

# TROPICAL FISH

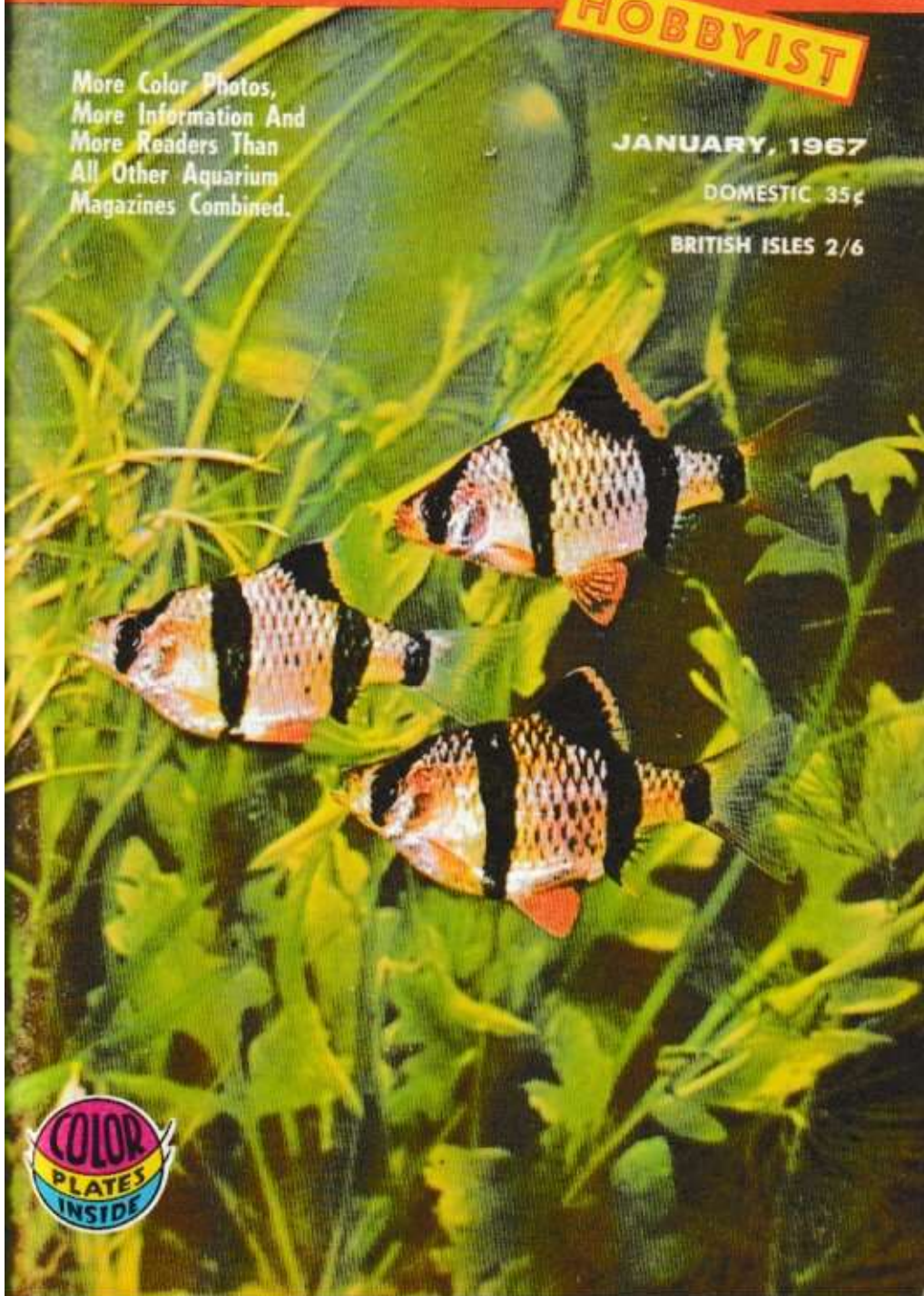
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**Aquarium Primer**



**AQUARIUM PRIMER**  
by Neal Pronek.  
25 cents from your dealer or direct from TFH.

Neal Pronek's 32-page, 7-chapter *Aquarium Primer* is an excellent book of basics for new and relatively new hobbyists. Foods and feeding are given prime consideration, and the various types are compared and their relative merits discussed with the end result that the beginner will know just how to feed his fishes a balanced diet. The prime question of how much to feed is given an entire page to assure that the reader is not left with a meaningless rule of thumb.

Just how much equipment is needed is another question which every beginner faces. The most commonly available equipment is described and its desirability is discussed. The reader will save many times the purchase price of the book reading this section before he buys any equipment.

Plants are of great importance to the appearance of the aquarium, and *Aquarium Primer* covers the major types with emphasis on some of the most attractive and most easily kept species.

Other aspects of the hobby that are covered include water chemistry and temperature, setting up the tank, the best fishes for beginners, and diseases. The book is illustrated with photos carefully selected to clarify the text.

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**FEATURES**

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Sally from The Seven Seas, p. 67; Your Fishes' Health, p. 68.

**COVERS**

Our cover this month features the tiger barb, *Copotes tetrazona*. This fish is particularly one of the best known and most popular of all tropicals. And no wonder, these barbs are beautiful, not at all shy, and among the pickiest and most active of the fishes commonly kept. Their one drawback is that you can't keep them with tangential, slower-moving tankmates, for they (the barbs) are often the aggressors of the world order. If you really want to see them at their best, try putting about 25 of them in a well filtered and aerated 70-gallon tank. Don't add any other fishes, and you've got quite an affair. For more on this species including some color spawning photos, read the story beginning on page 37. Photo by Dr. Herbert R. Axelrod.

**EXOTIC TROPICAL FISHES SUPPLEMENTS**

Pages 33 and 34, 51 and 52. These pages are prepared for easy removal and tacked to fit into the Locomot Edition of EXOTIC TROPICAL FISHES.

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**EDITORIALIALLY . . .**

A lady in Pennsylvania takes me to task for constantly stressing the point of not overcrowding a tank. In her defense she cites the case of a dealer she visited who had a 20-gallon tank in which she saw about 100 adult mollies. The reason he could get away with this, he told her, was because he was using a "fish tonic" in all of his tanks. This wonderful medicine was also recommended for the treatment of ichthyophthirius (ich) and fungus, and as a destroyer of hydra besides! Even after this glowing description (and I take this as a great personal compliment), the good lady wonders if she could not put in a few more fishes per gallon than I recommend --- if she uses this wonderful elixir.

Shades of patent medicines! The dealer, needless to say, was crowding his tank, but was compensating for this by using heavy aeration and filtration besides. This, plus the fact that he was in a position to give his fish a lot more attention than the average hobbyist and was, as all dealers do, redoing his tank regularly was the deciding factor here rather than the use of the tonic. As for curing ichthyophthirius and fungus and eradicating hydra, I must confess to being a doubting Thomas. A tank which is more crowded than the rules allow gets more solid wastes in the water as well as more carbon dioxide given off by the fish. If most of this is not done away with, the fish are living in an unhealthy environment, no matter what medication you dose them with. Isn't it better to have a few healthy fish than a lot of sick ones?

