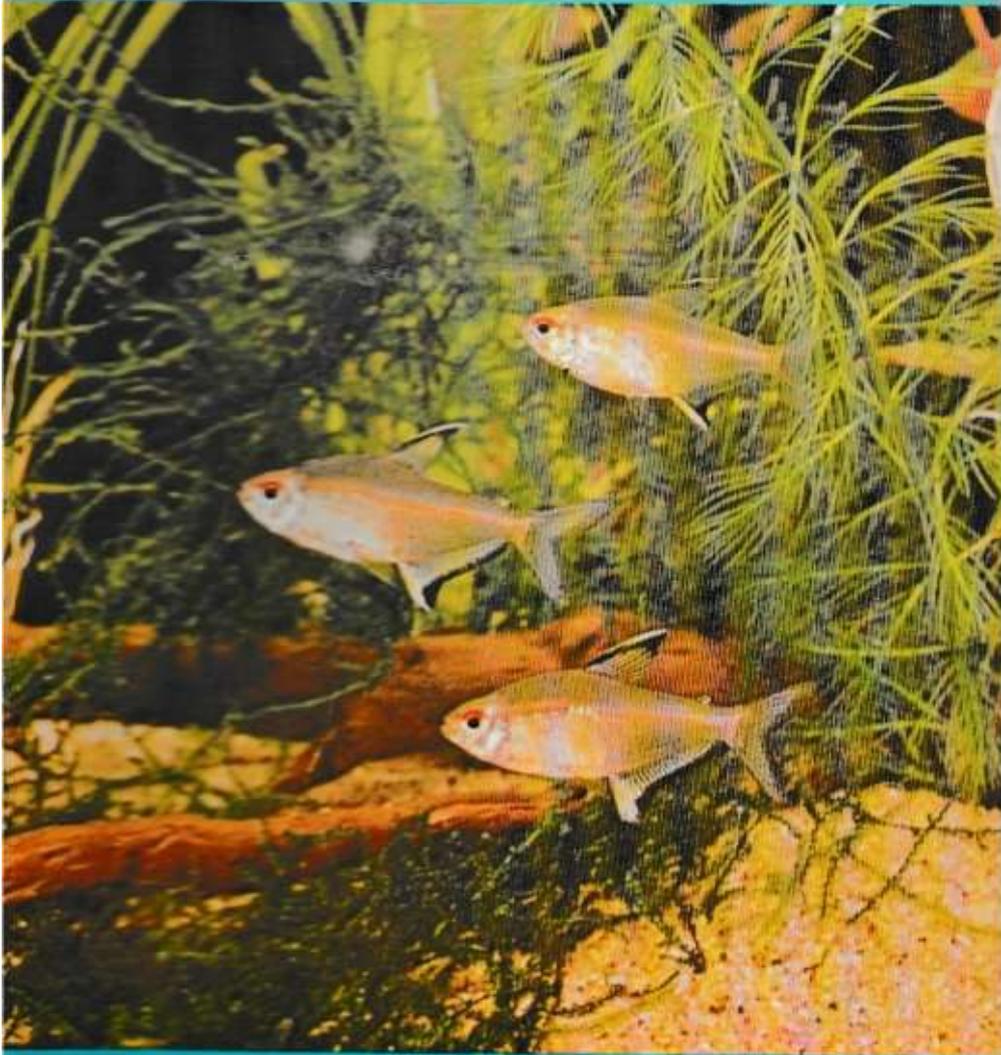


July, 1971

tropical fish hobbyist

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Spawning the Lemon Tetra

tropical fish hobbyist

Vol. XIX, July, 1971 (#185, No. 11)

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Loxostichus, *Hypostichobrycon pulchripinnis*. Photo by Ruda Zekal.

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July, 1971

EDITORIALLY . . .

Until fairly recently, the aquarium hobby had not been what you could reasonably call a "collecting" hobby. Sure, you could always have a "collection" of fishes, if by collection you meant simply an assemblage of like units having some common basis of relationship. But regardless of the number of fishes you had and regardless of the diversity of their taxonomic status, in most cases you didn't have a collection, because the fishes had not been chosen on the basis of how they fit into a general plan of organization. In most cases, they were chosen simply because they were available and because they happened to appeal to the buyer for mostly subjective reasons. It seems to me that things have changed somewhat over the past few years: more hobbyists than ever before are approaching the purchase of specimens from the standpoint of how those specimens fit into some over-all organizational plan. I've seen or heard of hobbyists recently who are attempting to maintain representative collections of fishes from every fish-holding continent or from every country within a certain continent; one very ambitious gentleman recently wrote and informed us of his decision to maintain at least one species from every family of fishes that had representation in the fresh waters of the world. He mentioned how much tank space he estimated he'd require, so he had at least an inkling of the enormity of the task he was setting for himself. I don't know what has occasioned this change in habit on the part of some hobbyists, but I'm certain about one of the factors that has allowed it to happen: the great increase in the diversity of fishes offered for sale. True enough, many of the old standbys of the aquarium hobby have declined in quality, but there definitely has been an increase in the number of different species on the market...so hobbyists who had the collecting urge to begin with are finally being given the means to put their accumulative instincts to work.

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Prognathodes aculeatus. Photo by Dr. John R. Randall.

Prognathodes aculeatus

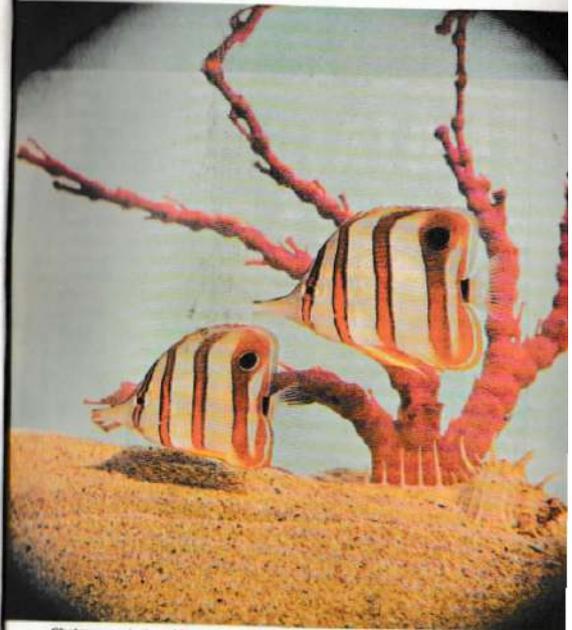
BY PETER CHLUPATY

The first specimen of *Prognathodes aculeatus* that I ever acquired surprised me greatly by doing something that chaetodontids very rarely do: it ate almost immediately upon introduction to its quarantine tank. I had expected that it would, like almost every other of the many butterfly fishes I had obtained throughout the years as a marine fish hobbyist, take badly to tank life at first and need all sorts of wheedling and coaxing before it would take food. I was prepared to offer the fish a whole raft of saltwater delicacies and was happy to learn that I wouldn't have to.

Not so pleasant was the reception arranged for *Prognathodes* when it was put into one of my marine community aquaria after it had finished its

three-week quarantine period. The new fish was immediately attacked by the other chaetodontid fishes, including both butterfly and surgeon fishes, in the tank. But my *Prognathodes* was no coward and rose to its own defense very well. Assuming the defensive attitude common to members of its family, it erected the huge rays of its dorsal fin and put its head down so that the rays were pointed directly at any fish threatening it. This maneuver served the fish well as far as the other butterfly fishes were concerned, but it didn't keep the surgeon fishes at bay. The newcomer's defense against the surgeons and their superior armament was a simple one: flight. When a surgeon fish approached menacingly, *Prognathodes* got out of its way in a hurry. The surgeons left the new fish alone after a few days of going

Forcipiger flavissimus. The genus *Forcipiger*, one of the two genera of Pacific long-snouted butterflyfishes, was until only recently believed to include only one species, *F. longirostris*, but *F. flavissimus* and *F. inornatus* are now recognized. Photo by Dr. John R. Randall.



Chelmon rostratus. More colorful and more long-nosed than the Atlantic *P. aculeatus*, this Pacific species is also more delicate, especially as regards its willingness to accept food upon its introduction to new tank surroundings. Photo by Earl Kennedy.

through their tough-guy routine; I've found that they usually give a new fish a bad time for at least a few days and then stop bothering it. Not always, of course; sometimes they'll pick on a new fish relentlessly, never letting up until the unhappy new tankmate is dead.

