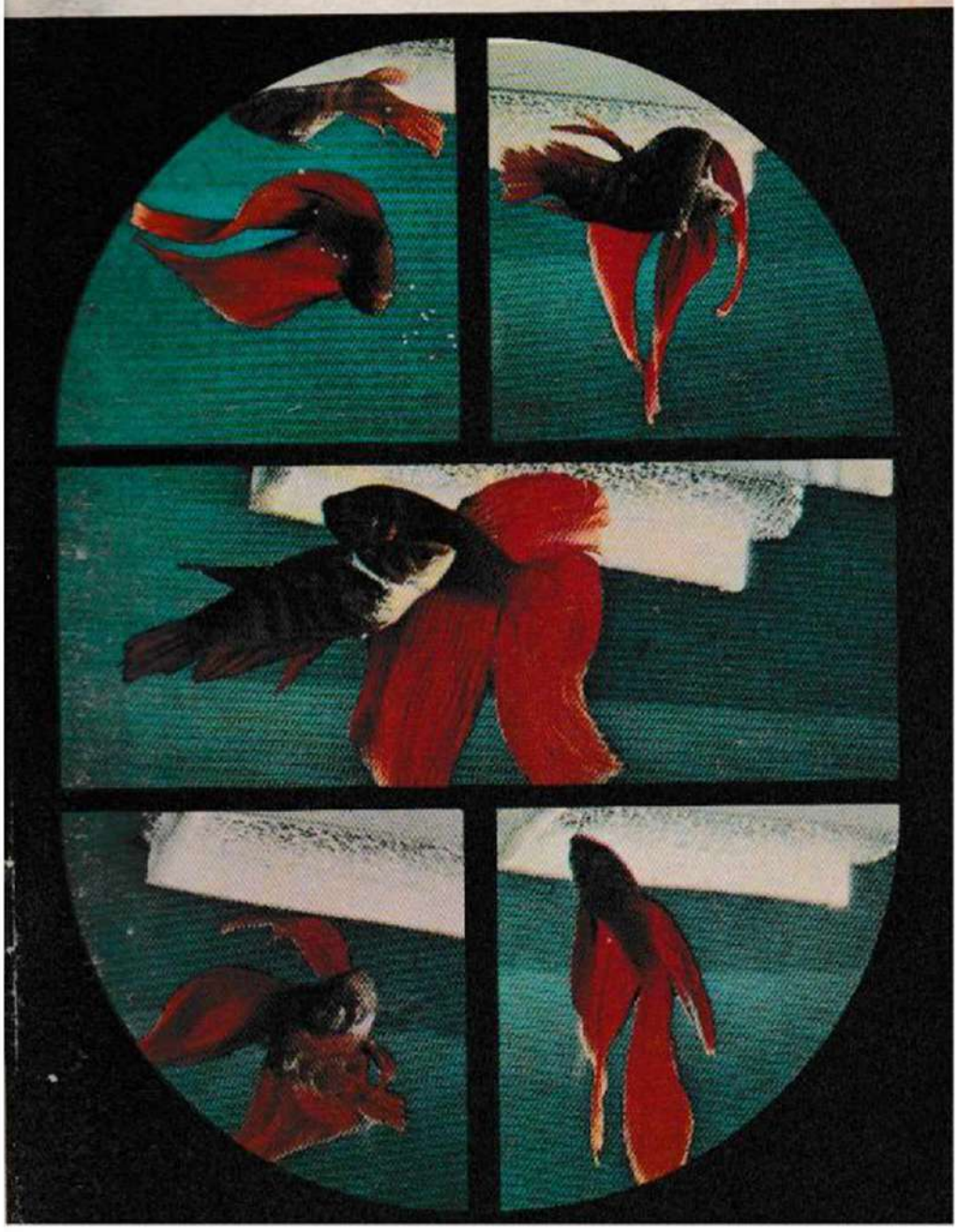
AQUARIUM

35¢



MAY, 1968
VOL. I NO. 7

THE AQUARIUM

founded in 1932 by Dr. William T. Innes

Contents

On The Cover

This beautiful spawning sequence was recorded by THE AQUARIUM photographer Andrey Roth with a motorized Nikon F on Agfachrome film using a time lapse system. (Additional credits appear on page 68.)

$3.50 per year 35¢ per copy

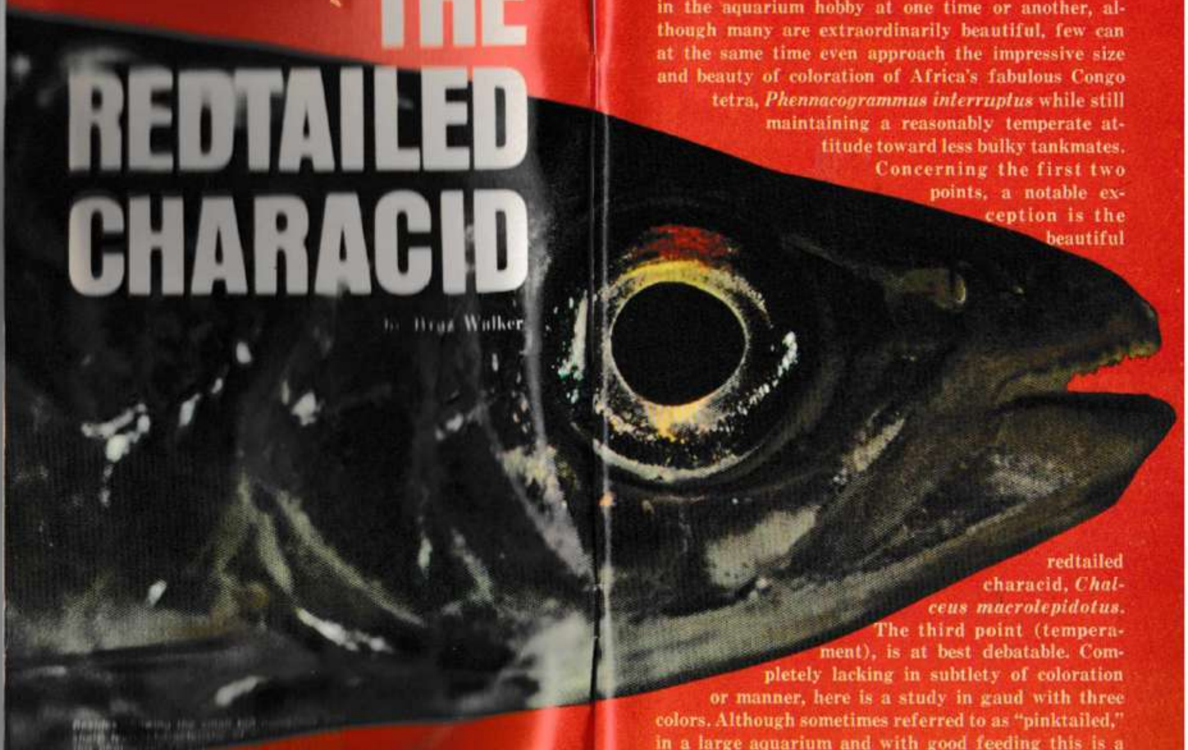
THE AQUARIUM is published by PET BOOKS INCORPORATED (formerly The Aquarium Publishing Company), a division of Metaframe Corporation. Copyright 1968 by PET BOOKS INCORPORATED. Published at 200 Finn Court, Farmingdale, N.Y. 11735, 12 times per year.

Address all correspondence to PET BOOKS INCORPORATED, 87 Rt. 17, Maywood, N.J. 07607. THE AQUARIUM is not responsible for any unsolicited submissions. To insure return, include self-addressed envelope.

 Second class postage paid at Farmingdale, N.Y.

THE REDTAILED CHARACID

by Braz Walker



Of the multitude of "tetras" or smaller characids (characins) from South America which have appeared in the aquarium hobby at one time or another, although many are extraordinarily beautiful, few can at the same time even approach the impressive size and beauty of coloration of Africa's fabulous Congo tetra, *Phennacogrammus interruptus* while still maintaining a reasonably temperate attitude toward less bulky tankmates. Concerning the first two points, a notable exception is the beautiful redtailed characid, *Chalceus macrolepidotus*. The third point (temperament), is at best debatable. Completely lacking in subtlety of coloration or manner, here is a study in gaud with three colors. Although sometimes referred to as "pinktailed," in a large aquarium and with good feeding this is a

continued on page 75

[illegible] as he constructs his nest, bubble by [illegible] a U-shaped piece of polyfoam plastic [illegible]

[illegible] of air bubbles, the walls of each bubble [illegible] by a mucus secretion from the mouth of the [illegible]

A RECIPE FOR BETTA SPAWNING

by Barbara Newman

Spawning bettas is the simplest thing in the world — if you are an expert or if you are unusually lucky. Most of us, however, have a few problems.

Every aquarist has his own method or methods. It's a good idea for a beginner to try several and pick the one which works best for him.

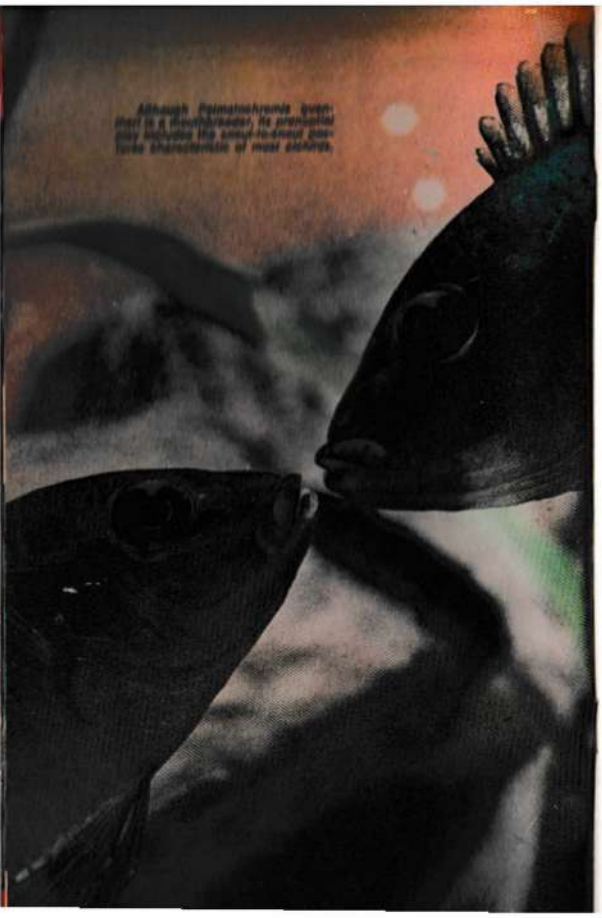
There are, however, some basic ingredients that help to insure successful spawnings:

(1) *A pair of healthy bettas.* Don't bother to spawn fish which have poor color, bad finnage, or are in any way deformed. Choose the male betta with the best fins and color. This is equally important in choosing the female. She has as much influence on the quality and characteristics of the young fish as the father does.