*William Vordenwinkler*

**Breeding the**  
**Red Devil Cichlid**  
*Cichlasoma erythraeum*

BY TIBOR FLOTHMANN  
DIRECTOR OF IMPORTS  
Gulf Fish Farms, Inc.  
Palmetto, Florida

This new fish from Nicaragua was discovered and shipped to the United States by one of God's servants, Father Astorqui, and because of its beautiful coloring and interesting behavior, it could soon become the most popular of the cichlids.



Just how many species of red devil cichlid there are is not yet clear to taxonomists. Obvious differences from one specimen to another are large rubbery lips (see left) as opposed to normal lips (see above) and colors ranging from red, red-black, and pink, to yellow. The fish are very prolific, spawning resulting in 1500 to 2000 young have been reported. Even more important, the fry are particularly tough, large percentages of them reaching adulthood. Photos by M. F. Roberts.



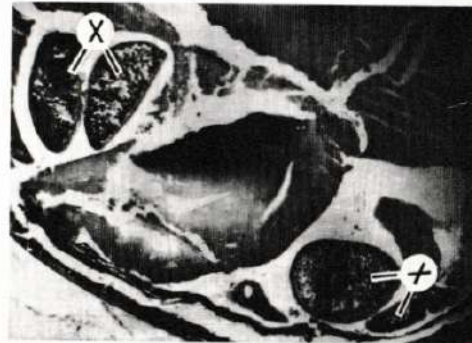
## Curing Ich (*Ichthyophthirius multifiliis*) With Malachite Green

BY JOSEPH HAVILKA AND IVAN PETROVICKY  
SCIENTIFIC INSTITUTE FOR FISHERIES AND HYDROBIOLOGY  
VODNANY, CZECHOSLOVAKIA  
LABORATORY FOR FISH DISEASES AND WATER POLLUTION  
PRAGUE, CZECHOSLOVAKIA

Photos and sketches by the authors

Ichthyophthirius is one of the most serious diseases which besets not only aquarium fishes but also commercially important food species, particularly carp and sturgeon. It belongs to the parasitic coating organisms, has a spherical form, and is between 0.2 and 1 mm in size. Under the microscope it plainly shows its horseshoe-shaped nucleus, which lies inside of its body. This body is covered with tiny cilia with which the parasite keeps itself in constant circular motion. The organism does not live on the surface of the fish's body, but bores into the skin or into the epithelium of the gills, where it lodges and nourishes itself on cell fluids and bits of loosened skin cells.

A microscopically enlarged view of the invasion sites (marked with X) of the ich organism.



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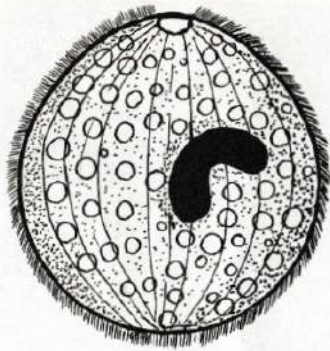
Three microscopically enlarged views of *Ichthyophthirius multifiliis*, the ich organism, showing the horseshoe-shaped nucleus quite clearly.

Ichthyophthirius can be introduced to the aquarium by direct contact of an infected fish with the aquarium water, or by the introduction of live foods from an area containing infected fishes.

The parasite multiplies outside of the fish's body. Its multiplication and subsequent growth progress quickly, especially at fairly high water temperatures, and shortly the parasite attacks all of the fishes in the pond or aquarium. At a temperature of 50° F. its life cycle lasts 4 weeks. At its optimum temperature, between 68° and 78° F., the cycle is about 1 week. The mature parasite then leaves the fish and falls to the bottom, where it frequently fastens itself to a plant. It then surrounds itself with a sheath and forms a cyst. In this cyst there occurs a very rapid cell division, so that in a few hours 1,000-2,000 spores emerge from the cyst. These, after 2 days of swimming with the circular motion, attack their fish hosts and quickly bore through the epidermis and gills with a sharp spike.

Even to the naked eye this disease is easily recognizable, because the affected fishes seem to be covered with what looks like finely granulated sugar on their bodies, fins, and gills. At first these spots are sharply defined but, as the disease progresses, they tend to run together into smudges which give the skin a white overcast caused by a great abundance of slime. As the disease progresses still further, the inflamed and dead skin falls off in patches, until the muscles become exposed. These damaged sites become secondarily attacked by bacteria, protozoa, and fungi. The disease runs a particularly dangerous course when the gills are affected; at first the irritation makes the gills bloody, and later they are covered with the white spots. Even the cornea of the eye can be affected, and both eyes can become infected then fungused and the fish become totally blind. In the beginning stages, the diseased fishes are very restless and try to rub the parasites off by rubbing against the bottom gravel and plant stems.





Sketch of *Ichthyophthirius multifiliis* showing the spherical body shape and the fine cilia which provide motive power for the parasite. Above is the oral opening and inside are the nucleus and various vacuoles.

The most common means of dealing with ichthyophthirius have always been to bathe the fishes in solutions of table salt, potassium permanganate, rivanol, or acriflavine. Most aquarists combine this with keeping the fishes at water temperatures that have been raised to at least 86° F., and in pond culture the fishes are placed in rapidly flowing water, where the young parasites are carried away effectively. The bathing methods of disinfection, which are useful enough where external parasites are concerned, are not very effective here, because the parasite is lodged below the epidermis, where the disinfecting media cannot penetrate.

In the culture of carp and trout, ichthyophthirius has been combated frequently without it resulting in many and lasting losses. In the last 4 years, however, the parasite had multiplied to such an extent that it presented a threat to the entire industry. This was the situation when it was decided to take heed of the German findings for the conquest of the parasite and the healing of the fish through the use of a bath in a malachite green solution. The baths were prepared in small containers with a concentration of 0.15 to 0.5 mg of malachite green to 1 liter of water, and lasted 7 to 10 days. Results were positive with the fishes treated as well as those of the next generation, and there was no disturbance of their fertility.

These results, after we had tested them in the laboratory, led us to treating aquarium fishes with malachite green. The first possibility for a test was presented to us in a 25-gallon tank in which breeding pairs of white clouds, zebra danios, and rosy barbs were attacked by ichthyophthirius. The

parasite became evident when a brood of zebra danios about a week old began to die. In another breeding aquarium of 25 gallons capacity, another attack broke out, this time in a batch of 5 mm-long rosy barbs. The brood of about 400 zebra danios was wiped out in a few days, but the disease did not have such a quick course with the rosy barbs. When the parent fish were examined they were found to have white spots, especially on the back and anal fin. A microscopic examination confirmed the presence of ichthyophthirius.

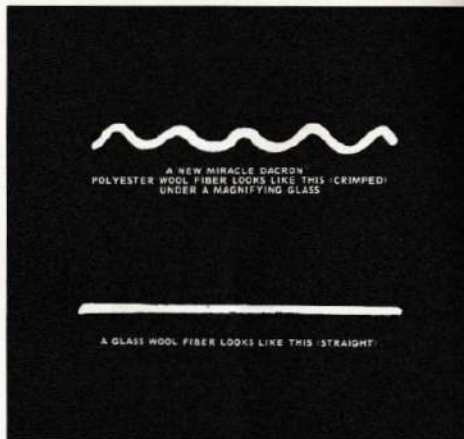
We put all fishes from suspected tanks in the 25-gallon aquarium that was infected with the disease. The tanks they had come from were left untreated and without fishes, because when the parasite does not find a new host for 4 days it dies. In the tank with the mixture of suspect and infected fishes, we put a malachite green solution.

