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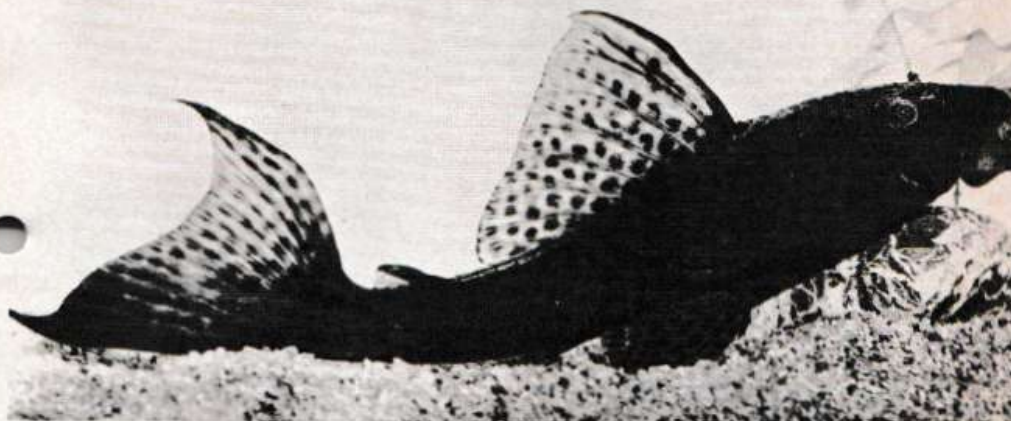
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cover photograph

The fish on this month's cover was imported from Colombia, South America by Ross Socolof. It has been bred and photographed by Gene Wolfsheimer, F.A.I. Dr. Weitzman of the U.S. National Museum says the fish looks like a greenish geographical variation of our old friend *Aequidens latifrons*, the blue acara. He says that to determine its name more accurately would require considerable study.





There are other sucker-mouth catfishes
besides the old standby *Plecostomus*

Algae Eaters I've Had Working For Me!

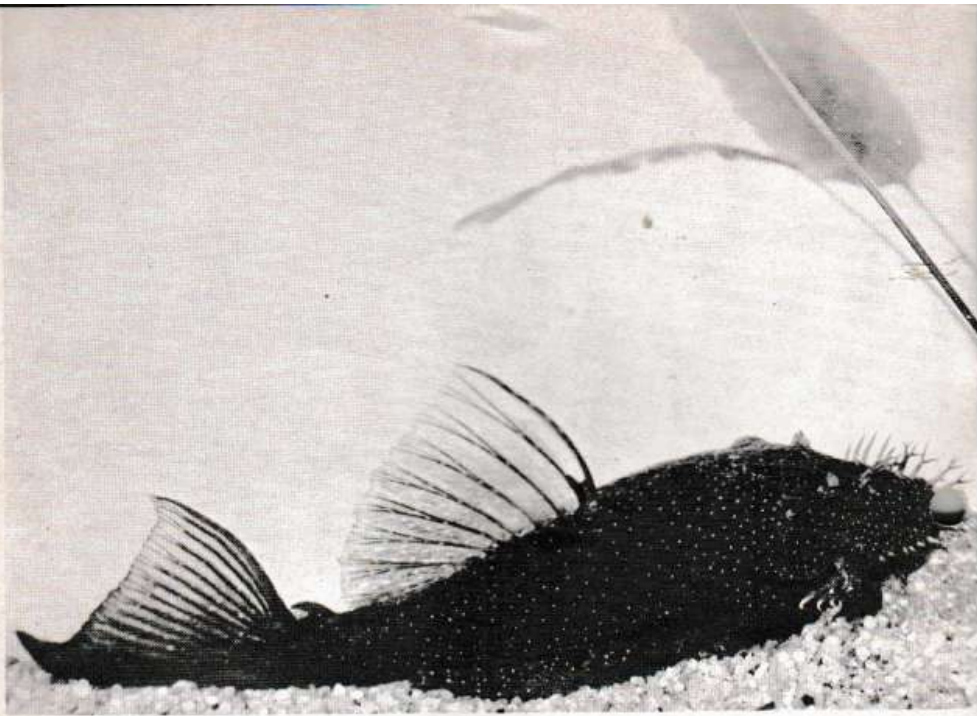
THE MINUTE "algae eaters" are mentioned most people seem to think of *Plecostomus*; however, there are quite a few other "sucker type" fishes to help clean out the algae that collects in our tanks. Some fishes that eat algae are not endowed with sucker type mouths, for example mollies and kissing gouramies, but I can't say one way or another as to how effective they are for I have not experimented with them. *Labéo bicolor* can be seen working up and down on leaves and rocks, apparently reaching for algae, but I don't know how much they accomplish.

