be the imitation of a certain in some way protected or advantageous animal form by another kind which is less protected and not related to the other. This complicated definition can be made understandable with a few examples. If a tropical butterfly looks like a wasp, the birds avoid it just as if it were armed with a poisonous stinger. Or if in South America a harmless non-poisonous snake is marked and colored just like the very poisonous coral snake, the reptile-eating birds give it a wide berth, although it is easy to catch, and will not touch it. In both cases the imitation of a poisonous, well-armed creature by a harmless one has given the "double" a certain measure of protection. Another possibility of adaptation is the imitation of a very common species by a relatively rare one. If a scarce species of butterfly in which the death of each individual is a real danger to the population were to assume the costume of a species which is abundant everywhere, there is also a certain measure of protection offered here: every individual of the unusual species joins in the mass of the abundant ones and

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is in less danger of being pursued than when it lived a solitary existence and had an eye-catching coloration.

We think that we have established another instance of such adaptation. Fish exporters sent a large shipment of young specimens of *Leporinus fasciatus*, which is characterized by zebra-like bars. Closer examination of the shipment proved that some individuals, which looked very much like the others and kept in the middle of the school, were not of the *Leporinus* species. They were young *Abramites microcephalus*.

When older both species are readily distinguishable, not only by their coloration but also by their behavior. The Black-Banded Leporinus remains a gregarious creature, while the Headstander (*Abramites microcephalus*) when adult lives a more solitary existence and occurs more or less singly, possibly even taking possession of a definite territory.

Mimicry was first discovered with insects, where there are many examples of this imitation; one meets with other cases in other creatures, for instance with snakes. For a long time there was no true mimicry known. There were some vague guesses, that is all. This was radically changed when a few years ago the American ichthyologist Randall in the Pacific as well as the German behaviorist Eibl-Eibesfeldt in the Indian Ocean were able to establish an astonishing case of mimicry. The predatory Blenny *Aspidontus taeniatus*, which lives principally on the skin of other fishes, has the same colors and a very similar behavior to the Lipfish *Labroides dimidiatus* of the Wrasse family. The last-named fish is very well-liked, especially among the large predators, because it relieves them of annoying skin parasites. Using the principle of the "wolf in sheep's clothing," the parasitic *Aspidontus* in the guise of the harmless and well-liked Lipfish uses this sneaky way to arrive at his goal. This is a clear case of mimicry. Protective mimicry by the imitation of a "common coloration" is known among fishes. In the realm of tropical marine fishes there is a Blunt-Headed Wrasse, *Thalassoma amblycephala*, which is fond of joining the schools of Golden-Banded Goatfish, *Mullisichthys auriflamma*. During this time the Wrasse takes on a light coloration and also has a dark horizontal line, like the Goatfish. Only by close observation can the two be distinguished, notwithstanding the fact that they come from totally different families.

In their youth both rush about openly in the same schools, the *Leporinus* making up the majority, while *Abramites* are only represented by occasional specimens. At this time the young Headstanders do not yet show the characteristic coloration of the adults, but are zebra-banded like the *Leporinus*. This similarity is so remarkable that not even the exporters can tell them apart.

The advantage of this youth mimicry is evident: a single young *Abramites* swimming about without a territory in which to stay is in extraordinary danger. When he joins a school of Black-Banded Leporinus he can "hide" himself in



As *Abramites microcephalus* matures its body grows deeper, making it less similar to *Lepturus* in appearance even though the banded pattern remains. Photo by Gunter Senft.

the crowd. Of course there is still the danger that predatory fishes will come along for their tribute and that the *Abramites* will be included, but the chances are considerably lowered. In this way the chances of survival for this rare fish species have been greatly increased. This form of mimicry gives us a real and even mathematically checkable system of protection. And it seems to occur considerably more frequently than has been yet assumed. Particularly among the South American Characins (as suggested by Dr. Gery), but also among many tropical fish species from the coral reefs will we find this mimicry among widely diverse fish families.

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Electrical problem.

