

TROPICAL FISH

HOBBYIST

JULY, 1963

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TROPICAL FISH HOBBYIST

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COVER
On the cover this month is Dr. Herbert K. Axelrod's photo of the unique Black Pink Angelfish bred by Bud Goddard of Lakeland, Florida. Read William Vorderwinkler's account of the development of this new Angelfish and another new Angel, the Harlequin Angel, in the article beginning on page 72.

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EDITORIALLY . . .

We get a great deal of mail from people who ask us where they can get a pair of some hard-to-get fish (or even fairly common ones), and what the price would be. This is a question which we might be able to answer in our own area, but when it comes from someone who lives out in the Middle West or farther away, how could we possibly answer something like that? As for the price, we run into the old law of supply and demand. Prices vary in all localities, depending upon how many breeders in each place are supplying fish, and how much of a demand there is for them. We might truthfully say that a certain fish costs fifty cents in the New York area and have the person we tell it to get highly indignant when his dealer, who has to have the same fish shipped a considerable distance, charges a dollar and winds up with a smaller profit. So please, good people, don't ask us to recommend dealers or quote prices. If you have recently become a hobbyist or if you have moved to another city, look up "Tropical Fish" in the yellow pages of your phone book and visit the dealers listed there. Look at their tanks; if they are "dirty" and crowded, and if the fish in them are not as healthy as they should be, take your trade elsewhere. A dealer who does not have enough know-how to keep his own fish healthy with all the equipment at his disposal cannot be expected to sell you healthy fish. And beware of "bargains." These are often fish which are not up to par for some reason or other, which the dealer marks down for quick disposal. Sometimes they are fish which he has pulled through a disease and he wants to get rid of them quickly before they get sick again. A few cents more spent on a healthy, vigorous fish is a good investment if that fish lives out its life to give many hours of pleasure to you.

William Vorderwinkler




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A pair of *Crenicora filamentosa*, male above. Photo by Dr. Eduard Schmidt.

CRENICORA FILAMENTOSA

BY DR. EDUARD SCHMIDT

Some time ago my friend Harald Schultz sent me three small, slender Dwarf Cichlids via the well-known import and export firm Tropical Aquario of Sao Paulo, Brazil. European hobbyists have this firm to thank for many rare and beautiful novelties.

It took only a glance to realize that these new, attractive Dwarf Cichlids belonged to the genus *Crenicora*. So far we had been acquainted only with *Crenicora praetoriusi* and *Crenicora maculata*. Dr. W. Ladiges of Hamburg identified mine as a new species and named them *Crenicora filamentosa*.

There is no doubt that this new discovery represents the most beautiful of the species described under the genus. "I found these charming fish under floating grass patches," Harald Schultz wrote me. All three had a cylindrical body and the typical checkerboard Cichlid arrangement of two rows of black spots separated from each other by areas of olive green. In contrast to *Crenicora maculata*, two of the specimens showed a caudal fin which ended in filamentous elongations of the outside rays. The third, which later turned out to be a female, had a round tail. The checkerboard-like spots, which extend from the caudal base to the tip of the mouth, become more intense when the

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fish is excited; in the case of the males the spots unite into a wide black horizontal stripe which is bordered by two gleaming gold rows of scales. The females of all the Checkerboard Cichlids show blood-red ventral fins, especially at spawning time.

Having only three specimens at my disposal, I had to try every means to get them to spawn. There was no way to get more fish, as Harald Schultz had a lot of trouble getting only three when he was in the area. The fish were placed in a 10-gallon aquarium with a crushed quartz bottom and soft, acid spring water. After being filtered through peat moss, the water had a pH value of 6.2 and hardness of 18 ppm. Temperature was maintained at an average of 82°. I fed them with gnat larvae, *Daphnia* and white worms. The tank was planted with broad-leaved *Cryptocorynes*. Floating plants on the surface helped to cut down the light from above. As spawning sites I gave the fish small flowerpots in the darker spots. After only two weeks the female clearly showed the presence of eggs and both males crowded toward her with spread fins.

In order to prevent any pitched battles between the two rival males, the smaller one was removed. The pair took no notice of the flowerpots. Without any shyness whatsoever the female cleaned off a large leaf of a *Cryptocoryne ciliata*, which was flourishing in the brightest spot in the aquarium. From time to time the male came to see how things were progressing at the spawning site, swimming around the female. There could be no doubt that the female took the more active part in the spawning preparations. She outshone the male by far with her deep black checkerboard pattern and bright red ventral fins. The next day the spawning tube of the male made an appearance, shaped like a tiny yellowish bowling pin. In the evening hours egg-laying took place in the manner which has been described so often for the Cichlids. The eggs were cared for by the female only. There were 80 to 100 of them. Later the male kept watch over the area in the vicinity of the eggs while the female dug a number of shallow pits in which the newly-hatched young were placed after 48 hours. Three days later the first youngsters appeared at the edge of one of the pits, searching for food. From this point on the female became fierce and attacked the male with such violence that I had to take her out. Raising the youngsters with newly-hatched brine shrimp and later on with sifted crustaceans presented no particular problems.

Three months later one could first make out the elongated tips of the caudal fin in the males. After six months the fish were fully grown and surpassed the imported ones both in size and intensity of colors.

The newly discovered fish are a lively, graceful Dwarf Cichlid. Because of their unusual checkerboard markings and their interesting brood care and peaceful behavior toward other fishes, they will find many friends among fish hobbyists.

A Fish That Travels Over Land

BY HARALD SCHULTZ,
Museu Paulista, Sao Paulo, Brazil.
Photos by the author

You can find this little fellow everywhere in Brazil. He looks like a knight from the Middle Ages adorned from head to "foot" with armor. An imposing moustache extends from his hard visor. This is the impression one gets on seeing this fish.

Our little friend is not as eager for battle as a real knight. An open,

also find him in flowing waters and in lakes, ponds and pools or water-holes left by the rain.

"It has been raining fish!" says the Brazilian of the interior whenever he finds this fish stranded or in some small pool of water which has no connection with a river system. They also say: "This fish can travel over land!"



Hoplosternum thoracatum, the fish that travels over land.

honest fight is not for him; he prefers to remain hidden in the semi-darkness and attack his prey in a predatory manner. Every place where mud and decaying plant leaves cover the bottom, where twigs and decaying wood offer opportunities for concealment is where you will find him. You will

One is so easily skeptical of anything the natives tell about. Of course, we cannot accept anything we hear as the honest truth, either. Too many fantastic stories are invented and then retold as the truth. But there is also a grain of fact in some of the things one gets to hear. Besides, the people of the interior

live a great deal closer to nature than those in the cities, who have trouble even getting a good look at the sky because of the many buildings. One must learn to separate the wheat from the chaff!

On July 11, 1962 at about 11 A.M. I sat in the straw hut of a rubber-gatherer on the high banks of the Jurueua River in central Brazil. It is far from civilization here in this unexplored huge forest region where there are some still unknown Indian races. Some are still at odds with the white men who crowd them out

monies. For the last three years the Indians have declared peace with the rubber gatherers, but deep in the forests there are still a few groups who want nothing to do with the whites and kill all intruders. Nobody wants to pay them a visit!

They are lonely people, these rubber-gatherers of the upper Jurueua River in central Brazil. Most of them are bachelors who want to earn a few cruzeiros in the forest. At the end of the season there is little left when the rains put an end to the gathering of natural rubber, because then the



Erythrinus erythrinus likes to hide in the mud or under rotten logs and branches. Although the body color of this species is usually a uniform drab grayish-brown, individual specimens may have yellow or orange markings on their sides.

of their home country and make life always more and more difficult for them.

Three years ago the rubber-gatherers did not dare to come here. They were afraid of the Indians, who celebrated ritual cannibalism. They roasted and ate their slain enemies with deeply religious cere-

forests are flooded by the overflowing streams. Most of them return to the cities and squander their meager savings on what to them seemed like unattainable riches in the forest: whiskey and women.

Of course there are a few who have made plans for using their money wisely. But reality is always

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This straw hut is typical of the dwelling places of the Indians who eke out a meager existence tapping rubber trees along the Juruena River in Brazil.

more convincing than dreams of ease and financial comfort. They tell themselves that they were born poor and that this is the way they will die. One must be born to wealth! They are a happy lot, but there are certainly a few who might turn out to be dangerous company.

When one comes to visit them, the pot is soon boiling on the clay hearth over a wood fire. Soon the aroma of hot, black, sweet coffee hangs in the air. The conversation encompasses rubber prices, wild life in the forest which had been encountered on the rubber trails—or soccer! Brazil is a soccer-minded land and its players, who have twice been world's champions, are hailed as national heroes.

Looking out from the shadows of the shack, I see the hot platform

which is about 25 feet above the surface of the Juruena. The banks on this side are steep. On the other side, which leads to the forest, the decline is more gradual.

Butterflies flutter about in the light, like living sunbeams. They gather on one spot where the ground is damp. Flock after flock, they are there by the hundreds. All rest with their heads turned toward the center: yellow, white, deep yellow and a single blood-red individual with long, narrow wings. They feel here and there with their thin, tubular tongues and suck up the moisture. Strangely, they never mix. Butterflies of the same colors will always remain together.

The Juruena is a mighty river, in some places about 900 yards wide. It flows toward the north and sends

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In the forest behind the rubber-gatherer's hut there live only wild animals and Indians. Not far from the hut there is a small pond in the forest. It still holds flood waters

real beauty in the aquarium. But here it is too far away for successful transportation. Later, perhaps!