Hazel Hall

San Antonio, Texas

When *Plecostomus* is mentioned in a room full of tropical fish hobbyists, it usually will be a most controversial subject. (Just as there are those who swear by sub-sand filters and some swear at them.) While I realize that an outsized *Plecostomus* can be a real conversation piece in *your* tank and might do a good

Photo: *Plecostomus*, the sucker-mouth catfish, as photographed by Gene Wolfsheimer, F.R.I.



job on the algae they are not for mine. My favorite plants have been either uprooted or the leaves all torn and when the "algae eater" comes out at chow time, with dorsal fin erect and its pectoral fins are used to fend off the other fish, so that the algae eater won't starve. *Plecostomus* can be particularly mean to angelfish.

Since there are other sucker mouth fishes that eat algae and seem, to me, to be much more desirable than the *Plecostomus*, let me discuss those familiar to me. Perhaps if you have not already given them a try you will decide to do so. Let's start with the smallest, *Otocinclus*. I don't know which of the several *Otocinclus* species are more common in aquaria, but on the algae eating job they all seem to be about the same. They are small, peaceful and do eat algae. Their size makes them ideal for small tanks, they do not harm plants. However, they do have one big drawback. They don't survive "change" easily and all too often within a few days of

purchase you are right back where you started, without them! So when you buy this little fish, do take care to float it in carefully and don't just dump it. Take time and equalize the pH of the water and you will have a much better chance of getting your *Otocinclus* over this dangerous hump. After the change has been made successfully you will probably have this good little algae eater around for quite some time. Never buy an *Otocinclus* with a hollow belly! It has probably been starving so long in transit and dealer's tanks that it is beyond recovery.

Next in size, I would say, would be *Gyrinocheilus aymonieri*, or the Chinese algae eater. Here is another fish that can be argued, pro and con, but after my experience with this fish I will have to cast my vote for him. Larger than the *Otocinclus* they can go over more algae covered territory in your tank, yet they are small enough to be harm-

Photo: "Brushmouth Plecostomus," a species of *Ancistrus* or *Xenocara*, side view, as photographed by Gene Wolfheimer.



less to the most delicate of plants. Also they eat tougher types of algae than *Otocinclus*. Are they peaceful? Yes, I suppose so, but I have found that sometimes they get ideas about attaching themselves on to the sides of angelfish and discus, both with nice flat sides. When I find an algae eater so inclined. I put it in a tank containing smaller fishes, such as tetras, then there has been no trouble. Put one of these algae eaters in a community tank and you have an algae eater that is all business and not a pest.

One exception, several people here, including myself, have had unhappy experiences with Chinese algae eaters kept with albino *Corydoras*. Several of the cats were known to have been killed by these sucker mouthed fishes attaching themselves on to the cats' back and sides. The albino color must be attractive, for I have never seen an algae eater pay any attention to a regular *Corydoras* of any kind. I also have found that if there are two or more of these Chinese algae eaters in the same tank,

especially a small tank, that things can get wild! Usually so wild that one or more of the algae eaters manage to hit the floor. You might ask why, since I am pointing out so many rather bad traits in this fish that I'd vote for it. I have found that if I place one Chinese algae eater in a 5, 10 or 15 gallon tank, I have an ideal, efficient cleaner fish.

In a 20 gallon tank I have one Chinese algae eater and one "bushy-mouthed catfish." Both mind their own business. The *Gyrinocheilus* works during the day and the bushy-mouth cat works at night. *Gyrinocheilus* takes the small leafed plants and the bushy mouth cat takes the larger plants and the sides of the aquarium.

The tank is free of algae. My Chinese algae eaters have been no trouble to move, but they do have one disease which they are highly susceptible. That is bloating. This is not like dropsy

(Continued on Page 374)

Photo: Underside, ventral view of a species of *Ancistrus* or *Xenocara*, the "brushmouth Plecostomus." Photo by Gene Wolfshelmer.