(2) *An aquarium between 5 and 15 gallons in size.* Some people use smaller or larger sizes, but these are the most practical. A 5 gallon tank is probably most commonly used.

(3) *Fresh, clean water between 78° and 82°F.* 80°F. is the optimum temperature for spawning. Add a few floating plants for the female to hide in if her mate gets too rough with her.

continued on page 44



A MOUTH BREEDING *PELMATOCHROMIS*

by Philip S. Franco

Every once in a while a fish turns up at the pet store that will not be accepted by hobbyists. One of the reasons for this, in my estimation, is the way the fish are displayed to the public. There are many fish which need subdued lighting, dark backgrounds, and a reflected lighting arrangement to bring out its true colors. The pet store owner, in most cases, doesn't have the room or time to give all of his stock the proper staging; therefore, some fish suffer. Another cause is false information on a species, such as "vicious," eats "plants," "difficult to maintain," etc. *Pelmatochromis guentheri* is one fish that is a victim of such misleading ideas.

At first appearance, the colors of *P. guentheri* are not impressive or outstanding. As a matter of fact, it does not even seem to belong to the genus *Pelmatochromis* when one looks at its physical shape. The body is strongly compressed laterally and of a medium height, whereas the typical aquarium species in the genus *Pelmatochromis* is one of elongated body shape. This is a good example of the fact that shape is not always a good indication of genus.

A contrasting fact also is that most of the aquarium species in the genus *Pelmatochromis* comprise an egg hiding group, i.e. one that lays its eggs in caves, flower pots, or other dark areas, whereas *P. guentheri* is a mouth breeder.

continued

A French angelfish and a silver dollar (Metynnis) looking for their food. The unusual thing about this is that they are in the same water!

MARINE FISH TO FRESH WATER

LAST YEAR, S/SGT. WILLIAM K. WHEAT, stationed with the U.S. Air Force in Japan, startled the aquarium fraternity here by reporting on two Japanese television programs he observed. The following is his account:

"On a TV program the other day they introduced a Dr. Shozo Yamomoto (M.D.) of Osaka, Japan. His hobby is fishkeeping and he had a large tank set up at the TV station, on which the cameras were focused. I screamed (and the announcer must have heard me!) as this roughly was the translation of the dialogue that followed.

Announcer: "But aren't some of those fresh water fish and some salt water fish?"

Dr. Y: "Yes . . . that's my hobby. I keep them together."

Announcer: "But that is impossible . . . ? ? ?"

Dr. Y: "Impossible? Maybe, but the fish don't know it. They have been together now for a long time." (Period of time not specified but said in a way to indicate several months or more).

Announcer: "But, but . . . how?"

Dr. Y: "Bundo-To (grape sugar), made from grapes and other chemicals (this is a medicine used to fight fatigue and to help the injured regain their strength) is added to two parts fresh water and one part salt water."

"And now, a week later, another shocker on TV. A Mr. Miyato of Tokyo, Japan, invites the TV cameras over to his house to take a look at one of his aquariums. This one is about four feet high, eight feet long and four feet wide, has a gravel bottom and real plants (guesstimate . . . 950 gallons). Now there are about fifty or so fish in the tank and I did a flip when a guppy swam by trying to make love to a marine clown fish. A freshwater angel fish crossed my screen, side-by-side with a trigger fish, and I almost blew every tube in my set when several chaetodons played tag with a golden carp. In my state of shock the names of the others elude me but I would swear the tank was filled about half and half with salt water and fresh water fishes. Now this Mr. Miyato is the cagey type and his only answer to the announcer's question of "How?" is a shrug of the shoulders. "Can't say", he replied. "I'm in the process of getting a patent from the Japanese Government."

We were pleasantly surprised the other day upon receiving a report and several photographs from Dr. Edward L. Sharpe, Director of Research of Douglass Filtrations Systems, Inc., which related directly to Sgt. White's experiences. The following information is based upon Dr. Sharpe's report.

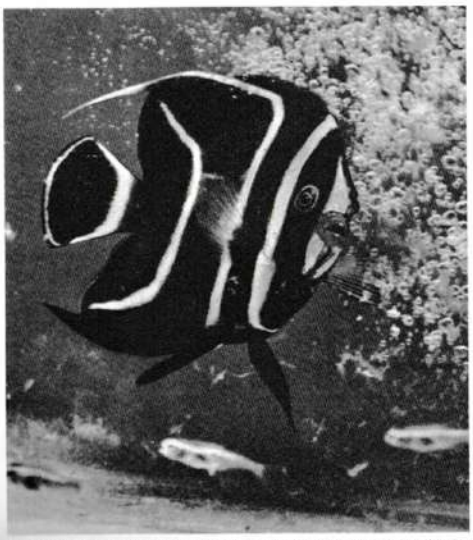
1. *Equipment Used:* 20-gallon aquarium with glass cover; shells and fine sand; 18 gallons commercial marine mix (density 1.020); power filtration system (Douglass King); ring stand and ring; intravenous bottle with tubing; 1000 ml bottle of dextrose 5% in saline (commercially available); and a hydrometer (range 1.000-0.060). The equipment arrangement is shown in the accompanying photograph.

2. *Original Tank Population:* 2 clownfish, 2 horseshoe crabs, 1 French angel, 1 royal gramma, 1 hermit crab.

3. *Food Used:* Frozen brine shrimp only.

4. *Start Of Experiment:* 2/10/66.

Dr. Sharpe's experiment involved the slow change of the salt water to fresh water. Between 2/10/66 and 3/4/67, the decimation of the fish and crab population was rapid and approached being a catastrophe. Upon reading Sgt. White's account, however, Dr. Sharpe decided to utilize the dextrose solution (being readily available and similar to the Japanese commercial preparation mentioned). On 3/14/67, 2 cc of dextrose solution were added; on 3/15/67, another 1 cc; on 6/15/67, a



Ever expect to see a French angel and a school of neon tetras swimming around together in the same tank? Here they are, engulfed in a cloud of fine air bubbles!

final 1 cc. The addition of the dextrose solution appeared to help greatly the fish and crabs to adjust and indeed, on 6/9/67, one horseshoe crab and one French angel were still alive and healthy in practically 100% fresh water (the hydrometer reading was the same as for fresh water).

Freshwater fish additions were as follows: 5/5/67—two silver dollars (*Metynnus*); 6/21/67—eight neon tetras; 6/21/67—two catfish (*Acanthodoras*). As of 8/8/67, almost 18 months later, these twelve fresh water fishes, the salt water French angel and the horseshoe crab are alive, swimming side by side in fresh water! The conclusion to be drawn from these experiments is that the addition of dextrose may be of great benefit in changing salt water fishes over to fresh water. ●

ABOUT OUR AUTHORS

PHILIP S. FRANCO

Phil Franco was born in Rochester, New York and attended Benjamin Franklin High School there, ultimately graduating from the University of Rochester with a Bachelor's Degree in Electrical Engineering. Phil is married and he and his wife have five children. He is currently with the Rochester Gas and Electric Company, working as a technical engineer specializing in highway lighting design.

Phil started in the hobby at the age of 12 and has maintained fish for the last 23 years. Over these years, he has bred approximately 40 species and recently has specialized in angels and catfish. It has just been during the past year and a half that he started putting some of his experiences down in writing whenever starting a fish breeding project that posed a challenge.

Rosedale, New York high school sophomore who became interested in fishes three years ago when he started a science project on guppy breeding. One of the results of this project was a guppy x molly cross and after entering the Queens Science Fair, won First prize with his entry. At this point, even his father became interested and it wasn't long before tanks abounded in the Kaufman household.

Recently, his interests have been in cichlids and mormyrid fishes (elephant fishes), and he is currently considering a marine project as well. Les enjoys skin-diving and freshwater game fishing, and time not spent on school work finds him also at the piano or with his pet sand boa. His goal is to become a marine field biologist and to study the possibilities of colonizing the Continental Shelf, as well as the animals that live there.

HERBERT F. MEYER

Born in Jersey City thirty-five years ago, Herb Meyer became enthralled with a tank of guppies that were on display in a friend's home when he was only seven. From that time on he was "hooked."

In 1940 Herb joined the Navy and [illegible]. His Navy career has taken him to just about any coun-

continued on page 58

How to buy fish.

by LES KAUFMAN

I'VE LITERALLY BEEN SWIMMING IN tropical fish for a few years now, and I'm finding it my turn to introduce the ever more popular pastime to new recruits so that the "species be continued." Like most other people in the same position, I am getting a big kick out of sharing the hobby with others. But no longer do I count the times that friends have called me at ridiculous hours to announce the mass bucket-kicking that had taken place the night before, to share their financial misery with me, and to inform me that I may have their tanks for they will no longer be needing them. No matter how small the first tank may be, it always leads to a major investment so it is hardly surprising that such a financial setback might find the beginner disheartened enough to abandon the field in its entirety. And yet, when I actually get the opportunity to inspect my friend's tank shortly after the holocaust, I often find the remaining fish in top shape, the temperature perfect, and the water chemically a haven for the remaining species. Some strange new disease? No, some strange old disease: simple ignorance on the part of the mourning human of the fact that *HOW* and *WHERE* one purchases his new additions is just as important as where they end up.

No offense meant to department stores, but a great number of them simply do not have the time or the trained personnel to support and display an attractive tropical fish department and still offer healthy merchandise. It is possible that such a department is not a true necessity in the eyes of the store-owner, a sorry excuse so that the store can claim "it sells everything." This is the place to look, not buy.

On the other hand, you may be perfectly happy and safe buying from a certain chain store, and may have had much luck with its stock. Stick with it then, you're one of the lucky ones. And so, we have established the first major axiom of buying fish: *the best place to purchase fish is a specialized tropical fish store.*

"But I bought all my fish at Sam's place, and that's the best place within miles," so said a friend. The same day, when I went to his house on a condolence call in memory of his new discus, I found the corpse floating in the hardest, most alkaline water I've ever encountered. This was inadequate to meet the requirements for this fish although with

most species, the chemical condition of the water may not be this important. But my friend did not *know the fish and its requirements before purchasing it*. One must be aware of the fact that a particular fish needs a place to hide, live food, or soft water in order to remain in good health. There's the story of the man who walked into a large store in New York and selected a number of choice marine specimens. After they had been all packaged the clerk asked what the salinity of his water was. He answered: "Salinity? You mean these fish go in salt water? I don't have a salt water tank!"