I understand that *P. aculeatus* is known to English-speaking marine hobbyists as the Atlantic longsnout butterfly fish, probably to distinguish it from the *Forcipiger* and *Chelmon* species from the Pacific and Indian oceans, generally sold as Pacific longsnouts (or longnoses) or just plain longsnouts. The name serves well enough, I suppose, even though there are some Atlantic butterfly fishes that are long-snouted enough to cause confusion if one were relying on popular names alone as expressions of definitive characters.

Anyway, my *P. aculeatus* proved that its atypical feeding behavior upon arrival wasn't a fluke. My specimen was a hearty eater right from the start, taking white worms, microworms, tubifex worms, mosquito larvae, small shrimps, many different freshwater crustaceans, mussel meat, finely chopped beef heart and raw ham, and commercial flake foods. Vegetable foodstuffs in the form of lettuce and marine algae were also taken readily. The species really offers no complications at all as regards its feeding program, which makes it a welcome relief from some of the other chaetodontid species. But I've discovered that even the more picky chaetodontids don't require as much pampering in dietary matters as they're reputed to require. It is not true, for example, that they must be maintained on a diet of living coral polyps.

Prognathodes aculeatus is very thankful if you afford it hiding places in its tank. This may be accomplished with either rocks or pieces of real or plastic coral. The fish like caves a lot, and squeeze into the narrowest crevices in order to search for food. The density of the water should range around 1.020 to 1.023. Use good sea water. Artificially mixed ones will do perfectly.

Frequent changes of its water enhances the well-being of the fish. The pH value should not sink below 8, and the temperature of the water should amount to 76° F. or more. During the last few years I have noticed that most coral fishes are less prone to diseases at temperatures ranging from 76 to 79 degrees F. than at temperatures of 75 F. *Prognathodes aculeatus* likes a thorough agitation of the water. For this a Hydra-flo or Hydramatic pump is what the prescription calls for.

The Atlantic longsnout is an elegant swimmer which is seen during most of the day in search of food. I would like to commend this species to any marine fancier.

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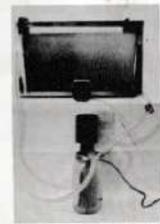
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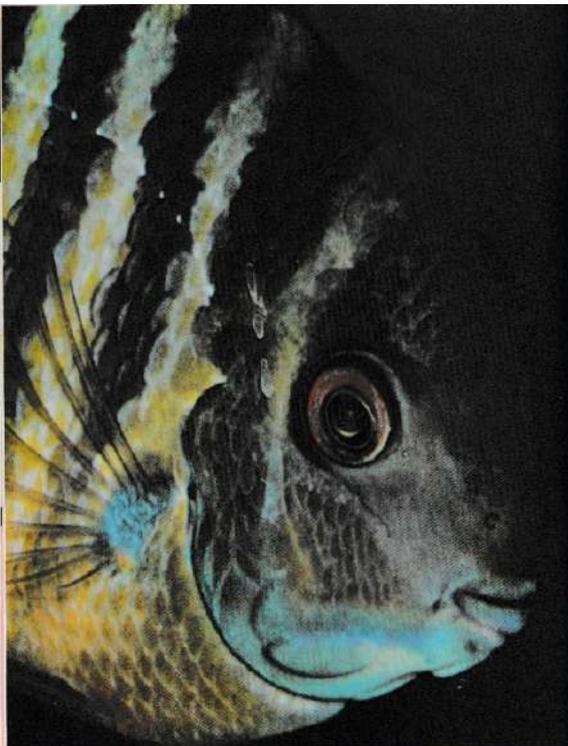
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LINCOLN LITRELL

cichlid
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Robert J. Golstein, Ph.D.

Photo by Dr. Karl Krauss



Most aquarists are turned off by taxonomy, largely because they see neither rhyme nor reason to it. Well friends, it does make sense, but it takes a little reading on your part to see this sense.

Groups of closely related species are grouped into genera; the genus

is the first part of the scientific name. When we say "related," we mean that they evolved from a common ancestor, to the best of our knowledge. In the same way, groups of genera may be related, and these groups are placed in families. The family Cichlidae has

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an abundance of genera, and here is where most cichlidophiles give up the ghost. Perhaps I can make some sense out of this for you. In this discussion, I will try to show how genera may be grouped, if not into taxonomic categories, at least into categories that make sense.

In Africa, there are two main lines of cichlid evolution, typified by *Tilapia* on the one hand and *Haplochromis* on the other. Each principal genus has a number of other, usually smaller, genera allied with it, and these other genera usually differ in teeth, gill apparatus, scales, or some other ways. But

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the big difference between *Tilapia* and *Haplochromis* lies in the pharyngeal apparatus and how it is hooked up to the skull. Closely

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Palmatochromis ansargii. Photo by H. J. Richter.

Examples of four species in four separate genera allied with *Tilapia*:

Pelvicachromis pulcher. Photo by Krenser.



Haplochromis nudiceps. Photo by R. Zukal.

Chromidotilapia guentheri. Photo by R. Zukal.



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related to the *Tilapia* species and in their line of evolution would be *Pelmatochromis*, *Pelvicachromis*, *Nanochromis*, *Chromidotilapia* and a number of others. *Tilapia* itself is a large genus; very few species have been seen by aquarists.

The *Haplochromis* line of evolution is even bigger and more confused, because many of the isolated lakes of Africa have experienced explosive speciation of the primitive *Haplochromis* ancestors. This has given rise to an enormous number of *Haplochromis* derivatives, often spoken of as "species-flocks," in several of the lakes. Generally, this explosive speciation is correlated with fluctuating water levels, exploration of every conceivable mode of life and food, and the violent geologic upheavals during the history of the continent. All the mbuna of Lake Malawi, for example, are members of a *Haplochromis* species-flock. And the Lake Tanganyika cichlids are almost entirely of a similar ancestry. Ditto for Lake Victoria. So *Haplochromis* and its derivatives have experienced great speciation in the old lakes, whereas *Tilapia*

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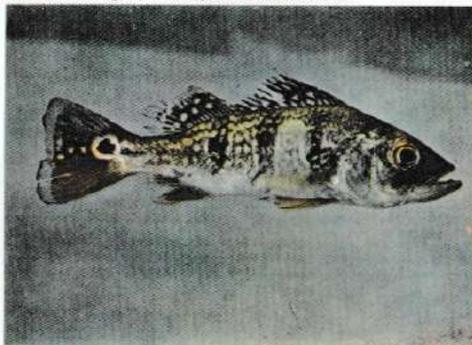


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Chaetobranchius bitaeniatus; although *Chaetobranchius* is a *Tilapia*-allied genus, it is different from the main body of American cichlids in that it is not a member of the "Acara Group." Photo by Dr. Herbert R. Axelrod.

Cichla ocellaris; *Cichla* is the only *Haplochromis*-allied genus in the American cichlid group. Photo by Dr. Herbert R. Axelrod.



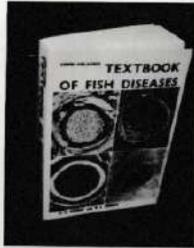
Aequidens nassa; *Aequidens* is one of the four genera in the "Aequidens Group" possessing three anal spines. Photo by Dr. Herbert R. Axelrod.

and its allies have made good use of the African rivers.

Now let's take a look at American cichlids, generally referred to as Neotropical cichlids. Again we have the same division, based on the pharyngeal hook-up to the skull. Only one American genus is thus related to Africa's *Haplochromis*, and that is the genus *Cichla*. All the other American cichlids have the *Tilapia* type of hook-up. There were two lines from the *Tilapia*-like ancestor, one leading to the oddball genus *Chaetobranchius*, and the other leading to what Regan called the Acara group. This was a group of fish characterized by three anal spines (unbranched rays). I will call it the primitive Aequidens Group.

Early in the history of the Aequidens Group, another line split off, characterized by more than three anal spines. This line gave off *Cichlasoma*, *Pterophyllum*, *Symphysodon*, *Uaru*, *Herotilapia*, *Petenia* and *Neotropus*. The remainder of the Aequidens Group gave off three other lines, still retaining the three anal spines. These groups can be indicated as (1) *Aequidens*, *Astronotus*, *Acaronia* and *Nannacara*; (2) *Grenicara*, *Batrachops* and *Grenichia* (characterized by a comb-like edge on part of the gill cover); and (3) *Apistogramma*, *Biotodoma* and *Geophagus* (characterized by a lobe on the first gill arch).

So you see, taxonomy does make sense. It's not just a game.



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YOUR FISHES' HEALTH

by Roger Lee Herman, Ph.D.

Furunculosis

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Furunculosis was the first bacterial fish disease described and studied by scientists. It was first noted in Germany in 1894. Since then, it has been recognized over almost the entire world.