Q. Ever since I started tropical fish as a hobby about two and half years ago I have had a slight electrical problem. I have turned to you because I can't find the answer anywhere else. It seems that the water from my tanks evaporates into my reflectors and then condenses. It then makes a connection with the light socket and if you put your finger into the water you get a slight electrical shock.

1. Does this have any effect on the fish?

2. Is there any way of keeping the reflector dry to prevent the shock?

The answers to these questions will not only help me but also a fellow hobbyist who lives up the street. I am sure other people have this problem also.

John Snyder, Westfield, N.J.

A. 1. No, this has no effect on a fish. Here's what to do: get some red nail

polish and pull out the plug connected to the offending reflector. Turn the plug around and with the nail polish mark one side and the same side of the outlet. Always replace the plug the same way. This has the effect of grounding the wire that was causing the shock.

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You may get a case where the socket was removed at some time and replaced, and in doing so someone did the job reversed the wires. Make sure that both wires go to the same spots on the sockets, or you will have a reflector that can always be a source of trouble from one socket or the other.

Sexing Catfish.

Q. 1. How do you sex Angel Fish and Dwarf Gouramis?

2. Can a male Brick Red Swordtail be bred with a Marigold Platy? If so, what would the young look like when grown?

3. Could you tell me how to sex Catfish? Also the size of tank, temperature, and food that would be needed for Catfish to spawn.

4. Can Bettas be spawned in a 2½-gallon tank?

Randall Elmore, Athens, Ala.

A. 1. Sexing Angelfish can be a very tricky proposition, almost impossible if your fish are not yet mature. I suggest you get our booklet Angelfish, which has a chart showing several ways in which they can be distinguished. Dwarf Gouramis are much easier: the male has distinct red and blue bars on his body, with a blue area in the throat region. The female's body only suggests these colors.

2. Yes, these two fish will hybridize; what the result will be is anybody's guess, but mine would be that the results would be disappointing.

3. There are hundreds of Catfishes, but I'll presume you mean what most of the hobbyists mean when they refer to Catfish: the Corydoras genus. They can be easily sexed by looking down at a mature group of fish. Females are a little longer and considerably wider in the belly region. They spawn best in a 10- to 15-gallon



Dwarf Gouramis, male below

tank, at a temperature of about 78°. Best foods are Tubifex and white worms, and living or frozen adult brine shrimp.

4. Yes, but don't expect to raise many young.



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More about the cooling device.
Q. In the May issue of TFH I noticed a question from R. D. Giles of Ukiah, California, concerning the cooling of his tank. I was very surprised that you were unable to give him the answer, but perhaps in all fairness the cooling device in question is not widely known on the consumer's market as yet. The device comes from semi-conductor engineering and not refrigeration engineering. One such trade name is "Frigistor." These

cooling units consist of compact cooling assemblies of series-connected thermoelements relying on the Peltier effect (i.e., the absorption of heat at the junction of two dissimilar conductors). Each thermoelement consists of a pair of semi-conductor blocks suitably doped, joined by a conducting bridge. As they are solid state devices they employ no moving parts or corrosive fluids and are silent in action. There are snags, however: they need a special D.C. supply

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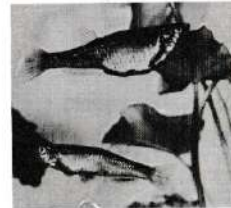
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and are expensive. It is most probable that in the United States a unit could be purchased that would fit against the side of the tank. As I can only quote on the availability of these devices in England I suggest Mr. Giles write to such places as R.C.A. or General Electric, who I'm sure would send him descriptive leaflets, etc. From what I know of the semi-conductor industry, being in it myself, I doubt if the person who designed the device did in fact make a fortune.

David A. Hope,
Rugby, Warwickshire, England.
A. Thank you very much for enlightening our readers, Mr. Hope. Such a visit may be practical some day when it becomes economically feasible to manufacture in quantity and also simplify it a bit. The special D.C. supply seems to be the fly in the ointment, but I can sure that engineering ingenuity will overcome this stumbling-block as it has so many others.

A variety of questions.
Q. 1. In a 12-gallon community aquarium, I have two Bronze Catfish, two Guppies, four Swordtails, two Platies, two Zebra Fish, two Pearl Danios and



Pearl Danios

two White Clouds. The average temperature is 75° and the surface area is 240 sq. inches. I have aeration and filtration. Can I add any more fish, or is the tank already too crowded?