The third rule, perhaps the most obvious, is often forgotten nevertheless: *Never buy any fish that displays the slightest symptoms of illness.* A sick swordtail, platy, or molly, usually sticks out like a sore fin among its healthy tankmates (presuming they *are* healthy) but two things lead to the inevitable breaking of this cardinal rule. First, there is the temptation to buy a fish that you have been after "for ages." When it finally turns up, it looks like it had just stepped off the airplane, before it had landed. The decision is yours but you should purchase such a fish only if you are fairly certain you can cure it. Even then, don't expect miracles.

The second temptation is to buy a fish that looks perfectly fine, but you are not quite sure just what a sick version of that fish would look like. This may sound far-fetched but how many times have *you* brought some innocent looking *Plecostomus* or other sucker-mouth catfish into your prize tank, unaware of the havoc it is capable of? These fish are mobile zoos, each one carrying almost a hundred different *kinds* of parasites, many of which are communicable. *Corydoras*, because of their widespread distribution, are responsible for more Ick plagues than virtually any other group of fishes in the business. The truth is that it is at best extremely difficult to tell a mildly infected *Corydoras aeneus* from a completely healthy one. The background color, the lack of indentifying symptoms and the way people take "scavenger" fishes for granted, all lead up to the danger a new, unquarantined catfish may pose when introduced to a tank.

A shocked look on the faces of my friends always accompanies my purchasing a fish from a tank where another fish is floating around dead. It seems to be an unwritten law that buying anything from a tank with a dead fish in it is taboo. Up till now, that has been the safest rule of thumb to go by, especially for beginners. Very often, the dead fish is actually infected with some disease and has begun to infect the living fish in the tank. But, when one considers the death rate of fish received by the average retail dealer, it becomes obvious that a good percentage of the dead and dying fish in the tank are weaklings that probably would die under any circumstances. Such fish are not suffering from a disease but rather from a shock (pH, temperature, etc.) that was too much for them. In other words, the presence of a dead fish doesn't necessarily

mean all the fish in that tank are infected with a disease unless the dead fish is infected. In any event, our fourth rule is: *don't buy fish from a tank with other infected fish, dead or alive, in it.*

A basic part of the aquarist's equipment is the quarantine tank. This is the sick-bay, where all suspicious-looking fish and new additions are placed for a short time. It is usually small, lightly medicated, and kept at a fairly high temperature (around eighty or eighty-five degrees). A good idea, then, is to *confine suspicious-looking fish and new additions to a quarantine tank for a few days.*

Some beginning and experienced aquarists alike may be struck by the beauty of some charming little fish and buy it on the spot, not stopping to remember whether or not they even have a tank to put it in! Many dollars worth of fish are lost when one does not *have a tank ready for all newcomers.* Such a tank should be more than a bare temporary receptacle unless the fish is being quarantined. Fish may not have great reasoning power but they certainly seem to know the meaning of the word discomfort.

The greatest demon that waits to spring upon the unwary hobbyist may not be the malady or discomfort that plagues his fish. The familiar "season sale" that he so patiently looks forward to, in the long run causes more trouble than any other commercial contact the fish-enthusiast is subject to. The greater number of these sales are down-to-earth and honest, the fish being of the usual quality common to the establishment in question, the equipment possibly of even higher caliber. But, after the sale has been in progress for a few days, something is bound to happen. The hectic to-and-fro rush of business may find one assistant who forgets to sterilize his net; here are the beginnings of the quality deterioration that accompanies many of these bargain days. By all means, take advantage of these excellent opportunities to secure otherwise expensive oddballs, and to stock up on equipment, but be sure to note beforehand the length of the sale, how long it has been in progress and what the lead items are. Be the first to get there, so as to get the best of everything. The last fish in the tank or pumps on the shelf are often the misfits. So, *beware the grand sale, and know how to make proper use of it.*

Very few people think twice about the number of individuals of a species they buy at one time. They may buy one or two; if they have enough money, possibly three. But with cichlids and certain characins, the purchase of too many of one kind over a span of time is certain to result in a reduction in the population of your tank. Remember that pairing fish set up a territory and that a third party is likely to become the scapegoat for all the pair's domestic problems. Firemouth cichlids are especially noted for this. On the other hand, the reverse may be true. When I once put a young *Leporinus fasciatus* in my thirty-gallon tank,

I was shocked to awake the next morning to a tankful of ripped fins, the damage carried out by the new fish's small but vicious mouth. Another *Leporinus* gave him a "playmate," however, and kept him occupied. They enjoyed rough-housing together, and they left the other fish in the tank strictly alone after that. Thus, a good idea would be to *purchase all aggressive fish in pairs wherever possible*. Also worth noting is that if you *buy all cichlids you intend to keep in one tank at the same time*, they will establish their territories with at least partial regard to the fact that they have neighbors. Otherwise, the pair that had been introduced earlier will have taken over the entire tank by the time the latecomers are introduced.

At last we come to the tenth and last rule, one that is usually taken for granted. By the time all the fish are picked out and you are all ready to take them home, you are often too anxious to pay any attention to the way the clerk is packaging your fish. I have found out the hard way that if it is cold out, you must insist upon an insulated bag. One day, I had three good fish freeze to "death" on the way home. Through some unbelievable miracle they "thawed-out" and came back to life for, during the entire walk home, my friend had been holding them under his arm! I wouldn't depend upon miracles though. Remember, buying fish and going on sprees can be as much fun as any other part of the hobby, but do it wisely. ●

EDITOR'S NOTE: One of the problems that chain stores have in staffing a tropical fish department is finding qualified personnel. When such operations are run well, they are usually very fine indeed. On the average, however, we agree with Mr. Kaufman and have to give the nod to the independent tropical fish dealer. Caring for animals, fish or otherwise, seems to be a very personal thing and requires real affection on the part of those responsible for them.

Mr. Kaufman's thesis that catfish are disease-carriers needs some solid proof to back it up. However, we agree with him that the presence of a dead fish in a tank does not necessarily mean that the end of the world has come and that no fish should be purchased from that tank. What has to be taken into account is the overall picture, i.e., the general condition of the other tanks and the shop itself.

The author has struck a sensitive nerve when he cautions about buying fish without having the necessary tank arrangements at home ready to receive them. The advice is well-put and should be heeded by both experienced aquarist and beginner alike. AJK

EDITOR'S NOTE: This article and the Preceeding one, cover the same material but from different points of view. We think that you might find the comparison informative.

How to choose fish.

by HERB MEYER

PROFESSIONAL FISH BREEDERS spend fabulous amounts of time and money hunting for the fishes which they use for breeding stock. The average hobbyist, however, is usually limited to an "expedition" to a local shop. The future success or failure of *your* aquarium community rests to a large extent on the outcome of such "expeditions." Naturally, you want the best fish available but how do you go about choosing the right ones? The purpose of this article is to point out a few basics and to get you thinking along the right lines.

First of all, go to a reputable dealer. Stay away from so-called "bargain" fish. These often turn out to be culls which a dealer with a reputation to protect would not allow in his shop. The difference between good and poor fish is usually only a matter of pennies. In most cases, it is wise to buy your fish when they still have plenty of growing to do. A younger fish will adjust to a new tank faster than a more mature specimen for fish, like humans, often get set in their ways as they grow older. This precaution is especially important with fishes such as killies, bettas, guppies, etc., which have such short life spans that you cannot enjoy them long enough by starting out with full grown fish.

A mistake frequently made by hobbyists is to buy only males due to their more attractive coloration. For various reasons they usually regret this decision. Even if you do not intend to spawn them, it is usually wise to buy a pair. The heightened coloration of the male is a sexual characteristic intended to attract the lady of his choice. Unless there is a female present or the fish are occasionally spawned, the colors may tend to fade even when the fish are otherwise in good health. (Personally I can't understand why anyone would keep fish without at least attempting to spawn them, even when they are a so-called "impossible" species.)

The criteria used in selecting your fish should include size, overall conformation, disposition and color. The reason I mention color last, though the inexperienced hobbyist is likely to consider it first, is that

color in most of our aquarium fishes is such a variable thing. *Barbus nigrofasciatus* and *B. titteya*, for instance, need at least a few weeks in a new tank before they feel at home enough to "turn it on."

Size is the first point to be discussed. At first thought this might seem simple enough, but a second glance at the dealer's tank may reveal that there are several distinct batches of varying ages. Consider each batch separately. Perhaps the best of the smallest batch is a much better fish than the best of the largest and probably the first to catch your eye. When choosing pairs, it is important in most cases to get a female as large as or larger than the male you want to pair her with. (In some species, of course, the female is either far smaller, as in the *Nothobranchius*, or larger, as in the guppy, and must be chosen accordingly.) A female too small for her partner is often bullied unmercifully.

Overall conformation is a bit harder to define but very important. Perhaps the best way to describe it is to say that the fish appears to be "in balance." Usually, a plump fish is more pleasing to the eye than a long lean one. (I am talking about variations within individual species, not among different species.) A healthy male usually carries his dorsal erect and keeps the other fins well spread. When choosing your female look for one with a good deep body. Even though you may not intend to spawn them, remember that a female who produces many eggs is usually a healthy specimen.

There is only one way to check a fish for disposition and that is by leisurely observing the undisturbed fish in the dealer's tank. If possible, select a fish which is neither a bully nor too shy to stand up to the others. Many fish have a fairly rigid "pecking order." Remember that the number one fish is usually on top of the heap because he has the most vigor and just plain gumption. Provided he isn't too much of a tyrant, this is usually your best buy. Don't pick the "low man on the totem pole," thinking he is less likely to be a bully. He often turns out to be the worst of all once he gets the chance! The fish you choose should be perky and active. If there are ladies present, he should be paying them some attention. Most fish will not court a female unless they are in good health.

Found the fish which looks best to you? Wait a minute! Don't buy it yet. First have a look at the other fish in the tank. Ick and some of the other fish diseases often pop up so fast that even the most careful dealer may have a sick tank which he himself hasn't spotted yet. Of course, it goes without saying that you should never buy fish from a sick tank. Now look for hereditary abnormalities. Any stumpy or missing tails? Twisted spines or humped backs? Twisted or mismatched jaws? If so, your fish may be from a strain which is suffering from too much inbreeding. Talk to the dealer. Perhaps he can point out a male and female which he received from different sources. Above all, don't be hesitant about asking the help of a reputable dealer. He is sincerely interested in satisfied customers and will do all he can to help you. Grouches don't last long in the tropical fish business.

Of course, in a generalized article such as this, many of the things I pointed out will not hold true for all species. Before starting out to buy a particular fish, look it up in several good reference works. Perhaps you will find, for instance, that a male of some particular species is normally a bit slow-moving and usually carries his dorsal folded, whereas in another species this would be a sure indication of poor health.