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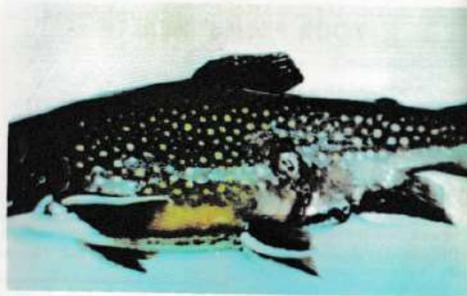
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An adult brook trout, *Salvelinus fontinalis*, exhibiting a lesion caused by chronic furunculosis. (From *Diseases of Fishes*, Book 2A, *Bacterial Diseases of Fishes*, by Bullock, Conroy, and Snieszko).

Australian rainbowfish showing extensive lesion caused by bacterial skin infection. Photo by R. Zukal.



These chocolate gouramis exhibit (immediately under the frontal portion of the dorsal fin in the fish at left and immediately under the middle portion of the dorsal fin on the fish at right) bacteria-caused skin infections of a type associated with lesions produced by *Aeromonas salmonicida*. Photo by R. Zukal.

not, however, look like furuncles on humans. A blister is formed by collection of fluid under the skin. The fluid may be clear or appear quite bloody. The blisters eventually break, exposing the muscle. If the disease is mild and the fish recovers, these sores heal but may be black. Certain pigment cells, called melanocytes, frequently collect at the healing edge of wounds. They remain there after the sore is healed and the dark pigment (melanin) causes a black "scar."

If the disease is severe and the fish die quickly, there are usually no external symptoms seen. However, when the fish is opened, the intestine and liver and sometimes the muscles and fat will be spotted with bloody areas—hemorrhages. When fish are resistant to furunculosis or the bacteria are not strong, hemorrhages may appear at the base of the fins, or the anus may become swollen and inflamed; the symptoms may appear together.

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requires identification of the bacteria *Aeromonas salmonicida*. This organism is a gram negative bacillus (rod shaped and stains red with special staining) which grows best between 68 and 86°F. On special culture media a brown pigment is formed. The bacterium is non-motile (has no flagella) and does not form spores. *Aeromonas salmonicida* is an obligate parasite: it cannot live long outside the fish.

Furunculosis occurs most frequently where environmental conditions are poor for the fish. A dirty aquarium with poor aeration makes an excellent place for the disease. Good housekeeping goes a long way towards preventing this disease as well as many others. As always, new fish should be quarantined.

Several sulfonamides, antibiotics and nitrofurans have been found to be effective against this deadly bacterium. Unfortunately, simply adding drugs to the water usually is not enough to cure the fish. The bacteria grow inside the fish, and not enough drug passes the gills to kill the bugs. Feed soaked in a strong solution of drug works well if the fish are still eating. Sulfamethazine (Sulmet) and sulfisoxazole (Gantrisin) are among the better sulfonamides. Chloromycetin and Terramycin are the antibiotics of choice. Drug in the water will help to prevent spread of the disease to non-infected fish. Use 200-400 milligrams per gallon or follow directions on the product package. Disinfection of the tank is desirable after an outbreak of furunculosis.

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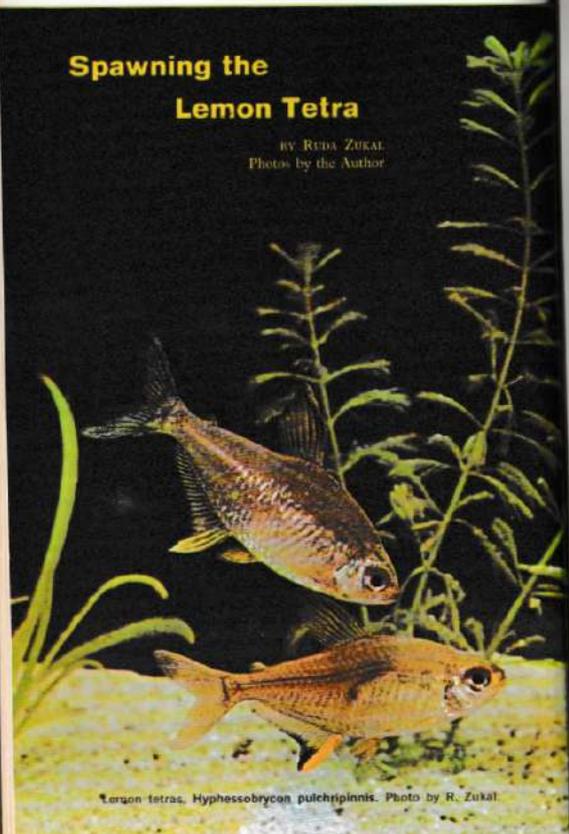


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Spawning the Lemon Tetra

BY RUDA ZUKAL
Photos by the Author



Lemon tetras, *Hyphessobrycon pulchripinnis*. Photo by R. Zukal

Although the lack of popularity of some fishes that seem admirably suited to the aquarium remains a mystery, I've always believed that the lemon tetra lacks a large following mainly because most people who keep the fish don't keep it right, and the coloring of the fish is such that if it is not provided with proper lighting and tank conditions it will never be able to live up to the pleasing yellowish coloration ascribed to it by its popular name. It's not a truly brilliant fish under any circumstances, but it does have a subdued charm if given a chance to show its best, definitely more colorful than some other tetras that have far outstripped it in popularity. In order to look at its best, the lemon tetra (like many other basically light-colored fishes) must be kept in a tank that is shaded at the bottom by use of a dark substratum and not too brightly lighted at the top. A nice planting also helps to bring out the fish's colors.

Lemon tetras do well in soft, slightly acid water of a type generally suitable for small characins. They do not demand much in the way of food and may be maintained at close to 68°. They of course prefer our small live foods, daphnia being among their favorites, but they will accept prepared foods of all kinds. They are not combative with other species, although male lemon tetras will engage in some roughhouse with other males during and immediately before spawning.

I have heard it said that lemon tetras are difficult to spawn, but I don't believe it. If they are fed correctly on a variety of rich foods, including live foods, the females will fatten up and fill with roe and be ready to spawn, and if you choose a number of good nimbles, frisky males and pay attention to providing clean and roomy tanks with soft, acid water you should have no great trouble. I think that one reason why comparatively so few aquarists have any success in breeding any of the

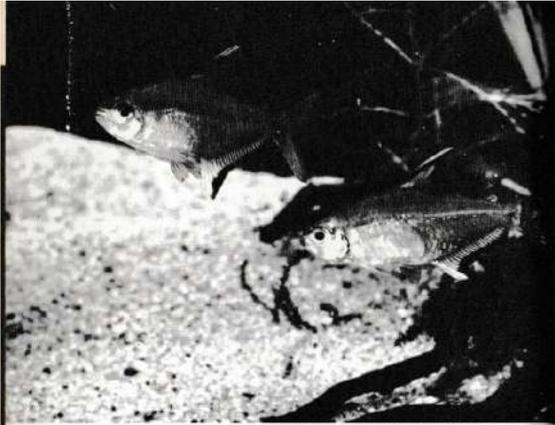
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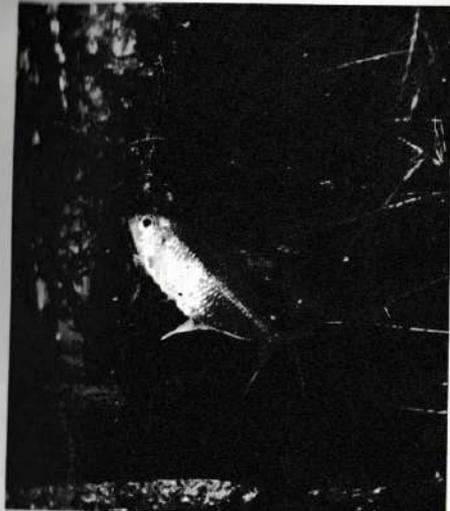
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35



The male approaches the female and, after overtaking her (below) near a densely planted area in the tank, captures her attention by taking up a stance directly in front of her and vibrating his fins and body. Both male and female lemon tetras may show the black edging to the anal fin, although the color is usually more prominent in males; sometimes the female entirely lacks the black seam.



Here the spawning lemon tetras have entered the plant thicket and begun the first of the spawning embraces.

characins lies in their refusal to get a large enough number of fish as their basic parental stock. I never stock fewer than thirteen individuals of any of the tetra species that I want eventually to breed.

The spawning portrayed in the photographs accompanying this article resulted in about 200 eggs. The parents were removed immediately, for they are avid egg-eaters. Maintained at a temperature of 77°, the eggs hatched in a little over a day, and the fry became free-swimming in about six days. The fry were tiny and required the smallest infusorians at first.

