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NOVEMBER, 1965

DOMESTIC 35¢

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More Fishes from Lake Nyasa



Colorful Tetras, by Wilfred L. Whitern, 50c from your dealer or direct from TFH.

COLORFUL TETRAS is a new TFH book devoted to giving hobbyists all the facts about those lively, flashing jewels of the aquarium, the Tetras. Necessarily broken into two volumes to allow the most comprehensive treatment possible, this Tetra information is given in two companion volumes, both by Wilfred L. Whitern. The two books are COLORFUL TETRAS and TINY TETRAS.

COLORFUL TETRAS covers the Characters of the genera *Hemigrammus*, *Moenkhausia*, *Aphyochorax*, *Phenacogrammus*, and others, with emphasis placed on the popular little *Hemigrammus* species. Everything that the hobbyist needs to know is covered, from aquarium arrangements and water conditions to foods and feeding and prevention and treatment of disease.

For each species customarily bred, author Whitern has listed all requirements for a successful spawning. Each species is treated both in general, in the section devoted to over-all recommendations for spawning the Tetras, and in particular, in the section which deals with the specific fishes.

Breeders, experienced or beginning, will find plenty of good, practical advice. For many, special benefit will be derived from the listings of the average amount of spawn received at each spawning.

## TROPICAL FISH HOBBYIST

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### Contents

Vol. XIV, Nov., 1965 (#117) No. 3	
More Fishes from Lake Nyasa	3
You Never Read in Charge	14
Water Aerial	20
I'm Gonna Write a Book	20
Three Large Species of Echinoderm	23
Green Algae	28
Tropical Fishes in South India	71

### FEATURES

Notes from all over: p. 30, Mail Call: p. 27, Guppy Corner: p. 64, Salt from The Swamp: p. 71.

### COVER

Last month we promised to keep you informed about any new developments from Lake Nyasa. Well, things have been popping again. A number of additional new species have been discovered, and several of them have been living comfortably in one of our office tanks for about a week. The only one this month I cover are tentatively classified as *Pseudotropheus*, the commonest, but as with all these new fishes, the name is not yet definite. For more about these latest Nyasa fishes and additional color photos of them, turn to the article beginning on page 3. Photo by Dr. Herbert R. Axelrod.

**EXOTIC TROPICAL FISHES SUPPLEMENTS**  
Pages 33 to 36, 53 to 56. These pages are included for any customer and purchased to fit into the convenient edition of EXOTIC TROPICAL FISHES.

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November, 1965

## EDITORIALLY . . .

Frequently I hear from a bewildered hobbyist who tells me he had a pair of fish which were apparently healthy in a tankful of other healthy fishes. Then, without any reason, these fish turned up their bellies and died, with no other casualties then or since. A hobbyist who has not had the same thing happen at some time or other is a rare individual indeed, and what could you tell someone like this? Usually an important piece of information is left out, such as whether or not the fish were old established tank members or recent acquisitions. A fish which is added to a strange tank must make some important adjustments to its new tankmates, water, and other surroundings. If these adjustments are drastic, and the fish has some little thing wrong with it besides, the combination could be enough to cause his demise while his tankmates, who have long since become adjusted, continue on their merry way with their health unimpaired. As for other things which might be wrong, the sad fact is that very many fish diseases do not show visible symptoms in their early stages, and when they finally do, it has become too late to do much of anything about them. All we can do is be thankful it doesn't happen very frequently if our fishes are given the best of care. When I think back to how difficult and complicated it used to be twenty or thirty years ago to do things which we consider just ordinary procedure today, I wonder how we were able to keep as many fishes alive and healthy as we did in those days!

*William Vorderwinkler*

3

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The sexes are colored differently in *Pseudotropheus trewavasae*. The female (above) is mottled tan, brown, and some black, while the male (below) is an exciting electric blue with a bright red dorsal fin. Photo by W. Hoppe.



Ooh, what colors!

## More Fishes from Lake Nyasa

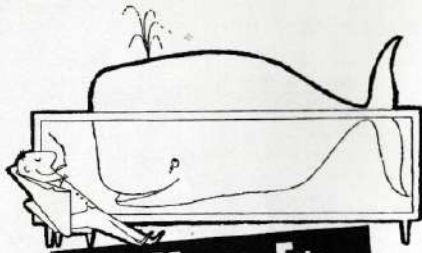
BY WILLIAM VORDERWINKLER

It would seem that the latest Paradise for fish hobbyists has been stumbled on in Lake Nyasa, in southeastern Africa. Like Lake Tanganyika, which caused a flurry several years ago, Nyasa is very rich in fishes which can be found nowhere else and carry the most beautiful colors and bizarre shapes you are likely to find anywhere.

5

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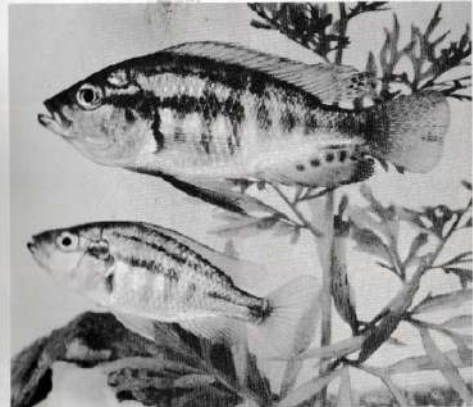
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Cataloging the hodgepodge of new species from this place promises to be a nightmare for the taxonomic ichthyologist who tackles the job. So far we have only seen a few of the cichlid genera and species; I'm willing to make a good-sized wager that the collectors down there have not paid much attention to the characins, catfish, and cyprinodonts which are doubtlessly available there. And who knows what else?

As far as we have been able to find out, the gorgeous little cichlids are fairly rough customers and, like many new imports, are a bit shy. They should be provided, the cribs and drabs of existing information tell us, with roomy tanks which afford many places where they can hide. Another nugget of information is that some are plant nibblers by nature and some incubate their eggs in their mouths. It is interesting to note that *Pseudotropheus zebra* has bright yellow spots in its anal fin which are very similar to a species from another part of Africa, *Haplochromis wingati*; this leads one to wonder if their use is the same.

*Haplochromis wingati*, from another part of Africa, also exhibits spots in the anal fin. Photo by Dr. Herbert R. Axelrod.



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A close look at *Pseudotropheus trewavasae*. The male is above, the female below. Note the large fleshy nose and upper lip. Just how large the fish grow is not known, but we have a pair that are about 5 inches long. Two conflicting reports have reached us as to their spawning. One claims that they are mouthbrooders; the other that they spawn in typical cichlid fashion in large flowerpots. Photos by Dr. Herbert R. Axelrod.





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The *H. wingati* male uses his anal spots to spread out in front of the female when she is picking up eggs, thereby fooling her into believing that she missed some and pecking at his anal fin while he is emitting sperm. The sperm gets into her mouth and fertilizes the eggs there. Whether this little subterfuge is also used by the different *Pseudotropheus* species remains to be seen, but it is something for prospective breeders to watch for.

To the average hobbyist, the *Pseudotropheus* group is a confusing one: *Pseudotropheus auratus*, *P. trowavasae* and *P. tropheops* all seem to have a different body structure and too little similarity to belong to the same genus. For example, the jutting snout of *P. trowavasae* is quite a contrast to the almost straight snouts of *P. tropheops* and *P. auratus*.