Something moves in the sun-drenched dusty earth in front of the rubber-gatherer's hut. It is dark, dusky gray in color. Its movements are snake-like, like a lizard. But until now I have not seen a single lizard here, although undoubtedly



This Aequidens was caught by Harald Schultz's native helpers during the collecting trip to the upper Juruena River.

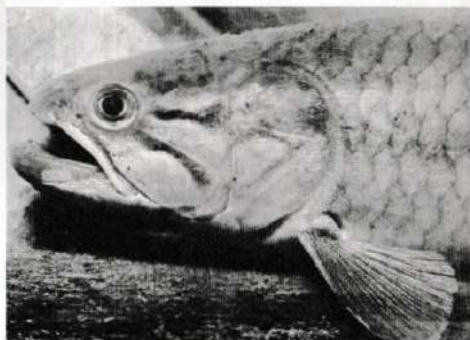
from the Juruena, left after the previous rainy season. Now in the dry season the sun's heat evaporates it and limits the living space of the numerous fishes which have been thrown together here, cut off from the main stream when the waters began to drop. There is a variety of fishes, including *Macrodon*, small *Acetorhynchus*, large scaled *Moonhausia* with red eyes, silvery *Hemigrammus* and *Curimatopsis* species, brown-striped *Gymnatus* and two species of *Corydoras*, also an *Aequidens* and a pretty Characin which was unknown to me but would be a

there are some, as there are in all of the Brazilian interior. It must be too dry in this hot summer! But no, it is not a lizard. I am only half-listening to what is being said about soccer... "Lizards run fast," I think, "stop for a little, turn their heads back and forth, flick their tongues a few times, rush a little further and perhaps snap up a sleepy butterfly that is resting there." This little beast's motions were vastly different: helpless, slow and sinuous, but hardly snakelike. Now it stops and rests motionless for a while before moving forward laboriously once more...



Partly covered by dust, the wandering *Hoplosternum* makes its way across a sunbaked platform high above the river. Its dorsal fin has been ripped, probably by a predator.

Hundreds of butterflies gather along the banks of the river to suck water through their delicate proboscises.



In this closeup of the head of *Erythrinus erythrinus* the fish's sharp teeth are partially hidden.

Heavens, it's a fish! When I saw this I was openmouthed with astonishment. I jumped up and ran out, leaving my talking partner puzzled in the middle of a sentence. What is a fish doing in the middle of a dry, burning hot riverbank, far from the main stream with its clean, oxygen-rich water, and on the other side, far from the drying, foul waterhole?

The Juruena is teeming with good eating fish. Surely nobody would pay any attention to such a tiny fish, scarcely longer than an index-finger. Therefore it was not a fish which would have escaped from a rubber-gatherer.

The small, dust-covered fish moved further while I was watching him. It was hard to believe! Naturally this is one of the Armored Catfishes, because any other fish

would have quickly dried out and died in this burning heat. It was coming from the direction of the drying waterhole in the forest and moving slowly in the direction of the river. Living conditions in the waterhole were evidently not to the little knight's liking. Daily some leaves fall in, decay and change the chemical composition of the evaporating waters. Tree barks tend to add poisonous substances to the water, which becomes constantly muddier and poorer in oxygen content.

These things tended to cause the fish to leave these waters, a thing which was previously made possible to him only when the floods set in. He decided to seek other, richer places, and knew where to find them. His journey took him out of the water and up the steep slope to



The Indians pull a plastic seine across a drying pond in the heart of the jungle. A single seine haul brought in representatives of more than five different genera of three different families.

the platform where the rubber-gatherer's hut stood. This is a distance of about 95 feet! How long must it have taken to cover this? There is some shrubbery to block the way. In places grass clumps cover the clay ground and there are dry, sun-drenched stretches with little shade and patches of sand.

Unswervingly the little fish keeps his direction, always toward the river. From time to time he stops, raises his head and opens and closes his mouth several times as if to pump himself full of air, then he hobbles on. Now a clump of grass blocks his way. He jumps up, lies on the blades, rests from his labors and then continues on, jumping until he has reached easier ground.

More than once I tried to divert him. I even went so far as to pick him up and carefully turn him

around to the direction of the pool he came from. He immediately turned around to the direction of the river, creeping on again, stopping to rest and continuing on his weary way, seeking salvation . . . about a half-hour is spent in this way!

At last the high point is passed; now the path lies downhill. There are about 30 feet more to go to the edge of the river. The little *Hoplosternum* slides and tumbles down, picks itself up, corrects his course and continues on to the cool waters of the Juruena.

When he finally reached the water he immediately swam happily about without attempting to reach deeper water. I caught the little *Hoplosternum* again and made him repeat his entire performance. Cruelty? Yes, perhaps. But it was very important for me to get his unusual per-

formance on motion-picture film. A series of pictures does not show the phases clearly enough. I got everything but a shot of him leaving the water. He would not do me the favor of leaving his element before the camera, but everything else went without a hitch. The next day when I tried to get a color film of his journey he flatly refused. He showed no further desire to crawl on dry land, to jump or to twist forward like a snake.

Some days later we found a drying waterhole deep in the forest. The water was muddy and in constant motion from fish coming up for air and diving down again. I guessed at once that these were *Hoplosternum*, or perhaps *Calthichthys* and *Corydoras*. The first seining confirmed my guess: they were *Hoplosternum*, but much more numerous were some *Erythrinus* species, which are said in Brazil to cross land, but only after a rain, when the grass is very wet, and not over dusty, sun-drenched earth and uphill like our *Hoplosternum*.

The waterhole also contained some small *Macrodon*, *Corydoras* and *Aequidens*. These genera are able to live in waters where the composition changes from muddy to cloudy and which at times gets very hot. Other fishes die quickly under similar conditions.

We caught about 50 living *Hoplosternum* and stored them in plastic bags. A much greater number found

their way into the rapidly woven baskets of the Indians who had brought us to this place. When we drew our nets to the shore, many *Hoplosternum* crept and scrambled away to hide under leaves or return to the water. "These must be reptiles!" remarked my wife when she saw the little armored fish running away.

We had returned to this waterhole to recruit some more "actors" for our motion picture. If one *Hoplosternum* which we surprised would repeat his actions, then there must be many more that would make the same journey at this time of the year.

Not by a long shot! Not one repeated the performance. At first they lay motionless in the hot sun, then began to hop aimlessly and restlessly until we put them back into the water.

The pictures of the wandering fish are therefore unique and cannot be made again. There must be an innate urge for the fish to leave the drying waters, connected with bodily and instinctive preparations of which I do not know and without which the fish is in no state to undertake such a journey. Perhaps these urges which are brought about by changed circumstances can be analyzed at some future time.

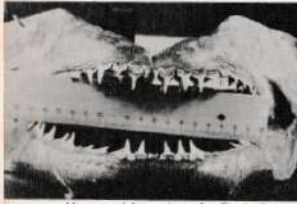
I consider myself very fortunate to have been able to observe this migration of a *Hoplosternum* from its natural element and to record it photographically.

READ IT NEXT MONTH IN TROPICAL FISH HOBBYIST

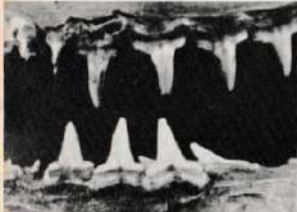
Fishing with Poison BY HARALD SCHULTZ

Look, Ma, no cavities! THE TEETH OF FISHES

By KURT LERCH



Upper and lower jaw of a Shark (Squaloides).



Teeth of a Shark (enlarged).

Lower jaw of a Shark, seen from the inside. The rows of spare teeth are distinctly to be seen.

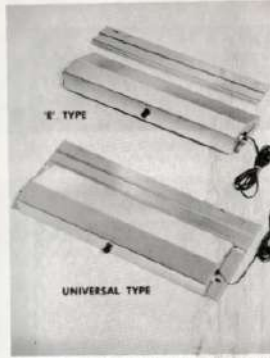


Nowhere in the animal kingdom do we find such a varied assortment of teeth as among the fishes, in form as well as in their placement in the oral cavity. The form of the teeth is governed by their function, giving rise to special properties for each genus.

With the Sharks and Rays (Selachii) the teeth sit on the jaw cartilage. Behind each tooth there is a whole row of spare teeth. In shape they represent everything from the lancelet-like to those shaped like cobblestones. Some of them have finely serrated edges.

In contrast, the bonyfishes (Teleostei) may have teeth on many individual bones in the upper and

Tooth of a Gray Shark (Notidanus). Edges are finely serrated.



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Cat. No.	Approx. Length
14C	14 1/2"
14E	14 1/2"
18E	18 1/2"
20C	20 1/2"
24C	24 1/2"
20E	20 1/2"

UNIVERSAL TYPE

Cat. No.	Length	Width (incl. backstrip)
4-0	4 1/2"	4 1/2"
6-0	6 1/2"	5 1/2"
8-0	8 1/2"	7 1/2"
10-0	10 1/2"	7 1/2"
12-0	12 1/2"	8 1/2"
14-0	14 1/2"	9 1/2"
16-0	16 1/2"	10 1/2"
18-0	18 1/2"	11 1/2"
20-0	20 1/2"	11 1/2"
24-0	24 1/2"	11 1/2"
28-0	28 1/2"	11 1/2"
30-0	30 1/2"	11 1/2"
36-0-12	36 1/2"	12 1/2"
36-0-14	36 1/2"	14 1/2"
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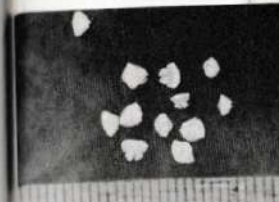
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Rosario La Corte, Elizabeth, N.J., Author, "Feeding Experiments," "Champion Characters." Recommends and uses Rut-King foods for fry and adults of these species.