The fishes spent a week in the tank with the malachite green. By then, oxydization had removed the green color. All the fishes were examined microscopically, and it could be seen that the ichthyophthirius organisms had been wiped out completely. It remained then to transfer the cured fishes to their original tanks. The use of malachite green on the brood of about 200 rosy barbs cured the disease, and only the severely damaged ones died; the rest returned to normal growth and appearance.

According to these successful tests, the use of malachite green by aquarists can be recommended in cases of ichthyophthirius. It is, however, easier to prevent diseases than to cure them. A strict quarantine for newly acquired fish must be observed at all times; live foods should come from clean ponds and pools, and each tank should have its own net and other tools. Plants should be placed in anthydrin for 3 days before using them, and keeping live foods in an acriflavine solution has been found to be the best prophylactic measure.

Malachite green when used in too great a concentration is damaging and even poisonous to fishes. The concentration must, therefore, be carefully measured out and painstakingly given. In aquariums, one uses a concentration of 0.1 mg malachite green to 1 liter of water, which is to say 10 mg of malachite green to 100 liters of aquarium water.

First, one must accurately measure the contents of the aquarium and the amount of malachite green to be used. Then one puts the malachite green crystals in a tumbler and dissolves them in a small amount of aquarium water. When the dye has dissolved, the water in the tumbler turns a deep blue. This solution is then added carefully to the tank containing the sick fishes; this is best done while stirring with a glass rod, so that the solution mixes thoroughly with the aquarium water. The aquarium water then becomes light green. At this concentration, the dye is effective as a cure and does no damage to plant life. It is also not necessary to raise the water temperature, and filtration and aeration can be maintained as usual.



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An *Otocinclus*, the smallest of the family Loricariidae. Photo by G. J. M. Timmerman.

## The Least of the Loricariidae

BY BRAZ WALKER

The tropical fish hobby in the past few years has become highly specialized in a number of directions, and for those of us with specialized interests it is sometimes easy to forget that the backbone of the hobby still lies in that customer who buys his fish food a can at a time and still gets a thrill out of trying to save each and every one of the baby guppies which might happen to be born in his community tank. He is the customer who keeps the "standard" tropicals standard, because year after year he will replace his lost fishes with those which are lively, colorful, compatible, and easy to care for. The perennial popularity of various species among "average"



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hobbyists vouches for their character, but there is one which although remaining constantly on the scene from year to year has never quite become a "standard" aquarium fish. Credit should be given where it is due, and to the tiny and unprepossessing *Otocinclus* species, also known as dwarf sucker catfishes, it is due.

The *Otocinclus* species have the appearance of having less armor than their larger, mud sucking, algae-eating cousins *Plecostomus*, *Xenocara*, and *Ancistris*, but, like the whip-tail *Loricaria*, and twig catfish (*Farionella*), their rows of bony plates protect not only their upper sides but also their ventral region. Least of a family of large algae eaters, *Otocinclus* is the pound per pound champion and has the added advantage of not outgrowing his welcome no matter how small the aquarium. Surprisingly, they are not molested by many species which could swallow them so easily that it would never even be noticed that the morsel was wearing an armored coat.

These mites are incapable of uprooting plants or doing almost anything else offensive during their stay in your tank, which is likely to be a good number of years if they are adequately cared for. Top size is about 2 inches although a good honest 1½ inches would do for most specimens.

Since algae is an important part of their diet in nature, they should be placed in a well lighted aquarium whenever possible. It has been my experience, however, that most of these little fellows will live happily and

A *Plecostomus*, a *Loricariidae* with a particularly large appetite for algae. Photo by Klaus Poyson.



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*Xenocara dolichoptera*, one of the more attractive of the Loricariidae. Photo by Dr. Herbert R. Axelrod.

in good health even in a rather dark aquarium if fed on presoaked, dried dog food. This is probably because dried dog food ordinarily has a cereal base and contains the necessary bulk to properly take care of fishes such as the Loricariidae with long coiled intestines. Certainly cooked spinach is beneficial, and, as a matter of fact, there are few aquarium fishes which will not soon learn to join in the fun if this is offered regularly. Some species such as *O. affinis* require at least some algae in their diets.

There are a number of species which are often imported together. Most are not difficult to sex and will spawn with proper handling. The extra girth of the female will be obvious when these little characters present a ventral view of themselves while hanging "by their teeth" on the front of the glass as they so often do. Spawning is similar to that of the *Corydoras* species but, unfortunately, it is not a common occurrence, probably for the reason that, like other species which abound in nature and are easily shipped in tremendous numbers, it is cheaper to import them.

This is not a striking genus of fishes. The members are hard workers and will earn their keep, and somehow even with their lack of bulk they have a way of making themselves prominent members of any aquarium. *Otocinclus arnoldi* is perhaps the most handsome of the genus, and with his shape and coloration he often gives the impression of a water-logged flying fox (*Epalzeorhynchus*) as he darts across the aquarium losing altitude as he goes.



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**TFH YEAR'S INDEX FOR 1966**

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A male tiger barb with a female in the belly preparatory to spawning. Photo by R. Zukal.

## The Tiger Barb. *Capoeta tetrazona*

BY RUDOLF ZUKAL  
BRNO, CZECHOSLOVAKIA

An honored place is held by the tiger barb as one of the best-liked and most beautiful aquarium fishes. This wonderfully attractive, active school fish was brought into Europe in 1933 from its native waters in Sumatra, Thailand, Borneo, and the Malay Peninsula. It attains a scant 2½ inches in length and, as it comes from a tropical climate, its aquarium temperature should never sink below 72°F. At low temperatures this attractive barb loses its lovely colors, retreats into the tank corners and, in a short time, dies. Therefore, it is important to keep this fish at the proper temperature.

Water characteristics are not as important to this barb as is the cleanliness of the water. Normal, fairly soft, crystal-clear water which is well aerated is best. In cloudy, infusoria-laden water, tiger



Above—the pair swim about investigating the spawning task. The male is the upper fish. Below—the male begins to drive the female in a rather haphazard manner. The tempo will build very quickly, however. Photos by R. Zukal.

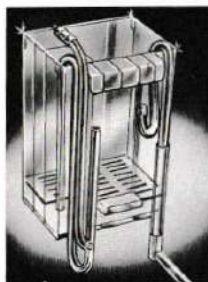


Above—the male crowds the female into the plants. Below—the spawning has begun. Side by side the pair shake as the male presses the female to his side by wrapping his tail around the upper part of her body. Photos by R. Zukal.





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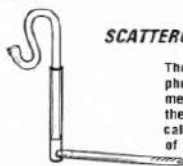
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barbs are very susceptible to gill inflammation. For this reason, it is advisable to filter the water and feed sensibly.