No doubt about it, these new cichlids have a gorgeous array of colors which rival those of many tropical marine species. The blue body and red dorsal fin of the male *P. trowavasae* form a startling contrast. Unlike many of the smaller cichlids, the disparity in size

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Here are two of the new Nyasa species which display markedly spotted anal fins. Above, *Pseudotropheus tropheops*. Below, *Labeotropheus fuelleborni*. Such markings may indicate that they are mouthbreeders. Note also the large fleshy upper lip of *L. fuelleborni*. This characteristic is in common with the earlier-pictured *Pseudotropheus* *hewanus*. Such overlapping physical features may prove to be extremely helpful to taxonomic ichthyologists trying to organize the new fishes into some logical order. Photos by W. Hoppe.



This *Nyasa* species, unnamed as yet, also exhibits a spotted anal fin. Photo by W. Hoppe.

between males and females in *P. trowavasae* is very slight, but the coloration is so different that the sexes sometimes seem to be two different species.

Aquarium Hamburg in Germany has supplied us with the original specimens from Lake Nyasa and indications are that they have gotten them to spawn. Limited quantities of these cichlids are available to dealers in the U. S. from Gulf Fish Farms in Palmetto, Florida.

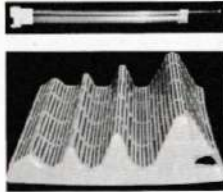
*Pseudotropheus auratus* is perhaps the most attractive of the Nyasa Escaveries so far. Photo by Dr. Herbert E. Axelrod.



New MIRACLE HIPOWER UNDERGRAVEL FILTER revolutionizes the aquarium hobby and obsoletes the outside filter for ever!

## You Never Need to Change Water Again!!

BY DR. HERBERT R. AXELROD



The Miracle HiPower Undergravel Filter is made up of two parts like the one shown here. Each part consists of an air tube assembly and a terraced undergravel filter plate.

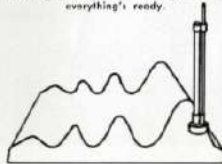
Over the past fifteen years more people have written me about their filtration problems, than any other of the bugaboos connected with the fascinating hobby of keeping tropical fishes. Now, today, almost every complete petshop in the country can solve your filtration problem for less than \$5 . . . and solve it forever.

Never again will you have to gamble with ruining your floor by a leaking outside filter. Never again will you have to suffer the ugliness

of a huge plastic box hanging on the outside of your aquarium, getting dirtier and dirtier, as it filters the nutrients out of your aquarium. Never again will you have to leave a gap between the wall and the back of the aquarium to accommodate an outside filter hung from the back of the tank . . . and never again must you change your aquarium water!!

I have been working on a do-all filter for almost fifteen years. I believe I have perfected it and will soon apply for a patent with the U.S. patent office to protect some of its new features. Here's what the new filter does:

The new filter is easy to assemble. One air tube assembly is placed over the air-receiving opening in each filter plate, and everything's ready.

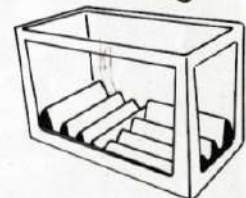
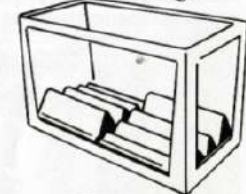
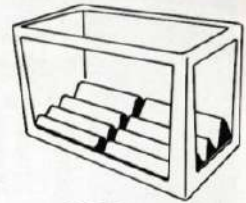


1. It slopes from one end to the other to permit your aquarium to be terraced from front to back . . . or from the sides to the middle, or in both directions at the same time. It is the first non-planar, three-dimensional undergravel filter ever made.

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3. Because the HiPower Undergravel Filter has notches around each slit on the face of the filter, it keeps the gravel from drifting into the usual flat strata, and keeps the beautiful rounded, sloping bottom which makes an aquarium so natural looking.

4. When your fish have babies, you don't have to worry about them being sucked into the Miracle HiPower Undergravel Filter. There is no single place where the suction is that great. The power of this filter is spread over many, many tiny slits which suck the dirt and debris through the gravel, breaking it into almost microscopic



Many overlapping designs can be achieved with the new Miracle HiPower Undergravel Filter. To the right are four such arrangements. Top to bottom they are: front to back slope, sides to center slope, half front to back and half back to front slope, and combination side to middle and back to front slopes.

pieces where it quickly decomposes into fertilizer for the plants.

5. Because the Miracle HiPower Undergravel Filter is so efficient, it keeps your aquarium crystal clear and you NEVER need change your aquarium water again. The high rate of filtration, plus the air chamber formed by the Miracle HiPower Filter under your gravel, keeps the tank sweet and healthy.

Dealers and large commercial breeders often keep aquariums without sand so they can be siphoned and cleaned without too much trouble. In our own hatcheries where we have thousands of aquariums, this is a real problem and it is almost impossible for us to maintain aquariums with gravel. What can we do? This problem has plagued the fish wholesaler for many years . . . but we now have the solution.

The Miracle HiPower is so constructed that a regular Miracle Undergravel will snap into its base.

Thus, you have a double filter principle working. All you need is to put some glass wool into the space between the two filters and you have the most efficient filtering system available without gravel. The advantage of this type of filtration is so obvious when you consider that more surface area is being filtered than with any other filter in the market. Further, if you have tiny fishes, you needn't worry about them being sucked into the filter where they die and foul the water.

While I don't believe this is the end of filter technology, I do feel that the Miracle HiPower Undergravel Filter will put an end to the unsightly outside filters which bubble and gurgle continuously, as they get dirtier and dirtier.

I would certainly be interested in hearing from dealers and hobbyists who have had experiences with these filters. Write: Dr. Herbert R. Axelrod, Box 33, Jersey City, N.J. 07302.

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The Smithsonian Institution is pleased to announce the publication of a reprint of "The Fresh-Water Fishes of Siam or Thailand," by Hugh M. Smith, U.S. National Museum Bulletin #188 (622 pages clothbound). This historical work has been out of print for many years; therefore, the reprint will be very valuable to libraries and to scientists in the field of ichthyology. Orders for the book, accompanied by remittance (price \$2.00 postpaid) should be addressed to:

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# I'm Gonna Write a Book

BY LUCKY LUCKINBILL

Do all people who keep tropical fish constantly run into nuts, or is it just me? I seem to always be talking to someone who I have always thought was reasonably intelligent and have them come up with such conversation stoppers as "What are they good for?" (Meaning my tropical fish.)

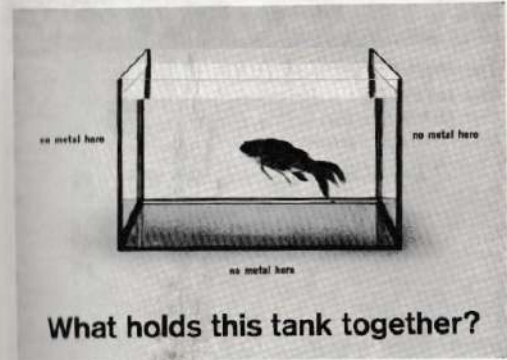
After I have finished my prepared lecture on "beauty for beauty's sake," the former friend usually lights up like a Christmas bulb and says, "Oh, I see. They are just to look at, huh?"

I grovel around in the dirt for my self-respect for a while, retrieve my ego from the deep hole into which it has fallen, screw up my courage, and retort, "At least they don't keep me awake at night, barking, like some people's pets."

The jerk usually walks off after this broadside, mumbling, "... earthworms don't bark at night either, and you can use them for bait to catch real fish. Har har har ..."