WHEREVER I GO, people are always asking me about the future and advice about the tropical fish hobby, or whether business is going to be good, and what I think about Congress. It

Walter V. Simon
Brooklyn, New York

Don't Cheapen the Hobby

seems anybody who travels as much as I do should have the real dope about everything, but I don't know and I don't pretend to know. When it comes to forecasting, I'm about on par with the old Indian who had an uncanny way of predicting changes in weather. If on a sunny day he would predict it would rain, sure enough it would rain. So he became a great prophet. Once on a rainy day someone asked him, "Will it stop raining soon?" He replied, "Dunno — radio, he broke." So please do not expect a lot of advice or predictions

from me. My radio is broken and I assure you I shall not venture far in giving advice, because I always keep in mind the paper a small girl wrote about Socrates. She wrote: "Socrates was a Greek philosopher who went about giving people good advice. They poisoned him."

There are frequent times when I go back in mind and thoughts to a good many years and recall the good days of the fish hobby. The days when there were no books on how to keep and breed fish and practically no equipment to

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work with. In those days those hobbyists had the time of their life. It was hit or miss, but look at the fun there was when you bred a pair of angels or even guppies for the first time. Since then, fish-keeping has become the second largest hobby in the country. Library shelves are stocked with books telling "How to Spawn . . ." practically any species of fish — under proper conditions, of course — and there are hundreds of gadgets on the market to entice the hobbyist and to make his wallet slimmer. But bear in mind that nothing has really been invented in the hobby field; everything — heaters, thermostats, filters, etc. — has been adapted from something else.

Somewhere along the line in this transition period during which we have gained much in the way of material aids, there is evidence that something vital may have been lost in the shuffle

— a proportionate sense of values. In one of the aquarium society bulletins, D. M. Denoon had this to say about the prevailing outlook: "I worry a great deal about an attitude that is prevalent in the tropical fish hobby. (You can worry about your camellias turning brown, or a speck of dirt in your carburetor, or why Junior refuses to brush his hair; but I worry about attitudes! This is undoubtedly a result of an unfortunate conviction acquired as a child, that it was important for me to worry about things that other people don't worry about.) Anyway, regardless of the reason, I do worry about the tendency in our hobby to emphasize its cheapness."

When you take a good look at people's attitudes, it becomes fairly noticeable that we seem to value things somewhat in relation to how much they cost.

(Continued on Page 408)

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(Continued from Page 371)

or swim bladder disease in other fishes. The fish will resemble an irritated puffer – the next day it will be down to its normal size. Later bloating will re-occur, sometimes for months before it will prove fatal, but it is eventually fatal.

Next we come to the "bushy-mouthed" cats. I won't even attempt to give scientific names on these. More learned ones than I are having difficulties identifying the numerous different sucker mouths that come under this category. I can only try to describe these fish for you. In my tanks you can find at least three different types of these "bushies" and I'm not absolutely certain that any are *Xenocara dolichoptera* – the name commonly associated with bushy mouthed catfish. The first bushy-mouth I met was called a "black plecostomus." I purchased 4 about a year and a half ago – two have died. Mine are on black gravel and are truly black with tiny pinpoint white dots on the fins (excluding the caudal fin), dots on their faces and even on the whiskers. A narrow band

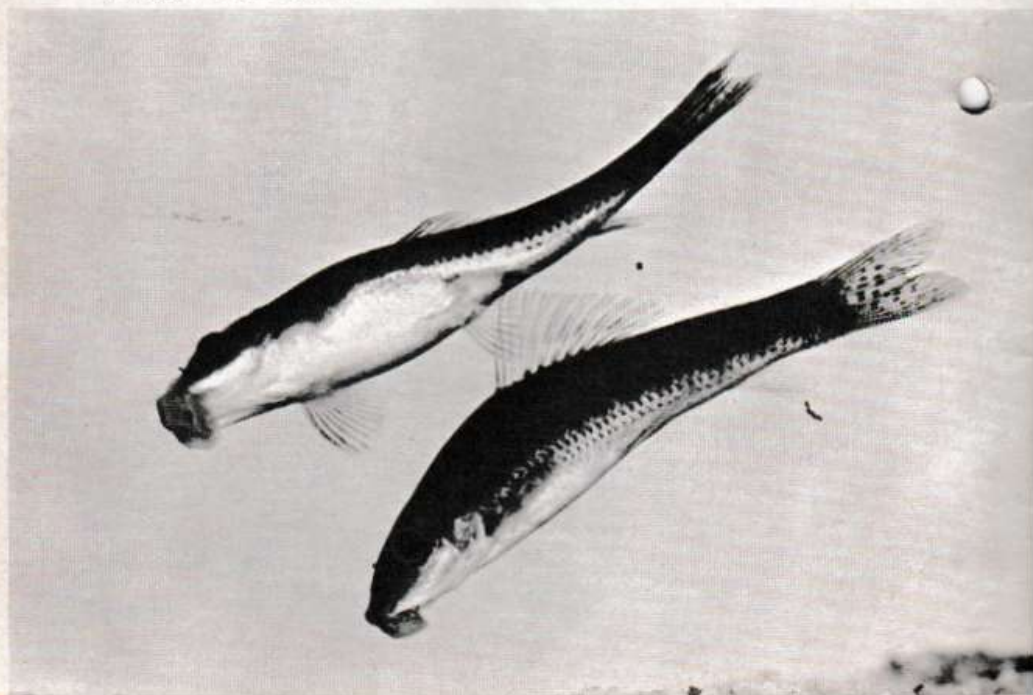
of white borders both the caudal and the dorsal fin. The fish do not exceed four inches and since I have had them this long I am sure they have attained their full growth. If you ever happen across any of these "bushies" – grab 'em! In my opinion they are very desirable and Johnny-on-the-spot where algae is concerned.

