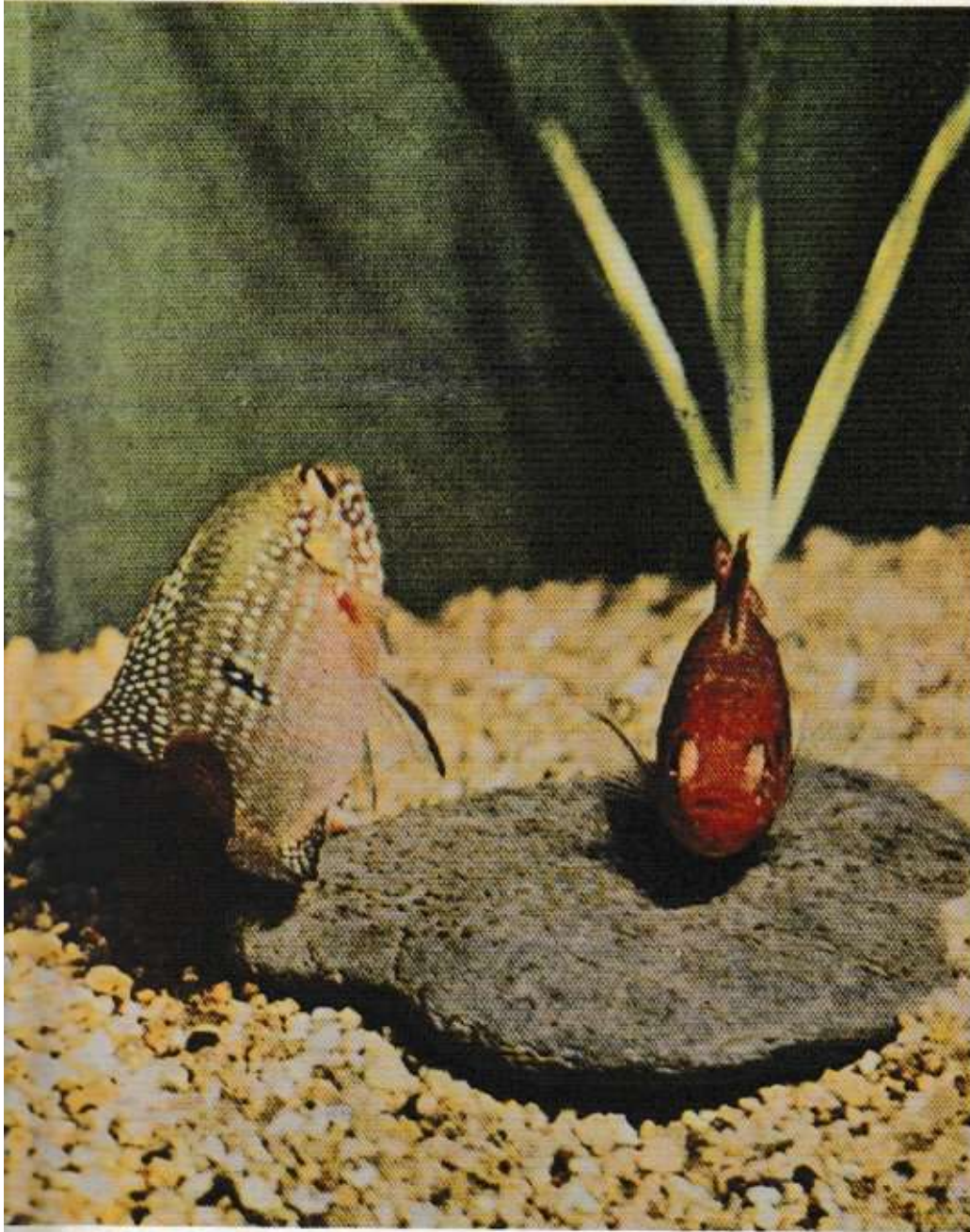


April 1967

tropical fish hobbyist

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contents

Color Varieties of the Hi-Fin Platy from Hawaii	4
Scavengers: The Domestic Brand	23
<i>Xiphophorus helleri</i>	33
Helping Your Society	37
Heaters, Then and Now	44
Sansevieria: The "I Don't Care" Plant	48
<i>Pelmatochromis guentheri</i> — Mouthbreeder Par Excellence	52
<i>Heterandria formosa</i>	67
Breeding the Jewel Cichlid, <i>Hemichromis bimaculatus</i>	89
<i>Aphyosemion bertholdi</i>	95

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features

Mail Call - 60, Guppy Corner - 79, Salts From The Seven Seas - 81, Your Fishes' Health - 83

cover

It's a shame that some of our most beautiful fishes are too aggressive to be kept in the average community tank. One such fish is the jewel cichlid, *Hemichromis bimaculatus*, a spawning pair of which is featured on our cover this month. Once they have seen these beautiful cichlids in full color, many hobbyists are more than willing to devote an aquarium to a single pair or to a pair of jewels along with a pair of some equally tough species, such as Jack Dempseys. If you're going to try the latter, however, be sure to give your fishes plenty of room and plenty of rockwork to hide and spawn in. Jewels spawn in typical cichlid fashion. For the complete story on spawning them and some terrific pictures, read the story beginning on page 89. Photo by Russell Ziska.

exotic tropical fishes supplements

Pages 33 and 34, 67 and 68. These pages are perforated for easy removal and punched to fit into the Looseleaf Edition of EXOTIC TROPICAL FISHES.

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publisher's note

Perhaps the science of fishkeeping has turned a pretty important corner. This came to me at breakfast this morning as I was eating corn flakes to which freeze-dried strawberries had been added. Freeze drying is the latest thing in food processing. It seems to be the perfect method of preserving the freshness of foods, and there's no need to refrigerate food treated in this manner . . . simply keep it dry, then add liquid when you're ready to eat. Then I remembered that the same process is being used with marvelous results on tubifex worms, brine shrimp, liver, beef, and several other fish foods. Don't get me wrong: I'm not thinking like a fish to the extent that I want to put tubifex worms on my corn flakes, but these freeze-dried foods need no refrigeration and keep indefinitely at room temperatures. Think what this means: no more tray smelling up the refrigerator and evoking caustic comments from your long-suffering family. Another thing, these "virtually-live" foods are always at hand, even when there are two feet of snow outside and your dealer cannot get any more living food until the weather warms up. The foods don't move, of course, but the nutritional value is perfectly preserved for the fishes to eat and grow on. Perhaps some day freezing and even refrigeration will be something we used to do to foods to preserve them, and freeze-drying will be standard procedure on all perishable foods, for humans as well as fish!

William Vorderwinkler

Tropical Fish Hobbyist

Color Varieties of the Hi-Fin Platy from Hawaii

BY GLENN Y. TAKESHITA
HONOLULU, HAWAII

The first red hi-fin platies developed in Hawaii were in the process of maturing when Dr. Jeanne Norton's article on the topsail platies appeared in TROPICAL FISH HOBBYIST magazine (June 1965).

Since then, the development of the different color varieties of hi-fin platies has come a long way in Hawaii. Today, this desired hi-fin character may be seen on almost every color variety that you can think of: blues, blacks, Berlins, bleeding hearts, saddle-backs. You name it, we have it.

A red hi-fin platy. Photo by Glenn Y. Takeshita.



April, 1967



A Berlin hi-fin platy. Photo by Glenn Y. Takeshita.

Although our present breeding stock of each color variety is still very limited, we are working very hard to increase it so that others in the hobby can enjoy the fish as we have.

In her articles "More Topsail Platies" and "Sunset Variatus, Tuxedo, Red, and Spotted Topsail Platies", Dr. Norton introduced to the hobby some of her many beautiful topsail platies. Now I would like to introduce to the hobby some of the new hi-fin platies that the hobbyists of Hawaii have developed.

First came the red hi-fin moon which was developed from a Hearin blue topsail variatus red low-fin platy cross. The first generation progeny of this cross had poor body color and a long variatus-type body but possessed the desired hi-fin character. Subsequent crossings back to the red low-fin platy have led to better color and more platy-like body proportions coupled with a very wide and flowing hi-fin dorsal.

At present, the author has back-crossed to the red platy four times and progeny thus obtained look very promising. The red body color looks very good, being an intense velvety red. The body color is also devoid of any of the striped markings that were prominent in the progeny from the first and second back-crosses. Body shape also looks good; the body now has



A saddleback hi-fin platy. Photo by Glenn Y. Takeshito.

being colorless. The first three fish of this color variety were all males; but in later batches, females were plentiful.

The author feels that this color variety is one that has great potential, for it possesses a striking color combination which would definitely catch the eyes and hearts of most hobbyists who are lucky enough to see them.

This color variety, like the other color varieties of the hi-fin platy seems, to be a good producer of young. Both the males and females of this color variety are very large in respect to body size. At present only Mr. F. Lau has breeding stock of this beautiful color variety.