2. A few months ago I purchased a large red Swordtail. He had a short sword which I thought was due to the fact that he was a cross between a Swordtail and a Platy. At that time I fed only a variety of dried foods. Now I feed a wide variety of dried foods and frozen brine shrimp. His sword has grown tremendously. Please explain this.

3. How often should I feed frozen brine shrimp?

4. I am now hatching live shrimp. Do these need to be processed in any way before feeding?

5. Is the scientific name of the Pearl Danio *Danio albolineatus* or is it *Brachydanio albolineatus*?

6. In both of my tanks I have Anacharis at the surface. However, most of it sinks down to the bottom. Why?

7. Should I add salt to the tanks? If so, how much and how often?

Ezra Lwowski,
Toronto, Ont., Canada.

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A. 1. Your tank is very close to being over-crowded. I suggest no new additions.
2. It's an old story: if you want a really BIG Swordtail, choose one with a healthy-sized body and a short sword. As long as the sword is short, the fish has some growing to do. Beware of the small fish with long swords, because they'll usually remain small.



Anacharis

3. I would suggest you alternate frozen brine shrimp with dried foods, using a number of dried foods, and every other meal the brine shrimp.
4. The only processing they need is to wash off the salt water from them by rinsing under a faucet before feeding.
5. Neither; it is *Brachydanio albolineatus*.
6. *Anacharis*; or *Blodora*, to call it by its proper name, has very puppy leaves and

stems. When there is an abundance of light, the cells in these leaves and stems become partially filled with oxygen, helping the plant to float.
7. I do not believe in adding salt to a healthy tank unless the fish need slightly brackish water. Frequency does not come into the question; once you add salt it does not evaporate, and adding more would cause it to accumulate.

Rocks.
Q. 1. How old should Guppy or Platy fry be before they are moved to other quarters or given to other hobbyists?
2. Does storage in 2 1/2-gallon containers affect purity of water? Mine sometimes looks milky from these containers.
3. What kinds of rockwork may be used safely in aquaria?

Don LaCross, Burlington, Vt.
A. 1. Guppy or Platy fry should be able to fend for themselves, and show some growth before they are moved. If you intend to move them into a tank with other fishes, they should be large enough not to be swallowed.
2. Clean, non-metallic, non-porous containers should be used for storage. If your water becomes milky, there are two possible causes: something that has not been thoroughly cleaned out, or a rich culture of infusoria. If it is infusoria, they will quickly disappear again by starving themselves out. Your containers should be scrupulously cleaned before storing water in them.
3. When a rock is used in an aquarium, it should add nothing to the water. This means that there should be no soluble substances and no salts in this rock. Shale, granite, petrified wood and rocks which are free of calcium, magnesium, copper and the like may be considered safe.
Albino Clarias.
Q. I have recently purchased a 9-inch Albino Clarias. I have looked in many

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books and have found nothing about it. I would appreciate it if you could give me the following information on this fish:

1. How long does the Albino *Clarias* live?
2. How long does this fish get?
3. What is its scientific name?
4. What are the preferred foods for the fish and what substitutes will it take?
5. Are earthworms OK?
6. In what part of the world is it found?
7. What are the 8 feelers near its mouth used for?

Danny Franks,
Salt Lake City, Utah.
A. 1. I have been unable to find any records, but they are tough customers that probably live 3 years or more.
2. In their natural waters they get to be about 18 inches in length, but in captivity perhaps half that.

J. Clarias batrachus.
4. They will eat almost anything given to a fish, and are very fond of Tubifex worms. Earthworms will do very nicely.
5. It has a wide range which includes India, Ceylon, Burma, Malaya, the East Indies, Philippines, Indo-China, and Thailand.

6. These "feelers" are barbels with which a fish with rather weak eyesight finds a great deal of its food.

Itchy fish.
Q. For three years I've had only one problem with fish. Many of mine develop the habit of scratching themselves against leaves, rocks, and other such items. I've tried internal and external treatments; many people have said that it is caused by cloudy water and bacteria. But it's not! Maybe you've heard of such a thing; any suggestions?