The next two "bushies" I bought have the male with whiskers all over his face while the female, at least I think it is the female, has only a neat moustache. Even on black gravel these catfish are a blotchy brown, with no fancy polka-dots. They reach a good 5 inches which I assume to be their full growth for I have had them a year and for the past six months I have not noted an increase in their size. They are very good at keeping algae down on rocks and sides of the 45 gallon tank, which is their home, however, due to their size they do not even attempt to "clean" tall narrow plant leaves.

The third "bushy" in my collection is brown, with an abundance of tan-like

(Continued on Page 406)

Photo: *Gyrinocheilus ayonieri*, another algae-eater, photographed by Gene Wollshelmer.



IT IS HARD for me to imagine anyone who has kept fishes for a long while and not experienced keeping and breeding some of the larger cichlids, providing his particular facilities permit. There are

Braz Walker

Waco, Texas

Spawning and raising the large cichlids is something every aquarist should experience!

"Jack Dempsey" Cichlid

few experiences available to us so heart warming as the meticulous care which is administered to a brood of tiny "ports" (*Aequidens portalegrensis*) or Jack Dempseys (*Cichlasoma biocellatum*) by parents whose care and "devotion" for their young is hard to match anywhere in nature. Perhaps this "love" is instinctive but there are those who could learn a lesson in humanity from these fishes.

Of the large cichlids there is no better parent and certainly no more gorgeously colored than a male Jack Dempsey over five years in age and in prime condition. This species is extremely long lived in the aquarium and often lives for ten years. With years, a length

of as much as eight inches is attained and a prominent "hump" develops on the nape. If a neon tetra is neon blue, a large Jack Dempsey is a dazzling, striking neon green alternating with velvet black producing an effect almost like glitter sprinkled on a Christmas package. The lips are neon green and the upper edge of the dorsal fin is traced with scarlet.

Cichlid spawning procedure has been explained many times but I will go over it for those who might have missed these accounts. A large aquarium of 25 or 30 gallons is ideal for these fishes because

Photo: A "Jack Dempsey" cichlid in one of his quieter moments of repose in the aquarium. These artificial plants must be nailed down! Photographed by Braz Walker.



a number of them can be kept in an aquarium of this size. Here they may pair by selecting their own mates. The urge to spawn is so strong in most cichlids, that an aquarium of as little as 10 gallons may be used if the fish are young and not too large. The drawback of an aquarium of this size is that at breeding time the fish become very aggressive and, if sufficient running room is not provided, one of the members may be injured or even killed. A few large rocks and a plastic plant or two weighted with lead will lessen the danger of this. Although sand is not necessary it should be provided unless the eggs are to be removed from the parents. Holes are dug in the sand in order to bed the babies down after they have hatched. It is a waste of time to try and keep

real plants anchored in a cichlid aquarium, especially at breeding time, since vegetation seems to infuriate them and will be quickly uprooted, and possibly torn to pieces in the process.

When a pair selects each other their color darkens and they make short charges, circle each other slapping tails and finally lock their jaws together after which they shake, twist, push and pull, anything that might wear the opponent down. Several times the grip is lost and they part but they quickly lock jaws again and the procedure repeats. If one member becomes tired and runs, the other pursues it and often will try to kill it. If the contest is a "draw" they apparently consider themselves "mated" and the couple swim off to spawn and raise their family.