In a large tank planted densely with cryptocoryne, synnema, ceratopteris, etc., a school of these fish show their colors properly. They are fond of taking a position with their heads down, particularly when resting. Their behavior towards tankmates is not exemplary, however: even if they stage only harmless "battles" among themselves, they are fond of picking at the fin tips of such fish as angelfish and other threadfinned species. They are best kept in their own company or with other small barbs.

Getting tiger barbs to breed presents no great problems to the experienced hobbyist. I prepare a tank of about 5 gallons or a little more in capacity with aged tap water that has been mixed with one-fifth distilled water. This distilled water has been previously acidified by filtering for a week through peat moss. It is my custom to prepare the water in this manner although I know that normal rain water would serve as well. The fish also spawn in harder water, but the eggs do not develop. After the water has been prepared it has a pH value of 6.5, and the temperature is brought up to 80°F. Plants consist of hygrophila, limnophila, echinodorus tenellus, and some Java moss on the bottom. I always start by putting in one fish first, in this case the male. The next day the ripe female is introduced.

Sexes are easily distinguished, if the fish are mature. The male is more slender and more brightly colored, with bright red fins and a reddish snout. The female is fuller in the belly. It generally takes 2

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When the pair begins hunking about for and eating the eggs, spawning is over, and the fish should be removed from the breeding tank. Photo by E. Zekal.

days for the pair to get accustomed to things, and on the morning of the third day things begin to get going. The female gets chased wildly by the male, who tries frequently to ram her belly region. After a while the male calms down a bit and dances about the female in circles. Then he tries to lure her into the plants. I have never seen her following him, so I can only assume that a spawning site is first chosen by the female.

Finally they meet and press their bodies together with the male folding his tail over the female. At this time the eggs are released and the fish jerk apart and swim away. After a few seconds the driving goes on again and the entire procedure is repeated. Spawning can last 2 to 4 hours and result in as many as 500 eggs.

When spawning is completed, the pair should be fished out: otherwise they will eat their eggs. Hatching takes place in 2 to 36 hours and on the sixth day the fry swim freely and must be provided with tiny living food. In the first days of their lives the fry are very sensitive to temperature fluctuations and water changes. If well fed they grow very quickly and after 14 days the vertical bands become evident.

## Inheritance of the Hi-Fin Dorsal in Swordtails and Platies

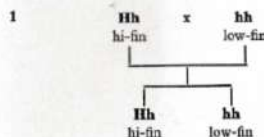
BY DR. JOANNE NORTON

Swordtails and platies having a large dorsal fin, called hi-fin, hi-top, or topsail (in platies) are increasing in supply as well as in number of color strains. Hi-fin swordtails exist in many different colors, including blood red, brick red, green, albino, red-eyed red, black, spotted, gold, red wag, gold wag, and tuxedo. Topsail platies also have been developed in a number of colors. As far as I know, the first Simpson hi-fin mutant is an ancestor of all of these hi-fin swordtails and platies.

Several years ago I noticed that whenever a low-fin swordtail from a strain in which there were no hi-fins was mated to a hi-fin, there would always be some hi-fin offspring, as well as some low-fins. Also, in the first generation from this kind of cross, as well as in future generations, there were either hi-fins or low-fins, no intermediate types. Therefore, I knew that hi-fin was due to a dominant gene, which may be called **H**, and that a low-fin sword does not have this **H** gene but is genetically pure (**hh**) for the recessive gene, **h**.

In a case of simple Mendelian inheritance involving one dominant gene, the population would be expected to include some homozygous, or pure-breeding, individuals. Then in hi-fins, for example, there would be some **HH** individuals. This type would produce all hi-fins, whether mated to a hi-fin or a low-fin. Since I never found a case in which any of my hi-fins produced all hi-fin offspring, I thought that the reason for this might be that no homozygous (**HH**) hi-fins exist. This would result if the **H** gene is lethal when homozygous (**HH**), but not lethal in a heterozygous (**Hh**) fish.

If hi-fin is inherited in this way, then there are two possible kinds of crosses involving hi-fins:



Thus, in this first type of cross, a hi-fin mated to a low-fin would be expected to produce hi-fins and low-fins in approximately equal numbers, a 1:1 ratio.





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low-fins, all in one brood. This is close to a 2:1 ratio. In a smaller brood from two other hi-fin parents, there were 20 hi-fins and 10 low-fins, again the expected 2:1 ratio.

I do not have counts of topsail (hi-fin) platy broods. However, there is reason to expect the hi-fin dorsal in these fish to be inherited in the same way as in swordtails since topsail platies have the same H gene, which originated in a swordtail. Also, I have never observed a 100 percent topsail brood, so it appears likely that HH individuals do not exist in platies either.

There is, then, the following evidence that the hi-fin dorsal is due to a dominant gene which is lethal when homozygous (HH): 1. No hi-fin has been observed that was true breeding in that all offspring from it were hi-fins. A true breeding hi-fin, if it existed, would have an HH genetic makeup. 2. Counts from a hi-fin x hi-fin cross were close to the expected 2:1 ratio. 3. Counts from a hi-fin x low-fin cross were close to the expected 1:1 ratio. It seems that it would now be desirable to get more counts from both hi-fin x low-fin and hi-fin x hi-fin crosses.

If the H gene does act as a lethal when present in a double "dose", then death probably occurs either at some stage before birth or within a few hours after birth. No large losses of young (from hi-fin x hi-fin) have been observed after the young are a day old. Sometimes a female swordtail produces many dead young along with the live ones. No counts have been made of these dead ones to see if there are the number that would be expected to die because of their HH genetic makeup. Of course, from a hi-fin x low-fin mating there should be no dead ones, while one fourth of the young would die from a hi-fin x hi-fin cross.

If the hi-fin dorsal is inherited as suggested, then there are several statements about hi-fin swordtails and topsail platies that may be helpful to those who are working with these fishes:

1. All hi-fins are genetically alike, Hh. None will produce a higher percentage of hi-fin offspring than any other one, provided the mating is hi-fin x hi-fin.
  2. No low-fin, even if from hi-fin stock, can produce any hi-fins unless it is mated to a hi-fin.
  3. There can be no true-breeding hi-fins.
  4. A hi-fin crossed with a hi-fin will produce about 66 percent hi-fins.
  5. A hi-fin crossed with a low-fin will produce about 50 percent hi-fins.
- As for pool-raised hi-fin swordtails or platies, the population as a whole may be expected to produce only a relatively small percentage of hi-fins since there will be low-fins present which are likely to be more prolific than the hi-fins.

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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 Cornelison Avenue, Jersey City, N. J. 07302.

**Heater or thermostat**

Q. On reading Mike Reed's YOUR FISHES' HEALTH column on "Temperature" in the September 1966 issue of T.F.H., I would like to point out that an error exists where he says: "A good heater can be your best friend, but a bad one can stick in the 'on' position and 'boil' your fishes." This is not so, the heaters do not stick on, only the controlling element or thermostat. There are only three main faults that occur with heaters which areas follows: Open circuit: heater will remain cold. Short circuit: this will cause the supply fuse to burn out.

Intermittently: heating becomes uncontrollable. Finally, may I add that your magazine is a worth-while asset to fish keeping and a great help to the hobbyist.