Blue Hi-Fin Platy

This color variety was developed by crossing a red hi-fin platy hybrid with a low-fin blue moon female. A great percentage of the F_1 progeny of this cross possessed an undesirable dirty-orange basic body color coupled with the desired masking blue body sheen. Only few specimens possessed the desired steel-gray basic body color with the blue sheen plus the hi-fin character. It was these few ideal specimens that Mr. F. Lau bred to get the almost-true-breeding hi-fin blue moon strain that he has now.

In this color variety the females are much larger than the males. It could be stated from our limited experience with this color variety that the sex ratio of the progeny seems to lean in favor of the females. These females

are good producers of young, and the males seem to be very active sexually. Both the body shape and hi-fin development of the F_2 and F_3 progeny look very good at this writing.

Hi-Fin Black Moon

This color variety was developed from a cross between a male red hi-fin platy hybrid and a female low-fin black platy. The F_1 progeny from this cross had a long variatus-type body. The basic body color was smokey black, not the intense velvet black that we desired. The tip of the head was generally yellow or red in color. The hi-dorsal fins in most cases were fairly wide but either colorless or white. The F_1 blacks that had the hi-fin character turned out to be all males, but subsequent batches of fry have produced some females. Here again, as with the blues, the tendency was for the females to be larger than the males, although there were a few very large males in the F_1 progeny. F_2 and F_3 breedings have produced fry with a very platy-like body shape. Severe culling and careful selection of the fry will undoubtedly produce a much better stock to work with in the very near future.

A variation developed from this black strain is the hi-fin black wag moon. This variation is in all ways similar to the hi-fin black moon, the only

A black hi-fin platy. Photo by Glenn Y. Takeshito.



A saddleback hi-fin platy. Photo by Glenn Y. Takeshito.

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A black hi-fin platy. Photo by Glenn Y. Takeshito.



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difference being that the black wag has black instead of white finnage. Since the hi-fin black wag platy possesses all black finnage, an almost completely black fish was the result. The only part of the body that had a different color was the tip of the head, which was generally yellow in color. Both of these color variations are quite handsome when displayed in the right setting.

Another interesting variation has occurred in the progeny from some of the hi-fin blacks. These variants possess a very much elongated anal fin which in some cases is as long as the dorsal fin. The highly extended anal fins give the hi-fin platy an angelfish-like proportion which looks quite unique. Careful selective breeding of these variants will probably result in an intensification of this anal fin development from which a more bizarre and unique strain could be developed.

The Half-Red Hi-Fin Platy

This half-red hi-fin platy which appeared in the F₁ progeny of the above mentioned cross, possessed a body which was yellow in the front half and an intense red in the rear half. The hi-dorsal of this color variety is also an intense red color. Evidently the half-red body tendency is a trait that was inherited from the marigold and sunset variatus, for the marigold strain has individuals in which the red color of the caudal fin extends sometimes as much as 1/2-inch onto the body. Also, many sunset variatus strains possess this same tendency, especially those that have been interbred with the albino variatus at some time in the past.

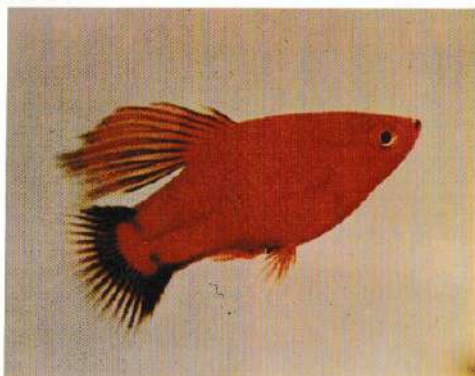
Subsequent breedings of these half-red hi-fin platy males to carefully color-selected marigold hi-fin variatus females have established a breeding stock that carries this beautiful and interesting half-red body color. Possibly by very careful selective line breeding, this interesting color variation could be fixed to breed 90% true in a very short span of time.

Hi-Fin Red and Gold Wag Platy

Both the hi-fin red and yellow-wag platy were the products of a breeding between a hi-fin red platy hybrid male and a low-fin red wag platy female. The author and Mr. Lloyd Yoshimatsu were the first ones in Hawaii to undertake this crossing and have had some success. The F₁ progeny of the above breeding possessed the desired hi-fin character and wag pattern but carried a basic body color of varying intensity. Mr. L. Yoshimatsu's F₁ progeny were colored a deep velvet red contrasted by the black wag pattern of the fins. But the author's F₁ progeny were very poorly colored, for the basic body color ranged from a gray or yellow to a deep orange. Although the basic body color was poor, the black of the wag pattern was good.

Surprisingly, a great majority of the F₁ progeny possessed a good body

Tropical Fish Hobbyist



A red wag hi-fin platy. Photo by Glenn Y. Takeshita.

shape being very platy-like in appearance. The hi-dorsal fins of these F₁ youngsters also were very good, for they were very wide, full and well carried.

In the first few batches of young that carried the wag pattern plus the hi-fin character, the ratio between the sexes leaned in favor of the males. Later batches of young possessed a greater number of females. Males of these color varieties are generally much smaller than the females, but there are exceptions to this rule.

The yellow (gold) hi-fin wags appeared in some of the above mentioned crosses. In every respect they are similar to the red wags except that they have a gold basic body color instead of a red one.

Hi-Fin Milk and Ink Platy

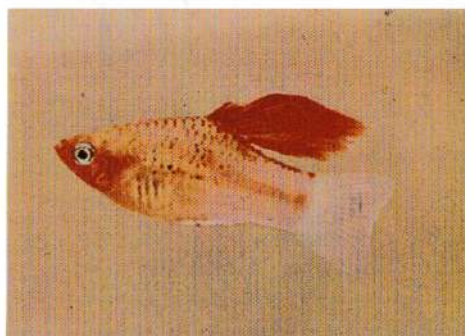
This color variety was produced by Mr. Lloyd Yoshimatsu by crossing a male hi-fin red hybrid platy with a female low-fin milk and ink platy. In the F₁ progeny from this mating, about a dozen of the fry possessed the desired hi-dorsal fin plus the milk and ink body color. But, to Mr. Yoshimatsu's dismay, all the fry were males upon maturing.

April, 1967



A milk and ink hi-fin platy. Photo by Glenn Y. Takeshita.

A bleeding heart hi-fin platy. Photo by Glenn Y. Takeshita.



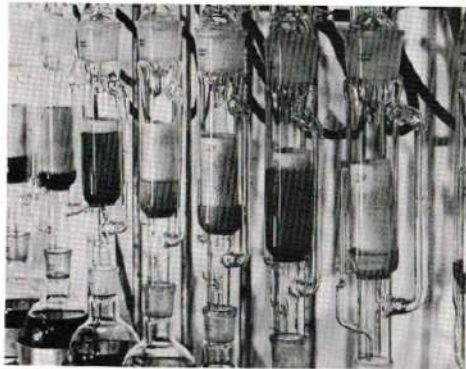


Photo by Harold G. Banks, Reno, N. Germany



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In order to get females of this color variety, Mr. Yoshimatsu initiated another mating by taking a male hi-fin milk and ink platy and backcrossing it to the low-fin milk and ink female platy. This son-mother mating produced some milk and ink females with the desired hi-fin character.

At this writing the third step of the breeding scheme is in operation, which consists of breeding both males and females which possess the desired hi-fin character plus the milk and ink color.

As in the other varieties, the males are much smaller in body size than the females. From our limited experience, it seems that the females are fair producers of young. In regards to color variation, there are marked differences in the basic white body color, ranging from a clear ice-box white to a dull yellow white. Dorsal fin development of this color variety at this writing could be considered only as fair. There is definitely room for much improvement in this area.

At present, there is just a small nucleus of breeding stock of this color variety in Hawaii, but much work is now being done with this color variety in order to establish it as a pure strain.

Bleeding Heart Hi-Fin Platy

This color variety was produced by breeding a low-fin bleeding heart platy female with a hi-fin red platy male. From this initial crossing, a batch of 30 fry were obtained. Of these 30 fry, only about one dozen were white, the rest being red. Of the dozen white fry, only eight possessed the hi-fin character. These eight fry all differentiated into males. As these males matured, their dorsal fins became red in color. Also blotches of red color appeared on the belly and face area. The rest of the body remained ice-box white.

Since there were no females with the desired hi-fin character, matings with virgin low-fin bleeding heart females are now being undertaken using the F₁ hi-fin bleeding heart males in order to get a breeding stock of this color variety to perpetuate the strain.

At this writing, our breeding plan is working out nicely for us, for we now have some fry from our second set of matings. We are hoping that at least a few of these fry will possess the desired hi-fin character plus the bleeding heart pattern, and some will also differentiate into females.