Tropical Fish Hobbyist

I use three plastic children's wading pools. Each pool is about 4 feet square and 9 inches deep; they cost about \$3.00 each. The pools are stacked one above the other on one of the racks in my fish

room. I add approximately 40 gallons of water to each. The water has a specific gravity of about 1.040 and is maintained at room temperature, which ranges from 71° F to 76° F. Each pool has an airstone adjusted to deliver a strong flow of bubbles for circulation; no filters are used.

Pure rock salt is added until the specific gravity is about 1.040, then to each pool is added half a cup of epsom salts and a tablespoonful of baking soda.

Freshly hatched brine shrimp are added each day for about a week to each pool; in three weeks the shrimp are of adult size. The pools are started one week apart, and each pool supplies adult shrimp for one week. When one pool is depleted, the next one is ready and is harvested for a week, then the next pool is harvested, and so on.

After a pool is depleted, the bottom is siphoned clean of sediment and the walls and bottom

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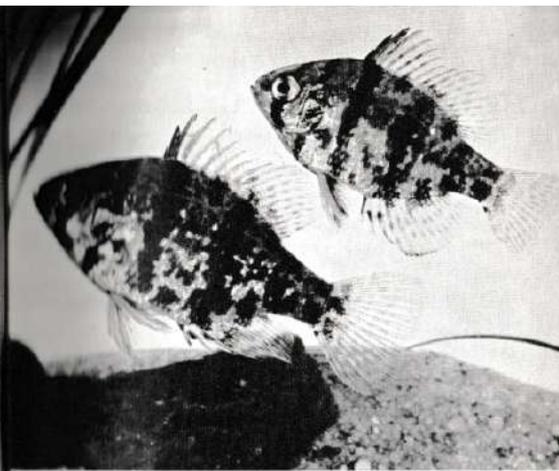
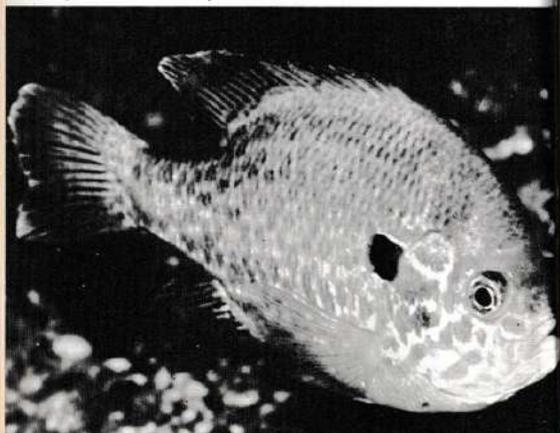
Tropical Fish Hobbyist

anything else—with aplomb. But it likes food that moves, to be sure, especially minnows. It probably does not occur to one at first just how big the species' mouth is. Actually, it's huge; I guess that's why "bass" was thought appropriate.

A one-inch rock bass actually is capable of swallowing a one-inch dace. It swallows as much as it can get down; then, over the next day, it gradually ingests the rest, making like a pencil sharpener, with the prey sticking out of its mouth. I've seen a rock bass with two minnows in its mouth at once, as though smoking two cigars: I've seen the head end of a swallowed minnow stretching the abdominal skin of its swallower to the breaking point, spreading the scales askew. It's not unusual for them to eat themselves to death!

Yet, voracious as rock bass are, they are generally less quarrelsome than other sunfishes. Part of the species' charm, however, lies in the "personality" differences among specimens, so there are exceptions. Sometimes they seem territorial. In nature, they don't school like some other sunfishes, preferring solitary hiding places.

Less pugnacious than its look-alike relative, *Lepomis gibbosus* (below), the rock bass is generally peaceful toward fishes that are too big to be regarded as food. Photo by G. Marcuse.



The entire sunfish family, Centrarchidae, has been neglected by American hobbyists, even though fishes of the family provide good-looking and interesting species. Probably the most sought-after of all of the sunfishes is the attractive pygmy sunfish, *Enneacanthus (Mesogonistius) chaetodon*, shown here. Photo by Milan Chvojka.

Rockies are alert and look for their feeder, whose hand they soon eat from. When acclimated, they are often up front.

I have not bred them, but European writers (naturally) say they adhere to the pit-spawning pattern of the Centrarchids. In nature, however, they often nest between and under rocks, or in clearings among the weeds.

Sex distinctions are not always clear, but in spawning season, there is considerable difference in girth. In equal conditions, males probably have clearer definition to their mottlings and darker pectoral fins, whose prominence is a further similarity to oscars. If kept over the winter before breeding, many other temperate zone fishes should be given rather cool water during this period, i.e., forties and fifties, and this is probably advisable.

This least-known member of a family underrated by aquarists has much to recommend itself. I would place it ahead of many of its cousins on the basis of its temperament, appetite and behavioral variability.

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Robert J. Goldstein, Ph.D.



"Is German peat moss better than American peat moss?" This is a question I receive frequently, and a few words about peat moss might straighten out a number of people who think they have a problem (but don't). Peat moss, whether it comes from Michigan, Canada, or Germany, is still just peat moss. Some brands come in large heavy paper sacks and this peat moss is generally extremely dry. To use it you must soak it for a long period or boil it to get it to sink. This is good peat moss because it has many large strands of material (usually sphagnum and other detritus). It can be washed under the tap in a large aquarium net, and the fine particles will go down the drain. I prefer

coarse material as a spawning medium, but there are many killifish experts who swear by finely ground material and will run their peat moss through a blender before using it. A second type of peat moss comes in plastic bags and is generally rather wet. This material is already very finely ground (except for some sticks and other detritus); it sinks right away, but it has a tendency to color your water immediately and very darkly. I have personally quit using it. A third type of material is ordinary peat, and this should not be confused with peat moss. Ordinary peat is not a good spawning medium. Very recently Joe Anascavage of Columbus, Ohio, introduced me to

a new kind of spawning medium. These are peat moss pellets, and you can pick them up at large nurseries.

These peat moss pellets are little packets of peat moss, wrapped in coarse netting. The pellets are the size of large checkers. Remove the netting and simply drop one pellet into a drum bowl or two pellets into a five-gallon aquarium. Within minutes the peat moss expands, soaks up water, and sinks totally. It doesn't contain sticks or other material, there is no unsightly floating remainder, and best of all it doesn't discolor the water. I think this is the most important new find in breeding annuals that has oc-

curring in years. I find the use of pellets so neat and trouble-free that I have finally begun changing peat moss in my breeding tanks every two weeks (the ideal interval for harvests), instead of monthly or less often (which often results in significant mortality of eggs and lowered breeding activity).

When you harvest your peat moss, be sure to run it under the tap in an aquarium net for a few minutes to clean it up. Then, store it in a plastic bag (for short term incubation) or in jars with perforated lids (for long-term incubation). Most importantly, be sure to label each package with the species and the date of harvest.

How dry should it be? The old adage *as dry as pipe tobacco* has given way to new information. For South American annuals, the peat moss should be quite dry; light-colored for *Pterolebias* species and slightly damper for *Cynolebias* species. Make it quite moist for *Nothobranchius* species (almost wet), and the same for *Rotofia* species.

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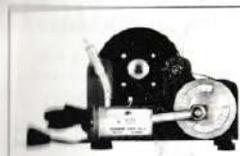
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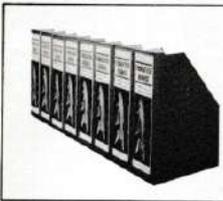
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CORYDORAS BONDI
Q. Have you any information on *Corydoras bondi*? In EXOTIC TROPICAL FISHES, there is a picture. Are they rare?
SUE DOLTON
NEW YORK, NEW YORK

A. Yes, *Corydoras bondi* is comparatively rare in aquaria. The genus *Corydoras* has caused a good deal of confusion regarding the exact



Corydoras bondi.
Photo by Dr. Herbert R. Axelrod.

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 Q. Two months ago I bought a pair of pike livebearers, *Belonesox belizanus*, and two weeks ago the female gave birth to 77 babies. I would like to know how long it will take for them to grow up? They're about an inch long now, and I've been feeding them baby guppies, glass worms, and frozen brine shrimp. They are kept in two-10-gallon aquariums. Another question is how often will the female give birth?
 DON RICHMOND
 RICHFIELD, MINNESOTA

A. The young should reach sexual maturity in about half a year, but they won't attain their full growth for another half year or so. You've been feeding them very well, so their growth should be swift, but two 10-gallon aquariums really isn't enough room for them. Spread them out more. The female will give birth on an average of about every month and a half if maintained at a temperature of 74.