D. G. Crisp, Wimbledon, England  
A. In this country, and doubtless in your own, a "heater" has come to mean the

entire heater-thermostat unit, which is what Mike told me to tell you when I showed him your letter. Nowadays, a heater without a combined thermostat is almost unthinkable, although you can doubtless get heaters designed to be used with separate thermostats, like the ones

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which control a number of heaters. This old-fashioned arrangement is a bit tricky, and I do not know of any hobbyist who is still using it. A good heater-thermostat combination is not very expensive and is very good insurance.

**Guppies for fun and profit**

**Q.** I'm 11 years old and have raised tropical fish and rainbow guppies for about a year. I have read many books about them. My first batch of guppies are full grown now. The four males I have are especially beautiful. Could I get a high price or win any kind of prizes for them?

**Mary Jane Foldi, Detroit, Mich.**  
**A.** Your inquiry takes me back many, many years. Remember this: if your male guppies are beautiful to you, that is not enough if you want to sell them or win prizes with them. They must be irresistibly beautiful before other people would dig into their pockets to buy them. Remember the advice of professional guppy breeders everywhere, and never let the second-rate males get anywhere near the females, or the result will be a lot of second-rate youngsters which would have been first-class stock if they had a better father. Breed only your best males to your best females, and perhaps some day you will have guppies that people will want for themselves and that you can enter into competitions and win prizes for.

**"Sharks"**  
**Q.** I am interested in breeding sharks (such as red-tailed and red-finned sharks). How do you sex the two above-mentioned species? Is there a

book on them so that I can learn more about them?

**2.** Are red-finned and red-tailed sharks the same genus? Can they be crossbred?

**3.** If I cross an albino swordtail with an albino hi-fin swordtail, what would be the chance of getting more albino hi-fin?

**Bob Jacques, Wilmette, Ill.**

**A.** 1. I would suggest that you choose something a little easier to breed, if you are looking for reads. There are no available reports on their successful spawning in the aquarium. They attain maturity at about 4 inches, and sexing them is purely a matter of guesswork. Where can you learn about them? That depends on what you want to learn. A good work on Thailand fishes is *YIII*

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FRESH-WATER FISHES OF SIAM, OR THAILAND, by Hugh M. Smith. Reprints of this book are sold by the Smithsonian Institution in Washington D.C. for \$2 each.

**2.** Yes; the red-tailed sharks are *Labeo bicolor*, and the red-finned ones are *Labeo erythrurus*. I doubt that they will ever be crossbred.



Above—a red-tailed shark. Below—a red-finned shark.



**3.** You can't produce a thing like this with any amount of accuracy, but it pays if you really want hi-fin albino youngsters to mate a male and female hi-fin. Even then you will probably get a lot of ordinary-finned youngsters.

**No heater**

**Q.** I have a 10-gallon tank, with pump and filter but no heater, for the lights soon warm the tank to 80° F. But of course at night, it cools down to room temperature. The only fish I can keep

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successfully are guppies, which seem to breed and live happily. Since January, I have lost two mollies, two swordtails, and two angelfish. I can't always get frozen brine shrimp, but have six or eight different kinds of dry food which I rotate. With few exceptions, when these fishes die, there is no obvious sign of illness, especially with the swordtails and angelfish.

**Mrs. G. T. Bryant, Tewksbury, Mass.**

**A.** Your big fault, to my mind, is the lack of a heater. It seems odd that a person who is so conscientious about foods should be lax about such an essential thing as a heater. Your tank temperature might be all right when the light is on, but remember that these fishes are from the tropics where a drop in temperature can spell disaster. A few dollars invested in a good heater can save many times that when the temperature drops too low.

**Angelfish problems**

**Q.** I have a pair of breeding angelfish which are laying eggs regularly every 10 to 14 days. I have allowed them to try to hatch and raise the young, but they have always eaten them. I have been told that the percentage of angels which are compatible enough to raise the young is small. Since then I have been trying to raise the young by removing the slate on which the eggs are laid to another tank. As yet I have not been successful

although on a few occasions the young have almost reached the freeswimming stage. Can you tell me:

**1.** Why do the young die? I have used methylene blue to prevent fungus,

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picked off unfertilized eggs, and siphoned water from the bottom regularly to remove any debris.

**2.** Can the young be picked up in a

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medicine dropper without injuring them?

**3.** Do commercial raisers move the young from the slate to another site before they are freeswimming?

**4.** Is it possible that the eggs are biologically deficient at the time they are laid and will never develop into healthy young?

**5.** What do you recommend as the first food for the fry, and when should it be fed?

**Noble P. Wong, Silver Spring, Md.**  
**A.** 1. The use of methylene blue has been declared by many as practically useless. Some aquarists claim it is effective only in heavy concentrations. The other things you have done seem to be all right.

**2.** Yes, but I do not recommend it when they are young, it is best not to move the young about at all.

**3.** No! Once the youngsters have hatched out, the slate is not moved until they are freeswimming.

**4.** This possibility exists at all times, but seldom turns out to be a fact.

**5.** Infusoria is recommended, but newly hatched brine shrimp can be used very soon after if not immediately.

**Bio-luminescence**

**Q.** 1. How do cardinal tetras change their colors (the green stripe to blue) and why? Has it something to do with bio-luminescence?

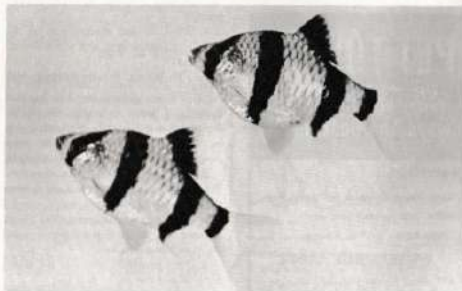
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2. Do honey dwarf gouramis always have intense yellow and blue colors, or only when spawning?  
3. What should tetra fry be fed?  
**Jonny Edlow, Baltimore, Md.**

**A. 1.** A fish has a natural tendency to pale somewhat when the light is bright, and some species put on special "night colors" when night comes. This action is not premeditated on the fish's part and is largely automatic. Bio-luminescence is the power of a creature to give off its own light, like a firefly. I do not know of any aquarium fish with this power. The "change" in a cardinal's colors is probably due to a combination of varying color intensity and variation in the angle of the light that hits the fish.

2. Compared to the comparatively dull colors the fish ordinarily displays, the intense yellow and blue colors taken spawning are a sight to behold.

**Honey dwarf gouramis spawning.**



3. Zebra fry are a hungry lot, and may be given almost any food which is suitably

small. They should of course get an occasional feeding of live or frozen food.

**Q.** I have a pair of very beautiful pearl gouramis which are about a year old. The male has built two large nests. The female, for a reason which I do not understand, will not react to his courtship and spawns. I am wondering if you



Pearl gouramis spawning.

might have a clue or an answer to this? I have been raising and spawning all of the gourami family for the past 9 years without a problem of this kind.

**Wendell Hennings, Alderwood Manor, Wash.**  
**A.** A fish does not have the power to reason, so, therefore, do not attribute to it any amount of "consciousness". This female is obviously sterile, and incapable of producing eggs; such a female, one that cannot obey her instincts to mate and lay eggs is of no use to the male, and it is very possible that he will soon tire of this required courtship and either ignore or snap at her.