I wish somebody would write a book for us that supplies retorts to people who do not keep tropical fish. Maybe I'll write it. If I do, the outline will look something like this:

- Chapter One:** What to say to the guy who insists that only children keep tropical fish.
- Chapter Two:** One hundred retorts to the question, "Are they good to eat?"
- Chapter Three:** One hundred retorts to the gal who says, "Oh, you keep tropical fish? How dahlia!"
- Chapter Four:** Fifty clever ideas on what to say to the guy who asks, "How much you get a pound for your fish, buddy?"
- Chapter Five:** Fifty clever retorts for the lady who gushes, "You keep fish? My little Homer had a goldfish once, but it died."
- Chapter Six:** What to say when asked, "What are the ones with feathers sticking up on top and bottom." (Angels.)
- Chapter Seven:** How to explain why you cannot cross angel fish with neon tetras. ("They are both fish, aren't they?")
- Chapter Eight:** Fifty clever retorts to use on the guy who asks, "Why don't you get a shark to put in there?"



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**Chapter Nine:** How to stay calm when your best friend gets mad because you won't trade him one of your fish for five or ten of his. (Yours is a 6-inch discus and his are under-sized common guppies.)

**Chapter Ten:** Fifty clever retorts to use on the guy who points at your prize betta and says, "I'll bet he would be good bait for a real fish."

I am sure I could find material for several more chapters by going into almost any crowded room and announcing, "Anybody want to see my tropical fish?" I would be overloaded with things to think up retorts for. I tried it at a party and got the following chapters:

- Chapter Eleven:** Fifty clever retorts to use on the lady who asks, "Why do those kissing fish (kissing gouramis) kiss each other?"
- Chapter Twelve:** How to answer the lady who asks, "Could I keep a couple of those in a quart goldfish bowl?" (She is pointing at two 6-inch oscars.)
- Chapter Thirteen:** How to stay calm when some guy says, "Why don't you get a dolphin to put in there? I hear they make good pets." ("Cause my 20-gallon tank is too big, stupid.")



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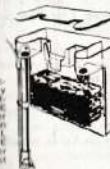


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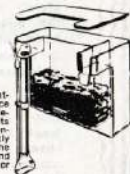
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- Chapter Fourteen:** One hundred clever retorts for the lady who asks, "Do you ever have any fish jump out into the air and drown?"
- Chapter Fifteen:** Ten judo blows to use on the guy who calls you over in the corner and whispers, "Wanna buy a hot carp?"
- Chapter Sixteen:** Fifty clever retorts for the guy who says, "I caught one like that last summer only it was about a foot and a half long." (He is pointing at a white cloud.)
- Chapter Seventeen:** A few choice words to say to the lady who points at a leopard catfish and says, "Look, everybody. That one has measles."
- Chapter Eighteen:** How to answer the lady who asks, "What do you feed them, table scraps?"

I do not suppose I'll ever write such a book, but if everybody gets kidded about their tropical fish as much as I do, there is a definite need for it.

### Notes from all over

#### LARGE SHOW PLANNED FOR DELAWARE VALLEY AREA

Aquarama, Theatre of the Sea, 3300 S. Broad St., Philadelphia, Pa., will institute its first annual aquarium show this coming November 13th and 14th. This show will be featured in the main exhibition hall of Aquarama's multi-million dollar marine land. In addition to the regular performances, visitors will be able to browse among the tank displays of the hobbyists. Visitors to Aquarama will also be present during the judging which will take place on Sunday, November 14 at mid-afternoon.

Invitations have been extended to all societies in the New England and Middle Atlantic States to be represented at this show. It is hoped that the show will be the largest of its kind held in the Philadelphia area. Entries will be in the Senior, Junior, and Mixed Divisions . . . with three categories in the first two divisions, and seven in the Mixed.

In addition, allied manufacturers will be provided space in which to set up displays for their aquarium products and to demonstrate their contributions to the aquarium field.

Information pertaining to entry blanks, rules, and regulations may be obtained by writing the Public Relations Dept. of Aquarama, care of Gene Hart.



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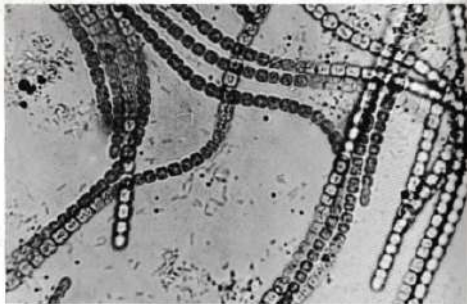


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Threads of split algae. (Magnified about 100 times.) Photo by Kurt Lerch.

Things you might not have known about . . .

## Green Algae

BY KURT LERCH  
Jena, East Germany

Algae are simply built organisms that take their place at the bottom of the evolutionary ladder which leads to the seed-producing plants. They, along with the fungi and bacteria, belong to the group of plants called thallophytes. When one observes these tiny plants under a microscope, it is hard to believe the significance of their role not only in aquaria, but in the waters of the world. Freshwater algae are all very small, but they occur in a great variety of shapes. Algae are divided into the following classes:

- |                                   |               |
|-----------------------------------|---------------|
| BLUE ALGAE AND SCHIZOPHYTES . . . | CYANOPHYCEAE  |
| WHIPLASH ALGAE . . . . .          | FLAGELLATA    |
| TRUE GREEN ALGAE . . . . .        | CHLOROPHYCEAE |
| CANDELABRA ALGAE . . . . .        | CHARACEAE     |
| YOKE ALGAE . . . . .              | CONJUGATAE    |
| SILICON ALGAE . . . . .           | DIATOMAE      |
| RED ALGAE . . . . .               | RHODOPHYCEAE  |
| BROWN ALGAE . . . . .             | PHAEOPHYCEAE  |

Of the above, the red and brown algae are marine inhabitants, and the silicon algae and candelabra algae form a highly developed group of their

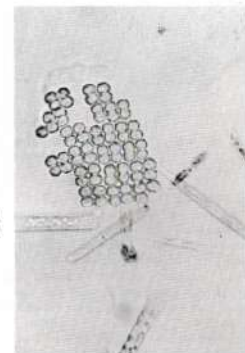
own. The remaining four groups, because of their green or bluish color, are all popularly termed "green algae."

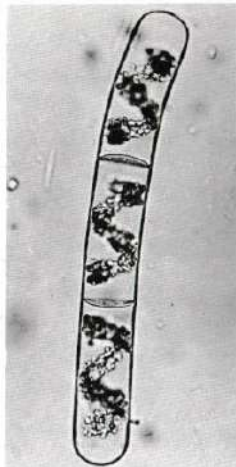
Moisture is the essential element for algae. They occur in all waters, from the ocean to the tiniest drops. Many types of algae have even adapted to a life in damp air and inhabit tree trunks and rocks in damp regions. Some of the highly specialized algae, along with some fungi, live together with the lichens.

A common property shared by all algae is autotrophic nourishment; that is, with the help of light and chlorophyll, the algae can convert inorganic substances into organic substances which they use for nourishment. As for their other life functions, there are marked differences among the various classes and species. One of the distinguishing characteristics of each class of algae is its method of propagation, or reproduction. Besides asexual propagation, which takes place with all algae, there is also sexual propagation. Sexual propagation is accomplished by the union of two gametes, which are of similar or different structure, depending on the species of algae involved. Another characteristic of many algae is generational change. This is the rhythmic alternation of the use of sexual and asexual reproduction with each generation.

The blue algae and schizophytes are the most primitive of the algae under discussion. They have no cellular nucleus but are equipped with a simple device which, like a true cellular nucleus, contains deoxyribonucleic acid and

Clumps of split algae (*Merismopedia*). (Magnified about 800 times.) Photo by Kurt Lerch.