The pair then selects a spawning site. This often is preferably a flower pot or other smooth stone surface. Usually after several hours to days of biting and polishing the surface of the spawning site with their mouths the female develops a tube at her vent which is called an ovipositor or "egg-placer." The male also develops a tube which is much shorter and smaller. The female uses her ovipositor to carefully place each egg on the surface of the spawning site and the male follows fertilizing them. The parents alternately guard and fan the eggs until they hatch. This usually takes from two to four days depending on the temperature. At this point the wriggling jelly-like mass is moved to a previously dug hole. Usually one of the parents picks up a mouthful of babies and moves them while the other stands lookout. The babies are moved several times into several holes before the youngsters are free swimming. Each time the parent seems to chew his mouthful of babies and spit them out rather hard. This is usually considered a cleaning operation.

When the babies are free swimming

★ IDEAS ★
BY HOBBYISTS

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Use of Glasswool

For the hobbyist who uses an outside filter I have found it best to put a half inch layer of glass wool under the charcoal as well as the regular amount of glass wool on top, this keeps any dirt that escapes the top layer of glass wool from going back into the aquarium. — Robert Jones, Roanoke, Virginia.

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they rise in a "cloud" and the proud aquarist can watch the parents escort the young about the aquarium in a school. As with all children a few are overly "curious" and try to slip away from the rest of the crowd in order to "see more of the world." It is not long, however, before an "angry" parent grabs the "naughty child" in his mouth and quickly spits him back into the middle of the school. If during this period any intruder comes on the scene, such as the hand of the aquarist or a net handle, it is furiously attacked by both parents until removed.

Perhaps the most interesting part of the procedure occurs at night when the lights are turned off. The parents can be seen in the semi-darkness dashing around gathering up babies which are soon bedded down in a single hole in the sand. The young are not allowed out of this hole until it is light again, at which time a signal is given and the whole school rises in a cloud. These babies are large at birth and can be raised easily on newly hatched brine shrimp and micro worms.

It is sad that some of the fishes like the Jack Dempsey which were so highly prized by the great pioneers of our hobby such as Mr. Innes seemed to have lost favor. Perhaps the ease with which they may be raised has caused the decline in their popularity. To be more realistic however, few aquarists are willing or perhaps able to house and care for large cichlids even though beautiful and few want to try to dispose of a couple of hundred unsalable young. The fact remains however that there are few fishes more spectacular than a large Jack Dempsey and it is conceivable that if *Cichlasoma biocellatum* had never been seen by an aquarist and were suddenly introduced the fish would cause quite a stir in aquarium circles. Certainly the beauty of this fish plus its most interesting breeding habits make

it a valuable asset to our hobby.

Let's give Jack Dempsey a chance at a comeback. ▶

★ **I D E A S** ★

BY HOBBYISTS

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Poly-Foam Containers as Tanks


A very inexpensive way of making more tanks is to use the poly-foam containers in which fishes are shipped. Cover the bottom with a thin layer of gravel and use an inside filter. Some containers have a small amount of seepage, so be sure to choose only the best ones for this purpose. — *Kenneth R. Cross, Roswell, New Mexico*

CLUB NEWS

Louisville Tropical Fish Fanciers

The L. T. F. F. will stage their Fifth Annual Competitive Tropical Fish Show at The Mall, Waterson Expressway and Shelbyville Road, Louisville, Kentucky, October 4 to 11, 1964, according to Mrs. Marion Hayley, corresponding secretary.

One of the feature attractions of the show will again be the 100-gallon all-plexiglass marine aquarium which will contain a number of rare saltwater fishes, Mrs. Hayley said. ▶

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DURING the years that I have been interested in the fish hobby I've tried to accumulate about every book that was ever written on the subject. Now, to the uninitiated a vast library of book shelves may stretch from floor to ceiling in the mind's eye. But to we

FINNY FOLKS

By Diane Schofield



Guy D. Jordan

who are "in" on such facts, a much more modest vision is in evidence. There just haven't been that many books written on the subject.

One of the now out-of-print books that has eluded me, these many years, is one written by one of the Contributing Editors of this magazine, Mr. Frederick H. Stoye. This book is entitled, "Tropical Fish For The Home, Their Care and Propagation." It was published by the Empire Tropical Fish Import Company which belonged to Mr. Richard Buttner, whose account appeared in the December '63 and January '64 issues of "The Aquarium Journal."