This color variety will undoubtedly become very popular among hobbyists, for it possesses a very striking and attractive color combination which is quite captivating when viewed in an aquarium with a dark background.

In summary, I would like to present a few general facts about hi-fin

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platies that I have gathered through my experiences and observations in working with them.

First, we have found that in a hybridization for the perpetuation of the hi-fin character using a low-fin individual as one of the initial breeding pair, most of the F₁ progeny which have the hi-fin character generally differentiate into males. But, when several different colored fry are obtained in the F₁ progeny, each of the same colored fry will be of the same sex. (Example: if in the F₁ progeny you get both red and yellow fry with the hi-fin character, all red fry are males and all yellow fry are females or vice versa.) This situation proved to be quite a handicap for us in our breeding scheme because one extra step had to be undertaken before hi-fin individuals of the same color but opposite sexes could be obtained.

Second, we have found that most of the hi-fin platy males of the different color variations are quite small in body size when compared to the females, but there are exceptions to this rule.

Third, we have found that the majority of the females of the different color variations were very poor producers of young when compared to their low-fin counterparts. Because of this, establishment of the different color strains was very slow when a limited number of breeders were available.

And last of all, we have found that hi-fin platies mature much more slowly than their low-fin counterparts. Generally full color and sexual maturity of the hi-fin platies takes 8 to 10 months as compared to the low-fins which take from 3 to 6 months to attain full sexual maturity. Those hi-fin platies that mature in 3 to 6 months remain small and runted when compared to the individuals that take a full 8 to 10 months to mature and color. Our observations indicate that the runted individuals are more active sexually than the larger fish. These runted individuals drive the females constantly day after day. We have not used the runts for the establishment of the different color varieties, however, for the goal was to establish strains of large individuals.

This article has presented to you the color variations of the hi-fin platy that are already developed or being developed in Hawaii. Since Hawaii is situated so far from the continental United States, new tropicals are generally belated in reaching its shores. But, for once on the shores of Hawaii, the development is unbelievably rapid. Good examples of this accelerated establishment and development are the phenomenal manipulation of the Simpson swords, the lyre-tail mollies, the hi-fin variatus, and now the hi-fin platy by Hawaiian breeders. The hi-fin platy boom is now at its peak here in Hawaii. We hope that our new color variations of the hi-fin platy will eventually get to the continental United States, for our goal was to develop these new strains in order that the entire hobby could enjoy the fruits of our endeavors.

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In range, size, and habits it is quite similar to the yellow bullhead. However, the black bullhead is more prolific than the yellow, laying about 6,000 eggs in saucer-shaped nests made in the sand. Mating takes place any time from May to June, and parental care is given to the fry.

The last of the common bullheads is the brown bullhead, *Ictalurus nebulosus*. Usually dark brown to black in color, the brown bullhead has black chin barbels, a separate adipose fin, a slightly notched caudal, a yellow to milky white belly, and sharp edges on the rear of its pectoral spines. In range and habits it is typical of the genus. The brown bullhead is the most prolific of all the bullheads. In early spring it deposits up to 10,000 eggs in a saucer-like nest fanned out of the mud. This bullhead eats a wide range of food, but it sees very poorly and must locate its food by taste, smell, or feel. If kept in ponds, the brown bullhead tends to overpopulate its home to the detriment of other fishes.

All bullheads are easy to feed and will readily accept any dry, frozen, or live foods. Voracious eaters, they even relish occasional feedings of dog food or powdered dog biscuits. Indeed, their appetites are so large that it is best not to keep them with any fish which can be swallowed easily.

The hardness of bullheads is a well established fact. If their pond should dry up, bullheads wiggle themselves into the soft mud and can survive there for several days. Country boys often catch bullheads by digging them out of the mud of millponds which have been drained. Even foul water does not phase these fish greatly, and their home waters are often very muddy and sluggish.

Ictalurus nebulosus, a side view. Photo by G. J. M. Timmerman.



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A beautifully clear shot of the head of *Ictalurus nebulosus*. Photo by Gunter Serrit.

The freshwater sole, *Achirus fasciatus*, is another fine scavenger. This fish is sometimes called the hog choker, because its rasplike rough scales supposedly are capable of choking any hog which would try to eat the fish. The hog choker, a member of the family of broad soles known as the Achiridae, is native to coastal waters from Cape Cod south to Florida. Although it can survive in fresh water with no ill effects, the hog choker is partial to brackish or even salt water. As do all flatfishes, the hog choker spends its entire adult life lying on the bottom. Only the right side of the fish is pigmented; left side, upon which the fish lies, is completely white and almost translucent. The olive-brown color of the hog choker's top side can be altered to some extent to enable the fish to better match its background. This fish is so twisted that the eyes are both on the same side of its head, the right side. These small, close-set eyes were not always on the same side. The young are born with a normal eye arrangement, but the left eye slowly migrates to join the other. The mouth of the hog choker is small and twisted and has few teeth. When swimming, the hog choker moves its highly compressed body with an undulating fin movement reminiscent of the flying-carpets of *Arabian Nights* fame.

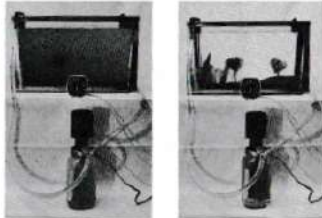
Although they reach a size of about 5 to 6 inches under natural conditions, hog chokers in the home aquarium rarely exceed 2 inches. Nothing, unfortunately, is known of the breeding habits of this fish. Within its wide



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Heaters, Then

BY WILLIAM VORDERWINKLER

One of the prime requisites when keeping most species of tropical fishes is a means of keeping their water as warm as it would be in the ponds, lakes, and streams from which they come. In the old days, when many houses were not wired for electricity, this was quite a problem, and keeping an aquarium at a temperature of about 76° F. was a task that took some doing. Houses in those days were heated very unevenly, and a tank that stood near a stove might be heated very satisfactorily in the daytime, but at night when the fires were banked, it would be a different story. In order to get around this, many tanks were provided with their own heating systems for those chilly night hours. A small gas flame or a little lamp that burned kerosene or alcohol was installed below a tank. Sometimes a little porcelain dome was built into the slate bottom, to spread the heat more efficiently. There was even a small gadget, a metal drawer that held a few hot coals and slid underneath a tank.

What a difference when electricity came on the scene! The first electric heaters came in different wattages, and if the wattage was too high for the tank you wanted to heat, your tank became too hot. For this reason, thermostats were designed to control the heaters and, thereby, stabilize water temperatures. The heart of a thermostat is a flat spring of two different metals, one of which expands and contracts with heat much more rapidly than the other causing the spring to bend. This bending is used to make or break an electrical connection. When the spring cools it closes an electrical contact and feeds current to the heater, which brings up the water temperature. When the water warms to the temperature for which the adjustment has been made, the spring bends back to open the contact once more and shut off the current, starting the same train of events once again. It was found that a single thermostat could control a whole series of tanks by connecting a group of heaters to a thermostat with multiple outlets in a "master tank." But there were disadvantages: suppose the heater in the "master tank" became inoperative. The thermostat contacts would remain closed, and the whole string of tanks would overheat!

and Now...

The first heaters the writer ever used were made of brass, coated with nickel. The nickel wasn't so bad when it came in contact with the water, but constant immersion had the effect of causing it to flake off, exposing the brass and then raising hob in general by poisoning the fishes. The first thermostats were designed to fit into separate glass tubes, and the gap between the electrical contacts was adjusted with a small set-screw. If one pulled out a thermostat to adjust the contacts and forget to unplug the current, there was a strong possibility that he could get a nice shock, especially if his fingers were wet. It was not long before thermostats were designed that were controlled by a shockproof knob on top. Another improvement was a built-in pilot light that showed when the heater was in operation. Putting the heater inside a brass tube was discarded as too dangerous to fish life, and with the advent of a glass like Pyrex, which is heat resistant, tubes of this material were used. Many manufacturers found it much more practical to combine both the heating element and thermostat in a single tube. This arrangement, the writer has found, for various reasons tends to give a quicker and more positive electrical contact. Such a contact, aided by a small-capacity condenser across the circuit, is almost inaudible as interference in radio and television sets that happen to be nearby.

Like any appliance that uses a glowing wire, the possibility always exists that some day your heater may burn out. If equipped with a pilot light, this unhappy circumstance is easy to spot: the pilot light stays on and the water gets no warmer. It is a simple matter to disconnect the dead heater unit and re-connect a new one. If there is a loud click or buzz in your radio or television set every time the pilot light goes on, the condenser may be defective; get a new condenser and install it the same way as the old one was before you took it out. Make sure the new condenser is the same capacity as the old one.