The flat teeth of a Ray (Rajidae).



Separated teeth of a Ray (Rajidae).

lower part of the oral cavity, on the upper and lower pharyngeal bones and even on the gill arches.

Some bony fishes, for example the Loaches (Cobitidae) and the Carp-like fishes (Cyprinidae), have no teeth in the oral cavity but instead have well developed pharyngeal teeth which are imbedded in the five gill arches that serve as pharyngeal bones.

Many bony fishes have teeth which are imbedded without any

Flat teeth of a Parrotfish (Scarus cretensis).

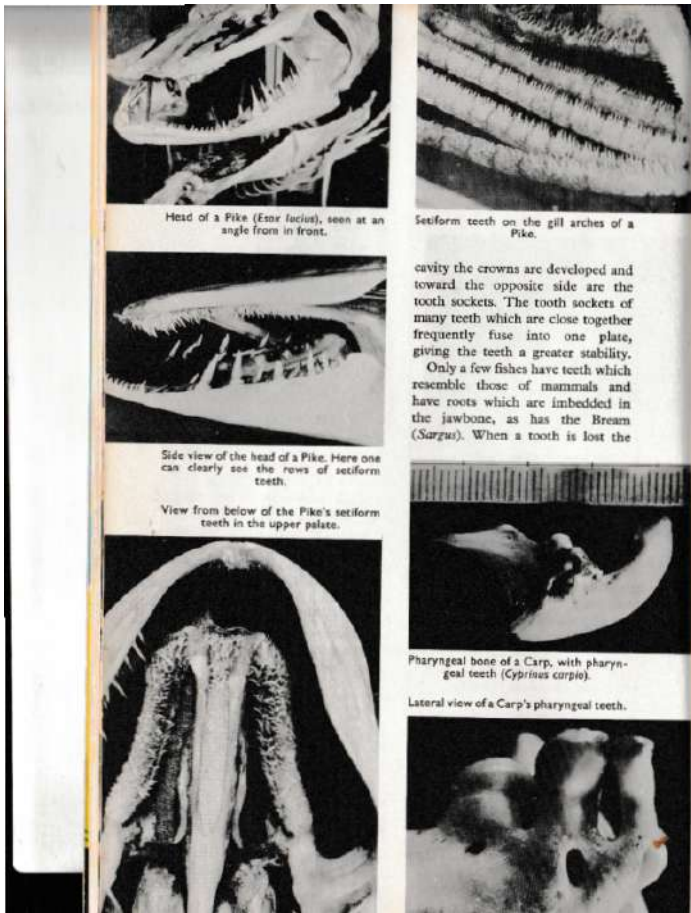


Flat teeth of a Parrotfish, seen at an angle from below.

particular anchorage in the slimy outer skin. This applies especially to the horny teeth which because of their placement are known as setiform, or bristle, teeth. These teeth develop right from the epithelium of the oral cavity without forming an epithelial ridge, as would be the case with the mammals. Next to them are tooth buds, which grow toward both sides. Toward the oral

Head of a Catfish (Silurus glanis). The jaws are thickly covered with setiform teeth.





Head of a Pike (*Esox lucius*), seen at an angle from front.

Setiform teeth on the gill arches of a Pike.

Side view of the head of a Pike. Here one can clearly see the rows of setiform teeth.

cavity the crowns are developed and toward the opposite side are the tooth sockets. The tooth sockets of many teeth which are close together frequently fuse into one plate, giving the teeth a greater stability. Only a few fishes have teeth which resemble those of mammals and have roots which are imbedded in the jawbone, as has the Bream (*Sargus*). When a tooth is lost the

View from below of the Pike's setiform teeth in the upper palate.



Pharyngeal bone of a Carp, with pharyngeal teeth (*Cyprinus carpio*).

Lateral view of a Carp's pharyngeal teeth.



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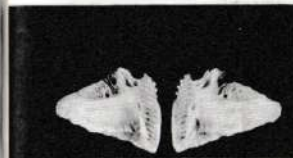
TFH 63-1



Jaws of a Bream (*Sargus*) seen from inside. Behind the incisors are rows of flat grinding teeth.



Upper jaw of *Sargus oris*, seen from outside. The spindle-shaped incisors are imbedded with their roots in the jawbone.



Teeth of a Puffer (*Tetraodon*). The individual teeth are fused at the base.



Lower jaw of *Sargus oris*. The incisors form a row on the outside and the molars form several rows inside.



Masticatory plate of *Diodon*, seen from front.



Masticatory plate on the lower jaw of a Porcupine Fish (*Diodon*), as seen from above.

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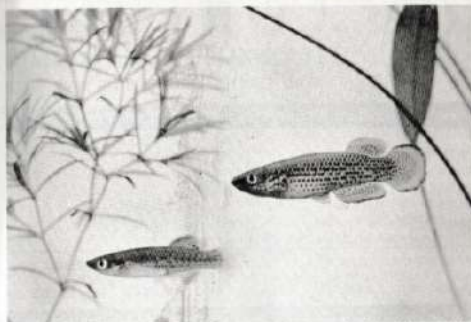
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A pair of *Pachypanchax playfairii*, with the female showing a dorsal marking typical of the female of this species. The slight scale protrusion is normal in both male and female, not a sign of disease. Photo by G. J. M. Timmerman.

About *Pachypanchax playfairii*, with Remarks on the Genus *Pachypanchax*

BY HARVEY SEGAL

Although *Pachypanchax playfairii* is a good looking fish, it has not achieved the degree of popularity due it. Its fins, while not rivaling those of the Blue Gularis, are nevertheless well shaped and very well colored. *P. playfairii* resembles some of the large, chubby *Rivulus* species in form; the body coloration of the male ranges from dark to light green, broken irregularly with large red dots occasionally shaped into small lines and bands. Present besides the red coloration are many yellow and blue dots, scattered randomly over the surface of the body. The colors possess a very metallic look, shining brightly when light is reflected off them. The fins are large and round and show the red dots and other colors. The anal and caudal fins are bordered with black and red lines.

The adult female, at a length of 2½ inches, is slightly smaller than the male. Her body color is a uniform light brown broken only by a large dot at the base of the dorsal fin. Her fins are nearly transparent, with very little color in them.



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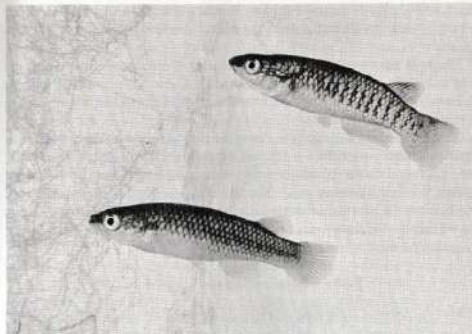
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Pachypanchax homdenotus, a closely related species. The bands on the lower margin of the anal and caudal fins are usually light yellow. Photo by Milan Chvojka.

Successful management of *Pachypanchax playfairii* entails no more than would be necessary to keep allied species. A 2½-gallon aquarium is big enough. Aeration and filtration are optional, but do contribute to the fish's well being. Water conditions are of little or no importance, the fish being one of the hardest I have yet encountered.

Feeding presents no problem whatsoever. Although the fish has a preference for live foods such as baby fishes and adult brine shrimp, beef-heart, liver, fish, and non-fatty meats are all eaten greedily. When feeding, especially when feeding the latter group of foods, I always give small portions divided into three or four feedings. With foods of this nature the fish have a tendency to overeat, consequently becoming bloated or constipated. By feeding smaller portions the fish will eat more, in total, and still digest the food with greater ease.

Pachypanchax playfairii is very easily bred and usually quite prolific. The standard spawning medium, floating nylon mops, can be applied with great success. Here I can only give one word of caution: make sure the females are full of eggs before introducing them into the spawning tank, and if at all possible use more than one. The fish is a vicious driver as far as Cyprinodonts go; it is definitely comparable to *Aphyosemion zealandi* and almost equals the ferocity of *Aphyosemion beauferti* in pursuing its mate. I have found it most advisable to condition the females separately until they appear well filled with eggs, then put them in the spawning tank. At the first sign of real maltreat-

ment, remove them for another conditioning. During one of the spawning periods, which last about ten days, anywhere from fifty to three hundred eggs are laid.

The eggs can be handled using the "far tray" method or by placing the mop in a clean aquarium to which fungicide has been added; malachite green is about the best. Slow aeration will circulate the water and keep the eggs from going bad.

Between fourteen and nineteen days after the eggs are laid, the fry will have made their appearance. Newly hatched brine shrimp can be the first food and can be fed until the fish are too large to notice them. An alternate food is micro-worms, which is almost as good. The last choice is sifted *Cyclops*, mentioned last because the nutritional value of the food is nothing to speak of. The fry grow fairly fast and very steadily. At the end of 2½ months the fish sex out. From here complete maturation is just a matter of time.