Recently on my way back from Death Valley, where I tried to catch up with

some of the pupfish of the desert, I, on impulse, turned off the main highway, intrigued by a sign that said, "Garlow." Now Garlow is what we are fond of calling in the west a "ghost town." A number of years ago it was a thriving little city, but one thing after another drew its life blood and the people left it literally high and dry. Especially dry, because there it sits out in the middle of the Mojave Desert with the bones of the buildings of a "past civilization" bleaching in the sun.

Not all left because there was one small store still present. A sort of "catch all" store in which you could buy anything from a bottle of pop to a miner's kit. I wandered in to look over the assortment of elderly junk—glass purpled by the desert sun, chewing tobacco, old rusty horseshoes, and — you guessed it, right on the top of a pile of stuff was a copy of "Tropical Fish for the Home, Their Care and Propagation" by Frederick H. Stoye!

A person appeared and noting my interest in the book said, "Didja see the rest of 'em?" Thinking she meant the kind of stuff that is usually found in such surroundings like, "Poems for Every Young Lady" and "Tom Swift Starts a Brand New Life," I said, "No, I don't think I'd be interested though." She replied, "Well, there's some more fish junk back there." Rooting eagerly through the pile I uncovered 6 beautifully hard-bound volumes of "The Aquarium" from May, 1932 to April, 1937 all in excellent condition! My file on these goes way back, but not that far.

After getting my treasures home, I noted that the entire small "library" had belonged to one Albert G. Bower, M.D., judging by the neat Ex Libris book plate in the front of each volume. But an odd fact was that his city was Glendale, California, the city right next to where I now live and the city in which I grew up! Ever since, this mystery has plagued

me — how in the world did books on fish keeping ever come to be in that dust blown, arid, God-forsaken ghost town? There wasn't even enough moisture there to steam up your glasses, let alone to float a very small fish. I looked up Albert Bower, M.D. in the phone book, but no such name appears. Chalk up one small mysterious aura that still nebulously surrounds one of the "Finny Folk."

As I always say, "If you're going to have an artificial ornament in your tank, have a *real* artificial ornament!" And this is just apparently what Alfredo's Restaurant in Rome has taken as their creed. Now Alfredo's is one of those world famous restaurants — famous especially for their fettuccine, which "out-fettuccines" any other fettuccine around. But they have also hit on another first and that is that they have the hugest aquarium "ornament" in a tank that I have ever seen! Of course Rome is a city of antiquities, so what else could have been more appropriate than to put a 4 foot ancient Roman statue of a non-bikini wearing Roman lady, clutching a large fish, into the aquarium, in their main

dining room? Not only has she gone through several hundred years clutching that fish, now Alfredo's has fixed it up so that she also has to hang onto the fluorescent tube that illuminates that tank.

A woman's work is never done — especially if she's a Roman statue. ◀

• • •

Every so often in any particular field you'll get a product that is so good that all others seem to be imitations. It has been that way with items like Kleenex and Jello. All tissues seem to get called "Kleenex" and all gelatine desserts end up being "Jello."

All bulletin review columns don't end up being called "Scanning the Periodicals", it's true, but the original "Scanning" does give the news columnists a high mark at which to aim.

Guy D. Jordan, who is the author of the column I'm talking about has his own breezy, kidding style that is distinctive as a thumbprint. This is probably the most difficult type of writing. But reading, "Scanning" (that appears each

Photo: Tank "ornament" at Alfredo's restaurant in Rome. All photos by Diane Schotfield.



month in "The Tropical Breeze," the publication of the San Diego Tropical Fish Society), is a "scintillating, and bubbly" experience. For one reason Guy's words are not always sugar-coated. He "calls 'em as he sees 'em," but never to wound, always to help. This helpful spirit is evident in another of his pursuits, that of pen-paling. Guy writes to dozens of hobbyists with whom he exchanges information and witticisms. A goodly number compose his "Stable of Miserable Dolls" and they get jerked up or down on his "Miserable Doll List" according to the frequency with which they write. Needless to say, Guy is a bachelor.

Another more recent boy on the pen-paling scene is one who is associated with no club, although those in Dallas would be most happy to have him join their ranks, I'm sure. W. B. McSpadden prefers to go it alone however, and he spreads himself about amongst any number of clubs in his contributions to their bulletins. What hobbyist who reads any of the exchange magazines has failed to see one of Mac's articles on his beloved discus, for instance?