Being made of glass, heater tubes are breakable if dropped or handled roughly. Replacing them is simplicity itself, but don't cut your fingers! The thermostat contacts should be cleaned occasionally if they have become pitted or dirty. A small file such as is used for automobile distributor points is perfect for this job. Make sure the thermostat contacts are clean and smooth, and meet evenly.

A good heater and thermostat combination can save many times their price in fish lives. It's cheap insurance even if you buy the best!

Sansevieria: The "I Don't Care" Plant

BY IDA COCHRAN

Plants that live mostly in water are called hydrophytes. Their weak, pliable stems allow for the give and take of water currents, depending upon the buoyancy of the water for support.

On the opposite side of the fence are the xerophytes, which are able to live for long periods with little or no water. They have the ability to hold what water they can get and use it as needed, and are common to the deserts and other dry places. Such a plant is Sansevieria.

The erect, blade-like leaves of the "Sans," with its zig-zag, horizontal markings of light and dark green, are absolutely smooth and waxlike to the touch. It has at least two popular names, these being "Snake Plant" and "Devil's Tongue." The latter always puzzled me until I learned that the Portuguese believe the devil to possess a forked tongue.

The odd thing about Sansevieria is that it may be plucked from its dry environment, where it may have survived years of almost total neglect and poor soil conditions, apparently possessing none of the structures common to the water plants, and planted, completely submerged, in the aquarium.

The Sans offers no problems in water preference. As long as it is fit for tropical fish, the Snake Plant is right at home. If the water should be unsuitable, you will find the fish dying long before the Sans begins to show distress.

Truly the Guppy of the plant world, the Sans will tolerate almost anything; again, like the Guppy, they will grow bigger and better under favorable circumstances. For one thing, they like a tank that has been set up long enough for plenty of fish waste to have settled in the sand. They will really grow if given at least twelve hours of light a day.

Another thing I like about Sansevieria is that in the aquarium it does not produce a great, massive root system. This makes planting over sub-sand filters possible and can change a tank's appearance considerably. This is a boon to those who use the under-gravel filters and deplore the great expanse of nothingness, for the "Sans" will not interfere with the efficiency of this type of filter arrangement and will grow there just as well as in any other part of the tank.

When selecting Sansevieria for the aquarium, examine the plants for bruised leaves. Any blades that have blemishes, even old scars, should be cut off as close to the base of the plant as possible. I tell you this for two reasons, and believe me, I speak from sad experience, and the loss of the largest plants I had, from which I hacked off several blades, leaving stumps.



Several kinds of Sansevieria plants grown out of water. Photo by Dr. Robert E. Atkinson.

As long as the plants are whole, fish and snails ignore them. However, a raw stump, a cut or torn blade or even a hole exposing the fibrous structure is an invitation to everything that swims or crawls. What the fish don't tear to shreds, the snails will devour with glee. Should your particular fish decide, after a nibble or two, that the Sans is not worth eating, and your tank be free of snails, you may still be in for trouble. Having lost the protective outer "skin," the damaged part will begin to rot. This is the only drawback to this water-convert. It lacks the ability to heal itself without dry air. The base, or trunk, of the plant is of slightly different structure from the leaves, and this is why you should cut as low and as close to the trunk as possible.

Propagating by leaf cuttings is best done by pot culture, and out of water, if you please. While it is possible to propagate cuttings under water, it is not very practical; not only are you likely to have more rot than survive, but it may be many months before you are rewarded with the first tiny shoot.

Almost any plant mixture will serve the purpose. I use ordinary garden soil with some peat mixed in, about three parts soil to one part peat, and keep the mixture slightly damp. Over-watering may cause the soil to sour and is sure death to your cuttings.

You do not have to wait for your cuttings to become full-fledged plants to enjoy them in your aquarium. After three or four weeks you may select a few and arrange them to give the appearance of a complete plant. This is most effective if the blades are of different lengths and the tallest placed to form the center with the shorter blades angling off to the sides. You may want to move some of the blades as new shoots appear to give them room to develop.

If you have Sansevieria standing around in pots in your home or keeping company with the "hens and chicks" in your succulent garden, why not have it as an unusual tank plant?



A *Pelmatochromis guentheri* pair. The male is on the right. Photo by Dave Tahir.

Pelmatochromis guentheri — Mouthbreeder Par Excellence

BY DICK STRATTON

To the average aquarist, the term "mouthbreeder" brings to mind either *Tilapia* (African mouthbreeder) or *Hemihaplochromis* and *Haplochromis* (Egyptian mouthbreeder) species. Many species of cichlids are mouth-breeders, however, including some of the very rare and exotic species from Lakes Tanganyika and Nyasa, and many of them display brood care that is much more intensive and complex than that of our better-known mouth-breeders. A case in point is *Pelmatochromis guentheri* (Suavage).

It seems strange that a fish so closely related to the well-known *Pelmatochromis kribensis* should be a mouthbreeder, and, as a matter of fact, young specimens look very much like *Tilapia* species of some sort. Upon reaching sexual maturity, *P. guentheri* attains a more obvious *Pelmatochromis* shape as well as other typical *Pelmatochromis* characteristics. One of the most readily apparent of these characteristics is the red glow in the belly region displayed by the female. It is not as bright as that in *P. kribensis*, but it is a definite glow.



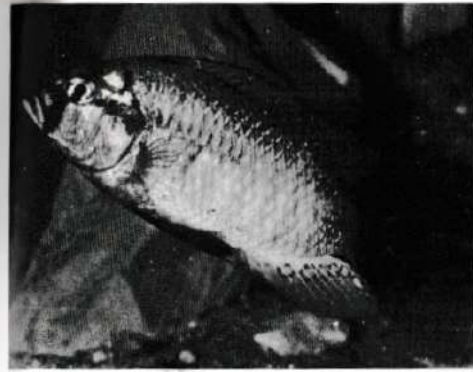
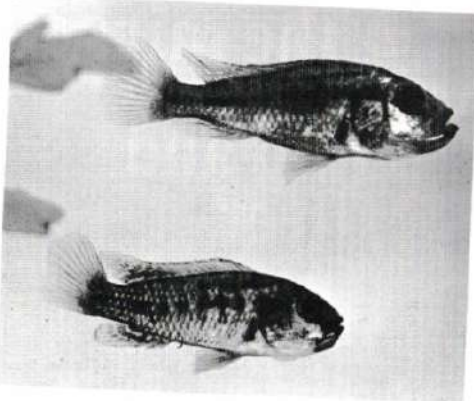
Most mouthbreeders of the genus *Tilapia* grow quite large. Two such species are the black-chinned mouthbreeder *T. macrocephala*, above (photo by Lawrence E. Perkins) and the *T. zetta*, below (photo by Dr. Herbert R. Axelrod).



Neither the male nor the female of this species is colorful enough to be considered gaudy, but they have features which make them quite handsome. The female's main attributes in the looks department are the previously mentioned red glow in the belly region and a very striking platinum dorsal fin. The male does not have either of these features, which makes determining sexes easy with this particular cichlid species. The male *guentheri* is an overall green-gray with red-rimmed dorsal, red eyes, a black spot edged in red on the gill plate, red spot on the body in back of the gill plate, and a red glow in the throat region.

I obtained my specimens when they were about half-grown and so colorless you could practically see through them. The specimens remained relatively colorless until they reached maturity, although the females' platinum-colored dorsals were in evidence during most of this time and were quite striking. Normally I try to get about six young cichlids at a time to assure having a pair. While this system has never failed for me, there have been many times when I have ended up with only one pair. In the

The dwarf Egyptian mouthbreeder, *Hemihaplochromis multicolor*, does not often exceed 3 inches in length. Photo by G. J. M. Timmerman.



Haplochromis burtoni is medium-sized among the mouthbreeders. The species grows to a length of about 4 inches. Photo by Zimmer.

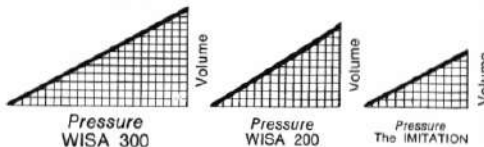
case of the *P. guentheri*, I had one male and five females, and, later on, this situation became quite a source of frustration to me.

After about 3 months, my specimens began to show their mature coloration. While the colors were not gaudy, the fish were quite handsome, and I began to watch for the signs of an imminent spawning. They were not long in coming. Soon the male had paired-off with a female, and the two fish were chasing the other females away from a selected site, so I removed the "spares" for their own good and to give the pair privacy.

I was eager to observe the spawning procedure, because contradictory reports had been given in the popular aquarium literature. Some reports indicated that the male and female both incubate the brood in their mouths and even pass them back and forth to each other. (I never observed this behavior.) Other sources indicated the male alone incubated the brood and that the female did not participate in any way. (My experience is that this definitely is not so.)