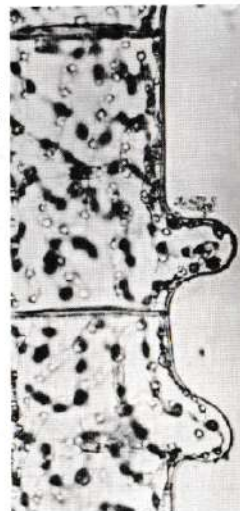


Spiral algae (*Spirogyra*). (Magnified about 100 times.) Photo by Kurt Lerch.

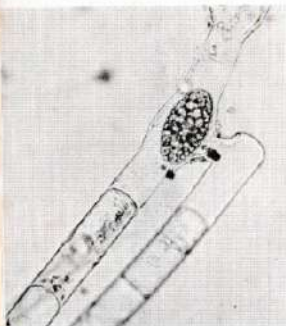
probably performs the same functions. The whiplash algae possess one or more whiplashes with which they propel themselves or hold themselves motionless in mid-water. The true green algae (chlorophyceae) are capable of producing real starches for assimilation or storage. Because of their tiny sizes, these particular algae are known as "toy algae." Many kinds of algae form colonies or large cell groups. Others occur only singly. Most of these are found as part of plankton. And, as part of plankton, they form the food basis for many fishes and many animals upon which fishes prey. By their ability to assimilate carbon dioxide and nitrogen and to give off oxygen, they play a considerable part in water purification. Under favorable conditions they can multiply so prolifically that they discolor the water, providing an abundance of food for fishes. If, however, there is too much algae, it covers the bottom and later becomes foul. A resulting oxygen shortage can wipe out all fish life.

Various green algae are very well known to most aquarium hobbyists, even if they pay no attention to the algae's forms and manners of living. The aquarium sometimes offers green algae ideal living conditions, however, and

they multiply quickly, making their presence annoyingly known. In the aquarium, they are usually introduced with living fish foods or with pond water when it is used in setting the aquarium up. Besides all sorts of small crustaceans, algae-carriers can be *Chironomus* larvae (bloodworms) or tubifex worms, which may have come from mud containing green algae. There are virtually no aquaria in which there are no green algae. Usually they make their presence known by a light green coating over the plant leaves and glass sides. If living conditions are perfect, however, they multiply so profusely that all the water becomes cloudy with them or a thick coating of them covers the plants, gravel, and glass aquarium sides. This can become so serious that the entire bottom is covered with a thick layer and all plants suffocate and die. Understandably, every aquarium hobbyist tries to avoid this. It is, therefore, not surprising that all possible means have been used to combat algae.

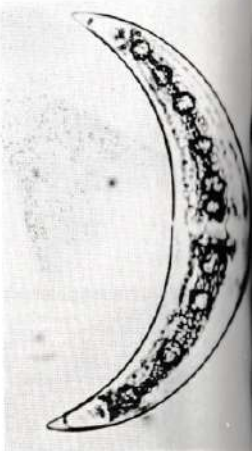


Thread algae (*Spirogyra majuscula*) in the budding stage that precedes conjugation, a form of sexual reproduction. (Magnified about 350 times.) Photo by Kurt Lerch.

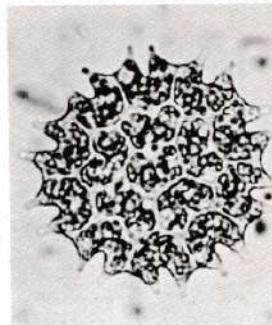


Spiral algae (*Spirogyra*) after conjugation, a form of sexual reproduction. The zygote, which results from the union of gametes, appears in the upper cell. (Magnified about 80 times.) Photo by Kurt Lerch.

Yoke algae (*Closterium*). (Magnified about 1000 times.) Photo by Kurt Lerch.



*Pediastrum granulatum*. (Magnified about 800 times.) Photo by Kurt Lerch.



*Pediastrum granulatum* reproducing by the asexual process of fission. Here, it is in the four-celled stage. Each cell will become a complete organism. (Magnified about 800 times.) Photo by Kurt Lerch.

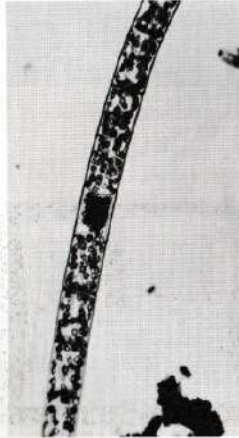




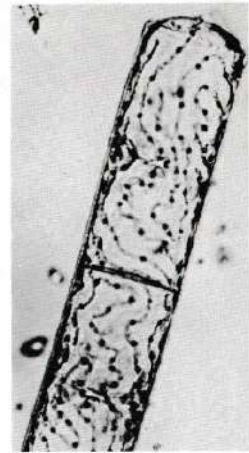
The simplest means of prevention is to keep fish that eat the green algae. Many commonly kept fishes, for instance swordtails, platies, black mollies, and guppies, are fairly effective. Especially effective are the algae-eating catfish species, such as the plecostomus. Besides fish there are also snails, which are very active in conquering algae. But many snails must be used, and often they create more problems than they solve.

Because algae require light for their life processes, good results have been achieved by cutting down the amount or intensity of light in the aquarium. It is easiest to do this in a tank which receives only artificial light. Here it is always possible to control the light. Where natural light is being dealt with, sheets of colored paper or plastics put between the aquarium and light source often give good results. A light-controlling cover of floating plants, for instance *Riccia*, *Ceratopteris*, *Salvinia*, or *Azolla* can hold down the growth of algae considerably.

Water companies have long been using activated chlorine and hydrogen peroxide to control protozoa and algae. These chemicals can also be used successfully in the aquarium for algae control. A solution of sodium hypochlorite at a concentration of 1 to 350,000 can produce enough activated



Thread algae (*Cladophora*). (Magnified about 100 times.) Photo by Kurt Lerch.



Thread algae (*Spirogyra matucule*). (Magnified about 100 times.) Photo by Kurt Lerch.

chlorine to kill most lower plant life, especially algae. Hydrogen peroxide at a concentration of 1 to 10,000 kills blue algae. A higher concentration damages the other plants so badly that after a time they fall to pieces. For treatment, a 3% solution, 0.5 ml to each liter of water, should be added gradually to the aquarium water.

Copper sulfate ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ) in a concentration of 0.1 mg per liter also damages lower plants and algae to such an extent that they are prevented from growing. Successful tests have also been conducted with the element boron. At a concentration of 0.01%, boron, the algae are stunted in growth and die after a time. The boron can be added in the form of boric acid. Of course the pure boric acid cannot be added suddenly to the tank. It is advisable to get a 3% boric acid solution from a pharmacy and to pour a solution of 100 ml to 100 liters of water gradually into the water and mix it at the same time with vigorous aeration.

All the methods mentioned here represent a certain upset in biological equilibrium and can be damaging to the other plant life and even to the fishes. For this reason, they should be used carefully, and only when necessary.

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# MAIL CALL

By William Verderwinkler

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.

**Anonymous letter**

Q. I frequently read about conditions that experts say should never be seen in your aquarium, BUT they never give the reasons! So, with that in mind:

1. It is said that "snow" should not rise from your gravel when it is disturbed. If it does, what does it indicate?
  2. They say air bubbles should not rise from the gravel. Again, what does this indicate?
  3. They say your fish should not have a "string" hanging from them after a meal. Why? If it does, what does it mean?
- I do not sign my name because I do not want to display my gross ignorance. "Wondering," Los Angeles, Calif.
- A. 1. Gravel should be clean when it is stirred; when "snow" rises, it is usually composed of uneaten food, a sign that you are overfeeding and that the food is spoiling.
2. Bubbles that rise from the gravel are

not air; they are gas bubbles. Their appearance indicates that there is something that has worked down among the gravel granules and is decaying there and forming gas that is eventually released. A

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clean-up is strongly advised in such cases.  
3. It simply means that your fish has eaten very heartily and his digestive organs are working properly.  
Many times it is more ignorant not to ask a question for fear of being dubbed foolish than to ask a question which if answered intelligently could enlighten many others, as well as yourself.