As to type of coloration, you are on your own—each to his own taste. No one can state, for instance, that a checkerboard barb with an orange flush over his silver body is superior to one with a pink or rosy flush. I will avoid like poison any discussion of coloration of guppies. Just bring *that* up next time you want to see a good brawl at your aquarium society meeting! ●

HAPPY HUNTING!

THIS IS MY PROBLEM

by HELEN SIMKATIS

From: Ron Whipple, Erie, Pa.

In a book I read it states to breed neon or cardinal tetras one should supply very soft, acid water. My question is do these fish swim to places where these conditions prevail to breed? If not, why must we supply these conditions or do these fish live constantly in this type of water. I recently purchased a Chinese algae eater. This fish is constantly eating algae off plants, rocks, grass, etc. Is this all they eat?

Answer: Neon and cardinal tetras live in soft water. When breeding any tropical fish it is helpful to try to duplicate the conditions most natural to the species. The Chinese algae eater should answer your question itself when you feed your other fish. If it joins them at meal time, it likes kinds of food other than algae. It may be that it will take a little time before it is brave enough to compete for the food when you are feeding your other fish but eventually will do so. Many fish that eat algae or vegetable matter also like some protein in their diet.

From: Michael Unterman, Far Rockaway, New York

My friend and I have recently acquired a large number of tanks and figured out that at retail price it would take almost forever for us to get enough fish to fill the tanks up. Could you please tell us where we can get some fish at wholesale prices near me or by mail. If I sent for fish by mail, will most of the fish come alive and adult? Also can you tell me of some large fish that breed fairly easy (preferably cichlids) and is the jewel fish difficult to breed? What DH do they like and do you advise leaving the parents with the fish?

Answer: Wholesale houses do not sell fish in small lots to individuals. From your questions, we gather you and your friend have not been working with fishes very long. We suggest that you set up one aquarium at a time. When you succeed in breeding one species of fish, you will have room in another tank for the young. Jewel fish, the blue acara, Jack Dempseys, and *Tilapia mossambica* are all fairly easy cichlids to spawn. They are not too fussy about water quality but any one of these species should be set up in a tank to themselves. Breeding any cichlid is a particularly rewarding experience when you allow the parents to have their babies until

continued on page 58

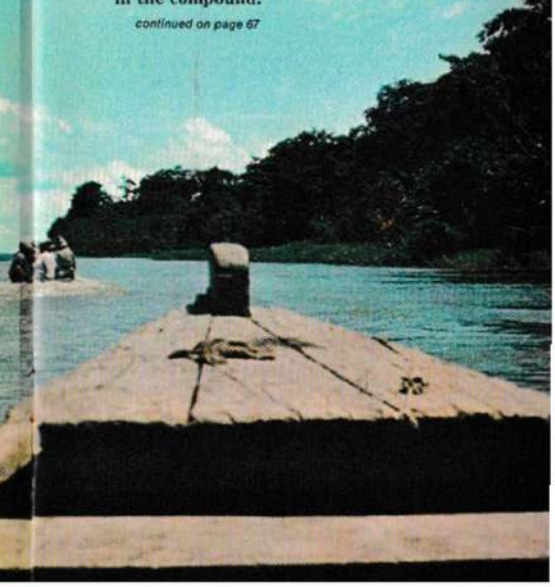
AN AMAZONIAN ADVENTURE PART IV

by ALBERT J. KLEE

OUR MOST FASCINATING PASTIME WHILE in Leticia was visting Mike Tsalickis' animal compound where we enjoyed unfettered access to the cages and pens. After viewing animals in zoos at a respectable distance for many years, it was an exciting experience, for example, to be able to step into a tapir's pen and "pat" it on the nose. The tapir, *Tapirus americanus* (its native name is "Sachabaca"), is a rather shy, solitary creature, nocturnal and inoffensive. A vegetarian, it measures up to 3' 6" at the shoulder, and tips the scales at about 400 pounds. Its main food is the aguaje, a fruit also popular with the natives (indeed, it is made into a soft drink after first soaking to remove the scaly outer cover – the Kool-Aid of the jungle!). I had to chase this "Sachabaca" all around its pen until it tired and finally lay down long enough for me to photograph it.

The Amazon jungle is profusely inhabited by sun birds of beautiful and brilliant colors. These bi however, are generally mute or of not too pleas warble. Consequently, the jungle is a lot quieter t many are led to believe. There were many kinds birds at Mike's compound, particularly parrots their relatives such as macaws and cockatoos. Parr are usually gregarious and monogamous. Their fli is low and wave-like, but powerful nonetheless. Pri rily vegetarians, an unusual characteristic is that t hold their food in their claws. Toucans and toue ettes, birds with huge but light beaks, also ab in the compound.

continued on page 67



A HISTORY OF THE AQUARIUM HOBBY IN AMERICA

PART 6

BY ALBERT J. KLEE

THE 1890's WERE truly significant years for the aquarium hobby in America. Although there was considerable activity in both the Philadelphia and the New York-New Jersey areas, for practical reasons it is necessary for us to treat developments in these two regions somewhat separately for the time being. What is of interest to us now, however, is the tracing of the faint stirrings of organized aquarium society activity in the United States.

On March 12, 1893, the first aquarium society in this country made its appearance. It was formed in New York City by five persons who had by chance become acquainted. The name of this small group was TRITON, and its president was a German immigrant named Baron von Schlichting. In April of 1893, the second aquarium society in this country was organized. It, too, was formed in New York City; its name was SALAMANDER, and its president was Dr. A. von Duerung (its Secretary was Mr. H. V. Letkemann). If the names of these societies seem peculiar to you it is because they followed the custom then prevalent in Germany (a custom remaining largely unchanged even to this day) of naming aquarium societies after fish, other aquatic animals and mythical creatures associated with water (Triton, for example, is a sea demi-god, the son of Poseidon, and is usually represented with the lower parts of his body fishlike). TRITON and SALAMANDER were at that time (and still are), already famous as German aquarium societies. The German immigrants who formed these American counterparts, understandably named their societies after them.

Although TRITON and SALAMANDER were the first two aquarium societies in the United States, they had no real effect on the hobby as such. They were clannish, with often only German being spoken at their meetings. (It is interesting to note that at about this time, Mulertt started a quarterly aquarium-terrarium magazine written entirely in German. Its name was *NAIDE*. It was published in Brooklyn along with *THE AQUARIUM*, but it was short-lived). Consequently, these organizations were little known outside of New York City. It is not really known exactly what these groups did although SALAMANDER had an exploring excursion to the Bronx River Park on May 21, 1893 which was "well attended". It must be remembered that, as far as tropical fish were concerned, there were few species available in this country at that time. The paradise fish was pretty much it! It is helpful, therefore, to briefly review the state of the hobby circa 1893.

In 1893, almost every major city in the east had at least one prime dealer in aquarium supplies. For example, a very impressive establishment in Pittsburgh was *The Aquarium*, located at 908 Penn Avenue. Not only did they deal in aquarium supplies but they handled fancy

continued on page 52

FRANCO: continued from page 11

with a flurry of spread fins. The second day, the male regained his courage and when the female approached he would respond with a show of color and spread fins. It seemed the female was looking for this response of acceptance and immediately started to clear an area for a nest. The location was a cave formed by two piles of stones and a piece of slate for a top or roof. The female proceeded to blow mouthfuls of fine sand into the opening of the cave until she had it almost closed off. In the process of moving the sand, the slate of the tank was exposed which was to be used for the eggs. In later spawnings with the same pair of *P. guentheri*, the egg-laying site was prepared by male alone, and also together with the female. Consequently, there is not set procedure that is followed as in some of the other egg-laying fish where the site is prepared by either one or the other sex. The male would approach at times as though he were the foreman on the job and give the female a quick look of approval before she would nudge him in the caudal peduncle area until he left. This went on until both fish were satisfied that the site was prepared properly.

The female with her breeding tube very much visible could be seen making close passes to the exposed slate, followed closely by the male. After a few false passes, the female started to lay a few eggs at a time, followed by the male who fertilized them. When six or eight eggs were laid, the male picked them up in his mouth and with a chewing motion, put them in lower jaw and throat. The eggs were large and pale-orange in color. I could not witness the full spawning, but it was completed when I next saw them, which was about four hours later. I assume that the actual spawning lasted about an hour since the total spawn was small and the eggs large in size.

The male had driven the female away and taken refuge under the overturned flower pot. At this time, it is advisable to remove the female *guentheri* as I have found she does not contribute to the care of the eggs or young in any way. Her presence in the breeding tank will either result in the male devouring the eggs or in injury to the female. Like so many fish at breeding time, there are exceptions to the rule for there have been reports that the female *guentheri* helps in the care of the spawn.

For the first two days, the male remained under the flower pot. He next took up a position in the corner of the tank which was good from my point of view, as I was able to watch him from day to day. It seemed he took this corner position so that it was only necessary for him to watch in front for enemies to him or to the eggs he carried in his mouth. Because of these eggs and the instinct to do all he could to protect them, he would be at a disadvantage if some inhabitants of the area decided to attack, for only as a last resort will the male *guentheri* open his mouth, then losing the eggs or young. In the aquarium one can see how the male meets this challenge by taking the most protected

Pelmatochromis guentheri is a member of a small group of aquarium fishes in which the females are more colorful than the males. In this photograph, the male is above, the female below. Among other things the female has a gold iridescent dorsal fin, and a flush of rose in her belly region.

area to hide in. He hardly moves for two reasons: (1) not to attract attention to himself; (2) with the eggs in his mouth, his respiratory system is reduced in efficiency and therefore the less he moves, the less his respiration rate will have to be. What breathing he does do is enough to maintain him and afford a constant supply of fresh aerated water passing among the eggs keeping them free of bacteria. He ate no food during the incubation period, and all color was reduced to a pale olive-green. No doubt this color reduction is a protection of nature.

The male held the spawn in his mouth for thirteen days. On the eleventh day, he became more active. The chewing action which is so typical of mouth breeders when they have eggs in their mouths became more frequent. For two days the male investigated anything that moved in or near the tank. At this time dry pellet food was introduced into the tank. This was to prevent the male from eating the young, due to hunger, when they were released. On the thirteenth day the young were observed just in front of the male near the bottom of the tank. The young were about the size of two-week-old angels. The observation was a short one for the male gave the signal with a wag of his body and the brood headed for the safety of the male's mouth. As if caught in a vacuum cleaner, they were gone out of sight! Newly-hatched brine shrimp was now introduced for the young, frozen shrimp for the male. A constant supply of food was maintained in the tank but never more than was needed.

Colors in Pelmatochromis guentheri are not brilliant, but the presence of reflecting material known as "guanine" provides some bluish-green iridescence.

The female, is by far the more colorful compared with the male. Note that the row of black blotches at the base of the dorsal fin of the female pictured here is quite prominent.