His entrance into the hobby came about through a doctor's prescription. A doctor who thought that keeping tropical fish might be much better for the nerves than shots of vitamin B1. After going through one type of fish after another for a while, Mac struck up a love affair with the discus. The discus spawn for Mac with the same alacrity and dispatch as guppies. Nor is Mac one to hoard these fishes. A great many of his

pen-pals have been delighted to receive some of the McSpadden discus and these are often full size breeders!

All right, let's not push now — the line forms on the right to become one of Mac's pen-pals.

Somewhere around the Bay Area of California there lives an editor that is known rather anonymously, since he uses only the zodiacal sign for Pisces, ♉. He is the new editor of "The Fish Fancier,"



W. B. McSpadden

the bulletin of the East Bay Aquarium Society, P.O. Box 121, Oakland, California. I didn't recognize "The Fish Fancier" in its new dress — we had to become acquainted all over again. When I had received it before, first Ann Patrick Cook and then Al Seguin had edited it.

Starting with the March issue there is a new editor — one that obviously has had much journalistic experience and, I'll have to admit, is a man after my own heart. After reading his first editorial I had to all but sit on my hands to keep from applauding. Most of his sentiments dealt with something that

Photo: Some of the tank stands available at a fish shop along the Seine in Paris.

AQUARIUM JOURNAL





crops up so often when a new person takes any kind of an office, whether it be editor, president or even janitor of a club. The members expect the job to be done exactly as the past office holder had done it. This is completely unrealistic. The personality of any individual is injected into any job and just because the results may be different than those of the predecessor, it should call for no wails that say, "So-and-so wouldn't have done it that way!"

A slight sampling from here and there in)-('s editorial reads in part, "For those of you who, because name and publisher are the same, expect a magazine like that edited by Ann Patrick Cook, you may as well stop reading now . . . each editor stamps his publication with his own taste and personality . . . We do not intend to depart from the standard of excellence of material which has been the hallmark of this publication. In that respect this will be the same magazine. Otherwise, it's our baby

and we will do as we jolly please with it!"

• • •

The tropical fish hobby has never been "big" in France and this fact is plainly evident in Paris. There are a number of shops there that feature both plants and animals. These line one of the streets that borders the Seine. It's obvious at first glance that the shop keepers believe that no one is going to know that they have fish unless they bring all of their tanks right outside on the sidewalk and show them that they have fish!

Of course, they are prepared for the fact that it's possible that nobody wants to buy their fish, so they also put in a complete stock of fishing poles, lines and hooks, so that any non-fish buying Parisian can just pick up the equipment, go across the street, drop in his line and have his fish on the end of a hook to eat, if not to look at. ◀

Photo: Exterior of a typical fish shop along the Seine river in Paris, as photographed by the author.

WHEN the strange way that the discus fish feeds its young was first reported in the scientific literature — some time *after* it had been described in various aquarium magazines, including *The Aquarium Journal* (February,

James W. Atz, Ph.D.

Malverne, New York

Two species of catfishes in India also feed their young with a skin secretion

Discus Is Not Alone

1957) — it was called unique. That distinction no longer holds true, for an Indian ichthyologist has recently described how two species of catfishes from his country also feed their young with a special secretion from their skin. The ichthyologist is B. Sundara Raj and the fishes are *Mystus aor* and *Mystus seenghala*. These are predacious catfishes, said to reach a length of at least six feet, and they are the largest members of the genus. Two or three of the smaller species of *Mystus* have occasionally been imported from Ceylon, India and southeastern Asia for aquarists, but they have never been bred in captivity.

Sundara Raj's discovery began in a fish market where his curiosity was aroused when he came across a catfish whose

belly was red and spongy and seemed highly inflamed. Fishermen told him that the fish had been caught while on its nest, but even though the observant scientist was able to obtain several similar specimens over the years, it was not until 16 years later that he was able to see one of these fish's nests, which was located on the bottom of a river among rocks at least seven feet below the surface. The local fishermen must have known about the nests all along, but like many men of their calling, they apparently were not eager to share their knowledge with an outsider.