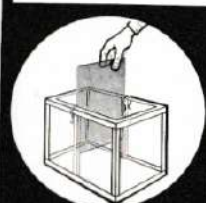
P. L. Nilsson,
Santa Ana, Calif.

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A. Sorry, Mr. Nilsson, but I'll have to agree with the people who told you that this condition was caused by bacteria. The presence of horde of bacteria is caused by a number of things: perhaps your tank is too crowded (this is the case in most instances), or you are feeding too heavily (this is also a very common failure); your water may also be fouled by something having died in the tank, or a lot of dead plants. Give your tank a good cleaning out and never feed more than your fish will clean up in ten minutes. Limit your fish population to 1 1/2 inches of fish to a gallon of water.

Exodon paradoxus.

Q. I have six fish ranging in size from two to three inches. The pet dealer who sold them to me said that they were Barbs, of the genus *Exodon*. He said they appeared on the market briefly about 10 years ago, and being rare, commanded prices comparable to

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those charged for Discus at the time. He said that these six were the first specimens he had seen since that time. They are undoubtedly the most beautiful Barbs I have ever seen. The body shape is long and tapered, not quite as short and chunky as most Barbs. Barbels are extremely tiny, white and two (?) in number. Color markings: iris of eye, yellow; pectoral fins, clear; ventral fins, clear with red edging on front; caudal fin, clear with orange near area where fin joins body; adipose fin, black; dorsal fin, orange at base and black and yellow at outer edge. The most distinguishing mark on the fish is a black spot, more or less round, behind the eye, on the lateral line, large (about half an inch in diameter). A luminescent



Exodon paradoxus.

yellow halo surrounds the black spot, the yellow having begun in the area of the eye and extending around the black spot and then continuing along the lateral line to the base of the tail, where it again takes a smaller, less distinct spot which is also more or less round. The top half of the fish under most lighting is brownish gray, the bottom half silver. Direct lighting from the side or bottom of the fish, as opposed to top lighting, results in a luminosity of the yellow along the lateral line, gives a green luminosity to the top half of the fish, and reflects an opalescent, pearly effect of gorgeous blues, greens, and violets on the bottom half of the fish.

What is the correct scientific name of these Barbs? Where do they come from? How rare are they? How big do they get?

Jerry Lawless,
Jacksonville, Ill.
A. *Exodon paradoxus*, let me hasten to say, is not a Barb; it is a member of the Characin family. They occur in greatest numbers in northern Brazil. When I was in British Guiana we caught a few, but did not find them in any numbers. Perhaps there were more and their agility helped them to escape from our nets. Although they are very lovely, they are very likely to become scrappy among each other rather than with tankmates of other species. The few that come in are rarely spawned; when they do spawn, they lay eggs like most Tetras among busy tropical fishes, of course.

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Salts From The Seven Seas



By Alfred A. Schultz

East Coast of the United States, and they are often used for bait. The movements and habits of salt water shrimps are interesting, and the ones you have in mind would no doubt make interesting aquarium inhabitants if you could keep them alive long enough to study them. It would be best to keep only one or two of them in a 2-gallon tank. Your idea of keeping them separate from the fish is good.

Q. A friend of mine told me that it was possible to make salt water for a marine tank merely by adding rock salt to regular tap water, and that this type of water would be just as good for fish as real sea water. Is this true?

Frank Smollett, Indianapolis, Ind. A. No, it is not true. Although there are a number of exceptionally hardy salt water species that might

Q. At some of the beaches and fishing jetties around New York City I have noticed many small shrimp, about 1 to 1½ inches long, that congregate near rocks and pilings. They are very easy to catch, and I was wondering if they would make good inhabitants for a small 2-gallon plastic salt water aquarium if they were kept by themselves and not put in with fish.

Charles Dillon, Brooklyn, N. Y.

A. The shrimp you mention have quite an extensive range along the

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survive for a short time in plain tap water to which rock salt has been added, even they wouldn't last long. Perhaps your friend meant, instead of rock salt, some of the various commercial products for making salt water that are on the market.