**Success with the red devils**  
Q. I thought that you might be interested in knowing that we have had many spawnings of the new (?) red devil cichlid *Cichlasoma doriai* or *Cichlasoma labiatum*. We purchased the fish in late fall and after conditioning the pair for a month, put them together and were blessed with a most prolific spawning. We leave the fry in with the parents until we see that they are preparing to spawn again. They are wonderful parents and care for their young in a typical cichlid manner. We



let them spawn for 3 consecutive months and then let them rest for 2 months. They started a new family a

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five days ago. In our opinion this is the most beautiful cichlid, and we are pleased to have been the first to spawn them.

Hexxy Dean, Hudson, Mass.

A. I see that you are also doubtful as to the name of the "red devil" cichlid. The experts who write about them seem to be, too. I do not know, of course, which species your fish are, but I have great doubts that you are actually the first to spawn whatever species you have. Just the same, my congratulations on your achievement! All cichlids put on a great show when they spawn, and these do not seem to be an exception.

Angelfish deaths and catfish

Q. 1. About 9 days ago we noticed our angelfish had spawned. We placed the

eggs in a 5-gallon tank. About 3 days later they hatched. Now only 5 days later they are all dead. We fed them infusoria and kept the temperature at a steady 78°F. We fed the angelfish only dry food before spawning. Could this have affected the young?

2. Our catfish (*Corydoras aeneus*) also laid eggs, but nothing ever happened.



*Corydoras aeneus* pair.

The eggs were laid on the glass so we could not remove them. We did however treat them with methylene blue. Is there something wrong with our male catfish, or does the female lay eggs without the male's coaxing?

Nadene Stark, Rosemead, Calif.

A. 1. Yes, it could. A pair of angelfish conditioned on dry food only might be in a weakened condition and pass this on

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to their young through the eggs. However, I suspect that the infusoria culture was not as rich as you thought, and the young starved.

2. A female catfish would seldom lay eggs in the presence of a male without his permission. Perhaps he was too young or too old to fertilize the eggs properly. Check also over nothing.

Q. I hope I don't sound like a worry wart but I think my fish are too peppy. The temperature of the water is 72 to 77°. The water is soft. The pH, I am quite sure, was neutral or slightly acid when I checked it 2 weeks ago. I have a 40-watt bulb on 9 to 10 hours a day. I feed a variety of dried foods. There are 30 guppies in this 10-gallon tank with two catfish. My water is slightly clouded. I have been treating a friend's guppy with methylene blue, and some of it may have entered the tank. The fish are mating and they have no color loss. Is everything satisfactory?

**Curt Brink, Jamestown, Pa.**  
A. Guppies are very active fish and the time to worry is not when they're too peppy, but when they're too sluggish. In my opinion, you have a slightly overcrowded tank, a condition which should be remedied. Temperature should be nearer 77° than 72°. The introduction of a little methylene blue into your water is nothing to worry about. Try to give your fish an occasional feeding of live or frozen foods.

**Purchasing oddities**  
Q. Being a comparative newcomer to the hobby, I have kept the usual "amateurish" specimens: guppies, mollies, swordtails, and the like. I have seen these same species in the tanks of friends, and am struck by the confinement of the hobby to these few fishes. Once in a while, I see a discus or one of the rarer characins. Recently having moved, I am expanding my set-up and, I would like to collect the rarer species of aquarium fishes and plants. I want the fishes that do not appear in dealers' tanks, real oddities in which a person

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would find enjoyment and fascination. I would appreciate it if you could tell me some of the rarer fishes, as my library of back issues of TTH and ENCYCLOPEDIA OF TROPICAL FISHES and HOW TO KEEP AND BREED TROPICAL FISH does not contain this information. I would also appreciate it if you could tell me of a reputable dealer in these fishes.

**Barry Yomtov, Bronx, N.Y.**  
A. Barry, yours is the kind of letter I would expect to get from some small isolated town, but the Bronx? Do you realize that you live in the biggest pet fish area in the world? There are many well-stocked petshops in your part of New York City as well as in the other sections, only a short subway ride away. Being a regular reader, you must have at some time or other seen some fish you would like

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to have. If they can be gotten anywhere, chances are that some dealers in New York City would have them. Shop around; it's fun, and with the amount of dealers you have within a short distance, you're bound to locate something. Remember this, though: not all of the fish you see pictured in our pages have as yet been bred in quantity and offered for sale, some will no doubt become common in the future, but at the same time, others will fade away even though they seem to have everything in their favor to make them top attractions.

**Guppy-molly cross**  
**Q. 1.** My molly recently had babies, and one was born with a yellow-transparent round piece of skin on the bottom of it. Do you know what I could do to remove it, or was the baby born with a permanent defect?  
**2.** Have a guppy and a molly ever had a fertile crossing? What would the babies look like?  
**3.** Could you tell me the sex difference between red-tailed sharks?

**George F. Antoon, New Kensington, Pa.**  
**A. 1.** Leave it alone. In time it will probably fall off. It is probably the remains of a yolk-sac.  
**2.** Guppies and mollies have occasionally been crossed successfully, but as in Guppy x molly hybrid.



most hybridizations of this kind, there is a great likelihood that the offspring will be infertile. They will seem to be males or females, but only in a few cases will they be functional males and females. The picture will give you an idea of what they look like.

**3.** There is very little sex difference between male and female red-tailed sharks. Females make their sex evident by their greater girth when they become mature and fill up with eggs.

**"Spotted zebra fish"**  
**Q.** I recently purchased a fish at one of those "all out" fish sales. The lady in charge said it was a "spotted zebra fish." I took the fish home and put it in my 30-gallon aquarium. Well, in about a week she had young. The strange thing about it was that her young were born alive. Since zebra fish lay eggs, were her young born alive? Is it possible that this isn't a zebra fish at all, that the lady at the store goofed? Could you please tell me what kind of a fish this is? Here are some of its characteristics:  
 a. It is small, about an inch long.  
 b. It has blue dots running horizontally against a gray background.  
 c. Young are born alive about every month, and I have no adult male.  
 d. Young are born dark black and turn gray in about a month.  
 e. Mouth opens like a swordtail's.  
 f. The mother fish is healthy and hardy, not a vigorous swimmer.

**John Paskan, Sutersville, Pa.**  
**A.** I don't know what the circumstances were, but it is possible that the lady they put in charge of the fish sale may never have seen a tropical fish before. It looks

as if she sold you some kind of a molly or platy, from your description. It's a cinch anyway that you have a female. What you should know is that most livebearers can have up to eight broods of youngsters from only one insemination from a male. This may seem like "old hat" to some, but I still keep getting inquiries from people who are mystified by the fact that their livebearer females keep giving birth after the death of their males.

**Incompatible angelfish**  
**Q.** About 11 months ago, I got two small angelfish. Now they are both large, their total length measuring 4 inches. Everything was fine until recently one started to go after the other, biting and ramming it. The fish always hid, but soon the aggressor went into the hiding place and drove him out. I have finally resorted to placing the aggressor in another of my tanks. They were together in a 20-gallon tank with lots of plants, plenty of light, no over-crowding, and plenty of aeration. They were fed a large amount and variety of dried, frozen, and live foods. The temperature was high in the summer, never going below 78°, due to the room's temperature, and sometimes hitting 85°. Could the temperature have anything to do with it? What can I do to stop the aggressor from going after the other one?