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### Betta with a special appetite

**Q.** I have a male betta that wouldn't eat flake food, frozen brine shrimp, or tubifex worms. The other day in another tank a neon tetra was dying, so I put him in the tank with the betta. Immediately the betta tore his head off and ate it, leaving the rest of the fish alone. That morning I had also put a tiger barb in the tank and the betta didn't bother him. How come?

**Ronald S. Balk, Newton, Mass.**  
**A.** It goes to show how fussy an appetite a fish can get at times. All hiding aside, your neon tetra was dying and unable to get away or protect itself, but for the betta to eat off the head and leave the rest of the body alone is pretty hard to believe. "How did the tiger barb get away?" you ask. This tiger barb was not sick and was able to handle itself and stay out of trouble. A tiger barb is a pretty fair match for a betta, you know.

### Misstatement?

**Q.** I feel you and many other so-called "experts" are guilty of a great misstatement. I am speaking of the feeding habits of the cichlid family. You say that many of the larger members of the family are very picky eaters and may sometimes even die of starvation rather than eat prepared foods. I have found this to be untrue. There are certain dry foods that I have fed my cichlids since youth. Yet you "experts" don't even mention any food of this kind. It is true that a fish straight from the Congo is not about to accept dry foods, but a

young fish straight from your dealer's tanks will (my young red devils will even accept it). As long as I am writing, I would like to congratulate Mike Reed on his fine *Your Fishes' Health*, the newest of the TFH columns.

**David Levine, Seaford, N.Y.**

**A.** Generalizations are never entirely true. There are some cichlids that will eat just about anything that is thrown at them, and others that are regular gourmet. The important thing when feeding any food is to avoid feeding it to the exclusion of everything else. You can feed ice-cream cones to a child, but if he gets nothing else he will not grow up to be very healthy. Passed your congratulations on to Mike, and he thanks you.

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### Pelmatochromis kribensis

**Q.** Recently I bought a young mated pair of *Pelmatochromis kribensis*. I set up a 15-gallon tank to spawn them in, first emptying half of the water in order to clean it and then filling it with tap water. Then I planted it well with several bunches of green cabomba and dwarf and giant hygrophila. After the tank was all planted, I washed out a clay flowerpot and placed it in the tank; after it was all set up I put the pair in. They seemed to be very shy and stayed behind the plants at all times. After an hour or so I noticed a coating of some kind of smelly oil on top of the water. On the morning of the next day I found their eggs on top of the flowerpot. But the pair didn't seem to take any care of them at all and all of the eggs fungused. After that I removed the pair to a 10-gallon community tank. Then I cleared out the 15-gallon tank, and when I removed the flowerpot it had the same smell that the coating had.

1. Was the setup that I had in the tank good enough for them to have a good spawn?
2. Could you tell me where the oil came from?
3. Could you explain to me why the pair acted the way that they did, and why they left the eggs to fungus?
4. Do you think their next spawn will be as unsuccessful?

**Martin Power, Roslindale, Mass.**

**A. 1.** The fact that your pair spawned is an indication that your setup was adequate.

2. Obviously, if your flowerpot smelled the same way when you removed it, that's probably the source of your trouble. The manufacturer probably saturated the flowerpot in some kind of solution for some reason. Remember, a flowerpot used to raise fish spawn is being used for other purposes than that for which it was intended. Always make sure it has not been treated for some reason before you use one.

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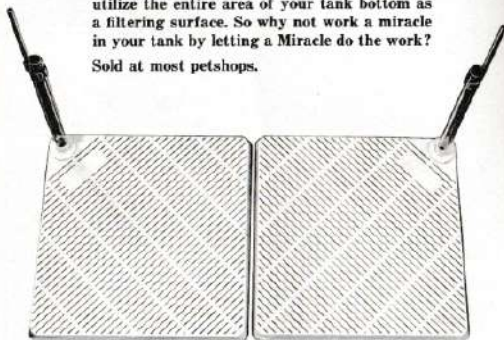
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3. Whatever the flowerpot was treated with probably made short work of the eggs. The fish were probably driven away by the same material or by sensing somehow that the eggs were dead.

4. Start all over, and make sure you never use that flowerpot or another like it again.

### Mollies

Q. I purchased a pair of mollies a few months ago. They mated and are having young. But I have some questions about the young to which I have not yet found the answers:

1. Should the young be given much room?
2. What do you feed baby mollies?
3. Should two males be put with one female?
4. Should the parents be separated from the young?

Andrew Fey, Jacksonville, N.C.

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1. A great big "yes" to your first question. In order to grow properly, mollies require a great deal of room.
2. An excellent food for baby mollies is live or fresh frozen brine shrimp. This can be alternated with a fine prepared food. There is a special 10-called "molly mix" which contains a little more vegetable matter than other dry foods and is usually relished.
3. It is not advantageous to use two males to one female, and if you are breeding for a certain characteristic in one of the males, your chances are cut to only 50% that you will get them.
4. Once the young are there, the parents usually pay no attention to them. If they are well-fed the parents will tend to eat their youngsters, but you must remember that they will eat a great deal of food that the young ones would otherwise get. Better to separate the parents from the youngsters.



By Paul Hahnel

**Tuberculosis in fishes**  
Q. I, a friend of mine (also a tropical fish hobbyist) tells me it is possible for a fish to have tuberculosis. Is this true?  
2. A fortnight ago I was checking my tank when I noticed that one of my female guppies had what looked like her insides hanging down from her, and as she was ready to produce her fry at any time, I could come to no conclusion but that it was a miscarriage. Have you any other ideas?  
Keith Pearson,  
Lancashire, England

A. 1. Yes, there is an organism named *Mycobacterium piscium* which attacks fishes and has been found to be related to the bacterium which causes tuberculosis in warm-blooded animals. This bacterium does best at a temperature range of 64 to 77°F., with temperatures approaching

77° preferred. It may attack the liver, spleen, kidneys, and skin of the fish. Tiny nodules are formed, which are too small to be seen by the naked eye. If these nodules form in one of the organs mentioned, a cyst with a yellow coloration results. A light attack will not affect the fish very much, but a more severe one leads to a wasting away of the fish, loss of balance, and, finally, death.  
2. This is a bacterial infection as well, which could best be classified by a biologist.

**Snakeskin guppies**  
Q. I have a problem and hope you will help me out. I love my guppies and don't want anything to happen to them,

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and want to improve my strain. Almost a year ago I sent for a pair of snakeskin guppies. I have youngsters from them, but they have hardly any markings on their bodies at all. I feed them twice a day, once in the morning on dry food and once in the evening on frozen brine shrimp. All gobble it up except a tankful of males. I tried frozen beef liver and frozen chopped spinach as well, but they would not touch either. What is wrong? How can I correct it? The color of the water is usually clear or amber. Plants do quite well. I know the strain is good

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because I let some youngsters go in a 5-square-foot pool in the back yard. They are growing well and the markings are beginning to show on them. I keep two fish to the gallon in my aquarium.