Early Classification of *Pachypanchax*

The species was described and named by Günther in 1866; he called it *Haplochilus playfairii*. At that time the genus *Haplochilus* represented fishes that are today broken down into a number of genera; e.g., *Haplochilus singa* became *Epiplatys singa*, *Haplochilus elegans* became *Ayphoseion elegans*, and *Haplochilus spilanchen* became *Aplocheilichthys spilanchen*. These are only a few of the more prominent examples. So it appears that the original placement of *playfairii* into the genus *Haplochilus* created no great stir.

In 1933, Dr. Myers renamed the genus, naming it *Pachypanchax*. Prior to that time some ichthyologists were beginning to refer to the species as "*Panchax*" from which it differed not only in maxillary bone structure but also in the unexpanded haemal arches, the structures through which blood vessels pass. Although the species was found to have certain affinities to *Nothobranchius* and *Epiplatys*, it differs from all other African and Asian species of Cyprinodonts. Interestingly enough, it possesses a peculiarly scaled caudal fin, resembling closely the structure found on *Austrofundulus*, a genus of South American Cyprinodonts.

Four species of *Pachypanchax* have been described and named: *Pachypanchax playfairii*, from Madagascar, Zanzibar and the Seychelles; *Pachypanchax homolomotus*, from the northwestern area of Madagascar; and *P. nunchimaculatus* and *P. sakeamy*, both from Madagascar. All of these species are found within the rain forest zones, so could not be considered annuals. The first two species have been imported as aquarium fishes. I do not know whether the remaining two species are valid. The written description of *Pachypanchax sakeamy* would make it appear close to *Pachypanchax homolomotus*.

More than once Madagascar has been referred to as an island continent. The general coastline contains few indentations that would make suitable

harbors. The west side of the island is largely savanna country, while the east side is chiefly rain forest. The middle of the island consists of a large plateau, on which the really mountainous terrain of the country is found. Except for the extreme southwestern portion of the island there are no truly acid parts.

The general fauna of the island represents an almost total departure in form from that found on mainland Africa. None of the large mammals existing on the mainland are present here. Interestingly enough, the animals display Asian rather than African affinities. The fish fauna appears as strange as the island and animals themselves. None of the Characins, Catfishes, or Cyprinids found on the mainland are present here. Aside from a few Cichlids and Killifishes the fish population is comprised mainly of marine invaders. The Cichlids mentioned are of brilliant and bizarre appearance, with strongly contrasted colors in bands and spots. As a whole the fauna of Madagascar lead us to believe that this island has long since been isolated from any other zoological region.

The author welcomes correspondence from hobbyists, particularly Killie enthusiasts, living in Africa and South America. Interested parties may write to Mr. Siegal at his home address, 1838 67th Street, Brooklyn 4, New York.

the New 1963*

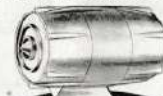
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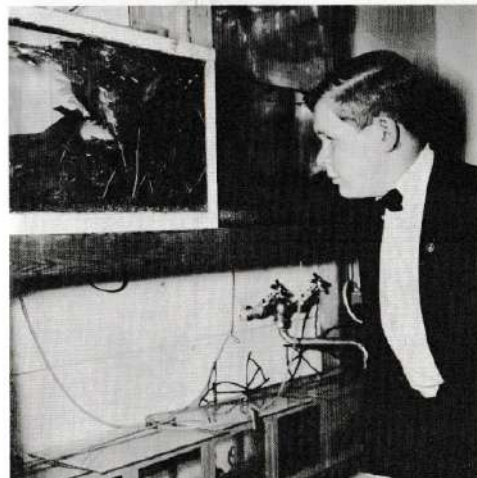
Ulf Hannerz Revisited

BY DR. HERBERT R. AXELROD.
Photos by Hans Peter.

In early 1958 a small teen age Swedish boy captured the hearts of millions of Europeans when he bravely lost the "\$64,000 Question" (actually, its Swedish equivalent). It seemed that the last question, a multiple question at that, contained one trick question: "Do fishes close their eyes when they sleep?" Ulf said "No" and they said he was wrong.

After the program appeared hundreds of scientists wrote in that Ulf was indeed correct, and he was given another chance at the question. Ulf won this time and he became a news item instantly.

In a small side room Ulf has a very compact fish setup complete with running water and some of the rare fishes he collected on his recent African expedition.



One of Ulf's desires was to join me on an expedition, so I took him to the African jungle. So capable was he that I also invited him to join me on a Brazilian expedition the following year. This developed into a strong friendship between Ulf (nicknamed "Hajen", meaning 'shark' in Swedish) and myself and we soon had Ulf as our houseguest.

Then one thing led to another and Ulf went to college and we couldn't see each other for a few years. Last winter I had the opportunity to visit Ulf. He's 20 years old now and about to graduate from college. He's written a book on tropical fishes and is about to complete one on African life in general. Ulf didn't specialize in fishes, for then he'd end up catching sardines in Lapland, so instead he specialized in African Indian Culture . . . he figured there'd be plenty of time for fishes, too.

Hans Peter, TFH Roving Correspondent, talks to Ulf about some of the Indian artifacts in his very interesting living room.



Ulf looks longingly at the fishes he collected in Nigeria. He tells Hans Peter: "I had to study Indians and not fishes . . . but my life will always be concerned with fishes."

Ulf studies his aquarium-terrarium in which he keeps some ivy and a dozen Mudskippers which he found in Nigeria.







Dr. Axelrod points to the Cameroons where he and Ulf found some exciting new fishes . . . Ulf thinks there's better fishing in East Africa.

Ulf lives with his family in Old Stockholm in a house that was built in the 1400's. His room reminds you of a museum . . . filled with Indian artifacts. Ulf still loves his fishes and he has a beautiful aquarium setup in one small room. In his living room is an artful aquarium-terrarium with Mudskippers bouncing about merrily. Ulf is still the same modest young man that he was then . . . and it was a great pleasure to visit him and to find that his interest in fishes hadn't waned. He is Editor of the Swedish magazine AKVARIET and works as hard on his fishes as he does on his Indians.

Ulf plans on studying soon in the United States. We hope he makes it and can lecture to some of the various aquarium societies in the neighborhood of the college in which he will study.

I think I express all of our wishes when I say: "Welcome to the U.S., Hajen!"

 Can you identify this fish? Do you know where it comes from? What are its spawning habits?  How about this one? Could you breed it for money? If you can answer these questions definitively, or if you can get an authoritative answer in a jiffy, don't read further. But if you don't know all the answers and can't get them in a hurry — in short, if you are a hobbyist who really is bent on learning all there is to know about tropical fishes, aquarium management and, yes, commercial breeding, — buy this  book. Its 892 pages alive with almost  600 illuminating color photographs by the world's foremost authorities makes it the best investment you, as a hobbyist, can make. Exotic Tropical Fishes is available at your pet shop in two editions: hardbound and looseleaf to accommodate supplements by the authors.

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MAIL CALL

If you have an aquarium question and cannot find the answer in any of the standard reference texts, send it to MAIL CALL. Each month this column will publish the most interesting questions received and their answers. Letters containing questions cannot be acknowledged or answered personally. Address all questions to: MAIL CALL, T.F.H. Publications, Inc., 245-247 Cornelison Ave., Jersey City 2, N. J.

"Egglaying" Guppies and Platies.

Q. I would like to know who first named the Moon Platy and what year it was discovered.

2. I have found two leeches in my 20-gallon tank, living in the gravel. Are they harmful, and if so, how can I get rid of them?

3. Some of my Guppies and Platies, when they are having babies, also drop a few eggs with them. If these are fertile, is it possible to hatch them with an airstone, and at what temperature?

Dave Martin, Corona, N.Y.

A. 1. Albrecht Günther gave them their first scientific name in 1866. The popular name "Moon" was given to them because of the crescent-shaped marking that so many of them have at the base of the tail. Leeches are seldom able to attach themselves to a fish, but they are ugly things nevertheless. When you see one, net it out and crush it.

3. These are unfertilized eggs. Even if they had been fertilized, you wouldn't be able to raise them in this manner.

Effects of light.

Q. I recently heard from a friend that a light left on day and night might tend to render fish sterile. Is this true? If it is so, what is a safe amount?

A. 1. We have heard this statement made about some of the fluorescent tubes, but I doubt if there is any truth in it. One thing which 24-hour lighting does is reduce the life-span of a fish. This is only natural, because a fish kept in this manner is much more active and has a greater strain on his organs. Don't let this scare you into keeping your lights turned off. I have yet to

Leech



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see any fish which is harmed by a few hours' illumination every night!

2. Yes, thread algae makes an excellent spawning medium.

Ghost Shrimp and Guppies
Q. I have a few questions that I would like answered, but first I would like to tell you that I enjoy your magazine very much.

1. My city in the future is going to fluoride all water used. What will this do to my fish? How can I remove it?
2. Recently I bought a scavenger fish called a Ghost Shrimp. It has shed its skin twice already. What kind of fish is this? What are its habits? How can I tell the sexes?

3. I had a pair of cheap Guppies until they had babies. Then the babies had babies. Then the second group grew up and you can guess the rest. Now I have enough to start my own pet store; the trouble is that I don't have enough

room for them. The only way I can get rid of these is to use them as live food for my bigger fish, which I don't want to do. How can I get rid of the Guppies?

Melvyn Erdos, Detroit, Mich.

A. 1. Hundreds of cities are fluoridating their water supply at the present time, and we have yet to hear of a single case where a fish has died of fluoride poisoning. Removing it involves a very complicated chemical procedure. If in spite of all my reassurances you are still afraid, your only recourse would be to collect water from an unfluoridated source like a brook or a pond.