**Jules Perlow, North Bergen, N.J.**

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**A.** In many batches of livebearer young you will find a few which are a bit weaker than the rest. Given ideal conditions these will almost always pull through, but let me point out a few things: a 24-gallon tank is not the best place in the world to put 20 youngsters, tiny as they are. Feed only a bit heavily, and your water quickly becomes fouled. Also keeping a few plants in an aquarium adds very little oxygen, at least nowhere near as much as it must once assumed to. Changing a little of the water frequently is an invigorating thing, as long as the water is of the same temperature and has about the same chemical composition. Baby fish are particularly sensitive to both chills and chemical changes. No, you do not necessarily have to use a pump and filter, but they have great advantages: they provide

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a healthy circulation of the water, distribute the heat evenly, and are a great factor in keeping your tank clean. My advice is to get at least a 10-gallon tank for the job and, if you want to get the full advantage I have pointed out, install a filter and aerator.

**Non-conformist fish**  
**Q.** I have the book BREEDING LIVE-BEARERS by William Vorderwinkler. I have a pair of black mollies, and, because of a shortage of time, I had to go against everything said in the book, for instance: 1. No salt in the water. 2. Hardly any algae. 3. I moved the female a short time before birth. 4. She had a perfect brood of young, furthermore everyone I know who has followed your instructions, including fish dealers, has had trouble with the mother eating her young before they could take her out.  
**Brad Pagni, Tacoma, Wash.**

**A.** Far be it from me to say that things must be done my way or you are doomed to failure. All that any of us so-called "experts" can do is to offer suggestions on how to do things a little better, and make the fish a little more comfortable. Let me take up your points: 1. "No salt in the water." Of course mollies can live perfectly well in fresh water, but they usually live longer and are in better health with a little salt in the water. 2. "Hardly any algae." Watch a molly for a while. He (or she) always grazes over the glass, plants, and rocks. They can live without any algae to nibble, but they need it for a truly balanced diet. 3. "Moved the mother a short time before she gave birth." You were evidently very careful not to excite her unduly, and certainly you were very lucky. In most cases where young are delivered prematurely, the mother eats

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**A.** Probably you have two males, but it could be that you have a pair and one is ready to spawn and the other isn't. Try keeping them apart for a while; then if the same mayhem starts after you put them together again, take one of your fish and exchange it for another if you can.

**Baby swordtail deaths**  
**Q.** My hybrid swordtails mated and produced approximately 20 babies. My problem is this: considering that I have fed them finely ground food, kept them with fresh plants for air in a 24-gallon tank and change the water frequently, what could be the cause for several deaths? Do I have to buy another pump and filter? I cannot place them in the larger tanks, as I am afraid the other fish will eat them.

**Mrs. Martin E. Rose, Miami Beach, Fla.**

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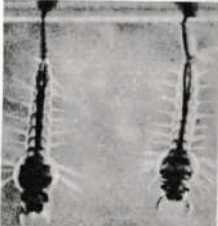
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moved shortly before it happened. 4. "Everybody who has followed instructions has had trouble with the mother eating her young before they could take her out." A well-fed mother in a heavily planted tank is neither hungry enough nor active enough to go scooting through the plants after her young.

**Mosquito larvae**  
Q. I have been collecting mosquito larvae for my fish, but they hatch quickly and are hard to keep. I am wondering if it is possible to freeze them for future use, such as with shrimp. If so, how?

**Mike Union, Altoona, Penna.**

A. Mosquito larvae make an excellent food, whether frozen or alive. If you figure on freezing them, I suggest that you put them in a plastic bag and put it into



Mosquito larvae.

the freezer. Break off whatever you use, and put the rest back without letting it defrost. The nice part of using mosquito larvae as food is that there is much less chitin than with daphnia or brine shrimp, making them more digestible.

**Neon tetra disease**  
Q. I. Over the school year my teacher and I had an argument. It was over whether two animals in the same genus but of different species could ever cross and have fertile young. He said they

couldn't. Then I pointed out to him that platies and swordtails could be crossed. He said that the fish was the same, except that the platy didn't have a sword in its tail. Is this an exception to the rule or were they misnamed?

2. In the ENCYCLOPEDIA OF TROPICAL FISHES there is something mentioned about a disease that is characterized by a lightness in the red area of the neon tetra. How is it cured?

3. I've noticed black marks in the dorsal fins of my neon tetras. Is this new or is it common?

**Jay Rideout, Steilacoom, Wash.**

A. 1. There have been frequent cases where fishes of different species but the

same genus have been successfully hybridized. In the case of the platy-swordtail cross, the fishes are both of the genus Xiphophorus, but the platy is X. maculatus and the swordtail X. helleri. The lack of a "sword" in the tail of X. maculatus is only one characteristic which is different, and by no means the only one. The offspring are often fertile.

2. The "neon tetra disease" is considered by most to be incurable. Like so many others, by the time it has progressed to a point where it is visible to the naked eye, it is too late to do anything about it. Sacrifice the infected fish as soon as you see it, because it is very contagious.

3. All I can say is that I've never noticed any on mine.

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D. Free distribution .....	300	300
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## Guppy Corner

By Paul Hahnel

**Why they died**  
Q. About 2 weeks ago I purchased two male fancy guppies. Yesterday they died. Before they died their tails, formerly light blue, turned very bright blue. The water had a pH of 7.5, was 74 F., aerated and filtered. They had plants and a 7-gallon aquarium to themselves. Can you tell me why they died?

**Don B. Cronkhite, Falls Church, Va.**

A. Changing fish from one type of water to another is often fatal. If pH, hardness, temperature and other environmental factors differ too much, a fish as small as a guppy will get a severe shock. Fish being put into water containing ions of chemicals different than those which they were originally accustomed to have to equalize the chemicals of their bodies to those in the

water. If the difference is too great it will kill the fish. Actually, the gills interpose only a single layer of cells between the fish's blood and the external water. Not only gases (i.e., oxygen, carbon dioxide) but also various metallic ions such as potassium and sodium tend to pass through the thin membrane as well. The constant balance that must be kept between the fish's internal and external environments is disturbed severely by radical water changes.

**Moving pregnant females**  
Q. On several occasions I have given a number of my guppy offspring to a friend who is quite interested in the

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breeding and raising of fine guppies. Several of the females have been heavy when I gave them away, and a short time thereafter they were placed in a breeding trap as became necessary. Only a few of these females have survived long enough to give birth. I would like to know what could have caused the females to die so quickly. I have had no difficulty whatsoever in breeding and raising the strain myself.

**Jodie Hayes, Houston, Texas**

A. Change of environment can kill without apparent cause. Heavy females should not be moved to a tank where they get different conditions and environment. The water conditions in the tanks of your friend may be so different that it shocks your fish severely.

**Siamese twins**  
Q. We have quite an oddity and unusual conversation piece at our house. While sexing our guppies I found two pairs of Siamese twins which had survived. One fish twin (not so perfectly formed) died recently, but we have one very healthy Siamese twin fish left. It is 6 1/2 months old now and the larger fish (female) is approximately 1 1/2 inches long, the smaller one, attached to its belly, is approximately 1/2 inch long. We have

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studied it under the magnifying glass and both seem to be functioning normally. The larger fish seems to be thriving very well. It eats well and swims with fins erect and spread beautifully. We are wondering if this is unusual. I have read that they seldom live more than a few hours and rarely 3 days at the most. Have you heard of one living this long?