In spite of the fact that I was quite anxious to observe the actual spawning, the fish were most uncooperative and always managed to spawn during my

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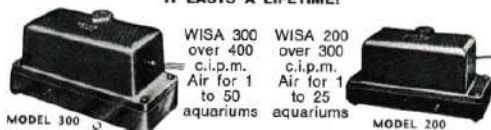


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absence. I knew when a spawning had taken place by the fact that the male was displaying the tell-tale chewing motions, a sure sign that he had eggs in his mouth. The purpose of the "chewing" is to wallow the eggs or fry around. Studies with *Tilapia* have demonstrated that the friction of the wallowing process is an important factor in protecting the eggs from bacteria. I never saw the female take the eggs or fry in her mouth, but she did help the male patrol for enemies while he carried the eggs, and she helped guard the fry once they were free-swimming.

Unfortunately, my male turned out to be a consistent egg swallower. Sometimes, just to be obnoxious, he waited as long as 10 days to get my hopes up before he finally swallowed his brood.

Once I tried to get him to drop the eggs by netting him from the tank.

At the slightest sign of danger, either actual or imagined, these *Tilapia mossambica* fry crowd into the protection of mama's mouth. Photo by Marcus.



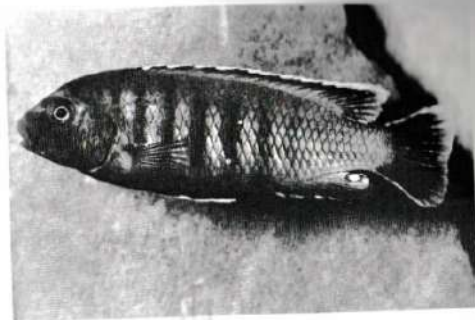
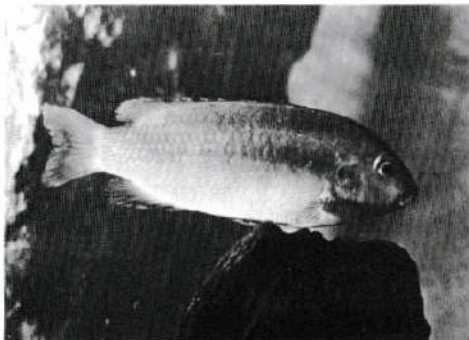
(I planned to hatch them using a saline solution.) Unfortunately, netting this fish out did not cause him to drop the eggs, nor did it cause him to swallow them (he did that later on), and I was seriously considering prying the male's mouth open and shaking the eggs out of him! It was at this point that I experienced extreme irritation at having only one male—and such a "bad" one at that!

Finally, in disgust, I dumped my *P. guentheri* in a large community tank of medium-sized cichlids. At that time the mouthbreeders were about 4 inches long; they are now about 6 inches long, and this seems to be their maximum length. I had not given up on my *P. guentheri*, but for the time being, I had run out of patience!

From time to time, I noted, rather cynically, that the male had eggs in his mouth, but true to form, he never reared any to the free-swimming stage.

Finally, 2 or 3 months later, I noticed that the male and female had taken over a large section of the 40-gallon tank and were keeping all the other fishes crowded together on the other side. Looking closely, I discovered about 25 fry foraging along the bottom of the tank. I was amazed at the size of the fry, for they were considerably larger than newborn puppies.

Most of the Lake Nyasa cichlids have been found to be mouthbreeders. This is a female *Pseudotropheus novemfasciatus*. Photo by Maurice.



Note the egg-shaped spots of the snout fin of this male *Pseudotropheus novemfasciatus*. Such spots are characteristic of many mouthbreeders. Photo by Maurice.

Also, as it turned out, the *P. guentheri* young were quite fast growing compared to other species of *Pelmatochromis*.

I tapped on the glass to see if both male and female would take the fry in their mouths. The fry swam to both parents, but only the male opened his mouth and allowed the young to swim in. The female would hover over the young when they were swimming about, much in the manner of a pit-spawning cichlid, and she protected them fiercely from the other fishes, as did the male. When the male had the fry in his mouth, both male and female continued to guard their selected site. The male chased other fishes even with babies in his mouth, but obviously he could take only tiny bites!

In my opinion, every aquarist should give mouthbreeders a try at one time or another, and this is one of the most fascinating of them all. Its care for its brood is quite intensive; over 3 weeks after they hatched, when I finally siphoned the brood out of that community tank of rough cichlids, all 25 were still alive! Two other advantages of this species of mouth-breeder are that it does not get as large as most of the others, and it does not dig deep spawning pits. So, if you get a chance to pick up some specimens of this species, by all means, do so. And do not be too impatient with an egg-swallowing male—he may turn out to be a good parent after all!

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MAIL CALL

By William Vorderwinkler

If you have an aquarium question that you would like answered, send it to MAIL CALL. Each month the most interesting questions received and their answers will be published in this column. Letters containing questions cannot be acknowledged or answered personally. Address all questions to: MAIL CALL, T.F.H. Publications, Inc., 245 Central Avenue, Jersey City, N. J. 07302.

Livebearers vs. egglayers
Q. Mr. Ong Kay Yong states in one of your earlier issues that harlequin rasboras are livebearers. I have noted with some livebearing fishes such as swordtails that at the same time as the young are being born live, an occasional egg is dropped, usually to be eaten by the female. We know livebearing fish are not true livebearers like the warm-blooded mammals as at no time is the baby fish attached to the mother by an umbilical cord. The only thing these fish do is to provide a hatching place for the eggs and then release the fry at the free-swimming stage. Might these eggs then, if left unmolested, not hatch in the water? This may be what Mr. Ong has seen!

Mrs. Sheila Anderson,
Angus, Scotland

A. What the mother livebearer does, as you say, is to provide a safe haven for her eggs until the fry are hatched and free-swimming. They are not attached to the mother's uterus by an umbilical cord, it is true, but they seem to get some nourishment not only from the yolk, but also from the amniotic fluid of the mother. If this is the case, it could easily be the

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Spawning rosbars.

explanation of why these accidentally dropped eggs seldom hatch. As for Mr. Ong, I must disagree with his statement that rosbars are livebearers and say what so many who have bred them successfully are saying, that they are two egg-layers closely related to the barb and danios.

Wandering loaches

Q. 1. Recently I bought a pair of what my dealer called weather fish. They are more commonly called loaches and are in the family Cobitidae, I believe. The first day, after the usual 20-minute equalization period, I introduced them into a 10-gallon tank, kept at about 72°, pH about 7.0, with a bottom filter and many plants. A little later when I checked them, I found them on the floor, even though the hood was closed. Replacing them gently they revived and did well. I resolved to be more careful,

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but the next day one had perished on the floor while I was at school. Plugging up the extra utility holes in the rear of the hood I took pains to secure the hood after each feeding. One morning, a week later, I found the other one on the floor, equally dead. Checking I found a small space between the hood and the tank edge that it might have used to escape. Why?

2. Living in a small town has distinct disadvantages considering that the only two dealers within 60 miles keep unhealthily tanks. After I buy fish I find that, to keep them, I have to quarantine them and feed them a rich diet, i.e. fresh food constantly—daphnia, shrimp and drosophila, to stave off infections in their weakened state. Is there any easier way to help them adjust to a more healthy state?

Roger Eason, Pittsburg, Kansas
A. 1. The family Cobitidae is a big one, and not knowing which genus and species

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You mention, I have to generalize a bit more than I would like. The temperature of about 72° is on the low side for the tropical loaches, and they might have been looking for warmer water. When a fish wants to jump out of a tank, and sometimes this is sheer playfulness, he can squeeze through very small holes, and it is a simple matter to keep these holes closed. Another thing you could do would be to bring down the water level a little bit, making it more difficult for a fish to jump through any openings.

2. The precautions you say you are forced to take are just ordinary ones wherever you make new purchases. Until a fish, or for that matter a plant, is established in a permanent healthy environment, he is going through a very difficult stage of his life and anything you can do to make this period a little easier

for him could make a life-and-death difference. So many hobbyists forget this and dump a newly-purchased pair of fish in their tanks, and if disaster strikes they

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species is never normal; these two do not come from the same waters in nature. However, a healthy male that is ripe for spawning might not take it amiss if there were a female of another species equally ripe for spawning to mate with.

2. You might say it is a rare occurrence, simply because it is seldom that a male of one species is given a chance to mate with a female of another very similar species. We would see a lot of such hybrids, but one thing that happens often is that the young that are produced from such a union, although otherwise healthy, are incapable of reproducing.

Letter from Vietnam

I am, or should say was, a confirmed reader of TFH. That is, I read the magazine until October 1965 when I had to give up my hobby and job as a petshop manager to join with many others in the

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defense of our country's way of life and come to Vietnam. Although I will be able to pick up my hobby at a later date, I know that I must be behind in information on new equipment and new varieties of tropical fish.