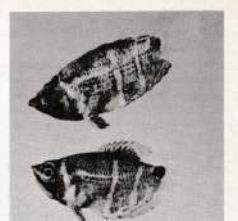
2. The Ghost Shrimp is not a fish; it is a shrimp, as the name clearly indicates. Shedding the shell is natural, as it is with all crustaceans. The shrimp's body grows, and the shell does not; consequently the shell pops open and it sheds at intervals, to be replaced by a new, slightly larger shell.

Females are a bit larger and longer than the males, and carry their eggs in a bunch on the underside of the tail.

3. Isn't it amazing that the Guppies you don't particularly want are the most prolific? And don't you wish that you had bought better stock to work with, and that these babies were now developing big, beautiful colorful tails? One way to get rid of some is to let word get around among the youngsters in your neighborhood that you're giving away fish.

Information about Chocolate Gouramis.

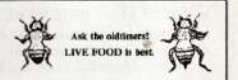
Q. A short time ago I purchased with some reluctance two Chocolate Gouramis. The reason for this reluctance was that there was so little information available, but the price was low. The main reason I'm sending you this letter is because of the strange habits of this fish. They seem to feed only when the lights are on. They will stay near the surface of the water all day, but as soon as the lights are turned off they will eat normally. They are not at all shy, and I can put my finger within a few inches of them with almost no reaction. From what I have been able to learn about them from pet shop owners, they are known to be delicate. I keep mine in a 50-gallon well-planted community tank where they are well able to take care of themselves. In my opinion Chocolate



Chocolate Gouramis

Gouramis make a nice-looking addition to an aquarium. I hope that this information will be of use to other hobbyists who are interested and that you can give me some information about the breeding of this fish.

Morton Kugelmann, Brooklyn, N.Y.



Ask the old timers! LIVE FOOD IS BEST

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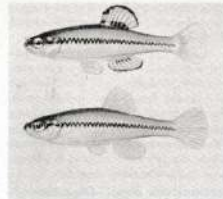
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A. The April '61 issue has a very informative article by Dr. Edward Schmidt about their spawning. I am sure you will find it interesting. From what you describe it might be possible that they have eyesight something like a but or an owl and are nocturnal feeders. Nobody will deny that the Chocolate Gourami is a good-looking fish!

The neglected native fishes.

Q. I am writing this letter as a plea for the adoption of local American fishes into the home aquarium. For a long time it has frustrated me to see the way aquarists have pampered and, what is worse, paid fantastic prices for fishes from far-off lands when they have in their own back yards fishes which are as beautiful and interesting, and often more hardy, than costly imported species. True, tropical fishes are very beautiful, but what of it? There are many North American species which are just as



Chiropeops goodii

handsome. The iridescent blue sheen of *Chiropeops goodii* cannot be equalled by many of the fishes which inhabit Brazilian streams. The golden hues of the Sunfish make many of the best tropicals diminish in beauty by comparison. Surely no better scavengers exist than the black Bullheads of our

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Native Catfish (Ameiurus)

streams and ponds, and in little mountain streams tiny fishes of indescribable beauty dwell. It seems ludicrous to me that people prefer mud-colored monsters that die if the water is one degree too cool to hardy, beautiful American fish. The reason is plain: the mud monsters come from Pago Pago, while the pretty fish is North American. Local fishes are easier to catch and cheaper to keep than Mollies, Piranhas, or Bettas. They do not as a rule require tons of complicated equipment and will eat almost anything. Besides being hardy, they are interesting and, for the most part, beautiful. I have nothing against tropical fishes. I like them and have quite a few of the marvelous creatures myself. Still, I think that our

own American fishes should receive more favorable treatment.

Howard Baumgartner,
Mt. Vernon, N.Y.

A. Human nature is a strange thing, Mr. Baumgartner. I have always had a favorite among American fishes, *Notropis hypsoclepterus*, from the Georgia swamps. On the rare occasions when this fish is offered for sale, people always snap to acquire it. As soon as they find out that the beauties are from our own East Coast, they immediately walk away and look at something else. You know the old cliché: the grass is always greener in the other fellow's pasture! This poses the easy for some more clichés: familiarity breeds contempt, distance lends enchantment, etc., etc. Besides, the owner of a fish collection likes to tell his friends that his fishes come from all over the world, not from a little pond a half-mile away.

Aggressive Red-Tail Shark.

Q. 1. How long does it take Angelfish to reach spawning size?

2. Would taking a flash picture during the spawning of African Mouth-breeders frighten them into eating the eggs?

3. Is there any way to stop my Red-Tail Shark from chasing and nipping other fish?

Joe Schum,
San Diego, Calif.

MOVING?

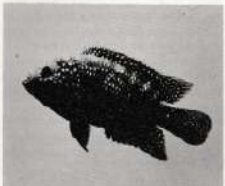
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1. About nine months to a year.
2. Probably not; once they begin spawning, they are not easily disturbed.
3. Only by putting him with another fish that is a little smaller than he is. You might also try providing him with a cave to hide in; if he feels more secure he'll likely do less chasing.

Dempseys and Congos.

Q. 1. I have a hobby of looking through reasonably old books about tropical fish keeping. I have found a book named *Tropical Fishes and Home Aquariums* by Alfred Morgan (1935). The book gives the scientific name of the Jack Dempsey as *Cichlasoma nigrofasciatum*, but in the booklet *Cichlids* by



Jack Dempsey, *Cichlasoma biocellatum*

William Vorderwinkler (1958) it is called *Cichlasoma biocellatum*. Were Jack Dempseys called *C. nigrofasciatum*

or was it an error on Mr. Morgan's part?

2. I have 5 Congo Cichlids, 3 males and 2 females. I have noticed that the females seem to have a larger forehead which is more vertical than that of the

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males. Are all Congos like this, or are mine just different?

Wayne Bixenman,
London, Ont., Canada.

A. 1. Your question had no looking into some other literature published at about that time, to see what they said. In Arnold-All's *Fremdländische Süßwasserfische* (1936) it is mentioned that *Cichlasoma biocellatum* had been known as *Cichlasoma nigrofasciatum* for 30 years previously until the error was cleared up.



Congo Cichlid.

2. Here's what makes your letter so interesting: the fish which was introduced in 1834 as the "Congo Cichlid" is the real *Cichlasoma nigrofasciatum*! Are you sure that you aren't getting your males and females mixed up? The males are generally the ones with the blunter, more vertical forehead. Incidentally, the name "Congo Cichlid" is a pure fabrication. The fish comes from Guatemala and Salvador.

Angelfish's strange behavior.
Q. I have a mated pair of Angelfish but have never been able to raise a spawn. My male Angelfish keeps both of his feet on his right side, and I have never seen them like ordinary Angels, one on each side. Is there anything wrong with him?

Richard Mandell,
Rockville Centre, N.Y.

A. No, unless the unusual way he holds his ventral fins prevents his sperm from

reaching the eggs. Your best bet would be to take the eggs away from the parents and hatch them artificially by placing an airstone near them.

Eye trouble

Q. Three of my Black Mollies have pop-eyes, so I put them in a solution of methylcine blue. The next day one of them was dead and the other two still had pop-eyes, but there was a hole in the center of the eye. Can you explain this?

Bruce Prager,
Emerson, N.J.

A. Your Mollies must have had a fungus on the eye at first, which left the hole after it cleaned up. Pop-eyes are caused by an irritation, usually bacterial in origin, behind the eyeball. I recommend a thorough cleaning job and a new start with fresh water.

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Scrappy Paradise Fish.

Q. A few years ago I put a male Betta into an aquarium containing a male Paradise Fish and other fishes. As soon as the Paradise Fish saw the Betta he attacked him. The Betta retreated to the other end of the aquarium and tried to hide. The Paradise Fish soon found him and chased him into a thicket of *Sagittaria*, where the two became engaged in a vicious fight. As soon as I realized what was happening I removed the Betta. The Paradise Fish was peaceful with other fishes in the aquarium and became vicious only when the male Betta was introduced. I have come to the conclusion that a male Paradise Fish becomes enraged when he sees a fish with better fin development than his own. Therefore it would probably be best to keep a male Paradise Fish with fishes of lower fin development. I thought this might be of some importance to you.

Jim O'Neill,
Port Townsend, Wash.

A. A male Paradise Fish is a tough customer in his own right and frequently does not tolerate any other fish. What probably got him riled was not the fact that the Betta's fins were bigger but that when he took an experimental snap at the Betta, it snapped back. Better keep them separated.

Freshwater clams

Q. I would like to know if you could give some information as to where I could purchase freshwater clams. I have a few tropical fishes and where I made the purchase of the fish they do not know about the freshwater clams. I have been informed that they constantly draw water through their



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Freshwater clam

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Mrs. Rebecca Bell,
Sunnyvale, Calif.

A. Whoever gave you your information only gave you the sunny side of the picture. There are such things as freshwater clams and freshwater mussels, and the ones we might see are the local variety and do not



Freshwater mussel

acclimate very readily to the warm water of a tropical fish tank. Here they are very likely to die in a short time. A dead clam or mussel does not look much different from a live one and might not be suspected until it is very, very dead and the water is unfit for any fish unfortunate enough to be in it. You are better off with a mechanical filtration system than with a living one!

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Guppy Corner



By Paul Hahnel

Population problems.