It is easy to sex Pelmatochromis guentheri by dorsal fin alone (i.e., less gold in the male), as this picture of a male suggests. At breeding time, and especially when the male is carrying the eggs, the throat of the male develops a fairly intense carmine coloration.

This soulful look almost makes Pelmatochromis guentheri look human!

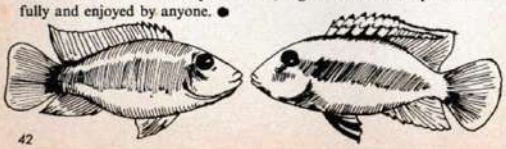
The nuptial "dances" of Pelmatochromis guentheri are as varied and interesting as those of most other cichlids. The fact that the male incubates the eggs in his gular (throat) region is an added bonus.

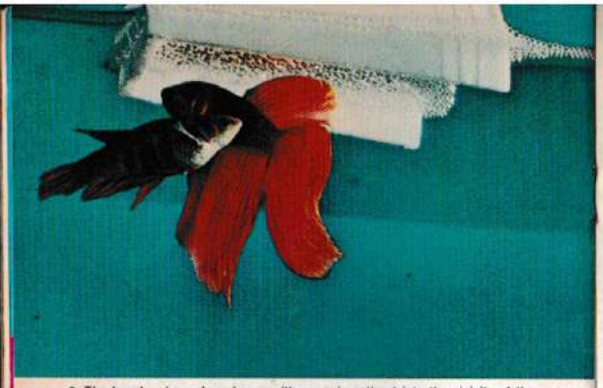
It is advisable to separate the male from the young as soon as possible since there is always the chance that the young will be devoured by the male when he is frightened or thinks they are old enough to go on their own. Catching the male without the young is not simple, for when the young are one to three days old the male calls them to the protection of his mouth at the slightest noise or movement. Since growth is rapid on a diet of live shrimp, about the fourth day the male is not as eager or quick to take the young into his mouth. With patience and a quick hand with the net I was able to separate the adult *guentheri* from the young.

There were thirty-five young in the brood. It would seem from the size of the adults (which reach six inches in length) that this was a small spawn. Later spawns numbered forty to fifty, but my breeders were only four inches in length. The young, when they emerge, are about ¼ inch in length and have typical cichlid shape. They resemble their parents in body shape and have the vertical stripes. After the male was removed, the brood swarmed together and were very nervous. They would rush together in one direction and then change their direction as if looking for a place to hide (most likely the male's protective mouth). With an abundance of live food, supplemented by a paste made of liver, spinach and oatmeal, growth was rapid.

If anyone is looking for an attractive mouth breeder to keep, *P. guentheri* would prove a good prospect. It is very easy to spawn; as a matter of fact when I placed the male back with the female in the community tank, they started courtship anew. When they started to dig a pit, I separated them again, for after not eating for thirteen days, the male was in no shape to rear another brood of young just yet. But this does show their willingness to spawn, even in a community tank if need be.

There are a few precautions one must take with these fish. Like so many of the larger fish, they have an enormous appetite and anything small enough to go into their mouths is usually consumed. It may be days before they devour any fish, but sooner or later they will decide they are hungry and down goes a guppy or small tetra. So, care should be taken in the size of companions for *P. guentheri*. So far they have not attacked fish their size or larger, so I personally cannot say they can be called "vicious." If these fish are to be kept in pairs, there usually is no trouble but in small numbers, extra females or males are sometimes bullied to death. With these precautions, *P. guentheri* can be kept successfully and enjoyed by anyone. ●





3. The female, shown here heavy with eggs, is enticed into the vicinity of the nest by the male. The chief danger at this point is that the male may harm his mate. In such a case, she must be removed and either another attempt made later, or another female substituted.

NEWMAN: continued from page 7

Now that the spawning tank is prepared, you can do one of three things:

(a) If the male has already built a nest, transfer this nest to the spawning tank with a net. The pair can then be placed in the tank.

(b) Leave the male by himself in the spawning tank until he builds a nest. Then add his mate.

(c) Put both the male and female into the spawning tank, but keep them separated. This can be done by using a glass partition or by placing the female into a glass jar inside the tank. Wait till the male builds his nest. Now release the female. This is the method most commonly used.

Watch the behavior of the pair for a few minutes. If the male is too vicious to his mate or shows no interest in her (which is rather unusual), try a different female.

Some bettas spawn in a few hours. Others take a week to begin spawning. Don't be too impatient. Give them about five days. If in this time they have not spawned, replace one or the other with a different fish. Or, try a new pair. When the fish do spawn, it will take roughly three to six hours. As soon as they are finished, the male will chase the female away; he will repeat this action should she try to return to the nest. At this point, she should be removed. The father betta is then left

4. A mutual encircling of bodies is typical of betta spawnings.

5. At the high point of the spawning motions the male is bent, U-shaped, around the female who is now upside-down.

alone to care for the nest and eggs.

If the female has badly torn fins or some scales missing, it's a good idea to keep her by herself in medicated water until her condition improves. As soon as she has recovered sufficiently, place her with your other female bettas. If she is kept isolated too long, she may become troublesome when returned to the company of other fishes.

Once the fish have spawned, many novice betta breeders feel that their troubles are over. This is not true, for at this point, the aquarist is only half way to his goal. The young bettas must hatch, survive the

6. In this position, the eggs are released. Being heavier than water, the eggs slowly sink to the bottom.

dangerous first few weeks, and grow to be beautiful young fishes before a spawning can truly be considered a success.

The time required for the eggs to hatch varies with water temperature; the higher the temperature, the quicker the hatching. However, don't be tempted to try temperatures much over 85° as this may cause deformities in the young fish. At normal spawning temperatures, the eggs begin to hatch in about thirty hours. In forty-eight hours, all the eggs should have hatched. By looking closely under the nest, you should be able to see little white tails hanging down. These are baby bettas. They will remain in this position, inside the nest, for two to three days.

After this, the babies should begin to become free-swimming. You can observe them swimming close to the nest. When all the fry are out of the nest, remove the father. He has had a hard job to do, so feed him well (preferably live foods). It's a good idea to feed spawning pairs live foods prior to and during spawning.

Meanwhile, back at the bubble nest, the baby bettas are now on their own. I've found that the best food for them during their first two weeks is a commercial liquid preparation. This comes in a tube, and there are several brands. Any one will serve its purpose well. It is important to carefully follow the feeding directions on the package. Too much food will foul the water. Without enough food, the fry will starve.

After one week, add an airstone. THIS IS IMPORTANT. Without it, you will lose many of the fry. However, do not use too much aeration at first, since the fry aren't yet very strong. Gradually increase the amount of aeration as the young bettas grow. When they are two to three months old, you may begin using a filter.

As for food, the fry are ready for baby brine shrimp at two weeks. Frozen baby brine shrimp is available, but live baby shrimp is better. Brine shrimp eggs can be purchased at many aquarium shops. Follow the directions which come with the eggs on how to hatch them. It's fairly simple and takes only twenty-four to forty-eight hours. If you are uncertain about how to feed baby brine shrimp to the fry, ask someone at your aquarium store. They will tell you the proper procedure to follow.

When the young bettas are 2½ to 3 months old, depending on how quickly they've grown, begin feeding adult fish foods. Live or frozen brine shrimp (adult), tubifex, white worms, and others, all are suitable foods. It is helpful, while the fry are growing, to siphon some of the mulm off the bottom of the tank and add fresh water of the proper temperature. If the spawn is a large one, or if the tank is small (5 gallon or less) the young will grow better if half are moved to another aquarium. This can be done when the fish are five weeks to two months old. The new tank should be the same temperature as the fry are used to. It should also be clean, with a few plants.

One other thing that should be mentioned is the critical age when the labyrinth organ develops. This usually takes place between the second and third week. It is extremely important at this time to guard the fry from drafts and chills. Also, the surface of the water should be kept free from any film. Of the fry which survive the first six weeks (the most difficult period), most will grow to maturity. Males should be separated as soon as they are observed nipping and chasing their brothers and sisters.

7. Now the male disengages from the female and picks the eggs up into his mouth.

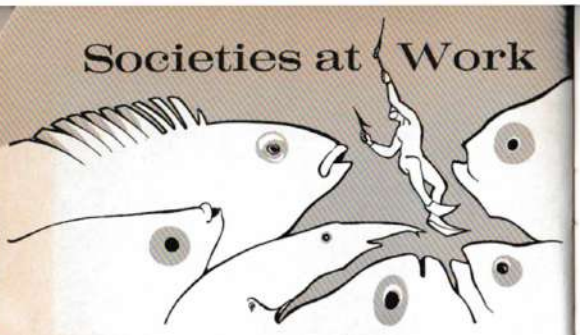
8. After retrieving the eggs, the male returns to the nest and "blows" them into it. The nest not only holds the eggs together within it, but provides the highly oxygenated environment needed by the eggs for subsequent development.

9. The spawn complete, the male guards the nest against the female or any predator.

Is it worth all this work, worry, and bother just to raise a fish? Anyone who has raised a betta from a tiny egg to a big, beautiful, blue-ribbon winner knows the answer is, "YES!"●

EDITOR'S NOTE: There is evidence that suggests the thesis that at a "critical" age at which the labyrinth develops the fry are susceptible to "drafts," may be false. Further work is needed in this area. AJK.

Societies at Work



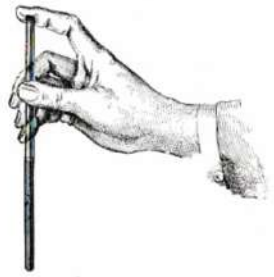
By
Helen Simkatis

THE INTERNATIONAL BETTA CONGRESS presented Volume I, Number I of its official publication early in 1968, at that time still unnamed, stating its aims as follows: Its purpose is communication; its goal is growth; and its hope is purposeful and continuous dialogue. Readers were invited to suggest titles for the bulletin and to send them to Editor Walt Maurus, 10068 Cavell, Livonia, Michigan 48150. Officers of the International Betta Congress are Stan Smith, President; George Torres, Vice-President; Sharen Chappell, Secretary; and Bob Lorbiecki, Treasurer. A membership in the Congress is $5 annually and entitles one to a subscription to the official publication. Dues should be sent to Treasurer Bob Lorbiecki at 1845A North Pulaski Street, Milwaukee, Wisconsin 53202. The President's Message indicates the Congress will promote betta shows and will encourage breeders of bettas to share their experiences with IBC members through writing for the official publication. This issue carries a detailed report on the first IBC convention held in September 1967. There is also a discussion on the albino betta, highlighted by a series of letters from such people as Dr. Karl F. Koopman of the American Museum of Natural History, Department of Mammalogy, Leo S. Crandall, General Curator Emeritus of the New York Zoological Society, Margaret G. Bledso, Chief Editorial Researcher of the *National Geographic Magazine*, and Director Arthur J. Riopelle of Tulane University, on a definition of albinism. A definition was sought when a report from the *New York Times* announced the discovery of a white gorilla in which the animal was described as a white, pink-skinned, blue-eyed gorilla and was referred to as an albino type. Apparently betta breeders have been able to come up with white bettas but have not been classing them as albino types because the pink-eyed characteristic was missing. All the answers to the question are in accord that albinism is the absence of pigment but some letters indicate there are degrees of albinism. For a first issue, the official publication of the International Betta Congress shows promise of stimulating fare for the betta buff and those interested in joining a concerted effort to promote this long-time aquarium favorite should write to Walt Maurus, 10068Cavell, Livonia, Michigan, 48150 or mail a check for membership to Treasurer Bob Lorbiecki, 1845A North Pulaski Street, Milwaukee, Wisc. 53202, as indicated above.