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Belonesox belizanus, female. Photo by R. Zukal.



Infant pike livebearers. Photo by G. J. M. Timmerman.

Belonesox belizanus; male. Photo by R. Zukal.



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TUNA FISH FOR TINY FISH?
 Q. I've never heard anything mentioned about canned tuna fish as a food for tropicals. Now they can it with water so there wouldn't be any trouble with oils. I've tried feeding it to my cichlids and they accepted it surprisingly well. I'm afraid to include it as a part of their regular diet until I'm absolutely certain that it is safe and worthwhile protein-wise.
 Is there anything I can do to get my male betta to breed? He's a bit young but my female is so ready that she's maintaining a bubble nest of her own. They are separated by a glass partition and she keeps trying to attract his attention although he doesn't seem to care. Assuming I get him to breed before she grows too old, will the spawn be any good? I've heard that if the male is young, it's possible that the eggs may not be fertilized.
 RANDY BATTY
 GLENDALE, CALIFORNIA

A. You haven't heard much about feeding fishes on peanuts either, and mostly for the same reason as you haven't heard about feeding them on tuna fish: why bother? If hobbyists want to undertake the feeding of their fishes on untried foods purely for at least mostly in the spirit of scientific experimentation, that's one thing; perhaps they can come up with a new winner. But if it's their pocketbooks and not their fishes they're concerned about, that's a different story, because trying to do things on the cheap in many cases turns out to be a lot more expensive. If your cichlids like water-packed canned tuna fish and do well on it, there's no reason you shouldn't use it, provided you continue to provide them with a variety in their diet.

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But we can't really see that any fish of the mackerel family, to which all of the tunas belong, could be other than oily, regardless of what it's packed in, water or oil.
 If your betta is too young to breed, he's too young, and the only thing that will help is the passage of time. If the male you have won't spawn, for whatever reason, and you want to breed the ready female that you have, get a different male. Yes, young males just reaching sexual maturity are more likely to allow a greater percentage of unfertilized eggs than males in their prime; but at least some of the eggs should be fertilized unless the male is sterile.

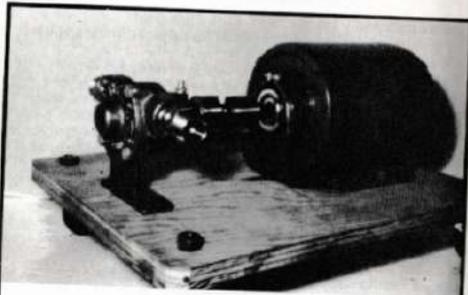
BETTA IN BOWL
 Q. I would like to know if it would be safe to keep a single male betta in a one-gallon fish bowl with a round-bottom filter. I have seen these at my pet shop, but they did not have the filters.
 In my 15-gallon tank I have a small brown blotch on the filter stem and also on my long-leaved plants. I would like to know if this is algae or a fungus? Could you tell me which product would control or eliminate these brown blotches?
 CLINT MURRAY
 GREENSBORO, NORTH CAROLINA

A. Yes, it's safe to keep a betta in a bowl filtered by a small round filter, as long as you pay attention to the fish's other requirements. Bettas can take cramped quarters like a bowl, all right, but they can't take cold water, so make sure that the bowl housing the betta isn't subjected to drafts or left in a cold place in the house. The brown patches probably are growths of bryozoans, or moss animals, and their appearance is a sign that your tank isn't getting enough light. The product that will control their presence is your aquarium reflector.

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Q. I am very interested in banded severums, but I have never seen an article about them. Could you give me some information on their breeding habits and how they get along with other fish?
GINA DUZICK
LOS ANGELES, CALIFORNIA



Young *C. severum*, showing prominent banded pattern.
Photo by Dr. Herbert R. Axelrod.

A. *Cichlasoma severum* is a substratum-spawning cichlid; both parents guard the eggs. The parents are diligent guardians, and adult *C. severum* are large fish, so at breeding time they are willing and able to do damage to other fishes that happen to get in their way. Young severum are more peaceful than adults. Since you've called your fish "banded," it would seem that you have young specimens, because it is in the younger fish that the bands on the sides are most prominent. As the fish get older, the bands become obscured.

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CATFISHES AND SALT

Q. Is there any consensus about the salt content of water for catfish? The older literature, as far as I know, warns against salt. I am keeping a large number of various species of catfish in water without salt. A fellow catfish collector is keeping his in water to which he has added 1 teaspoon of salt per gallon. I know the beneficial effects of salt in a tank and would like to know if it is safe to do the same.

ERNST A. EBBINGHAUS
STATE COLLEGE, PENNSYLVANIA

A. Yes, there is a consensus that says that there shouldn't be any salt in a tank housing catfishes...but there is no real hard evidence to show that the consensus is correct in all or even most cases. Look at it this way: your friend is having success, and since you are convinced that the salt has a beneficial effect and would therefore like to use it, you should experiment for yourself. Try one or two cats in a tank to which you've added salt, and see how they do. Then use salt or not, according to your own conclusions.

COOLING AQUARIUM WATER

Q. I have a 10-gallon aquarium with six platies. My problem is simply this—how can I cool the aquarium water during the summer without buying an air-conditioner? In the past I have tried frequent water changes and the addition of ice cubes. Although these methods cool the water, they are not practical and have resulted in the loss of some fish. Can you please offer some practical suggestions?
THOMAS WEINMANN, JR.
JERSEY CITY, NEW JERSEY

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A. Apart from the mechanical production of cooled air effected by running an airline through some type of vacuum device containing ice or other coolant and then having the cooled air pumped into the tank, you might try playing a small fan across the surface of the water or wrapping the outside of the aquarium in some damp material, thereby causing evaporation—produced cooling. In general, it is best in warmer weather to reduce the fish population in the tank, increase aeration, and feed less heavily. Also, you should cut down on any heat-producing equipment like lights.

OVERFEEDING AS SNAIL ERADICATOR

Q. Up until a couple of weeks ago I had trouble with snails and algae in my 20-gallon tank. I tried everything from pills, scraping, and picking the snails out by hand to tearing down the tank completely. Nothing seemed to do any good. Then I had to stop working so closely on the tanks and my wife took care of them for me. When I got back to working on my tanks, I found that the snails and algae cleared up. My wife said that the only thing she did was overfeed the tank one day and it clouded up for a few days. When it cleared, the snails and algae were gone. Can you tell me what might have happened?
EMIL F. JUPITZ, JR.
BALTIMORE, MARYLAND

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A. No, we can't, unless to suggest that possibly the overfeeding was so exaggerated as to cause a pollution sufficient to kill any living organism in the tank...and that's not likely. We're assuming that you didn't have any lights on during the time in which you paid no attention to the tanks, and that's probably what killed the algae.

WORMS

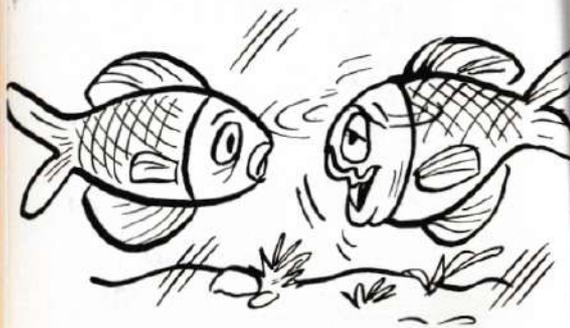
Q. Could you please tell me what has been plaguing my guppies? I've noticed worms coming out of their ventral area. What is this and how can I prevent it?

ALBERT G. KAVAL
MASSAPEQUA PARK, NEW YORK

A. Probably what you are seeing are not worms at all, but fecal material expelled from the guppies.

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**AQUARIUM SOCIETIES
DIRECTORY**

The completed forms for our annual listing of aquarium societies have come in heavily, so here (finally) is the 1971 AQUARIUM SOCIETIES DIRECTORY.

We've made a few changes from the way last year's listing was arranged. For example, this year the listings within each state and within each foreign country are arranged alphabetically according to the names of the cities in which they're situated, not according to the names of the clubs themselves. Additionally, there is a separate section for national and international specialty organizations.

Again, as last year, we do not represent the list to be complete, but it is as complete as we could make it on the basis of the information provided. If we've left any society out, please let us know about your existence; if any club listed is no longer in existence, perhaps some principal of the expired club will write and authorize us to remove the society's name from the list.