Q. 1. I have a 2-gallon aquarium with some Water Wisteria, *Vallisneria* and *Nitelia*. I also have a filter-aerator combined. In my aquarium there are: 2 female Guppies, 1 male Guppy, a pair of Gold Wag Platies and a Pepper Catfish. My tank ranges from 66" to 70". My females keep having babies. Now they have so many babies I don't know what to do. I am 8 years old. What can I do?

2. My sister has a 20-gallon tank with a filter, a heater and a light. Why did her middle plant, a *radiocaria*, grow so big that the top was out of the water?

Robin Dillingham,
W. Asheville, N.C.

A. 1. Ach du Lieber, you are in trouble, and only 8 years old! The parent fish which you have in your 2-gallon tank are just enough, I am afraid, and you will have to dispose of your newcomers somehow. Try to interest some of your friends in Guppies; in this way you will be doing something for the fine hobby of fish-keeping,

and you don't have to set up another tank. Or be nice to your sister, get her a fancy ribbon for her hair, and she might give some of your baby fish room and board in her 20-gallon tank.

2. Many plants send up aerial leaves, especially if their light supply is coming from directly above. Many hobbyists help themselves by trimming off these leaves.

Behavior.

Q. 1. I have a male Guppy which has no interest in the females. Is anything ailing him?

2. I have a female with a curved spine. She is otherwise very healthy and growing normally. Will her babies be affected by the curved spine?

3. One of my male Guppies once tried to mate with a male green Molly. Why would he do this crazy thing?

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4. I have 4 females for 3 males. Is this combination okay?

5. Some of my baby Guppies fight with each other. They seem to nip each other with their tails. Is this harmful to them?

J. Dundatschek, Hillsdale, N.J.
A. 1. There are misogynists, even among Guppies. Normally a male Guppy will pursue some female or other as long as he can see her. You failed to mention how old this male is; he may be far beyond his prime.

2. Spinal curvature is often a sign of deficiency in nourishment, and a deficiency in calcium and phosphorus could be the answer. This condition may also be inherited, and for this reason it would be better to avoid using such a female for breeding. I destroy such fish.

3. A healthy male Guppy is always "in love," and will play around with any strange livebearers you put into his tank. Don't worry about it!

4. Nothing wrong with this combination. The preferred one is one male to four females.

5. Again, do not worry! The behavior of your baby Guppies proves that they are normal and full of pep. Full-grown Guppies also do this, especially females.

Unusual strain.

Q. I am just getting started in this never-ending, wonder-packed hobby. I was fortunate enough to get going in this field at a young age, thereby giving me a chance to enjoy this hobby for a lifetime. I sincerely hope some day to be a professional in this fascinating world of the fish. Recently I purchased five full-grown Guppies. Two were males and three were females. They were only 25 cents apiece with no special strain indicated. I have been noticing that the tail of one of the males changes to a blackish color with infrequent white lines running through it. I do not believe

that it is the half-black variety because at many times its tails is light yellow and orange. I thought that perhaps it might change to black when it is mating. Any information would be greatly appreciated.

Danny Thompson, Vancouver, Wash.

A. Your 25-cent Guppy gives you quite a show, with the black and white lines, yellow and orange. Try breeding this special male. The half-black variety you mentioned in your letter is supposed to show black color from the center of the body to the very end of the tail.

The Judge's life is not a happy one!

Q. In the October 1962 issue of TFH there appears an interesting article entitled "Guppy Standards in Germany," by Dr. O. M. Stoerzbach. I, and I believe many other readers, would be very interested in how the various angles and

lengths of fins, etc., are actually measured in one of these shows. Would you please explain this for us?

William W. Metzler, Washington, D.C.

A. This is a quotation from the Journal of the Modern Guppy Breeder, a publication of the F.G.A. of England: "As previously reported in the last issue, there have been numbers of Guppy Show Standards . . . It is to be expected that every Specialist Society has its own ideas as to the ideal fish in shape (form) of the same variety. The only conclusion one can draw is the difference in the experience of those responsible for these illustrations." I share their opinion and I hope to say that I do not know how to measure the fish in their shows. When I am called upon to judge a show, the most colorful and perfectly formed Guppy gets first prize.

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By Alfred A. Schultz

Q. 1. A week ago I bought a 10-gallon all-plastic tank. In it I placed one-third Rock Beauty and a French Angel. The salinity was 1.024. After four days the Angel died during a feeding. He dashed all over the tank before he died, and I

suspect he choked to death. Could this have happened?

2. Could I add two Clown and one Gownfish to this setup?

Craig Schiller, Rego Park, N.Y.

A. 1. No, the fish was probably sick when you got it.

2. Yes.

Q. 1. What would be the easiest to breed of the marine fishes?

2. Are Skates and Rays easily raised in an aquarium?

3. Are Sea Robins good for the aquarium as scavengers?

Ronald E. Watson, Seattle, Wash.

A. 1. None are easy, and only very few have ever been spawned at all.

2. No.

3. Yes, but only when they are small.

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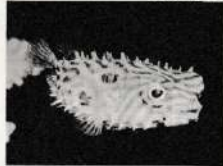
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Q. 1. I am planning to set up a 50-gallon salt water aquarium and would like to know if the following fish could be kept together:

- 2 Spiny Boxfish
- 1 Frog Fish
- 2 French Angels
- 2 Damselfish
- 2 Clown Fish
- 2 Rock Beauties
- 2 Seahorses

2. How important is the hydrometer to the marine aquarium?
3. What is the best substance to use in coating the inside of the aquarium?

Robert Sissman,
Newark, N.J.



Spiny Boxfish

- A. 1. *Spiny Boxfish*—only small ones.
Frog Fish—should have a tank to itself.
French Angels—OK.
Damselfish—OK.
Clown Fish—OK.

Rock Beauties—Keep one only; they will fight with each other.
Sea Horses—They should have their own tank.

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SOCIETY NEWS

Clubs and individuals interested in membership in The International Federation of Aquarium Societies should contact Mr. William I. Lawrence, Membership Chairman, 214 E. 29th Street, Wilmington 2, Delaware.

Oceanside, New York . . . A new society, Oceanside Fish Breeders Association, has recently started in the Long Island area. At the society's first meeting, officers were elected for the first year, as follows: Paul Facella, President; Kirk Brueckmann, Secretary; Jim Hancock, Treasurer.

Regular meeting dates have not yet been announced, but interested hobbyists can obtain information by writing to the society secretary at 514 Chelsea Road, Oceanside, New York.

Chicago, Illinois . . . At this year's Chicago World Flower and Garden Show, attended by over 350,000 visitors (up 10% over last year), members of the Chicago Aquarium Society, the Greenwater Aquarists, the Mid-West Aquarists, the Southwest Aquarists, and the Midwest Guppy Club set up more than 250 aquariums for the public to view. In addition, a beautiful saltwater exhibit was set up, and visitors could see, among other fascinating marine animals, an octopus and nurse shark.

Winner of Best in Show was George Killmer of Southwest Aquarists.

Bloomfield, New Jersey . . . Best of Show award at the seventh annual tropical fish show held by the North Jersey Aquarium Society was won by Dick Lugenbeel of the National Aquarium Society of Washington, D.C., with one of his entries in the Panchax class;

Aquarium Societies

Please Note
TFH is more than happy to accommodate aquarium societies by publishing news of future activities. To enable us to help you, please send us your news releases of coming shows at least a month and a half in advance of the prospective show date.

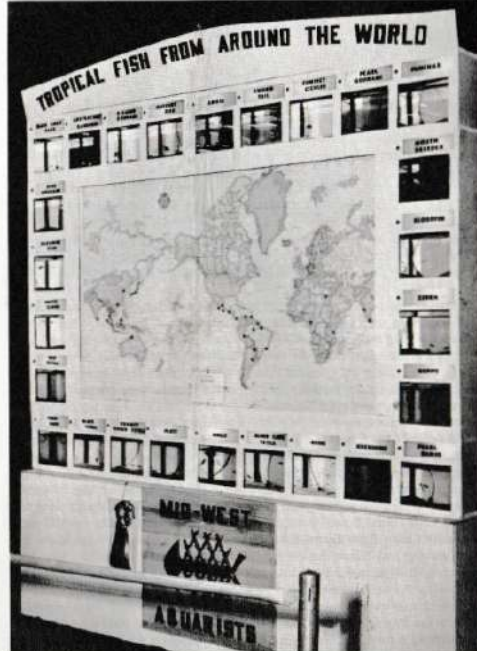
first place winners in the A.G.A. Eastern Guppy Championship held in conjunction with the show were Frank and Mary Alger of the North Jersey Aquarium Society.

There were 15 separate exhibition classes at the show, plus eight Guppy classes. A feature of the show was that the sponsor society eliminated all raffles, normally used to offset show expenses, and substituted instead an admission charge of \$1.00 (children free); the admission charge entitled visitors to chances on the complete tank setups raffled off at 20-minute intervals. The show garnered 285 entries, including community tank entries.

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This huge display board depicting tropical fish from around the world was built by five members of Mid-West Aquarists especially for the Chicago World Flower and Garden Show. John Cook, Ray Ferglec, Harry Mrotek, Ed Swan, and Ken Zik put in approximately 150 hours of labor and an estimated cost of \$200 into this 9-foot by 8-foot display. The large map was circled by 26 2-gallon tanks, each with a small light corresponding to a light at the spot on the map where the fish in the tank originated. Each light stayed lit for an 8-second interval.