Bernard A. Ramsay discusses *Daphnia* in the December issue of the *Colorado Aquarist* (published by the Colorado Aquarium Society) and offers suggestions on methods of freezing this time-honored food for fish. Freezing the daphnia in small amounts of water, he points out, prevents drying out, and when the collected daphnia is suspected of carrying dragon fly larva or other kinds of undesirables, immediate freezing kills the culprits and renders them harmless for aquarium use. A process is offered where small daphnia and cyclops can be separated from the larger ones, giving the aquarist the benefit of having portions suitable for baby fish. Never freeze dead daphnia, the author advises, because the fish will not eat it and it falls to the bottom of the aquarium to spoil. There is an extensive article in this issue entitled *Still the King* by H. S. Greaves, picked up from *The Monthly Journal* of the New South Wales Aquarium Society, giving close scrutiny to the management and breeding of angelfish. Both of these articles make this issue a reference piece. Write to the Colorado Aquarium Society, P. O. Box 19278, Denver, Colorado 80219 for information regarding the society and its publication.

The January issue of *The Wet Thumb*, published by the Cleveland Aquarium Society, reflects an active club intent on making meetings stimulating to the membership, producing a provocative bulletin, and adding more events to the society's already busy program. A nine-point program for 1968 is presented in this issue and we mention it here because it seemed exciting enough to give other societies ideas on how to liven up their calendars for 1968. Courses in aquariology are proposed, designed to familiarize hobbyists with the science behind basic aquarium management. More shows will be held by the Cleveland Aquarium Society in 1968 with emphasis on an effort to improve the general quality of the shows as well as to promote participation by non-members and non-Clevelanders. More regular columns are to be included in *The Wet Thumb*, the official publication of the society. ●

continued from page 37



A dip-tube of the 1890's. This was nothing more than a straight length of glass.

goldfish as well. Two cents would obtain for the hobbyist their catalogue and price list!

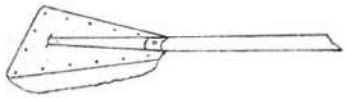
One could buy plants such as *Ludwigia*, water hyacinth and *Sagittaria* (several species). These sold for 25¢ to 50¢ each, or about $1.00 to $2.00 in terms of today's currency. (From time to time, we shall place in parenthesis, equivalent prices in terms of today's dollar next to certain prices mentioned.) Special center plants, however, sold for as much as $2 each, (=$8)! Regarding fish, plain and fancy goldfish were offered, as well as sticklebacks, paradise fish, tench and the chanchito. Fish prices varied according to species, size, color, etc., from a few cents to several dollars for all but the rarest of the goldfish. Also available were snails, newts and tadpoles. Fishfood sold for 25¢ a box, aquarium cement for 50¢ a pound (= $2 a pound), and nets with turned walnut handles for 25¢.

In medium sizes, tanks sold for about $1 per gallon (= $4 per gallon). A tank 11½" high x 7½" wide and 14½" long with a plate glass bottom sold for $5 (= $20); the same tank with wooden base and cornice sold for $7.50 (= $30). Slate-bottomed tanks were available also and in 9 and 13-gallon sizes, sold for about $1 per gallon. Larger sizes, however, were more expensive: 19-gallon, $15 (= $60); 33-gallon, $22.50 (= $90); 47-gallon, $25 (= $100). Note the odd sizes to tanks then . . . there was no standardization either in dimension or capacity.

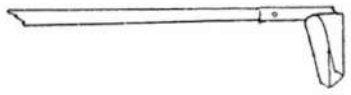
It is important to note, however, that tanks manufactured prior to 1890 often had metal bottoms, inside ribs or exposed cement. This made it almost impossible to keep fish in such tanks without either circulation, or a change, of water. Aquarium cements of the day were imperfect; after long immersion in water they discolored, usually killing fish and or plants. The development of tanks in the 1890's in which the glass was arranged so as just to meet inside the frame, thus minimizing contact of water with the aquarium cement, plus the abandonment of the use of metal inside the tank, permitted the aquarist to set up a tank without aeration for periods of up to one year.

As to precisely how one went about constructing a tank prior to the turn of the Century, Mulertt himself tells it best (circa 1894): "Of the different shapes used for an aquarium tank we find the rectangular shape the best for all around purposes. Its advantages over the round, the triangular and the hexagonal shape are so apparent that any of the latter should only be constructed for special purposes.

"The first thing to be considered when about to construct a tank is the space or location which it is to occupy. As a rule amateurs make their tanks too large. A large tank, when proportionally stocked, makes a grand effect; this we admit, but its size and weight make it inconvenient



An aquarium "wiper" of the same period. It consisted of a piece of sponge fastened to a stick.



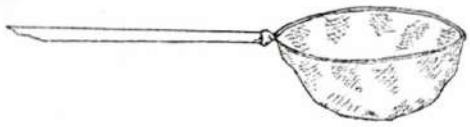
A "dredge," circa 1894. This instrument was used for scooping debris from the bottom of a tank.

at certain seasons of the year, and the cleaning and refilling involves a great deal of labor and time which everybody has not at his disposal at the required time. We always advise building one medium sized or two small tanks; in the latter you are enabled to keep different species that are not on friendly terms with one another.

"The medium sized tank, which we find best suited for a parlor, sitting or dining-room, has a capacity of about eighteen gallons. The inside dimensions, from glass to glass (the proper way to measure an aquarium tank), is twenty-four by twelve inches, by fifteen inches in height. This tank sets on a stand, the top of which is on a level with the window-sill.

"To make such a tank, get an ironworker to make you a simple iron frame out of one-inch angle iron (see illustration) to correspond with above dimensions, and at perfect right angles at the corners. The frame is painted with one coat of red lead. After this is perfectly dry, a straight piece of one-quarter inch thick rough plate-glass, such as is used for large skylights, is cut to fit loosely, leaving about one-eighth of an inch play all around in the lower part of the frame. This glass is to be the bottom of the tank. It forms, so to speak, the foundations, and great care is therefore to be exercised in placing it properly. To this effect all of the entire lower angles are covered liberally with rather stiff aquarium cement, being especially particular that the corners are well supplied

with it. Now take a dry rag and wipe the corners of the plate perfectly clean and lay it gently and evenly on the cement bed. If the frame stands where it should, on a perfect level, the weight of the glass will tend to sink it into position; if, however, the cement is not very pliable, it will be necessary to assist by pressing it down with the hands; in this case the pressure should be gentle, uniform, and only in the middle of the plate. The surplus cement is now removed, both below and above, with a putty knife, followed by a dry rag. If examination shows that the cement has taken hold of the glass at every point, it is left to stand quiet for at least twenty-four hours. The two lights, twenty-four by fifteen, that are to form the front and rear, are now prepared. These may be cut out of second hand polished plate-glass (pieces of broken show windows), or where this can not be had, they should be extra heavy double thick French, or so-called English twenty-six ounce glass. In every case the lights should fit loosely into the frame, and if one of the long edges should be rough or ragged, this should go up in order to have the lower edge fit snugly against the bottom. The lights are now cleaned with water and wiped perfectly dry. The angles on the bottom and those at the uprights, but not the upper horizontal ones, are next filled with cement, as was done when the bottom glass was placed, and the lights are then set in place, using gentle force to make a uniform



A wooden handle net, 1890's. Early nets were much more shallow and inefficient than those of today.

fit. Two wooden sticks (braces) are then placed across from one to the other to hold them in position, then the surplus cement is removed and the glass again wiped clean.

"Our next move is to measure the distance between the two lights just now set, as the two end lights should fit snugly, but without any strain, against them. Double-thick French glass is best suited for these, and the edges that will meet the other glass should be clean cut. We then proceed to set them as described above for the others. After two or more days, according to the season or weather, the cement has sufficiently hardened and the tank may be filled with water.

"For the small tanks above mentioned we find fifteen by seven and one-half inches, by eleven inches height (all inside measure), the most desirable size. The frame is in this case made by a tinner, out of galvanized sheet iron, bent into right angles and soldered at the corners. The bottom in this size is made of double-thick Pittsburg glass, which should be double thick French, on the same principle as in the larger tank described above.

"Do not attempt to make an aquarium out of wood; in nine cases out of ten they are a failure. Neither take outside advice regarding the size of the tank. Some one will tell you that "If you make it such and such size the glass will cut to better advantage, etc.", but an inch or two out of the way one way or the other makes a very big difference in the appearance and also in the welfare of your collection.

"These are the details to be observed in the construction of the inner hull, or the tank proper; the outside hull, or ornamental part, is easily put on afterwards. This can be a simple coat of paint and varnish, or it may consist of a rustic decoration of tree-bark or tuffstone, or a stylish

mantle of wood-work; no rules are set for this part, and one may exercise his individual taste. Regarding the stand for the aquarium, however, we find that a closed pedestal, for instance, a little cabinet, tends to set the collection off to its best advantage."

Mulertt's instructions for tank construction 74 years ago, still contain some very good ideas and principles. Only materials of construction have altered things to where modern practice is different (e.g., epoxies and wooden tanks). The use of the term "light" for pane or side is odd to us today, but Mulertt's suggestion that the frame of the tank be covered with tree bark or other decorative material, is intriguing.

Standard heating procedure for aquaria in the early 1890's (used for paradise fish, climbing perch, chanchitos and sundry South American catfish species; these formed the sum-total of tropical fishes available at the time) was as follows. A sheet-iron pan, several inches deep and about ½-inch larger all round than the bottom of the tank to be heated, was filled with two inches of sand. The tank was placed on top of the sand, and the whole set on a framework or on an open-top table so that there was direct access to the bottom of the pan. Two kerosene

continued on page 60

PROBLEMS: continued from page 32

they outgrow the aquarium in which they were spawned.