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ALABAMA
Alabama Aquarium Society
3718 Spearman Drive
Birmingham 35210
Huntsville Aquarium Society
P.O. Box 5151
Huntsville 35805
The Mobile Aquarium Society
c/o Wm. W. H. Morris
300 Rapier Ave.
Mobile 36604

ALASKA
Alaskan Aquarium Society
P.O. Box 4-280
Anchorage 99503

ARIZONA
Valley Aquarium Society
c/o Mr. R. Beauchamp
378 E. Verde Lane
Phoenix 85012

ARKANSAS
Delta Aquarium Society
P.O. Box 631
Blytheville 72315
Fort Smith Aquarium Society
c/o Linda Organ, Secretary
1217 Phoenix—Lot 13
Fort Smith 72901

Arkansas Amateur Aquarist
c/o Marion Arendt
3524 W. Capitol
Little Rock 72205
Arkansas Aquarium Society
P.O. Box 275
North Little Rock 72115
Fish Club
Scl. I
West Jr. High
West Memphis 72301
(Address above September through May)

Fish Club
405 Gibson
West Memphis 72301
(Address above June through August)

CALIFORNIA
Garden Grove Aquarium Club
c/o Howard Kiefler
1583 Wakelield Ave.
Anaheim 72802

Western Betta Association
800 S. Azusa Ave. H-3
Azusa 91702
United Marine Aquarists
Box 537
Baldwin Park 91706
L.E.R.C. Aquarium Society
2814 Empire Ave.
Burbank 91504

Hasterty Peninsula Aquarium Society
P.O. Box 5151
Evanston 91921

Utah Aquarium Society
Rt. 1 Box 745 A
Utah 95926

San Diego Guppy Association
c/o Virginia McDowell
240 Beadley Avenue SP #8
El Cajon 92021

Orange County Aquarium Society
P.O. Box 8345
Fountain Valley 92708

Quaka Barbara Aquarium Society
7613 Rochester Way
Quakana 93017

Long Beach Aquarium Society
c/o Fay Berube, Editor
P.O. Box 1527
Long Beach 90801

Southern Calif. Guppy Assn.
5017 E. Broadway
Long Beach 90803

Los Angeles Aquarium Society, Inc.
2301 Merton Ave.
Los Angeles 90041
c/o James R. Mason

Stanislaus Aquarium Society, Inc.
1101 College Ave.
Modesto 95350

East Bay Aquarium Society
P.O. Box 435
Oakland 94607

Ventura County Fish Hobbyist
Box 2494
Oxnard 93030

Peninsula Aquarium Society
2609 Ramona Street
Palo Alto 94304

Pomona Valley Aquarium Society
P.O. Box 482
Pomona 91769

Inland Empire Guppy Club
c/o Paul Gorski
409 E. Cornell
Rialto 92376

Tri-City Aquarium Society
P.O. Box 228
Riverside 92502
Sacramento Aquarium Society
P.O. Box 1204
Sacramento 95806
Salinas Valley Aquarium Society
P.O. Box 5442
Salinas 93901

San Diego Tropical Fish Society
P.O. Box 4156 North Park Station
San Diego 92104

Southern California Cichlid Association
3411 Sandrock Road
San Diego 92123

San Francisco Aquarium Society, Inc.
California Academy of Sciences
Golden Gate Park
San Francisco 94118

San Joaquin Aquarium Society
2555 Oxford Way
Stockton 95204

San Luis Obispo Aquarium Society
386 California Boulevard
San Luis Obispo 93401

Redwood Empire Aquarium Society
c/o Sharon L. Bonilla
17200 Buena Vista Ave.
Seonoma 95476

Simi Valley Aquarium Society
P.O. Box 174
Santa Susanna 93063

Harbour Aquarium Society
P.O. Box 3276
Torrance 90501

Yallico Aquarium Society
P.O. Box 1208
Yallico 94590

Westminster Aquarium Society
14314 S. Pine
Westminster

Pan Pacific Guppy Association
c/o Mrs. Floyd Hill
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Whittier 90603

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 Denver 80201
CONNECTICUT
 Aqualand Aquatic Society
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 Bristol 06010
 The Exotic Fish Society of Hartford, Inc.
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 34 Elmer St.
 East Hartford 06108
 Elm City Aquarium Society
 8 Easty Street
 Milford 06460
 Norwalk Aquarium Society
 P.O. Box 403
 Belden Station
 Norwalk 06850
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 c/o Sharon L. Pellerin
 21 Whitaker Avenue
 Norwich 06360
 Tropical Fish Club of Brooklyn
 Marc Cohen
 143 Dogwood Lane
 Stamford 06903
DELAWARE
 Diamond State Aquarium Society
 c/o Douglas Cain
 1 Hasslett Place
 Newark 19711
DISTRICT OF COLUMBIA
 Capital Aquarium Society
 c/o D. M. Fisher
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 Washington, D.C. 20011
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 Aquarium Society of Broward County
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 Aquarium Society of Gainesville
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 University Station
 Gainesville 32601
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 Tropical Fish Club
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 719 Brokton Ave.
 Jacksonville 32208
 Gold Coast Aquarium Society
 c/o June Sanger, Executive Secretary
 3187 Harding St.
 Hollywood 33021
 Tropical Fish Club
 1646 A Ellisberg Ct.
 Key West 33040
 Florida Marine Aquarium Society
 c/o Museum of Science
 3280 South Miami Ave.
 Miami 33100
 Miami Aquarium Society
 c/o Dottie Kromer
 11215 N.W. 17 Ave.
 Miami 33157
 Salt Water Aquarium
 P.O. Box 59 2214
 Miami 33101
 South Florida Aquarium Society, Inc.
 7595 S.W. 28th St.
 Miami 33155
 Everglades Aquarium Society
 c/o Bobbie Patrick (Mrs.)
 291 N.E. 152 St.
 North Miami Beach 33162
 Central Florida Aquarium Society
 Esther McIntyre, Corr. Secy.
 5717 Peninsular Dr.
 Orlando 32809
 Aquarium Society of Seminole
 c/o Fred L. Tena
 9550-49th Way No.
 Pinellas Park 33565
 Coastal Aquarium Society
 P.O. Box 5583
 Sarasota 33579

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 Atlanta 30324
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 Chamblee 30005
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 Macon 31203
 West Ponds of Warner Robins Aquarium
 Society
 c/o Mrs. L. Stokes
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 Macon 31206
HAWAII
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 1016 Noalani St.
 Pearl City 96782
 Hawaii Guppy Society
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 Honolulu 96809
 Honolulu Aquarium Society
 "IAD Hawaii" (Publication)
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 Honolulu 96812
IDAHO
 Boise Aquarium Society
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 Boise 83703
ILLINOIS
 Guppy News
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 Beecher 60401
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 Belleville 62222
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 Greenbelt 20770
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Lancaster 03584

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c/o Ray Melillo
15 Belmont Ave.
Bloomfield 07003

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Killifish Association
2 Preston Avenue
Cranford 07016

Mid-Union Aquarium Society
Mrs. Rita Weinberg
8 Clovis Road
East Brunswick 08816

Exotic Aquarium Society of N.J., Inc.
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Fair Lawn

Shore Area Aquarium Society
c/o Warren Colville
Knights of Columbus Hall
Highway 36 & Main St.
Keansburg 07734

The Passaic County Aquarium Society
c/o Urban Donovan
293 Madison St.
Passaic

J. & M. Tropical Fish Club
116 So. Pavillion Ave.
Riverside 08075

NEW MEXICO
Aquatic Amigos
c/o Ted Richardson
4312 Hendrix Rd. N.E.
Albuquerque 87110

Roswell Aquarium Association
905 North Lea Avenue
Roswell 88201

NEW YORK
New York Fresh & Salt Water
Aquarium Society
c/o Eric Hoffman
P.O. Box 89
Bayshore 11706

Long Island Salt Water Aquarium Society
P.O. Box 362
Bayside 11360

Putnam County Aquarium Society
1 Leona Road
Brewster 10509

Bronx Aquarium Society
c/o Mrs. M. Zierau
2280 Randall Ave.
Bronx, N.Y.