Another entry in the log of frustrating attempts at raising marine fry.



Convict Goby Spawned

BY ROBERT P. L. STRAUGHAN
Miami, Florida

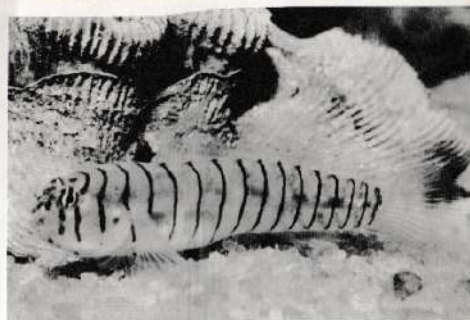
Marine hobbyists who have kept the beautiful Neon Goby will also enjoy its close relative, the Convict Goby, an interesting little fish from the Florida reefs. This is a peaceful little fish which is fully mature at slightly over one inch in length, and it is amazingly hardy. It may easily be kept in a two-gallon aquarium and will quickly set up home under a shell or piece of coral. It will eat live brine shrimp, chopped shrimp or frozen brine shrimp and will get along well with the hobbyist's Angel-fish, Butterflyfish or Neon Gobies, which often share the same piece of coral out on the reefs. In addition the Convict Goby will readily spawn in the home aquarium if conditions are correct.

My first observations of the spawning of this beautiful little fish occurred when I had set up three of them in a two-gallon plastic aquarium as an experiment in keeping small aquariums. I had set up the aquarium with fresh sea water and an undergravel filter which was covered with an inch and a half of silica sand, and planted several marine plants in the tank. In addition to the plants, I also added a live sea squirt, a medium Sea Horse, a large Sea Horse, several dwarf Sea Horses, a Dragonette, and three Convict Gobies. The plants flourished with proper lighting, and soon the aquarium became a miniature ocean with its varied forms of

marine life. The fish became right at home and the little Convict Gobies set up housekeeping under a small *Tridacna* shell I had placed in the aquarium for that purpose.

I watched the aquarium very closely and soon noticed that the little Gobies were going to spawn, for two of them constantly snuggled together under the shell. When the third Goby appeared on the scene, she was quickly driven away by the Gobies under the shell, and I knew from their behavior that they'd spawn soon. I watched them much closer after this and soon noticed that I had two females and one male in the aquarium. It was simple to tell the male from female in this instance; as the Convict Goby is almost completely transparent; by observing the fish daily, I could actually see the eggs forming in the female, the larger of the pair. She was also the more aggressive of the two. When her rival would come near the nest under the shell, she would fiercely attack her, grabbing her opponent by the tail and shaking her vigorously. She also attacked the Dragonette when it came too close, even though it was twice her size. She shook it so much that it never went near the shell again.

As the eggs developed within the fish, both male and female took turns carrying mouthfuls of sand from beneath the shell. Apparently they were expecting a large family,



The tiny Convict Goby is outlined against a background of mushroom coral. The fish is transparent to such a degree that grains of sand behind the fish can be seen through the body. Photo by Robert P. L. Straughan.

The eggs developed rapidly inside the female, and after about two weeks her body had increased in width to nearly three-eighths of an inch, and the eggs had swelled up to nearly the size of BB shot. Her body was so swollen that it appeared she would burst. The spawning occurred one evening; the next day, I looked in the aquarium and the male and female were quietly resting under the shell. The female was slim now and both fish clung tightly to the inside of the shell, neither leaving even for an instant. I carefully washed my hands and gently lifted the shell, just enough so I could see beneath it, and there were the eggs fastened tightly to the top inside surface of the shell. There were several hundred in all. I gently replaced the shell, being careful not to excite the proud

parents, and promptly removed the Sea Horses, Dragonette and the other female Goby from the tank. I wanted to hatch out the young fish and see if I could raise them. I left the plants and sea squirt in the aquarium, as I felt they would do no harm, and I made notes of aquarium conditions and the date the eggs were first observed.

During the next few days, both parents stayed close to the nest, each fanning and pruning the eggs. As the eggs developed I could see that most of them were going to hatch. In about five days the eyes of the baby fish were formed and after the first week, the little fish seemed fully mature. The female was spending less time in the nest, so I removed her.

After the tenth day, when the first baby fish began to swim about the

aquarium, I removed the male so he wouldn't eat any of the young. After two more days, I noted that the nest was empty and began looking for the young fish. At first they were extremely difficult to see. Many of them had settled into the green foliage of the plants and others had settled onto the sand, but when I finally located the first one, the rest were easy to see. As many as a dozen or two would gather in one corner at the top of the tank and, since their bodies were transparent, I could see them only by shading the tank. I tried feeding them egg yolk by dissipating it into the water and placed small quantities of green water in the tank, but after ten days all of the young fish had disappeared.

Meanwhile, the other female had developed eggs, so I put her in the aquarium and placed the male in the tank to join her. They got busy setting up housekeeping under the shell within a day. The second female's eggs hatched in about the same length of time, and I repeated the process of taking out first the female and then the male as the eggs hatched. The same thing happened to the new young fry as had happened to the first batch. They swam about the tank fine for the first four or five days and then gradually disappeared. I put the Sea Horses and Dragonette back in the tank and placed all three Gobies in it once more. In a few weeks, the first female had filled with eggs and spawned again. This time I left everything in the tank, and when the young hatched out, I watched them closely with both a magnifying glass and a low power microscope that I could hold up to the sides of the tank.

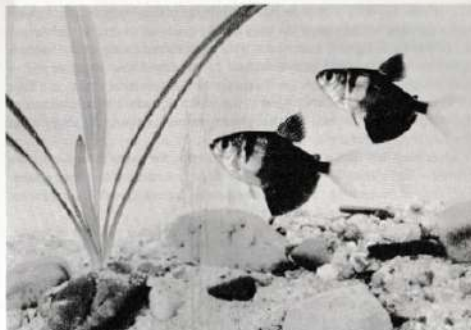
Then I saw the culprit that was killing the baby fish. The entire bottom of the tank had become covered with a fine, hairlike mass, light brown in color, that at first I assumed was algae. I paid little attention to it, feeling that it would help to "condition" the water, but now, with the aid of my low power microscope, I saw that the hairy growth was not algae at all but instead was a type of giant marine hydra, living in tremendous colonies along the bottom and sides of the tank.

Then, right before my eyes, I saw a baby fish struggling in the mass of gripping tentacles and I knew what had killed the baby fish. I moved as many of the young as I could to a new tank, but they didn't survive more than a couple of days, apparently dying from the change of water. Unfortunately the little Gobies didn't spawn again. Like many other salt water fish, the Convict Gobies spawn once or twice a year, depending on the season. I am watching them closely now; when they spawn again I will try to raise them, this time without the hydra!

READ IT NEXT MONTH IN
TROPICAL FISH HOBBYIST

The Aquarium Hobby in Roumania

BY ION E. FIJEN, Bucharest.



Black Tetra, *Gymnocorymbus ternetzi*. Photo by Milan Chvojka.

Raising and Breeding the Black Tetra

BY CAROL HONNOLD

Probably no other aquarium fish has as many aliases as *Gymnocorymbus ternetzi*, which is sold under such names as Petticoat fish, Blackmoor, Black Widow, Mourning Cloak Tetra, and, of course, the most popular common name of all, Black Tetra.

To me, this is an extremely attractive fish. A young Black Tetra is a contrast in deep velvety black and silvery gray, the black being especially pronounced in the fish's wide anal fin. As the fish grows older, this deep black becomes an attractive two-toned gray effect.

Gymnocorymbus ternetzi is native to central South America and belongs to the largest family of fishes in the world, the family Characidae. In the early days of the hobby, a number of Characins were included in the genus *Tetraodon*. To the trade all Characins became Tetras, and the name has stuck, although it has no scientific basis.

Various opinions exist as to the peacefulness of this fish. I have had many people tell me they wouldn't have one on the place because they are such mean characters. But I have had many Black Tetras, and I have never had

one that was anything but peaceful. When young, they may be put in with smaller fish and as they grow up they should graduate to a tank with larger fish. If you have limited tank space, it is well to remember that a mature Black Tetra attains a size of two inches. I have found that many of the so called fin-nippers have much less tendency in this direction if they are kept well fed, and especially if they have a diet which includes liberal amounts of brine shrimp, white worms and baby earth worms. Apparently they nip at other fish mostly when they are hungry.

I never keep less than six Black Tetras in a tank, for to me there is no more impressive sight than a school of these dark beauties swimming together with fishes of contrasting colors. They show up especially well in a tank that is heavily planted and has a dark background.

Because Tetras in general have the reputation of being difficult to spawn, most people don't bother with any of them. The Black Tetra, however, is an exception to this rule, so if you want to try your hand at spawning one of the Tetras, start with this one. But don't start with mature fish. As with other egg layers, it is best to buy a number of young specimens and bring them to proper spawning condition in your own tanks. If you buy six young *Gymnocorymbus*, chances are very good that you will get at least one pair, provided that the sexes are about evenly distributed in the group from which you make your purchase. Sexing the Black Tetras when they are mature will be easy, for the female is about a third larger than the male and much broader.