**Mrs. Cecil R. Lee, Johnstown, Colo.**

A. I also find an occasional Siamese twin among my guppies. In fact I had a pair recently which were 8 months old when a friend took them out of curiosity. I have never seen any of the size you mention. For scientific interest it would be nice if you let us know how long they live and what size they finally reach.

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## Salts From The Seven Seas



By Alfred A. Schultz

Q. I have just recently gotten a pair of dwarf seahorses and know very little about them. I have been reading your column in the TROPICAL FISH HOBBIEST and wonder if you could answer some questions for me. There is no place close to me where I can get supplies such as coral, etc. to go in with them, and I would like to know if you can use the regular dyed coral and gravel that you buy for freshwater fish. I put one piece in that was dyed red, and the water looked as if it was turning pink so I took it out. Also, how could I sterilize or treat rocks, gravel, etc. that I might like to use with them? Using a filter and air with them, will it be necessary to change part of the water at regular intervals, and how often? Do the dwarfs ever eat their babies, or can they be left together?

Mrs. W. P. Lofton,  
Winnsboro, La.

A. No, do not use dyed coral, but you can use gravel. The pink tint in your water came from the dye used in the coral. It is a good procedure to avoid using rocks; gravel may be cleaned in fresh water. 10% of your water may be changed monthly. Dwarf seahorses will not eat their babies, and may be left with them.

Q. I am planning to set up a marine aquarium for a miniature octopus. It has a 3- to 4-inch spread. I would like to know:

1. What type of sand should I use?
2. What should I feed it?
3. What hydrometer reading and pH value should my water have?
4. What temperature?
5. What type of aerator and filter system?
6. What size should the tank be?

Rickey Cadler,  
Hurst, Texas

- A. 1. Silicate sand is best.  
2. Adult brine shrimp.  
3. 1.025, pH value 8.5.  
4. About 72° F.  
5. Any.

6. 5 gallons would be satisfactory.

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Q. 1. I wish to start a marine aquarium but have read and heard so much that I have become thoroughly confused. I have heard advocates of natural water tell me that sea water is the best to use and is the only thing which will keep coral and sea anemones alive for prolonged periods. They also say that the most such water will have to be changed is 10% a month. Advocates of artificial salts tell me they do not find it necessary to make changes. I have also heard that natural water should be added to artificial, but wouldn't this mean that the combination would have to be changed like natural water?

2. For convenience my fish could live in almost total darkness except for a light about 5 hours a day, and the temperature would remain about 82° F. Is this okay?

George Liblick,  
Brooklyn, N.Y.

A. 1. Ten percent a day would be nearer to the correct frequency of changes required with natural sea water. Synthetic sea water does not require the addition of natural water, but even if this is done, it would not make it necessary to make changes, if the amount of natural water added is not too great. Five hours a day is not too small an amount of time, but

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## Tropical Fishes in South India

BY RODNEY JONKLAAS

When I was in India in the summer of last year, I was obliged to stay longer in Madras than intended. This gave me time to investigate the ins and outs of the tropical fish hobby and the tropical fish supply lines from this important Indian city. I also managed to visit Kerala state on the west coast of India, where, in spite of the monsoon season, I made many interesting observations and took a lot of pictures as well.

First of all, Madras. In spite of being the chief world supply center of the dwarf gourami (*Colisa lala*), wild zebra danios (*Brachydanio rerio*), and glass fish (*Chanda lala*), Madras proved to be rather a disappointment as compared with Bombay, where professionals and hobbyists are far advanced in com-

parison. The heat and dryness of Madras may be responsible. At 100°F. plus in the shade, few people care to fuss and bother over live tropicals as a hobby unless they are rich enough to afford air conditioners, servants, and constant supplies of fishes from the few pet shops. These pet shops are supplied by air shipments from breeders in Calcutta, Bombay, and Cochin.

I was stunned to hear from the few hobbyists I chanced to meet at a pet shop in Moore Market that nobody breeds angels in Madras! "Too hot," they say. Yet it is no hotter than Bombay in summer, and the Bombay boys turn out angels of all types faster than they can sell them. I was also astonished at the fact that the Madras boys say that they can breed goldfish but not angels; goldfish are supposed to be coldwater fishes.

In a large pet shop at Mount Road, there were for sale some mocnkhausias, *Pristella riddlet*, a few poorish goldfish, a few angels, tiger barbs, albino tiger

It is not unusual to see tropicals sold in the outdoor section of Moore Market. Every morning the vender must fill his tanks and set them up for the day. With evening, he packs his fishes in other containers and takes them home.



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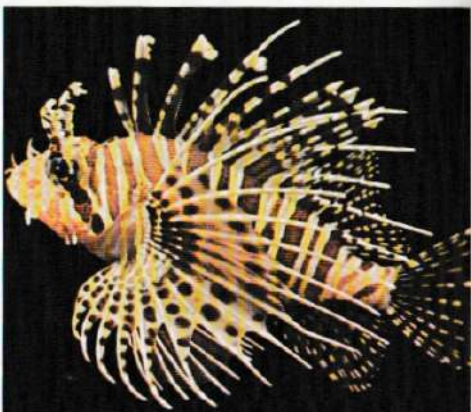
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*Pterois volitans* is one of the many marine beauties that abound in the Madras harbor. Yet, nobody collects or keeps marine tropicals in the area. Photo by Dr. Herbert R. Axelrod.

barbs, and the usual dwarf gouramis and zebra danios. The man in charge told me he could sell as many angels and goldfish as I could supply to him. This is about the same situation as can be found in Colombo, Ceylon, except that angels are bred here on the spot.

If an energetic breeder sets up in Madras, he'll surely make good. There is a steady demand for good-quality tropicals, for they are virtually nonexistent. The only good specimens I saw were of Madras-bred bettas which were vigorous and had good finnage but no fixed colors. Tubifex worms are plentiful all year round. There is no really cold season as there is in Bombay and Calcutta, and daphnia are not available.

As far as I know, nobody keeps marines in Madras. Even the rather pretty public aquarium has no marines. Yet the Madras harbor is quite clear and teems with herichthys, *Pterois volitans*, and other tropical marine beauties. I visualize a quite lucrative export business for anyone able to set up for collecting in Madras. There are fair supplies of marines and brackish water fishes like scats and monos, but only in season. There is always a huge supply

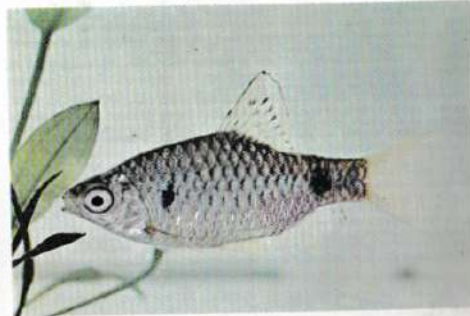
of dwarf gouramis, *Chanda lala*, and zebras. All of these native fishes are so absurdly cheap that a wholesaler in Europe would find it far more profitable for him to import them than breed them.

In the small shops in and around Moore Market were mostly local fishes offered for sale, but here and there were some very poor swordtails, mollies, platies, guppies, bettas, goldfish, blue gouramis, and a few angels. Of the native fishes, there were dwarf gouramis, brachydanios, *Tilapia mossambica*, *Epiplatys damrica*, *Rasbora daniconius*, *Puntius vittatus*, *Puntius ticto*, *Lepidoccephalus thermalis*, and rather nice *Notopterus* species. The notopterus, when small, are very black and really attractive, graceful in movement, and quite hardy. They are also inexpensive and peaceful.

The fish tanks available in Madras are of poorer quality, and are more expensive than those available in Bombay. I found out why no one was making cement or concrete aquariums; in Madras cement is sold only on a special permit issued to building contractors; it cannot be bought over the counter. So the average hobbyist, unless he is also a building contractor, cannot get cement for aquariums.