Tropical Fish Hobbyist

Brooklyn Aquarium Society
c/o Lawrence Brande
1376 Flatbush Ave.
Brooklyn 11210

Aquatic Establishment
2432 National Drive
Brooklyn 11234

Buffalo Aquarium Society, Inc.
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Buffalo 14226

Delmar Aquarium Society
58 Cherry Avenue
Delmar 12054

Fin Fans Aquarium Society
Barry R. Bryant, Pres.
65 Cleveland Ave.
Elmira 14905

The Greater City Aquarium Society
c/o Mr. Herb Fogal
P.O. Box 1147
Woodhaven 11421

Corresponding Molly Club
12 Union Turnpike
Hudson 12534

Western New York Aquarium Society
P.O. Box 55 Hiler Branch
Kenmore 14223

Niagara Aquarium Society
1520 97th St.
Niagara Falls 14304

The Society for the Advancement in
Knowledge of Ichthyology
460 Carol Place
Pelham Manor 10803

Aquarium Society
14 Adriaance Ave.
Poughkeepsie 12601

Rochester Aquarium Society
c/o Richard A. Morano
56 Spiegel Park
Rochester 14621

Long Island Aquarium Society
P.O. Box 356
Smithtown 11787

Rockland County Tropical Fish Club
23 Haverstraw Road
Suffern 10901

Nassau County Aquarium Society
1342 Holiday Park Drive
Wantagh 11193

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Charlotte Aquarium Club
928 Montford Drive
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Minot Fin & Gill Society
1812 4th St. S.W.
Minot 58701

OHIO
Greater Cincinnati Aquarium Society
5705 Adelphi Ave.
Cincinnati 45227

Guppy Associates of Greater Cleveland
c/o Cathy Wolf
5901 Madison Ave.
Cleveland 44102

Northern Ohio Guppy Breeders
Association
c/o R. W. Pentau
4409 Bader Ave.
Cleveland 44109

Central Ohio Saltwater Club
4968 Sullivant Ave.
Columbus 43228

Greater Akron Aquarium Club
Norma McCutcheon, Secy.
2013 E. Bailey Rd.
Cuyahoga Falls 44221

Central Ohio Aquarium Society
c/o Robert Bushnell
2744 Woodstock Rd.
Columbus 43221

Columbus Aquarium Society
P.O. Box 9703
Columbus 43206

Greater Dayton Aquarium Society
c/o Shirley Lynch
28 E. Cedar Rd.
Medway 45341

South Dayton Betta Society
74 Louelm Ave.
Dayton 45459
(Junior members only)

July, 1971

Region Guppy Club
440 Madison Way
Brighton 41222

The Cleveland Aquarium Society
1224 West 217th Street
Fairview Park 44126

The Aquarists Notebook
P.O. Box 139
Fairfield 45014

Fancy Guppy Correspondence Club
c/o George B. McCroskey
1837 Mahala St.
Huyon 43016

Northwest Ohio Aquarium Society
c/o Mrs. Norma Davis
1913 Heta Ave.
Oregon 43614

OKLAHOMA
Lawton Ft. Sill Aquarium Society
1010 S.E. Alta Ln.
Lawton 73501

Oklahoma City Aquarium Society
P.O. Box 1134
Oklahoma City 73109

OREGON
Aquarium Society of Central Oregon
P.O. Box
Fish Bend 97701

Emerald Aquarium Society
P.O. Box 715
Springfield 97402

PENNSYLVANIA
Headville Aquarium Society
c/o Wm. Groover
Rd. 1
Canneaut Lake 16286

Harrisburg Aquarium Society
State Museum Bldg.
Harrisburg 17105

Susquehanna Aquarium Society
Box 4054
Harrisburg 17111

Muhlenberg Tropical Fish Society
3401 McKintley St.
Laureldale 19605

Valley Aquarium Society
P.O. Box 121
Lock Haven 17745

New Castle Aquarium Society
c/o Mrs. Jean Heinemann
927 Franklin Ave.
New Castle 16101

Schuykill Valley Aquarium Society
c/o Walter Hoopes, Pres.
903 Bottomwood St.
Norristown 19401

Sar Shalom Aquarium Club
1334 Brighton Street
Phila. 19111

Pennsylvania Fish Culturists Association
c/o Robert W. Britton
1823 Dudley St.
Philadelphia 19145

Garfield Aquarium Society
122 So. Atlantic Ave.
Pittsburgh 15224

The Greater Pittsburgh Aquarium
Society, Inc.
Kings Conservancy & Cultural Center
1251 N. Negley Ave.
Pittsburgh 15206

Aquarist Association of Southeastern
Penn.
c/o Mark Douglas
219 Old Gulph Rd.
Wynnewood 19096

Delaware County Aquarium Society
c/o Fred Denney
310 Leslie St.
Ridley Park

RHODE ISLAND
The Fireside Aquarium Society, Inc.
c/o Raymond L. Mosher, Pres.
374 Cornell Road
Adamsville 02801

Tropical Fish Society of Rhode Island, Inc.
36 Ash St.
Warwick 02888

SOUTH CAROLINA
The Sea Chest Aquarium Club
Route #2
Campebello 29322

Tropical Fish Hobbyist

Columbia Aquarium Society
Apt. 23-C
Columbia Gardens
Columbia 29205

York County Aquarist Club
Route 1—Box 176
Rock Hill 29730

SOUTH DAKOTA
Pierre, Fort Pierre Aquarium Hobby Club
c/o Paul Baker
306 W. 3rd St.
Pierre 57501

Dakota Aquarium Society
c/o Charles Wohlers
3128 Claudette Drive
Sioux Falls 57103

TENNESSEE
Knoxville Tropical Fish Fanatics
5505 Valdosta Road
Knoxville 37921

Mid-South Aquarium Society
P.O. Box 11038
Memphis 38111

Middle Tenn. Aquarium Society
482 Brentview Hills Dr.
Nashville 37220

TEXAS
Arlene Aquarium Society
1634 Butternut St.
Arlene 79602

Aquarium Hobbyist of Amarillo
3105 N.E. 24 St.
Amarillo 79107

High Plains Aquarium Society of
Amarillo
c/o Rose C. Parkhurst
P.O. Box 5425
Amarillo 79107

Houston Aquarium Society Inc.
P.O. Box 391
Bellaire 77401

Dallas Aquarium Society
3012 McFarlin
Dallas 75205

Tropical Fish Hobbyist of Dallas
P.O. Box 34748
Dallas 75234

El Paso Aquarium Society
P.O. Box 26624
El Paso 79924

Fort Worth Aquarium Society, Inc.
Box 1456
Ft. Worth 76101

North Texas Amateur Aquarists
c/o Fred W. Mosher
1705 Morningstar Dr.
Gainesville 76240

Galveston County Aquarists Club
6818 W. Bayou Drive
Hitchcock 77563

Tropical Fish Hobbyist of Dallas
c/o Gary W. Kiley
206 Nichols
Irving 75060

South Plains Aquarium Society
P.O. Box 6036
Murryhill Station
Lubbock 79413

Alamo Aquarium Society, Inc.
319 Byrnes Drive
San Antonio 78209

East Texas Aquarium Association
2700 Van Highway
Tyler 75701

VERMONT
Vermont Aquarium Society
RFD 1 Box 247
N. Williston 05495

VIRGINIA
Potomac Valley Guppy Club
2045 So. Buchanan St.
Arlington 22206

University Aquarium Club
c/o Dr. R. D. Ross
614 Airport Rd.
Blacksburg 24060

Central VA Aquarium Society
P.O. Box 1402
Charlottesville 22901

Greater Charlottesville Aquarium
Association
P.O. Box 521
Charlottesville 22903

July, 1971

Fidewater Aquarist Society
Box 113
Muskogee 23452

WASHINGTON
Puget Sound Guppy Associates
c/o Willard Snow
414 150 Place S.E.
Bellevue 98004

Island Aquarium Society
c/o J. W. Meredith
1817 Central Dr.
Oak Harbor 98277

Western Washington Aquarium Society
922 S. Plymouth
Olympia 98501

Far West Fish Fams
1826 W. 4th
Fort Angeles 98362

Evergreen Aquarium Society
6, 6519 9th
Spokane 99206

Tacoma Aquarium Society
c/o Diana Rokey
1603 E. 104th Street
Tacoma 98445

Yakima Aquarium Club
c/o Mel Russell
35 Rosa Vista Drive
Yakima 98901

WISCONSIN
Valley Aquarium Society
1901 Parkwood Drive
Kaukauna 54130

Madison Aquarium Club
c/o Troy R. Brown, Pres.
2810 Curry Pkwy # 7
Madison 53713

Valley Aquarium Society
c/o Lon Huobner, Sec.
536 8th Street
Menasha 54952

Badger Betta Breeders Club
1410 North 66th St.
Milwaukee 53213

Citansu Aquarium
P.O. Box 2840
Milwaukee 53219

Milwaukee Aquarium Society, Inc.
P.O. Box 1416 (Mailing Address)
Milwaukee 53201

c/o Robert Watkins
3416 S. Kansas Ave.
Milwaukee 53207

Fond Du Lac Aquarium Society
c/o Richard E. Freund
14 Prospect Avenue
North Fond Du Lac 54935