From: David B. Yanoff, Woodmere, New York

I have recently purchased fifteen angelfish (about one and a half to two inches high). I feed them two or three times a day with dry food and sometimes adult brine shrimp. They are in a 20-gallon tank that has constant aeration and power filtration. (1) About how long will it take before they begin to pair off? (2) Can a pair of angels spawn in a 20-gallon tank? (3) Should they be fed, and if so, what, during and after the spawning? (4) Should the fry be fed infusoria (for how long) or newly-hatched brine shrimp? (5) How soon can catfish be placed into the tank after the eggs hatch?

Answer: Your angels should be pairing off when they are about the size of a silver dollar or a little larger. Usually they are about a year old when they begin to show interest in mating. (2) A pair of angels can be spawned in a 20-gallon tank. They should have at least a 15-gallon tank. (3) During the spawning act it is doubtful that they will be interested in food, although they may accept it during the early preliminaries. They should be fed after spawning takes place but this should be done as quietly and as unobtrusively as possible. (4) The fry should be fed newly hatched brine shrimp as soon as they are free swimming. (5) A catfish may be introduced into the tank when the youngsters are as large as dimes.

From: Alan Keronski, Brooklyn, New York

I recently purchased a pair of *Monodactylus sebae* (fingerfish) and would like you to answer these questions: (1) Will this fish do okay in water using the new chemical Picon which keeps the water about 6.52. (2) Has this fish been bred in captivity. If so, how was it accomplished? (3) What plants are best suited for this fish? (4) What other fish does this species get along with? (5) Is a 34-gallon tank big enough for this species? (6) Is there any way of telling the sexes? (7) What foods does this fish like best?

Answer: (1) In that this species comes from brackish water, it will prefer alkaline water. It would do well, in fact, in water that has salt added to it. The product you mention should not be used with this particular species. (2) To our knowledge this fish has not been bred in captivity. (3) Swordplants might do well with this fish if, of course, you do not keep it in salted water. Any aquarium plants that do not require acid water, such as the crypts, might be used. (4) This is a rather slow-moving gentle fish and should be kept with fish that have a similar disposition. It might be kept with *Scatophagus argus* or *Monodactylus argenteus*. (5) A 34-gallon tank would be a good size for this species. (6) Sex distinctions are absent. (7) This species will take brine shrimp, tubifex, and some high protein dry food. ●

AUTHORS: continued from page 16

try which borders on the Pacific, enabling him to see at first hand the natural habitats of most of our Asian aquarium fishes. Presently, he is a member of the SAN DIEGO TROPICAL FISH SOCIETY and regularly submits material to its publication, the *TROPICAL BREEZE*. Herb is primarily interested in breeding aquarium fishes and has spawned many of the common barbs, characins, danios, anabantids and livebearers. His current "passion" is killies with particular emphasis on the annuals. ●

continued from page 57

An illustration taken from Mark Samuel's book showing the principle of using an object — here a hand — to break the fall of water added to the newly set-up tank was well known even at this early date. The technique, of course, insured that the gravel would remain undisturbed.

lamps were placed under the pan and, during the day when the room was usually heated by an open stove fire, one lamp was used to keep the water temperature between 70 and 80°F. At night, both lamps were used. Of course, a great deal of attention had to be paid to such set-ups (water temperature checking, provision against fire and other accidents, etc.), but a typical 18-gallon aquarium could be kept suitably warm at a surrounding air temperature of 60°F, for about 5¢ per week.

Other clever devices were occasionally employed, our sketch showing one of them. This consisted of a sheet metal box 10" high and of 3" x 4" cross-section, all joints soldered so as to be waterproof (the top was left open). In the middle of the box a tube was soldered so that water could pass through. A small kerosene lamp was set below it to provide heat (an alcohol lamp was used if a higher temperature was desired) and the whole device was placed in the middle of the tank. The fumes passed up and out of the box, and the water passing through the tube was heated. At this period in the aquarium hobby, filtration was unheard of, and aeration practically non-existent.

A leading aquarist of the day was Mark Samuel. Samuel had a store located at 10 East 16th Street (between Broadway and Fifth Avenue) from which he sold fish, aquaria and supplies. In addition to manufacturing his own tanks and certain other hard goods, he was retained as a consultant to Columbia College (as Columbia University was known then). One of Samuel's real contributions to the hobby was his book, *The Amateur Aquarist*, published in New York in 1894. This was a very fine book, smallish, of some 114 pages. It was authoritative and featured some interesting innovations. For example, he warned of the danger of using gravel or stone ornaments which were high in lime content. Samuel's book also provided tables of "wise and unwise combinations" of fishes to be kept with goldfish, and a summary chart of 20 aquarium disorders together with cause and cure. His table of 18 things to avoid (e.g., "Avoid using soap or chemicals to clean the aquarium"; "Avoid introducing a doubtful specimen without quarantining", etc.) is still largely the most excellent of advice. On May 5, 1891, Samuel sent to the Stevens Institute of Technology, a gallon of water from one of his tanks which had been set up, undisturbed, for 8 months. Dr. Albert Leeds of that institution made a detailed examination of this water including nitrate, chloride, hardness, oxygen and eleven other chemical constituents, and found the water to be in excellent condition ("... and return to you a copy of my analysis of the water, from which you will see how much the satisfactory character of the water must have depended on the nice balance you struck in its inhabitants."). Samuel's book was of high quality, popularly written

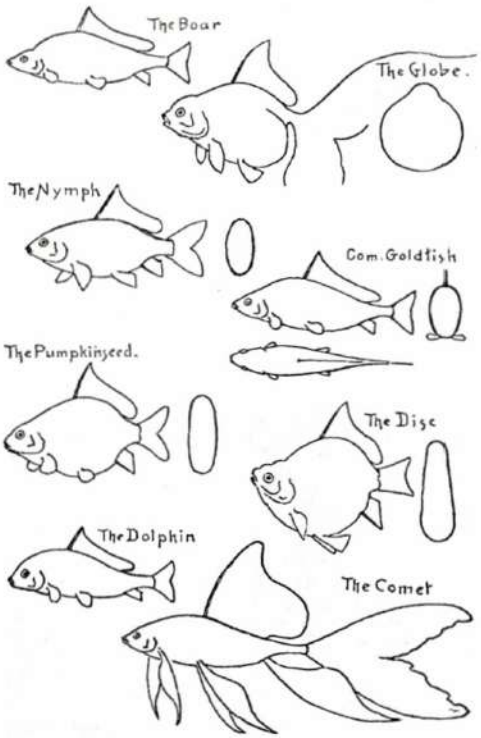
The Terrace aquarium of the 1890's. This unusual arrangement used 3 aquariums, all but the bottom one using the others as support. This was possible as the frames used were made of angle-iron, a material that is extremely strong.

but retaining the mark of the scholar. A very fine, pioneering aquarist, the name of Mark Samuel should not be forgotten as we entertain thoughts of the past.

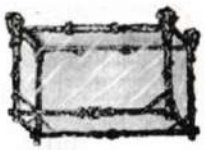
In December 1896, a milestone occurred in the aquarium hobby. This was the formation of a society which was to have a tremendous effect upon the aquarium hobby in the United States for years to come. It rightly marks the beginning of truly organized aquarium activity in this country. In a sense, it was mothered by the TRITON society which, by 1896, had gone out of existence. Because the new organization was the only aquarium society at that time (SALAMANDER also having passed from the scene), it was called simply, THE AQUARIUM SOCIETY. Only many years later, when other societies had formed throughout the country, was its name changed to THE NEW YORK AQUARIUM SOCIETY.

Oddly enough, THE AQUARIUM SOCIETY was organized at Jersey City, N.J., and not at New York City. In fact, it held its monthly meetings at the German-American School Building in Jersey City. (Later on it also used facilities at the American Museum of Natural History in New York City, meeting twice a month . . . once in Jersey City, once in New

In the 1890's, elaborate pedestals were quite common. Also typical were the stone arches in the tank that permitted bog plants to emit above the water's surface.



A collection of some of the goldfish types available at most aquarium dealers in the 1890's. Not included are the very fancy Japanese types developed by Philadelphia aquarists at this time.



An example of the aquarium described by Mulertt in which the angle-iron frame was covered with tree bark. It created a most rustic effect.

York City). Ultimately, about 20 or so years later, it ceased meeting in New Jersey, met only in New York and changed its name then to THE NEW YORK AQUARIUM SOCIETY. The first officers were: Eugene Smith, President; F. C. French, Vice-President; George Baehr, Secretary; W. Spicer, M.D., Treasurer; R. Breetz, Financial Secretary; P.C.A. Graupner, Librarian.

The initial membership of THE AQUARIUM SOCIETY even included one woman; all those residing within a radius of 15 miles from New York City Hall (the maximum reasonable traveling distance for the day!) were eligible for active membership. The initiation fee was $1 with dues of $1.25 annually but payable monthly! A fascinating provision in their Constitution was Section 5 of Article IV: "Dealers shall not be debarred from membership; it must be, however, definitely understood that they are not to use the fact of their membership as an advertising medium, and that they consider the members privileged parties and grant them reasonable concessions." What a donnybrook the latter part of this clause would cause among today's societies! It is interesting, however, to note that the question of dealer members arose as early as 1896, for the problem still plagues many present-day clubs.

The founder of THE AQUARIUM SOCIETY was Eugene Smith, its first President. Smith, however, is entitled to his niche in the history of the aquarium hobby in America over a much broader basis. He is the third (chronologically after Damon and Mulertt) in our series of the five great American aquarists of all time. Where Mulertt only briefly influenced the 20th Century, Smith brought the hobby successfully from the 19th Century to the next. We shall consider Eugene Smith more fully in our next installment. In any event, December 1896, primarily through the efforts of Eugene Smith, saw the beginnings of organized aquarium work in America.

To be continued.

KLEE: continued from page 35

The most numerous animals in the jungle, however, are the monkeys. They masquerade under such native names as maquisapa, choro, coto, arahuato (howler monkey), huapo, frailecito, pichico and leoncito. Two were of especial interest to us at Mike's; the wooly monkey (*Lagothrix lagotricha*), and the wooly saki (*Pitcecia monacha*). The former has a human sort of a face and a powerful prehensile tail used for picking up objects as well as for climbing. Earl fell in love with one of them and made arrangements to have it shipped to his home. The wooly saki is an odd-looking fellow with a bushy tail and whiskers of long, loose fur. In one cage, Mike had over a hundred squirrel monkeys and from it, I learned where the expression, ". . . the joint is really jumpin' . . .", came from!

The compound also featured many kinds of snakes, the deadliest undoubtedly being the bushmaster (*Lachesis mutis*) or, as the natives call it, "Shushupe". These are the largest of the vipers, some natives claiming that they have seen them up to 16 feet long and as thick as the calf of a man's leg. Mike's snake, however, was about 7 feet long. Its venom is deadly and it has a reputation for attacking without provocation where it then pursues its victim in a wild chase. Mike had a very close call with his snake. In the process of showing us its fangs, the snake's head temporarily got away from him and a fang grazed his

thumb. The result was that Mike was pretty sick the rest of the day, but gave thanks that the fang had not actually penetrated his skin.