One thing really surprised me; no one was using aerators! Even in the display tanks in some big hotels and stores, which were, on the whole, rather pleasing, no aeration was employed. Everywhere the fishes were listless or gasping at the surface. Yet Indian-made aerators are cheap and available in the main pet shop on Mount Road.

The perky *Puntius ticto* is another of the many tropicals native to South India. Photo by Dr. Herbert R. Axelrod.





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As far as I know, there are no commercial exporters of fishes from Madras. (I may be wrong about this, but nobody was able to supply me with names or addresses.) This is a pity, because I feel sure that many buyers in Europe and America and also the Far East would like to buy Madras fishes direct rather than get them through Bombay or Calcutta. There are splendid air services from Madras to all parts of the world, and freight is always available. What a contrast to Colombo where four or five exporters are constantly struggling for air freight space to the west!

From Madras, I travelled to Kerala State by train. I wanted to visit an old servant of mine, now retired and living a peaceful life in a rather distant rural area fairly close to the sea. The main village here is Valapad, which is about 15 miles by road from Trichur, a fairly large town in central Kerala.

The climate of Kerala is very similar to that of Ceylon, and so, the vegetation is almost the same but not quite as lush or varied. Kerala gets more than its share of monsoon, but there is a long dry season which we don't get in Ceylon, which is my home. I stayed for 2 or 3 days in the paddy-growing areas, which also boasted coconut palms, small village gardens, and extensive lagoons that join the sea during flood time.

I stayed in the clean and modest home of my dear old servant Raman, who was overjoyed to see me and did his best to make me comfortable. Life in rural Kerala is far from exciting and entertaining, but it was good to rest and enjoy the quiet and peace with charming, simple, honest folk. But to an aquarist, the waters of Kerala offer fascinating opportunities. I had been here once before, in the dry season. I had seen nothing of great interest. But now it was monsoon season, and the fields and ditches were flowing with clean water. Water plants were everywhere in profusion. I lost no time in exploring the ponds, ditches, and paddy-fields.

Raman's garden, like all small gardens in this area, boasts two ponds, one for drinking water, the other for bathing and washing. These ponds are laboriously dug in the sandy soil and almost run dry (but not quite) in the dry season. At this time, however, they were clear and overflowing and fascinating. In Raman's bathing pond, which was adjacent to and connected with a stream running along his paddy-fields, I bathed every day in the company of *Eiomus danricus* (brightly marked), *Pantius vittatus*, magnificent *Aplochelichthys lineatus*, *Aplochelichthys blochii*, *Rasbora daniconius*, *Macropodus opercularis*, *Anabas testudineus*, *Heradandya stenorhina* (which I thought came only from Ceylon!), and *Danio malabaricus*. The water was beautifully clear, and the most magnificent otellias I have ever seen grew upwards from the bottom. Some of the leaves had yard-long stems. There was also a profusion of myriophyllum and some water lilies. I spent many happy hours in this pool, to the astonishment of Raman's neighbors.

Near Raman's house are his paddy-fields, and from one field to another, in shallow trenches, flows the clear water that irrigates them. Sometimes the

Tropical Fish Hobbyist

embankments are overflowed, and one has to walk across stretches of clear water on a sandy bottom to go places. (I never wore long pants or shoes in Kerala; it would have been a nuisance taking them off each time I had to trek across a stretch of water; shorts and sandals were much more convenient.) One afternoon I gazed at the fishes in such a stretch of water, and, amongst the ubiquitous *Etroplus maculatus*, *Danio malabaricus*, *Xenentodon canaliculatus* (a freshwater gar), mystus catfishes, ophioccephalus, anabas, and panchax, I glimpsed something spotted and exotic rush across from one pool to another.

Now, like all collectors, I am an optimist and never give up looking for something new, bright, and exciting in the way of aquarium fishes or plants. This time I had something new, at least to the aquarium world, and I was determined to find out what it was. I often dream of jet-black cichlids with red tails and fins, albino black ruby barb with red noses, and of a new "Ceylon discus" in the jungle streams. My dreams have been rewarded with the discovery of three new species in tiny, well-fished Ceylon, not quite like those I dreamt of, but at any rate NEW. Now I was after another, perhaps new to science!

I kept a careful watch on this open patch and in a few minutes was rewarded. It was a small puffer that had caught my eye, and I found that in ones or twos and even in small groups, they swam from one pool to another via these open gaps. I had no net, no container, nothing. So I used patience and stealth and my cupped hands, and fairly soon I had my first dwarf puffer in my hands.

What a beauty the fish turned out to be! It was bright gold, with a darker gold belly and a smart black streak running along it from nose to tail. The dorsal surface was dark with splendid black blotches. The fins were golden. Soon I had more, which I examined in one of Raman's prized glass tumblers. Yes, they were new puffers all right, and I could even sex them. The females were slightly larger (about 1 1/2" long) and were a brighter yellow-gold with darker black markings. They lacked the golden belly and black line of the males. Later, outdoors, I often saw the puffers courting in pairs, and several times small groups of tiny fry swam past.

I tried hard to keep my precious captures alive, but to no avail. So I put them in methyl alcohol, which the local doctor gave me, and kept them for identification. I predicted fame and fortune for the first exporter of this lovely fish, which I unhesitatingly called the "Sunset Puffer." I also sent my friend S. R. Sane in Bombay a painting of a pair I had done with the aid of Raman's young son Raju, who lent me his paint box for the job.

I soon found that the sunset puffer was all over the area, even in the larger streams. A charming old fisherman who kept small cane traps in the streams running by his home told me that in the dry season you could collect sunset puffers by the hundreds. As we spoke, he produced from his trap a very small



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*Etropius maculatus*, the orange chromide, has lost a great deal of its popularity with hobbyists. Those who have seen the fish in its best colors know, however, that it is one of the most beautiful tropicals. Photo by Gunter Saath.

*Nandus nandus* (the first live one I had seen) which resembled a rather savage and mottled baby snook.

Other fishes I observed in the streams and ditches were *Gerris* species, which are usually found in the sea or in lagoons. Here they had adapted themselves to pure fresh water and were in the company of rather striking *Mastombeilus* species. Once I started fish-watching in Kerala, time flew all too swiftly. I made hasty notes about the water plants I saw; I recognized *Orellia*, *Myriophyllum*, *Hydrilla*, *Blyxa*, *Utricularia*, *Eichhornia*, *Nitella*, *Ceratopteris*, *Pistia*, *Hygrophila*, and the rather drab *Aponogeton natans*. All these are highly seasonal and probably die out during the drought. I heard that unusual cryptocorynes are found in the hills to the east, but there was not time to travel there.

Rather sadly, I bade Raman and his family goodbye and started for Madras. From here it was another long train journey back to Ceylon via Mandapam Camp, where there is a splendid Fisheries Research Station in which many of my friends are doing research. Dr. Jones, the director of the station, who in spite of a recent paralysis of his legs, is as active, energetic, and enthusiastic as ever, greeted me warmly. He had just returned from a conference in Rome and was full of fish talk.

I casually mentioned that I had found a rather exciting new freshwater puffer in Kerala. He just said, "Ah yes, look up Records of Madras Museum, page so-and-so, Hora and Pillai, 1940, describing *Monotretus travancoricus*."

An attendant produced the book, and there was my fish, described from several dead specimens which were carefully drawn to illustrate the paper. But Hora and Pillai had not seen live *Monotretus travancoricus* in full color and behind glass, as I had. So they described the markings as "variable" and made no mention of the true glory of this lovely small fish.

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