An idea struck me a few days ago when we were on patrol and stopped at a small jungle stream to eat our "C" rations. Staying in the wood line to avoid being seen, I was left in a position which was very wet; standing waist-deep in the stream, which was used to fill the rice paddies in the area. The water was crystal clear and had a gentle flow to it. Standing next to a fallen tree, I continued as best I could to eat my rations. I was enjoying broiled chicken when I saw what appeared to be a small dario. I then dropped a few bits of my chicken into the water to attract the

fish for a closer look. Within minutes I was completely surrounded and they were eating from my hand. I don't believe I have ever seen the species described in any books or for sale in any shops. They were a dull brown in color and were lightly streaked with white. They had white bellies, fair-sized barbels and pectoral fins that showed that they were good jumpers. Also to my surprise, although in very limited numbers, I saw white clouds which although very colorful were much smaller than those we have in our aquariums. Along those spots which weren't more than 6 or 8 inches deep, I also saw a few female bettas which seemed to be in prime condition for breeding. The females were of the typical brown color. I saw only one small male betta, about 1 1/2 inches long, about an inch smaller than the females. He was also a dark brown in color. I was unable to catch any of them.

The bottom of the stream was covered with a thick carpet of the *Cryptocoryne* species, and a thick growth covered both banks of the stream. Those in the water and those on the banks joined at short intervals to create cool spots which protected the fish from the blazing sun.

I would like to get any letters from anyone interested in the hobby. I would also be glad to correspond with any of the pros, for I have a few ques-

tions myself. It will take a long time for me to build my setup back up again and some advice would be welcomed.
SP-4 Gary E. Langley
U.S. 5893538
"D" Company 2nd Battalion 1st Inf.
196th Light Infantry Brigade
A.P.O. San Francisco 96256

A. I have never before heard of white clouds as far down as Vietnam and bettas outside of Thailand, but we are always learning! Hope you get a lot of responses to your very interesting letter. My guess would be that the little fish that you shared your chicken with is some kind of Eocorus.

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Hand-spawning tropical species

Q. 1. Can the hand method of spawning goldfish be used to spawn any other species of tropical fish?

2. Do tubifex worms cause constipation like white worms do?

3. How much salt can be added to aquarium water per gallon before it is harmful to *Corydoras* catfish?

4. I have bought a fine pair of *Macropodus opercularis*, paradise fish, and would like to breed them. Can you tell me how to do so and answer these questions? What size tank do I use? What pH, DH, temperature, and what level should the water be?
Robert G. D. Plungis, Linden, N.J.

A. 1. Trouble with trying to hand-spawn tropical species is that most are too small to hold properly without injuring them. If you want to try, I would suggest using a large barb species.

2. They do not seem to have the same constipating effect but should not be fed too frequently either, because they are a very rich, fatty food.

3. Salt is not as necessary in an aquarium as many "old-timers" insist it is,

but if you must use it, a teaspoonful per gallon added gradually should do no harm.

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4. Paradise fish are among the easiest of the labyrinth fishes to breed. Nothing less than a 10-gallon tank should be used, and the water depth need not be lowered. Water characteristics are not critical, as long as the water is clean. Remove the female as soon as she has laid her eggs. A temperature of about 75° F. is high enough for breeding, and 68 to 72° F. for keeping them. When mature they are very quarrelsome and should be kept by themselves.

Hybrids

Q. About 3 months ago a blond female guppy mated with a fancy male. Upon delivery, she bore only 2 fry. I noticed at the beginning that both had a tinge of orange coloring. This is the first time that I've ever seen newborn guppies

with any color at all.

1. Please tell me if there have been reports of fry being born with color.

2. At the age of 3 months both fry are a solid orange with one having a black crescent and the dorsal edged in black. Is this a rarity among female guppies?

3. What are the odds against crossbreeding mollies and guppies?

4. In the few that have been mated, what were used, female mollies and male guppies, or vice versa?

5. Have there ever been reports of crossbreeding swords and mollies? If so, were they induced or by chance?

Dorothy E. Walsh, Roselle, N.J.
 A. 1. It has been known to happen, but not often.

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2. They sound like rice fish. Too bad you didn't get a pair out of that lot, but you can always hope that the female will give birth again.

3. Tremendous!

4. It seems to have been worked both ways, but the results are not particularly attractive.

5. Yes, I have heard about it being accomplished. It must certainly be very rare. Mike Reed tells me he has seen two adults that were a result of a red swordtail to a black molly cross. The hybrids were mottled red and black.

Mouthbreeders

Q. 1. I have a pair of Egyptian mouthbreeders that I have tried to breed twice. Both times they had spawned successfully after which I removed the male and the rest of the fishes in the tank. But then, after about 3 days had elapsed the slowly began to spit out the eggs. She was in a 20-gallon tank at a temperature of 75° F., and there were plenty of rocks and such to hide in. Please tell me exactly what went wrong?

2. I wish to raise some platies and mollies in an outdoor garden pool this summer. Please tell me if there will be any trouble with the temperature aspect of this idea. I live in the Chicago

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area. Also, please tell me the temperature range of platies, mollies, and oscars.

3. Please tell me exactly what trouble

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will come from using iodized salt in an aquarium for mollies.

Larry Beavers, Northbrook, Ill.
A. 1. I could not tell you exactly what went wrong, but it is highly unnatural for a female mouthbreeder to spit out the eggs

like that. You say that this happened twice. It might be that the eggs were not properly fertilized. See what happens with another male.

2. If your pool is large enough and deep enough so that it does not cool off too quickly, you should have little trouble during the hot summer months.

3. The importance of using non-iodized salt has, in my opinion, been greatly overrated. If you use the proper amount and your fish are not very delicate, the use of salt with a trace of iodine in it is perfectly harmless. This statement, I suspect, is like kicking a large and active horse's nest, but I was never afraid to do that!

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Watersprite

Q. I have become interested in guppy breeding. I plan on buying another tank (15 to 20 gallons).

1. How many 1-inch guppies could I keep in a 15-gallon tank? The tank is well planted and has an undergravel filter. The water is about 75 to 80° F.
2. How many in a 20-gallon tank?
3. I have read that watersprite must be in a guppy tank. Is there any other plant I can use?
4. Do you know of anybody in my area that has fancy guppies and would care to sell some of their strain?

Gary Kratochvil, San Antonio, Texas

A. 1. The standard is supposed to be: 1 inch of guppy to each gallon, but with 24 hours a day of aeration and filtration going, I keep about two or three times that many.

2. Same as answer one.
3. It is not a "must" to have watersprite with your guppies; many other plants will do just as well. Watersprite just seems to go perfectly with a guppy tank because it grows well under the same conditions as do guppies and is hardy and prolific.
4. You might get some help from members of the Alamo Aquarium Society, 319 Byrnes Drive, San Antonio 9, Texas.

Development age

Q. I am a beginner in the art of raising fancy guppies. My setup is the best that space will permit. At present, my guppies are of a lower grade. With these I

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have been trying to learn the proper care and breeding of guppies. The answer to a few questions could help me with more serious breeding.

1. I have a young peach-colored guppy whose eye center is red. This fish is not like either parent. Is this an albino?

2. When can the color on fancy guppies first be detected?

3. At what age should the finnage be fully developed?

4. Is a pH of 6.8 to 7.2 suitable?

Mrs. Francis Stunzi, Rouens Point, N.Y.

A. 1. Yes, it is an albino.

2. As you are working with a lower grade of guppies, it will take many generations and all your ability to provide the right conditions to produce good fancy guppies. You will notice color in 3 to 4 months after birth.

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Salts From The Seven Seas



By Alfred A. Schultz

Q. Would you please answer the following questions?

1. Are dwarf seahorses easy to breed?
2. What is the best temperature for breeding dwarf seahorses?
3. How long do dwarf seahorses live?
4. How old do dwarf seahorses have to be to breed?

Kenneth McGowan, Baltimore, Md.

A. 1. No. Sometimes a male carrying eggs is shipped and gives birth after he is in a hobbyist's tank, and the hobbyist naturally takes credit for spawning the pair. The complete mating has seldom been accomplished in the aquarium.

2. The best temperature for keeping

dwarf seahorses is about 75° F. If you can breed them, I tip my hat to you!

3. Up to 2 years.

4. They mature at about a year.

Q. I have a 30-gallon tank in which I keep eight fishes. There seems to be a controversy between my dealer and your column regarding what type of filter is best for my tank. What filter is best: the undergravel type, the inside-the-tank box type or the outside-the-tank type?

Helen Cotton, Madison, Wis.

A. In my opinion the best filter for any tank is the outside power filter. The new Miracle Hydraulic power filter is really terrific. However, each of the filters you mention will do a good job if used properly. With the undergravel type, beware of anaerobic foods being pulled into the tank. With the box type, make sure the filtering material is changed often and, above all, use airstones in conjunction with all types.