Perhaps the most spectacular snake in the compound was an anaconda (*Eunectes murinus*). The anaconda rivals the reticulated python as the largest snake in the world, reaching a total length of 30 to 45 feet, and a weight of 360 pounds. It feeds chiefly at night upon birds and other animals which it kills by constriction. Even good-sized caymens (the South American version of the crocodile) are regularly killed and eaten (most of the snake's time is spent in the water). The young are born alive, about 36 inches long at birth, and a brood of 72 has been recorded. A group of us attempted to "straighten" Mike's snake out, but it wasn't that easy. The movement of the anaconda under my arm indicated nothing but sheer power.

When all is said and done, however, big animals are not generally a hazard in the Amazonian jungle as they only attack man in self defense. Poisonous snakes are the animals that offer the most danger because they abound precisely in the places where man travels most. But even though the Amazonian jungle is the biggest, thickest and most mysterious in the world, it can be said that its beasts are not as abundant or fierce as those who never entered them imagine, and only

CREDITS

PHOTOS:

The Aquarium, A. Roth, P. 4-8, 39-41, 44-48, 76-78; Dr. Edward L. Sharpe, P. 12-14; The Aquarium, A. Klee, P. 34-35, 73-75.

FISH:

Redtailed Characid supplied by Dade County Fisheries, Bronx, N.Y.; *Betta Splendens* supplied by Warren and Libby Young, Little Falls, N.J.; *Pelmatochromis guentheri* supplied by Grassy Forks Fisheries, Allendale, N.J.

know what they read in fanciful books, magazine articles, and movies. There are no elephants, gorillas, rhinoceros, tigers, lions, bears or hyenas. The anaconda is inoffensive, either because it is seen easily or because it moves slowly and is almost always sleeping. Even the jaguar itself, in spite of its classic fierceness and treachery, runs away from man and only attacks when it has eaten human flesh, is very hungry, or defends its brood.

The true wild beasts, the ones that harass man the most and from which man defends himself with the most difficulty are the mosquitos, the isangui (an insect which lives in the grass and when stepped on, climbs to the body and lives for several days causing strong burning), the mantablanca (an almost microscopic fly with a sting that causes a swift and strong itch), the insula (an ant of terribly painful sting), the tangarama (another stinging ant), and the huayranga (a very venomous wasp). There is even an insect, the virote zancudo, which injects worm larvae into the skin; in a few days after the bite a bulge appears in the skin, which has to be cut, the larva taken out and tobacco applied.

It was decided now that the time for real exploration had arrived. The plan was to split into two groups: John, Norm, Jon Jr., Earl and

Marty were to head downstream into Brazil and hunt with bows and arrows; the rest of us would travel upstream (175 miles!) into northern Peru to search for the Yagua Indians. While our canoes were being supplied, I directed my efforts to a water analysis of a sample of the Amazon taken at the Leticia dock area. The results are shown in Table I. The major differences between this sample and those from the quebradas (creeks) at the edge of the town, were that the Amazon water was more alkaline, of higher pH, iron, hardness and chloride content. In addition, the river water was of lower oxygen content, probably because of the great quantities of mud carried in the water. With such differences, one might expect the fish fauna to be different also. This was exactly the case. Large fishes were the rule in the river. Indeed, Mike Tsalickis regaled us with tales of the giant Amazon River catfish which is known to swallow unfortunate natives who happen to fall overboard. On a number of occasions, these catfish have been captured and disemboweled, to give up the remains of a dog or even a child.

TABLE I

Water Analysis: Dock Area At Leticia, Columbia

Date: May 31, 1966

Time: 11:00 AM
Water Temperature: 79°F

pH	7.1
Hardness (total)	68 ppm
Alkalinity	45 ppm
Chloride	3 ppm
Iron	3 ppm
Oxygen	3.6 ppm

Our boats provisioned, each group took off to their respective destinations. Mike had warned us that a previous party had attempted the trip only to turn back because of the difficulties encountered along the way. We were not easily discouraged, however.

All along the Amazon River, different types of craft could be seen, including native canoes. Plantations lined both shores and we refreshed ourselves with limes from the trees on one of them. The false idea is sometimes given that the Amazon River is a desolate waterway; nothing could be further from the truth. In reality, it is the "Interstate Highway" of the region, busy with traffic and lined with habitations. Travel on the river is generally restricted to daytime for its currents are strong and there are many hidden obstacles.

Right. The business end of an anaconda. Although it kills by constriction, its mouth is filled with very many short fangs.

Center. A small portion of a 20-foot anaconda with the author, in the middle, trying to pretend that he is doing anything at all in attempting to hold that snake!

Bottom: A tapir at the Tsalickis Compound. These animals reach a weight of 400 pounds.

over minus the adipose fin and even retaining the proper coloration that it was difficult to tell that anything was missing without rather close scrutiny. Any experienced aquarist who had seen the creature at the height of infection or just after loss of the fungus a short time later, would have to give testimony to the amazing stamina of *Chalceus macrolepidotus*.

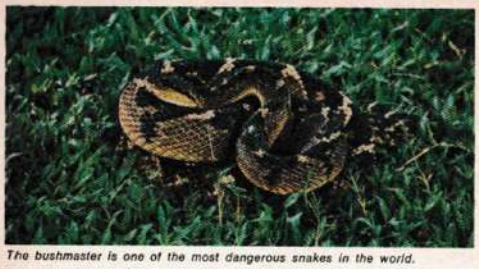
This is not a "nice" fish. Tooth-wise, it is well equipped for a fish of its size (5 or 6 inches maximum in the aquarium) and the dental equipment is often used for mischief as well as business. As with many characids, frequent bites may be taken from tender vegetation and even the more sturdy varieties. Individuals often scrap with each other and may also harass their more timid tankmates.

What could possibly recommend such a fish?

First of all, for those of us who like our fishes large enough to be easily observed from a distance, the redtailed characid qualifies. This, however, would amount to little if not for the extraordinary beauty of this bright creature.

Chalceus macrolepidotus presents no problems whatever in the areas of feeding, temperature, etc. Dry food, frozen brine shrimp, beef heart, earthworms and small fishes are eaten with almost equal enthusiasm.

Possibly this fish's greatest potential niche will be found in the aquaria of individuals like myself who have alternating passions for and against such sneaky and rather ornery fishes as *Leporinus*, *Anostomus*, *Laemolyta* and *Distichodus*, whose beauty of form and coloration time and again get them into the homes of those who have previously not only sworn off them but also at them. For those who have the space, a large aquarium containing only such defensively self-sufficient species can be a truly outstanding showpiece which may at times even seem harmonius. *Chalceus* fits beautifully into such a situation. ●



The bushmaster is one of the most dangerous snakes in the world.

One of the oddest of the lot — a woofy saki monkey.

One of the very many brilliantly colored parrots at the compounds.

A typical Amazon River settlement.

We were traveling in two canoes; Duane Wait and I were in the provisions canoe with Arnoldo, a Portuguese, as our guide. Guide for the other canoe was Pedro, a Peruvian. These were cheerful, courageous men, and we came to love them as brothers. Our canoes were driven by specially designed Amazon River outboard motors, made in Sweden. These had two speeds — "on" and "off"! Every few hours, the canoes had to be stopped, the motors refueled and their sparkplugs cleaned. Another job of the guides was to bail as the canoes leaked continually.

Our first stopover was at the home of Pedro's brother. Although primarily a farmer, he had worked for Paramount Aquarium and their compound was still standing. It was necessary to cross over from Columbia to Peru to reach the camp and unfortunately, the light was fading fast. Indeed, we approached the border in complete darkness, with only our flashlights to guide us. There was a strange flickering of lights coming from the shore, but we ignored them and pressed onward across the border. We were to rue that action later, as we found out.

We reached the home of Pedro's brother and the guides started supper. Jon Krause stuck his hammock on two hooks in the house, jumped in and promptly fell to the floor, hammock and all, as the hooks gave way. Laughing, the rest of us pitched camp outside, shortly to say some nasty things about the manufacturers of jungle hammocks who didn't make a product designed to be put up in the dark. After a rather cold meal, we tackled the problem of getting into our hammocks, with all the grace of hippopotami doing the bunny hop. It was a sight to behold.

To be continued.

WALKER: continued from page 5

This tail shot proves that the red coloration of Chalceus is intense, not only in the tail fin, but in the adipose fin as well (the adipose is the small fin on top of the base of the tail).

understatement since this appendage is instead a brilliant scarlet in most specimens. The dorsal is similarly colored and the anal and pelvic fins are only slightly less intense. The eye is a bright yellow and the large, mirror-like scales for which the species was named (macro = "large," lepidotus = "scales") reflect shiny colors which seem to vary among specimens from bluish to yellow overcast with blue. The abrupt contrast where the scales halt and fins begin gives a most striking appearance and makes this fish immediately noticeable even in a heavily populated aquarium.

Uncovered aquaria are often open invitations to disaster, and with *Chalceus macrolepidotus* this is particularly true. In such a situation it is only a matter of time before this beautiful and lively creature is instead a mummified carcass on the fishroom floor.

Considering what must be survived in order for a fish to find himself transplanted from his native Guyanlan home to your aquarium, the characid fishes as a whole are a remarkably hardy group of individuals. The redtailed characid is a prime example of tenacity of life. On one occasion a beautiful specimen was found in a seemingly well-dried condition after having leaped out of an aquarium which was covered except for one tiny opening where the siphon tube entered from the filter. Although the fish was stiff and a bit dusty he was placed in the filter box of the large outside filter on the aquarium from which he had

jumped in case some tiny spark of life might remain.

After a few minutes the gills were working faintly and a slight quiver was noticeable periodically. Unable to stay upright, the fish had to be held in position while "swimming" it forward and back in order to get water to flow past its gills. After a while, the exhausted creature was able to remain upright resting on the filter material. Next day it was swimming actively around the filter.

Within two days, however, the area around the adipose fin had developed fungus. After a week of the usual dye treatments, the fungus had become larger than the fish's head. As a "last ditch" treatment the fish was placed in a gallon jar half full of water to which half of a 250 mg. capsule of Tetracycline had been added. By the next day the fungus, which had been white, was taking on a yellowish tinge and small pieces were breaking off.

In a few days the other half of the 250 mg. capsule was added since aeration had caused much of the original dose to foam out of the solution. In another week the fungus was gone, leaving a gaping wound so deep that the tips of the neural spines (bones) were exposed. Remarkably, the fish recovered completely with this area so neatly fleshed

A study in beauty and grace, the redtailed characin, Chalceus macrolepidotus.