A. My experience with snakeskin guppies is somewhat limited, but I tested some for a petshop. If a snakeskin guppy shows its markings early, it will tend to stay small. Feeding only twice a day is not sufficient, and giving only two types of food is not so good. Males kept by

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themselves often do not eat well, so give them female company, preferably females you do not use for breeding. If all the other requirements are met, the males will eat. Having females with them seems to have a psychological effect on the males. Your fish in the pool get additional food from their surroundings, like algae and live foods. That is why the markings of the fish in the outdoor pool show up much better. One fish to a gallon is the so-called standard for keeping guppies, but with good aeration and filtration you can keep 2 or 3 times that amount.

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## Salts From The Seven Seas



By Alfred A. Schultz

**Q.** In spite of a moderate success in keeping such fishes as clowns and dascyllus, I have no luck with the butterfly species. I have them for a week and they die. Can you give me any ideas that might help me?

**A.** Butterfly fishes as a rule are timid fish. The prime battle is over once your new fishes start eating. Generally, they scare easily. If given hiding places and foods that they like, chances are your fishes will live a long life.

**Q.** I have four fishes in a 5-gallon tank. The tank has a light for about 8 hours daily, and I constantly have to scrape algae from the glass. For some reason

my fishes don't go after live adult brine shrimp even when they swim right in front of them. Any other food I feed falls to the bottom, and I have to siphon it out. My fish no longer look healthy. Am I doing something wrong?

**Jerry Popick, Los Angeles, Calif.**  
**A.** It seems to me that you have too much light on for too long a time. Your fish have been blinded by the light. Try keeping your tank dark, putting the lights on about an hour before feeding time and leaving them on for another hour after all the food has been consumed.

**Q.** I have read SALTWATER FISHES by Dr. Herbert R. Axelrod, and I would like to

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try my hand at keeping marine fishes. Unfortunately there are no perhaps near me that keep saltwater fishes. Can you recommend where I can purchase some?

**R. Glissner, Poughkeepsie, N.Y.**  
**A.** If you cannot obtain your fish needs from a local source, I suggest that you write to some of our advertisers.

**Q.** In setting up my marine tank I find that my water gets quite warm in the summer months. Should I get a water cooler, or is such an item made?

**Rose Chappell, Riverside, Ont., Canada**  
**A.** I would suggest that the best solution for you is to aerate your tank and, if possible, direct the flow from a small electric fan across the surface of the water in the tank. A water cooler for your tank can be built at home, but it's quite a job. The few that have been manufactured are very expensive.

**Q.** 1. Can a 5-year-old tank, 20 gallons, be converted for saltwater use? If so, how?

2. What kind of filter should be used?  
3. Will any saltwater fishes eat dry food?

**Terence Stahelin, Grand Rapids, Mich.**

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**A. 1.** Your old stainless steel tank can be converted for marine use. To do so, wash the tank thoroughly and fill with fresh water. Let it stand for a few days and repeat the process until the tank has had four complete changes. When the tank has dried completely, cover all seams with black asphaltum or epoxy waterproof paint. Then fill it with salt water.

**2.** An outside power filter or an inside box filter can be used in conjunction with an undergravel filter.

**3.** Most saltwater fishes will eat dry food, but not as a steady diet. They must, however, be taught to eat this food. The best way to teach your fishes how is to have one fish in the tank that will eat dry food readily. The rest of the fishes will soon follow suit.

## YOUR FISHES' HEALTH

BY MIKE REED

### Filtration

Talk to the oldtimers in the tropical fish hobby, and it won't be long before they're telling you how "In the old days, we didn't have any filters or heaters or anything like that, and we did just as well as you do today." You'll have to forgive them this great exaggeration, for they are, after all, usually senior citizens. The fact is that before the advent of modern equipment only a few really good hobbyists met with consistent success of any kind. Even these few could not hope to keep as many different fishes in good health as can the only-average hobbyists of today. If one of these oldtimers really gets on your back, just ask him if he has a filter and/or heater in his aquarium now. He'll usually have both, so that will end the conversation right there.

The major purpose of most filters is to remove as much of the debris that forms in an aquarium as is possible. Secondly, filters usually provide aeration, uniform heat distribution, beneficial water movement, and removal of harmful gases. So, a filter works for you and your fishes' benefits not only by keeping the aquarium clean, eliminating potential breeding places for harmful organisms, but also by providing other conditions more favorable to your fishes' health.

The hobbyist should always keep in mind that no filter removes wastes dissolved in the aquarium water. Thus, a good filter used properly in a well-cared for tank will eliminate the need to ever tear down and redo the tank, but it will never eliminate the need for regular replacement of small quantities of aquarium water in addition to that added to replace the amounts lost through evaporation.

All filters fall into one of two broad categories: air-operated filters or power filters. The important thing to remember in getting any filter is to get one made by a reliable manufacturer. Bargain filters will end up costing you more in aggravation and extra cleanup work than the few cents more you may have to pay for a brand-name product.

**Air-operated filters** include all filters that are operated through a hookup to an air pump. Such filters may be of the outside, inside, or undergravel variety. Used alone, I recommend such filters only for tanks of 20 gallons or less in capacity, for they move only small quantities of water per hour. By using more than one air-operated filter, however, tanks of any capacity may be filtered effectively.



Outside filters offer the advantage of being easy to get at in order to change the filtering materials. Their disadvantages are that they are difficult to conceal from view and usually do not provide significant aeration and heat distribution. The latter two drawbacks can be remedied by using an airstone in your tank if you select an outside filter.

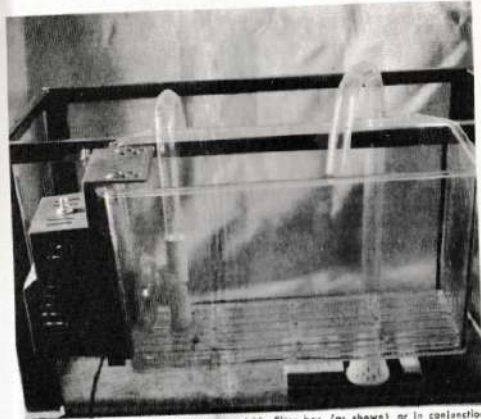
Inside filters are easily concealed from view behind a rock or clump of plants. In addition they provide good aeration and heat distribution. It is more bother to change the filtering materials in an inside than an outside filter.

Undergravel filters are concealed from view by the gravel. Their air outlets come up in the corners and so, do not usually get in the way. Because these filters use the gravel as filtering material, there is no filtering material to change. The filtering area of such filters is usually as large as the entire tank bottom, and the contoured sub-gravel filters offer still greater filtering surfaces. In addition, sub-gravel filters offer good aeration and heat distribution. I have found it a bit difficult to get some species of plants to grow over the flat subgravel filters, however, I have had no such trouble with the contoured types.

Here are two established types of filters that offer extra features. Left—an inside filter with a flip-top that can be turned over offering several advantages. Right—an undergravel filter that is contoured to offer greater filtering area and landscaping flexibility. Photos courtesy of Miracle Plastics Corp.



70







This power filter can be used with an outside filter box (as shown) or in conjunction with an inside or undergravel filter. The unit moves up to 100 gallons of water per hour. Photo courtesy Miracle Plastics Corp.