Q. I have a problem in trying to get live adult brine shrimp. Is there any good substitute I can use instead?

Geoffrey Tilton, Alliance, Neb.

A. Frozen adult brine shrimp is a good substitute for the live shrimp. Also, small pieces of cut-up raw shrimp (the type we humans eat) is a good food for your fishes.

Q. I am planning to start a saltwater

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aquarium, and I don't understand what some of the items I need are used for, such as a hydrometer, scaler, silicate sand, and buffering agents. Can you help me?

Harold Sands,
Toronto, Canada

A. A hydrometer is used to measure the amount of salt in the water. The proper reading should be about 1.025. The scaler is the protective coating material which is applied to all the metal parts of your aquarium which come in contact with salt water. Silicate sand is the type of white sand usually seen at the seashore. The sand must be washed many times before

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it is used. Buffering agents are chemicals which are used to keep the water in your aquarium from becoming too acid or too alkaline. Similar agents are used in the regular aquarium for the same purpose.

YOUR FISHES' HEALTH

BY MIKE REED

Shock

Sudden change in any of a number of factors can cause a fish to go into shock. Even the healthiest fish can be so severely shocked by something seemingly trivial to the average aquarist that it dies in a matter of moments. I have seen fish go into shock displaying any one or any combination of three symptoms. These symptoms are all quite easy to observe. The most common sign of shock is a fading in color of the affected fish accompanied by its sinking to the bottom and remaining almost motionless either upright or lying on its side. Fishes reacting this way show little response to anything. They even are slow to move when touched by your hand or when attacked by other fishes in the tank. The second symptom one may see in shocked fishes is erratic swimming. In such cases the victim often swims in loop-the-loop fashion, smashing into rocks, gravel, plants, ornaments, and the tank sides and doing irreparable damage to itself. The third symptom of shock is the almost motionless floating of the affected fish at the water's surface. In such cases, the fish's gills can be seen to be moving, showing that it is not dead.

Shock is a sign of extreme distress. The fish in shock is in great danger not only from the terrific strain put upon it by the condition itself, but also from the damage he may inflict upon himself or have inflicted upon him by curious and aggressive tankmates who take advantage of his defenseless condition. For this reason, even though shock is often a short-lived condition that is not even observed by the average aquarist, it is important to avoid sudden changes in your fishes' environment. The most common causes of shock and a discussion of them follow.

Light. The sudden bright illumination of an aquarium that has been in darkness will cause almost every fish in it to go into at least mild shock. I have seen this kind of cruelty practiced unknowingly by people who have kept fishes and prided themselves on their knowledge of tropicals for years. The most usual symptom to appear in cases of light-shock is the first one described previously: a loss of color and lack of response and movement. More violent reactions often occur with specific individuals. A friend of mine had an old angelfish that responded to any bright light by thrashing about blindly as described in the second symptom previously discussed. This fish was so sensitive that almost any but the most gradual increase in light threw it into these dangerous fits. It finally cut its eye

one day and lost its use. The loss of this portion of its sight seemed to cure it by simple elimination of about half the amount of light it could perceive.

It should go without saying that to plunge your fishes into sudden darkness is almost as bad as suddenly illuminating them brightly.

If your fishes have been in a darkened tank and you wish to light their tank, be sure to illuminate the room first. Leave the room lights on for at least 15 minutes before you switch on the tank lights. If you are doing things right, your fishes will not lose much color or stay motionless long after the tank lights go on.

If your fishes have been in an illuminated tank and you wish to turn the lights off, again be sure to illuminate the room first. Leave the room lights on for at least 15 minutes after turning the tank lights out. In this way, when you turn the room lights out, darkness will have come upon your tropicals gradually.

Temperature, pH, and DH. Shocks caused by sudden changes in temperature, pH, or DH usually occur when new fishes are put in your aquarium. To avoid such shock, the best thing to do is check the pH and DH of the water in the bag in which your fishes are packed. Use good (brand name) pH and DH test kits for this. These kits are inexpensive and can be purchased at most pet shops. When you have tested the water in which the new fishes are packed, check the water in your tank. (Meanwhile be floating the bag and fish in your tank to equalize temperature and avoid shock on this count.) Chances are the dealer from which you bought your fishes has water from the same source as you get yours, so pH and DH should be roughly the same. If the pH differs by as much as .4 or .5 in either direction, you are taking a risk if you put the new fishes in. If the difference is as much as 1.0 or more, expect trouble. If the DH differs by as much as 50 or 60 parts per million, you might also have trouble. A difference of 75 to 100 ppm. is a big risk, and larger differences can be considered dangerous to virtually any species.

I once bought two big beautiful *Leporinus tasciatus*. After equalizing temperature between bag and tank and checking pH, I let the fish out into my 100-gallon display tank. Their color faded out immediately and they lay virtually motionless on the gravel. The only thing I hadn't checked was hardness, so I took a quick guess that they had been in considerably softer water than I had in my tank. (This was probably because of certain peculiarities of the water chemistry of this tank.) There was only one thing to do: I had to drain out about 75 gallons of water and replace it with new (softer) water. This all happened just as my wife and I were about to leave



Angelfish are among the most likely of tropicals to react to light by going into shock. The most common reaction is for them to fade to silver in color, losing all their dark markings for awhile. Loop-the-loop "blind" swimming is also found fairly often with angelfish in a tank that is lit suddenly. Photo by Dr. Herbert R. Axelrod.

for a show. Barbara has always been most understanding about my hobby, but I do believe I was pushing her just about to the limit as I ran frantically from the tank to the bathroom, draining and refilling the tank and splashing her floors and my best suit in my haste. The story ended happily though: the new fish perked up by the time the tank was half filled and none of the old inhabitants suffered from the sudden lowering of DH. Also, a rare thing, we caught a cub in New York City on a Saturday night. And we didn't miss a note of "My Fair Lady".

Sudden noises, vibrations, and movement. Anything that frightens a fish or causes it pain may send it into shock. A fish perceives both noises and vibrations as vibrations. A sudden blast of sound or a jolt of the aquarium, stand, or a floor or wall nearby in a quiet room will affect a fish's lateral line (a sensory organ) causing a reaction much like the one you would experience if someone tip-toed up to you when you were dozing or reading quietly and shrieked in your ear. People have had heart attacks from such pranks.

Sudden movement will also throw the fish in panic that could produce shock. This is because in the fish's natural environment, sudden movement may well be the attack of a predator.

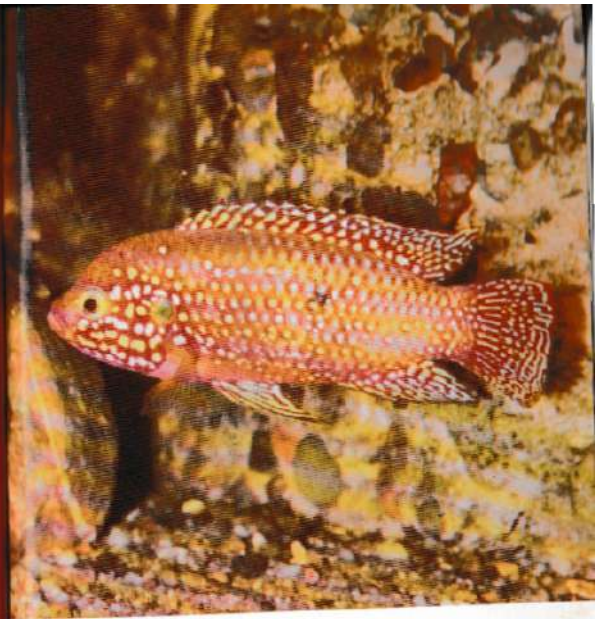
Children are the main offenders in these areas. They should be made to understand that they must not rap on the tank or stand, nor must they shout and jump about near the tank. It is often difficult to make youngsters behave around the aquarium because they are so enthusiastic about tropicals. Once, however, they understand that their actions could actually harm their pets, they usually change their ways quite readily.



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A jewel cichlid glowing like an ember against a rock background. Photo by Hansen.