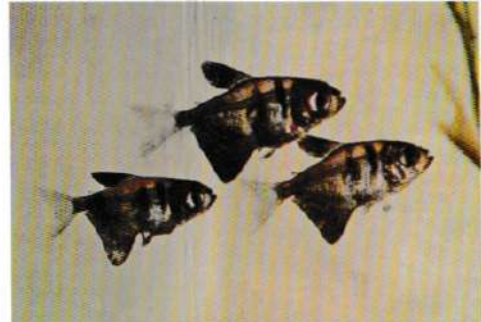
The first spawning I ever had from Black Tetras was strictly an accident. I was new to the hobby and bought two of these fish at the dime store. I had previously learned the hard way to isolate all new fish, so I took my purchase home and put them into a five-gallon aquarium by themselves. I didn't even know I had a pair—I had simply bought two fish. Imagine my surprise the next day to discover that they had spawned! Of course, I didn't raise any of them, for they had eaten their eggs by the time I realized what was going on.

A certain amount of preparation is necessary if you are to be successful at spawning these fish. (I realize now that it was the change in water that stimulated the spawning process in the pair I bought quite a few years ago as a novice.) Because you are dealing with fish between one and two inches long, you will need at least a ten-gallon aquarium. Remember that the larger the tank you have for any spawning (with few exceptions) the better your chances are of having a good spawning and raising a good percentage of the fry.

It is important to start out with an immaculately clean tank, one that has been thoroughly sterilized with salt. Plants that are to be used should be dipped in a solution containing 2 teaspoonsful of alum to a gallon of water for ten minutes and then thoroughly rinsed to be sure there are no snails present. Gravel should be cleaned by washing until you are sure it is thoroughly clean and then washing some more. I like to spread this gravel out in direct

sunlight for at least eight hours. If desired, you may accomplish the same end by baking the gravel for one hour in a good hot oven. I did this just once and smelled baked gravel in the house for days. So now I put it in the sun!

The tank should be set up with an undergravel filter bubbling slowly and with the water level eight inches deep. The tank should be fairly heavily planted with fine-leaved plants. *Limnophila* (Ambulia) is good; so is *Cabomba*. Lacking either of these, Hornwort may be used by making several circles of it and weighting one side of the circle down with a medium size rock. The Hornwort, of course, won't root, and that portion of it under the rock will decay, but it will serve its purpose as a place for the deposit of eggs. My standby for most of the egg layers, however, is *Fontinalis*, or Willow Moss.



Young Black Tetras are more intensely colored than older specimens: as the fish ages, the frontal bands become less prominent, and the deep black of the after part of the body fades to grayish. Photo by Dr. Herbert R. Axelrod.

This is a dense, attractive dark green plant that does well under almost any conditions. It is not necessary to plant it, because it will sink to the bottom and more or less anchor itself to rocks or gravel.

The water in which you hope to spawn Black Tetras should be no harder than about 175 ppm, and preferably slightly acid, about pH 6.8. After the spawning tank is set up at the proper conditions, let it stand for at least 24 hours so that the water is not too fresh. The female should be placed into the tank first and fed especially well until she fairly bulges with roe; add the



Mature Black Tetras are easy to sex, especially when in spawning condition. The females are larger and broader than the males. Photo by G. J. M. Timmerman.

male in the evening, just before the lights are turned off. The best spawning temperature is 80°.

Spawning should be in progress the following morning. The male drives the female into the plants, where they tremble side by side and the female releases a few eggs which are immediately fertilized by the male. These eggs will, for the most part, stick to the plants. Those that sink to the bottom do not seem to be hurt.

Some books state that Black Tetras don't eat their eggs, but my fish haven't read these books. Whether they do or don't is, to me, unimportant. After they have spawned, there is certainly nothing to be accomplished by leaving the parents in the tank—they have done their job!

Since Tetra eggs seem to be sensitive to light, it is best to leave the tank dark, but with these fish it isn't necessary to block out all light, as it is with some of their more finicky cousins. The eggs hatch in 36-48 hours and are free swimming in another two days. They are large enough to take newly hatched brine shrimp immediately, and you might be amazed at the number of fry you have. This is a prolific fish!

Once the fry are free swimming, the sailing is smooth from then on out. They are transparent at first, but it is soon possible to distinguish the black anal and dorsal fin as well as the darker portion of the body. Growth is very rapid.

Black Tetras have the advantage over some fish in that they will eat almost anything that is offered to them. However, the young fry will thrive and grow better on a diet of live foods for at least the first three weeks of their lives. After that, their feeding may be alternated with dry food. Frequent feeding is the key to success in raising this fish. As long as their bellies are kept bulging, they don't ask for much, for this is an exceptionally hardy fish.

Breeding Tetras is fun! They represent a challenge, and success gives you a real feeling of satisfaction.



There must be an easier way to catch Daphnia!

PINK ELEPHANTS? NO, PINK ANGELFISH!

By WILLIAM VORDERWINKLER
PHOTOS BY DR. HERBERT R. AXELROD

It was bound to happen sooner or later—an albino Angelfish. Trouble is, there's only one, a blind male. A recent letter from our friend Ross Sociof tells us about it.

The pink Angelfish was discovered by Bud Goddard, a breeder in Lakeland, Florida, in a batch of otherwise

normal youngsters. Mr. Goddard raises huge quantities of Angelfish solely for the large commercial hatcheries in Florida, who absorb his entire output. It is a true albino with pink eyes and pink markings where a normally colored Angelfish would have black ones. When the

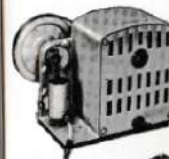
The new Pink Angelfish developed by Bud Goddard of Lakeland, Florida. Photo by Dr. Herbert R. Axelrod.



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fish grew up it turned out to be a male; discouragingly, the fish was blind. Realizing that its blindness was a hindrance but maybe not an insurmountable obstacle to its capacity to reproduce, Mr. Goddard put the fish several times with healthy females. Eggs were even produced, but the albino male never paid them the slightest heed and not a single fertile egg resulted. So it looks as if we may have to be patient until it happens again—if it ever does.

The other novelty is one which Ross calls the "Marbleized Angel." This is another sport which was found by Mr. Goddard in a normal batch. Here there is a small ray of hope that some day we will be able to get them, but it is only the smallest glimmer. This one differs from the albino specimen in that it has its normal vision and is fertile. It was mated with a Black Lace Angelfish, and when the young from this mating became mature they were mated back to the parent with the unusual markings. The result was that of the many thousands of young produced, not one had the desired markings. Sometimes, however, these traits are recessive and

do not show up for several generations, so we cannot yet write off the Marbleized Angel as a total loss.

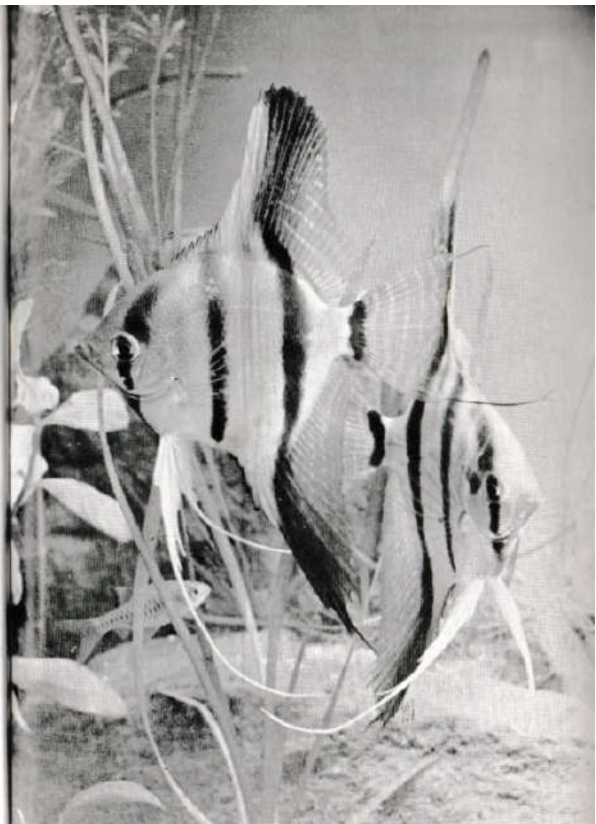
Albinism, even though it is far from common, is by no means the rare thing which many of us believe it to be. What happens is that an albino in a brood of normal youngsters is at a great disadvantage. His normal brothers and sisters are able to see their food plainly while the albino with his pink eyes lives in a constant glare where he must hunt his food mainly by his sense of smell. Besides, let us assume that an albino occurs in a Cichlid family where one or both of the parents are present to care for the young; the light-colored baby looks like an intruder to the parents and is promptly gobbled up. Albinism is rarely encountered in natural waters for the simple reason that a light-colored fish (with poor eyesight besides!) becomes an easy target for any predatory fish, bird, reptile, or amphibian that happens to spot it. With fishes raised in captivity it is a different story: if albinos are discovered they are usually separated from the others and given careful treatment.

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Angelfish of all color varieties are among the most popular of all tropical fishes. Photo by Papsan.



This is the Marbled Angel; unlike the new Albino variety, this specimen was able to spawn, although efforts up to this time have been unsuccessful in duplicating the sport. Photo by Dr. Herbert R. Axelrod.

It is always a good idea to give albino fishes special treatment. It takes them longer to locate food, with the result that they do not get their proper share in mixed company. This is something that usually does not occur to us when we buy albino fishes, and we soon come to realize that our albinos are con-

stantly being crowded away at feeding time, with the result that their growth is unsatisfactory.

We sincerely hope that the time is not far away when we can all own Albino Angelfish or Marbled Angelfish. Meantime, be patient; remember that patience can move mountains!

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