Power filters include all filters that operate by moving water directly with a motor. There are power filters for any size aquarium from 10 gallons up. With marine tropicals, it is advisable to use a power filter whenever possible. With freshwater species, however, a power filter is more a luxury than a necessity in aquariums below 20 gallons in capacity.

Power filters are now available which move tremendous quantities of water. One such filter now on the market moves in excess of 200 gallons of water every hour. This means a 50-gallon tank will be filtered completely four times every hour! This same filter can easily be altered by the owner so that it will move less water for smaller tanks. The motor for this unit can be used either with its own outside filter box or hooked up to standard inside or undergravel filters. Still another type of power filter is one that uses a diatom-coated bag as the filtering agent. So thoroughly does this device filter, that it is said to remove tiny disease organisms such as those which cause ich.

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 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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Ever been through this?

## Moving Day for the Hobbyist

BY JOACHIM KOHL  
Frankfurt, Germany.

One fairly good definition of a true fish hobbyist, in my opinion, is a person who is crazy enough to suffer for his hobby, although he may be otherwise of fairly sound mind. If such is the case, there is no time like moving time to test a fancier's dedication to the hobby.

Two years ago I had to move to another residence which was only ten miles distant from where I was living at the time. Of course my fishes had to be moved too. This special task was to be undertaken on a Sunday, and a friend agreed to help me (probably in a moment of weakness). It is hard enough for me to get out of bed at nine o'clock on a Sunday, but this day I set my teeth grimly and arose even 3 hours earlier! Two bathtubs had to be filled with water and allowed to stand for 3 days previously; these were waiting. Plants had to be uprooted and other decorations removed, and every last one of the highly indignant fishes had to be caught. It was an arduous task catching all my fishes, but finally they were happily finding shelter among the plants floating in the tub. I was exhausted. But my troubles had just begun.

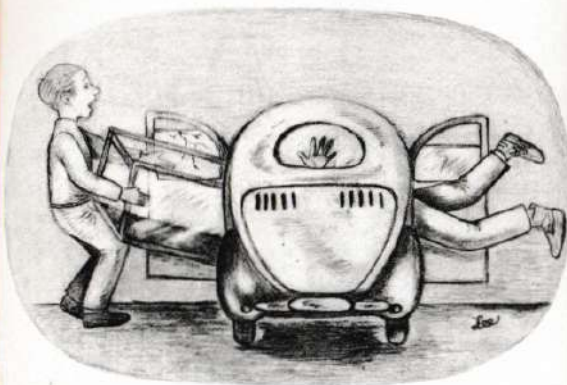
When my friend arrived, he informed me that he hadn't had breakfast, so what could I do but feed him, despite the delay it meant? Then we took the 4-foot-long tank down three flights of stairs to my tiny car of a famous European make. It took 2 hours to perform the miracle of getting the tank inside the vehicle. In order to do so we had to remove all the seats! Then I made myself as comfortable as possible on a cushion, and, with an eye peeled for cruising police cars, we crawled to my new quarters.

Getting the tank out of the car was an even greater problem than getting it in. The little vehicle will never be the same and the battle scars it bears will always remind me of our awkward, straining, pulling, pushing, and prying. But we made it, staggered in with the tank, filled it, put in the plants and equipment, and then raced back to our starting point of several hours back.

Now, catching fish in oval bathtubs may be a happy pastime, filled with the joys of good sport, but not if you are intent on getting the job done. Splashing, grabbing, cursing, getting soaked to the skin, and nearly falling in with the fish six or seven hundred times . . . all this comes along with the game free of

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"It took 2 hours to perform the miracle of getting the tank inside the vehicle."

charge. Eventually, however, we found ourselves with a full load of fish-filled plastic bags in front of my tank in my new residence. Unfortunately the water measured just 50° F., and the central heating system in the new house was not working yet. This seemed like the straw to break the camel's back but, valiantly, we raced ten miles each way to get a submersible heater that I normally used for the preparation of coffee. It took 2 hours to produce the desired temperature. The fishes in the plastic bags had been chilled blue and had to be put into the tank with great care. I still am in awe that none of them died from the hardships I inflicted upon them that day.

You won't believe this (I could hardly believe it myself), but the very next month I had to move again! Ah, the joys of the hobbyist on moving day. Should I ever have to move again I shall go quite mad.

## My Albino Paradise Fish

BY BERNHARD TEICHFISCHER,  
Dresden, Germany.

In 1959 I got my first look at albino paradise fish. They were still small and failed to make a great impression on me. They would attain the size and shape of the common ones, I figured, but they never would approach comparable loveliness of color.

I was astonished when I saw them again about 6 months later; in contrast to their original aspect, a modest, light yellow fish with red eyes, they had developed into something which caught the eye even at a distance. The basic color was a gleaming yellow. The yellow was covered with bright red in all the places where the fully pigmented fish have red coloring. All other normal coloring was absent, making the red very striking. The fins were a match for any paradise fish I have ever seen. The fish were even easily visible at a distance from the aquarium.

At the beginning of 1960, I am happy to say that I received the only five surviving babies from the first successful spawning of albino paradise fish. They were between 1 and 2 inches long and proved to be two males and three females. In the summer of the same year, I first attempted to spawn them. The albino fishes proved to be just as eager to spawn as the common ones. The eggs were light yellow, floated with the help of an imbedded oil drop, and were very numerous. They were cared for faithfully by the male.

The fry hatched in 3 days and hung with their heads in the bubble-ness. Seen from below, there was a large number of tiny tails; any young that dropped out were picked up quickly by the male and spat back into the nest. Two days later the youngsters had assumed the normal swimming position, and after that the male was no longer their master. Soon the youngsters were all over the aquarium. It can be said here that, similar to *Betta splendens*, in their earliest stages, the youngsters are very difficult to raise without the attention of the male. *Macropodus concolor*, in contrast, often built a bubble-nest and spawned in my community tank, and I transferred nest and eggs into a separate aquarium. In spite of rather deep water (8 inches), the youngsters always hatched 100% and were raised without difficulty.

With *Betta splendens*, and, to a certain extent, also with the albino paradise fish, things are different. In spite of very shallow water (about 1 inch), in the hatching tank, a large part of the youngsters die. I believe the reason is that the slightest vibration of the tank sends the youngsters falling to the bottom and they do not have the strength to struggle back to the surface. All labyrinth fish fry I know of remain at the water's surface until they become free swimming. I presume that they are sensitive to higher water pressures.

Now, back to the albino paradise fish of my first spawning. They were

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A normal colored male spawns with an albino female. Photo by R. Zukal.

Two weeks later, however, in spite of a very thorough search, I could find only normally colored fish in my baby tank. They had grown very quickly and had eaten their albino brothers and sisters!

I repeated the same breeding, but this time I tediously fished out some albino fry and raised them separately. I succeeded, and, in spite of the fact that there were only a few males in this lot, it was nevertheless possible for me to maintain the strain by breeding albinos to albinos. I would also like to add that in following broods the percentage of males to females was improved considerably. Also, the albino paradise fish proved to breed absolutely true. I find this worthy of mention because it has been stated that other albinos, for instance the albino catfishes rarely breed 100% true.