Breeding the Jewel Cichlid, *Hemichromis bimaculatus*

BY RUDOLF ZUKAL
 Brno, Czechoslovakia

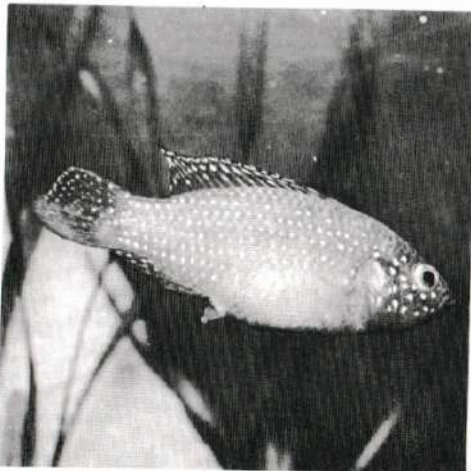
The 4- to 4½-inch jewel cichlid from the Niger, Nile, and Congo Rivers in Africa really need not be described, for it has been known to hobbyists since

Tropical Fish Hobbyist

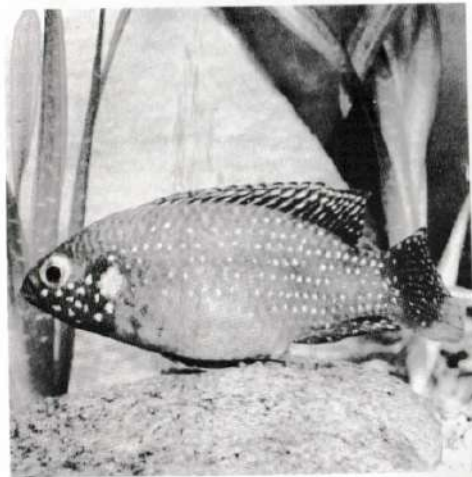
1907, and they must surely have been kept by practically all advanced fish hobbyists. With this species a striking thing is that the female is colored more intensely red than the male. The male is bigger and more slender in proportion. His ventral fins are pointed, and his coloration has more of a brownish tinge. The exact colors of these fish are difficult to describe because they vary greatly from one individual to another.

Jewel cichlids are of a quarrelsome nature and require a large tank. Some older individuals must even be kept by themselves. A further disadvantage is their tendency to dig, for which reason the tank should be provided with only heavy-leaved plants and numerous rocks of varying sizes. They are not particularly sensitive to the chemistry of their water, and for keeping them, I have found that a temperature of 65 to 70° F. is sufficient. The species requires the larger sizes of live foods for best health.

This shot shows the female's breeding tube clearly. Photo by Rudolf Zukal.



April, 1967



The female lays her eggs by rubbing her belly and breeding tube over the chosen spot. Photo by Rudolf Zukal.

To breed jewel cichlids, a tank of at least 10 to 20 gallons in capacity is required. If the pair have picked each other out, everything is in order. Otherwise, a male and female will not always get along well. If you are not sure, a pane of glass between them for a few days is advised.

The eggs are laid on a firm base, a rock or broad leaf. The touching attention given by both parents, the lovely courtship, and the entire breeding procedure will repay us for all the pains of getting our fish ready.

With these fish, one can tell the willingness of the female to spawn not only by her behavior and rounded belly, but also by the appearance of her breeding tube, which extends out quite far. At a temperature of 76 to 78° F. the pair spawn, usually on a flat rock. Around this spawning site, all plants

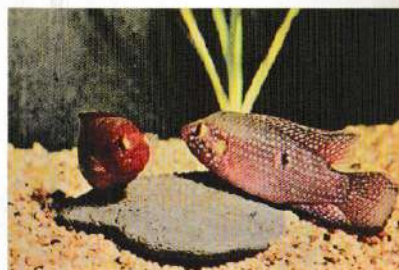
which are in the way are either uprooted or their foliage bitten off. For this reason, planting should be eliminated entirely, or only a few plants put in. The stone chosen for spawning gets painstakingly cleaned, mostly by the female. This cleaning job is often shared by the male and lasts several hours. Before the cleaning operation and during it, the male dances with his fins spread and also extends his breeding tube. When the cleaning is finished, the female glides over the stone a few times, and after some unsuccessful attempts, the first eggs are laid. Immediately, the male fertilizes them. The behavior of these fish varies somewhat during spawning. The female will lay eggs and then swim aside, allowing the male to perform his duty. Then the pair might begin spawning with the female swimming and laying



During spawning the pair may follow any of several spawning patterns. Here the female moves in alone to lay her eggs (above). The male, who has been watching from about a foot away, then begins to fertilize the eggs (below). The female now stands off awaiting her turn to lay more eggs. Photos by Rudolf Zatul.



It is not uncommon for the fish to switch their method of spawning as they proceed. The male swims up to the female as she lays her eggs (above). He then begins to follow along behind her fertilizing the eggs as she lays them (below). Photos by Rudolf Zatul.



eggs in circles on the stone while the male follows along behind, fertilizing the eggs as he goes. In about 2 or 3 hours, the spawning is ended.

Brood care is performed by both parents, who take turns fanning fresh water over the eggs. As soon as the youngsters emerge, they are usually transported by the female to a previously prepared depression in the gravel. Whenever I approached the aquarium, the parents immediately assumed a threatening pose and would attack any foreign object which I held in the tank. The youngsters, who could not yet swim, were moved daily. This was quite a task, as there were at least 350. Once the fry became freeswimming, the parents led them all over the tank. As I did not have the facilities to keep many kinds of fishes, I gave away the pair with their youngsters to an aquarist friend. According to him, they spawned again 10 days later.

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Aphyosemion bertholdi

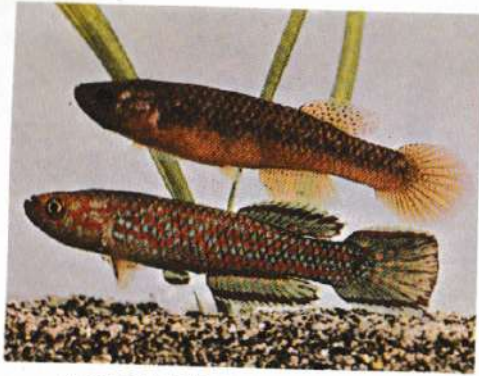
BY E. ROLOFF
KARLSRUHE, GERMANY

In November 1962, I found a very colorful species of *Aphyosemion* in a jungle creek about 10 miles north of Kenema, in Sierra Leone, West Africa. I am obligated to my driver for this fish; he had forgotten to bring an adequate supply of gasoline for the trip into the woods. That morning I had spent a few hours catching the spurrelli barb and a fish that was closely related to *Epiplatys fasciatus* near the ruins of a wooden bridge with my drop-net. I could see no other fish species, despite the fact that the water was crystal clear. The banks of the creek were thickly overgrown with trees and shrubbery, and I could see no possibility of getting through to the water. The depth varied between 1 and 2 feet, but further away there were also some deeper spots. Water temperature was 73° F. Hardness proved to be 1.5 DH, and the pH value was around 6.8.

When I wanted to return to Kenema at about noon, my driver found that there was no more gasoline in his tank. He was forced to hike for 4 hours through the woods to get to a highway where he could hope to be picked up by a passing auto to Kenema, there to notify my friends. I remained behind in the woods with our car. To pass the time, I finally was able to make a path to the creek by breaking away branch after branch. Here I fished barefoot in the shallow spots with a hand-net. Finally, under a tree root which extended from the shore, I caught an attractive steel-blue fish. It was the first of a new *Aphyosemion* species. Soon I was able to catch some more males and some females, which had a reticulated pattern on the sides and an intense red area at the tail base. In the aquarium, sad to say, this red coloring became very pale.

About 2 weeks later I found another lot of this new *Aphyosemion* species near the Agricultural Station at Newton, about 125 miles as the crow flies from their original location near Kenema. Finally, a year later, I was able to find two additional lots of this species near Lago and in a creek 9 miles to the north of Panguma. In every case they were found in clear, flowing water with well-shaded spots.

As soon as I caught the first specimen of this species, I was convinced that I had something new to science, because there were considerable differences in markings, coloration, and size from related species. Unfortunately scientific examination revealed that the new species was similar in fin-shape to other *Aphyosemion* species. This discovery was also made later with other new *Aphyosemion* species. The new description could be



An *Aphyosemion bertholdi* pair, the male below. Photo by E. Roloff.

made only after extensive examination which included hybridization attempts by Colonel J. J. Scheel (which took much time) in collaboration with the Danish zoologist Stenholt Clausen, who undertook some of the scientific examinations and was prevented from publishing them promptly by a prolonged African trip.

The new fish was described in the December, 1965 issue of *DATZ* magazine as *Aphyosemion bertholdi*. This was in honor of Mr. Karl Berthold in Geringwalde, who, even before the war, achieved great distinction as a breeder of *Aphyosemion* species.

It may be noted that the steel-blue coloring of the males loses some of its intensity if the tank he is in is placed in a location that is too light and if there are not plants enough present. Then the red dots on the body stand out a bit more, and it sometimes happens that keeping the fish in a well-lighted tank causes the blue base coloring to change to a light red.

Aphyosemion bertholdi attains a length of about 2 inches. Its care does not differ from that of other small *Aphyosemion* species. During spawning, eggs are buried in the bottom. The fry hatch in 2 to 3 weeks and are easily raised. For their care and breeding a temperature of 70 to 75° F. is sufficient, which approximates the temperatures found in their native waters.

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