Q. 1. Have you ever heard of the Queensland Grouper? This is the name that my local dealer has given to a gorgeous gold-colored fish that has black blotches on its body.

2. Is the Blue Devil the same as the Blue Reef Fish?

David Clive, River Edge, New Jersey
 A. 1. No, this name is not familiar to me.

2. Yes.
 Q. I have a Neon Goby and Queen Angelfish in the same tank, and the Neon Goby always chases the Queen Angelfish around the tank. Why does he do this? The Angelfish is much larger than the Neon Goby.

Jack Wilson, Ottawa, Ontario
 A. The Neon Goby is merely trying to perform his function of picking parasites from the body of the Queen Angel. As a matter of fact, it is

odd that the Goby has to chase the Angelfish all the time, because many times fishes kept with Neon Gobies go directly to them to let them rid them of parasites.

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Tropical Fish Hobbyist

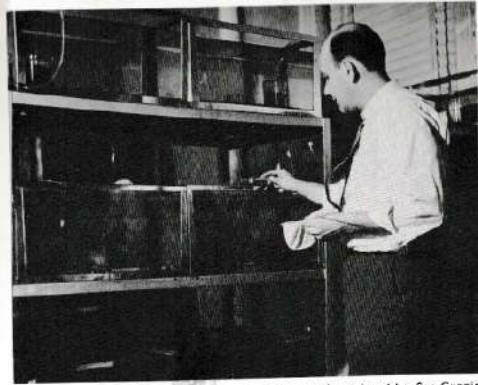


One of Fred Samuelson's beautiful male three-quarter blacks from the strain that won him honors in the most recent International Guppy Show in Germany. Photo by S. Golub.

time the fish are five months old they are ready to breed; runts and other imperfect fish of both sexes should have been culled long before this.

Mr. Samuelson advises that only the best male be used for breeding. He should be put into a tank with four or five good females which, after they have been impregnated, should be placed into separate tanks to drop their young. As the second generation matures you can tell which female has dropped the best young and you are on your way to setting a strain. At this point, the other fish should be discarded to make room for the new fish. The next step is to make three crosses: son to mother, father to daughter, and brother to sister. Work out from these crosses to set the desired characteristics.

Most important, Mr. Samuelson advises, is to always have at least three similar strains of Guppies on hand so that in the event of trouble you can still fall back on your second or third lines of fish and avert disaster. As he puts it, "What law states that you can't have two flat tires on the same night? So, keep spares."



Mr. Samuelson feels that proper diet is an all-important factor in raising fine Guppies. Here he is shown feeding his Guppies newly hatched brine shrimp. Photo by Sy Weiss.

Fred Samuelson

Continued from Page 20

do better in tanks that have been planted with Water Sprite, Water Wisteria, or other soft plants. Mr. Samuelson gives his fish no more than eight hours of light a day and keeps the temperature as close to 78° as possible. If the fish are healthy, the first batch of babies will arrive in less than a month. When the fry are born the parents, rather than the babies, should be removed to reduce any chance of shock. An infusoria culture is added to the tank, and the babies are ready for their first feedings of newly hatched and rinsed brine shrimp before they are 12 hours old. After five days Mr. Samuelson suggests small feedings of finely sifted dry foods. As the fish grow older he gradually includes more varied items in the diet but never feeds either babies or adults more than half a dozen times a day.

The babies should be sexed and separated as soon as possible. Once a strain has been set, Mr. Samuelson believes in raising the fish, except for breeding stock, together, but the purpose at this stage is to find that stock. Overcrowding is to be avoided and by the time the fish have reached four months of age there should be only three males per gallon of water. By the

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Metynnis Species

Continued from Page 14

To sum up, the following has been determined:

1. All *Metynnis* species need a large aquarium with a great deal of swimming space, and should be always kept in numbers.
2. Besides the varied diet given to carnivores they also require much vegetable matter in their diet for their well-being.
3. For breeding attempts use a large aquarium and if possible several breeding pairs.
4. The fry should be fed only with living small foods; only then do they grow quickly into vigorous, healthy breeders.

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