Milwaukee Cichlid Club
c/o Pete Thielon
1926 Grange Ave.
Racine 53403

South Eastern Aquarium Society
P.O. Box 52
Racine 53400

West Bend Aquarium Society
P.O. Box 394
West Bend 53095

WYOMING
Wyoming Aquarium Society
209 West 6th Avenue
Cheyenne 82001

PUERTO RICO
Aquarist Society of Puerto Rico
c/o Alvin Ramirez
Reparto Feliciano A35
Mayaguez 00708

AUSTRALIA
Queensland Gold & Tropical Fish Society
P.O. Box 708
Fortitude Valley
Brisbane, Queensland 4006

Aquarium & Terrarium Society of
Queensland
176 Thynne Road
Morningside, Brisbane, Queensland 4170

Canberra Aquarium Society
C-22 Blackman Crescent
Macquarrie A.C.T. 2614

The Aquarium Society of N.S.W.
Box 31
Brickfield Hill
New South Wales

Tropical Fish Hobbyist

Illawarra Aquarium & Terrarium Society
c/o Mrs. M. Egan
11 Armagh Parade
Thirroul 2512
New South Wales

Newcastle Aquarium Society
P.O. Box 145
Charlestown 2290
New South Wales

Aquarium Society of Victoria
c/o Mr. Fred Watts
30 Bamfield St.
Sandringham, Victoria 3191

Rockhampton Aquarium Society
Mr. R. Lewis
31 Face Street
North Rockhampton 4701
Queensland

The Aquarium Society of W.A. (Inc.)
73 Birkett Street
Bedford 6052 W.A.

BELGIUM
Gracilis
Watertorenstraat 28
2420 Olen

CANADA
Calgary Aquarium Society
c/o Graham Wood
P.O. Box 6116 Postal Sta. D.
Calgary 2, Alberta

Edmonton Society of Aquarists
General Delivery
South Side Post Office
Edmonton, Alberta

Lower Mainland Aquarium Society
c/o 4407 Binkheim St.
Vancouver, B.C.

Nanaimo Aquarium Club
c/o 668 Sterling Ave.
Nanaimo, B.C.

No. Quarium Club
P.O. Box 412
Nanaimo, B.C.

Victoria Aquarium Society
P.O. Box 715
Victoria, B.C.

Winnipeg Aquarium Society
P.O. Box 1203
Winnipeg 1, Manitoba

Acadian Aquarium Society
237 Astral Drive
Dartmouth, Nova Scotia

Aquarists of Troy
c/o Mrs. Brenda Scott
RR #4 Box 1
Aylmer, Ontario

Barrie Aquarium Society
c/o Mrs. Margaret Jones
2 Essa Rd.
Barrie, Ontario

Chatham Aquarium Club
c/o Chatham Memorial Community Center
80 Tweedsmuir Ave. West
Chatham, Ontario

Preston-Galt Aquarium Society
103 Wellington St.
Galt, Ontario

T.O.A.D.S.
R.R. #1
Glen Cross, Ontario

Kitchener-Waterloo Aquarium Society
P.O. Box 1324
Kitchener, Ontario

London Aquaria Society
Box 484
London, Ontario

Tri Town Tropicals
Box 1627
New Likeard, Ontario

Ottawa Valley Aquarium Society
P.O. Box 542 Stn. B.
Ottawa, Ontario

Scarborough Aquarium Society
P.O. Box 2813 Station B
Scarborough, Ontario

Niagra Aquarium Society
41 McCalla Drive
St. Catharines, Ontario

Canadian Aquarium Society
Box 453
Adelaide St. East P.O.
Toronto, Ontario

July, 1971

Guppy Associates of Toronto
c/o Chris McKay
7 Chapman Ave.
Toronto, Ontario

Hamilton District Aquarium Society
c/o Ernest Meridige, Sec.
47 Woodlark Dr.
Hamilton, Ontario

Windsor Aquarium Club
44 Grand Avenue
Windsor 10, Ontario

Toronto Guppy Association
P.O. Box 875, Terminal A
Toronto 1, Ontario

Windsor Aquarium Society
26 Glenborough Park
Windsor, Ontario

Box Farmer Aquarists Society
c/o Peggy Lonsmore
1445 Longfellow Ave.
Windsor, Ontario

Guppy Associates of Montreal
c/o Arklay Halpern
1084 168 Hill Street
Montréal (Javal) P.Q.

Montreal Aquarium Society
P.O. Box 653 Stn. B.
Montreal, P.Q.

Isle de la Madeleine Aquarists
c/o Jean De Matha
c/o Juliette
Quebec

Prairie Aquaria Society
c/o Doug Ward
1030 4th Ave. N.W. Box 333
Huron Jaw, Sask.

Iskutone Aquarium Society
27 McAdill Cres.
Iskutone, Sask.

ENGLAND
Huylo Aquarists Society
31 Newton Park Road
Buxton, West Kirby
Cheshire, L48 9XE

Coventry Pool & Aquarium Society
c/o B. Hirst
Flat 5
Quinton, Paroo
Coventry, CV3 5HW

Southend Leigh & District
9 Locarno Ave.
Runwell, Wickford
Essex

Bishops Cleeve Aquarist Society
c/o N. W. Dooley
57 Welch Rd.
Cheltenham, Glos.

Portsmouth Aquarists Society
198 Munsfield Ave.
Copnor, Portsmouth
Hampshire

Mid-Herts Aquarist Society
c/o Mr. Charles Withers, Sr.
15 Charnmouth Rd.
St. Albans, Hertfordshire

Fancy Guppy Associates
212 Ashton New Rd.
Beswick, Manchester
Lancaster

Freelance Aquarist Society
c/o R. A. Thomas
54 Beccroft Rd., Crofton Pk.
London, S.E.4

Newport Aquarium Society
3 Wyverne Rd.
Newport, Mon.

Nottingham & District Aquarium Society
65 Seymour Rd.
West Bridgford
Nottingham

Littlehampton and Bognor Aquarist
Society
1 Beulah Cottages
Yapton Road
Barnham, Sussex

Mid-Sussex Aquarist Society
c/o Mr. John Reeve
36 Rumbolds Lane
Haywards Heath
Sussex

Tropical Fish Hobbyist

Brighton & Southern Aquarist Society
c/o David McFarlane
92 Beverdean Ave.
Saltdean (New Brighton) BN2 0PE
Sussex

Haden Society
c/o B. Smith
28 Thornhill Road
Halesowen, Worcester

Horsforth Aquarium Society
c/o R. E. Hampson
The Headlands, Scotland La.
Horsforth, Leeds
Yorkshire

S. INDIA

Quilon Hobbyist's Club
c/o Sahithi Sadanam
Uliyakkovil
Quilon-8

KENYA

Aquarist Club of Kenya
c/o Mr. F. W. Jeffery
Box 9951
Nairobi, Kenya

MALTA

Malta Aquarist Society
c/o S. Lungaro Mifsud
9 Florida Mansions
Enrico Mizzi St.
Msida

RHODESIA

The Aquarium Club of Rhodesia
P.O. Box 1365
Salisbury

SINGAPORE

Singapore Aquarists Society
GPO Box 2216

SOUTH AFRICA

Eastern Cape Aquarist Society
P.O. Box 72
Port Elizabeth

SWEDEN

Tidskriften Avsariet
P.O. Box 22195
Goteborg 22

NATIONAL AND INTERNATIONAL SPECIALITY GROUPS

American Cichlid Association
c/o Guy Jordan, Pres.
6546 Colla Vista Drive
San Diego, Ca. 92115

American Goldfish Society
62-60 99th St.
Box 114
Rogo Park, N.Y. 11374

American Killifish Association
Frank Smith, Membership Chairman
17257 Via Chiquita
San Lorenzo, Ca. 94580

Betta Breeders Association
c/o Dr. Gene A. Lucas
Dept. of Biology
Drake University
Des Moines, Iowa

British Killifish Association
c/o Miss G. Licensee
217 Morland Rd.
Croydon, CRO 6RE
Surrey

International Betta Congress
c/o Stan Smith
4422 Anglebrook Drive
Grove City, Ohio

International Guppy Club
German Guppy Club
Wetsche Guppy Gesellschaft
1 Berlin 51
Alt Reinickendorf 30 B
Germany

International Marine Study Society
c/o Mr. G. H. Jennings, Director
2 Gatcombe Rd.
Tufnell Park, London, N.19
England

International Turtle & Tortoise Society
8847 De Haviland Ave.
Los Angeles, Ca.

Contest Winners



Landscape:
Patricia
Pilgrim,
Pittsburgh,
Pennsylvania

Closeup: D. Palmer, Plymstock, England