In all, eleven nests were eventually studied, and five *Mystus aor* and one *Mystus seenghala* were caught on them, usually with some of their young. The

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parent fish were all males and they all had bright red, spongy undersides, including the paired fins, the anal fin and the lower lobe of the tail fin. Vessels gorged with blood provided the color, while innumerable very thin, tube-like extensions and tiny folds in the skin of the belly help make it spongy. The baby fish, about three quarters of an inch long, had swollen stomachs, which were whitish in color from the thick, milky stuff that filled them. One of the captured parent fish was put into a tub of water with its fry. Soon the scattered youngsters collected underneath their father and some of them appeared to be picking at his belly. The parent was seen to be secreting some of the same white, thick, milky fluid found in the stomachs of the babies. Nearly an ounce of this material was collected and sent to a nutrition laboratory for chemical analysis. The "fish milk" was found

★ IDEAS ★

BY HOBBYISTS

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New Siphons from Old

Cleaning slimy siphons or clogged aerators made of plastic can often be a messy chore. Now it is a quick job with a little weak acetic acid (vinegar) and sodium bicarbonate (baking soda). First put a little baking soda into the tubes to be cleaned, and shake them to distribute the powder evenly. Then pour a small amount of vinegar into the tubes and observe the reaction. Flush well with hot water and notice the difference. Repeat if necessary, then scrape the inside of the siphon or aerator with some flexible plastic tubing. This method is safe for the plastic and the aquarium and your equipment looks like new. — *Sheila Cano, Redding, California.* ◀

to consist mostly of protein, and it did not in any way resemble real milk except for its color and the use to which it was put.

Strange as this reproductive behavior is, it is not entirely unheralded in the catfish world. For more than a century, scientists have known about a type of South American catfish that carries its eggs attached to its belly. In these fishes (there are a number of different species belonging to the genera *Aspredo* or *Platystacus*), each egg is attached to the female parent by a tiny stalk less than a quarter of an inch long. How the eggs get there is a mystery, but someone has suggested that the mother fish lies on the eggs after laying them and that they eventually adhere to her body. About 30 years ago, a German zoologist described the peculiar skin condition he found on a female *Mystus gulio*, one of the smaller relatives of Sundara Raj's catfishes. The skin on the underside was thickened and raised to form papillae, but not at all like the structures found on the males of its larger relations. No one seems to have ever obtained any more specimens like this, and until some one does, we can only guess that the special development has to do with reproduction.

Two other Indian scientists have confirmed the existence of Sundara Raj's "milk-giving" catfish. They have reported that the fry of *Mystus seenghala*

CLUB NEWS

Fort Myers Aquarium Society

(Fort Myers, Florida)

Up until this time, the F.M.A.S. has been a small, informal group, according to Margaret M. Willis, secretary of the group. At the present time, the group is attempting to increase their membership and become a more useful organization to those interested in tropical fishes. Contact Miss Willis at 1336 Lavin Lane, North Fort Myers, Florida. ◀

subsist solely on the body secretion of their father until they reach a length of an inch and three-quarters. These investigators could not find any papillae on the male's belly, however, and since they collected eggs lying in the nests, they did not believe that the male parent carries the eggs around attached to his underside.

Endocrinologists who study the hormones of fishes are especially interested in all of these species, including the dis-

cus. They would very much like to find out what particular hormone, if any, controls the remarkable changes that take place in the skin and the secretion of "fish milk." One of the hormones essential for the secretion of milk in female mammals is *prolactin*. It is also responsible for the secretion of the so-called crop-milk with which male and female pigeons feed their young. In addition, this hormone influences the par-

(Continued on Page 404)

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Diving can be dangerous when marauding sharks are combined with deadly man-o-war jellyfish!

An Omen from the Sea

I'M NOT SUPPOSED to get stung by any man-of-war jellyfish if I expect to stay among the living. This is the official word among marine scientists who have studied the toxic effects of *Physalia pelagica*, better known as the Portuguese-man-o-war jellyfish. It seems that the body becomes super-sensitive to the cobra-like venom of the floating dreadnaughts so that instead of becoming immune to their sting, a diver or swimmer suffers more acute attacks each time he encounters one of the evil creatures. As reported in an earlier article my last attack by one of these stinging jellyfish nearly cost me my life, as it was my fifth attack by the species and words

Robert P. L. Straughan

Marine Collector
Coconut Grove, Florida

can never describe that horrible day.

Since then of course, I have avoided men-of-war like the plague, but unfortunately, this winter the dreaded creatures invaded Florida waters by the millions. In fact, I have never seen such a tremendous number of them in my years of diving. They were so thick that some days, it was utterly impossible to dive at all as the creatures were spaced

Photo: The author investigating an undersea cave in search of tropical fishes. Photo by Paul Trimouille.

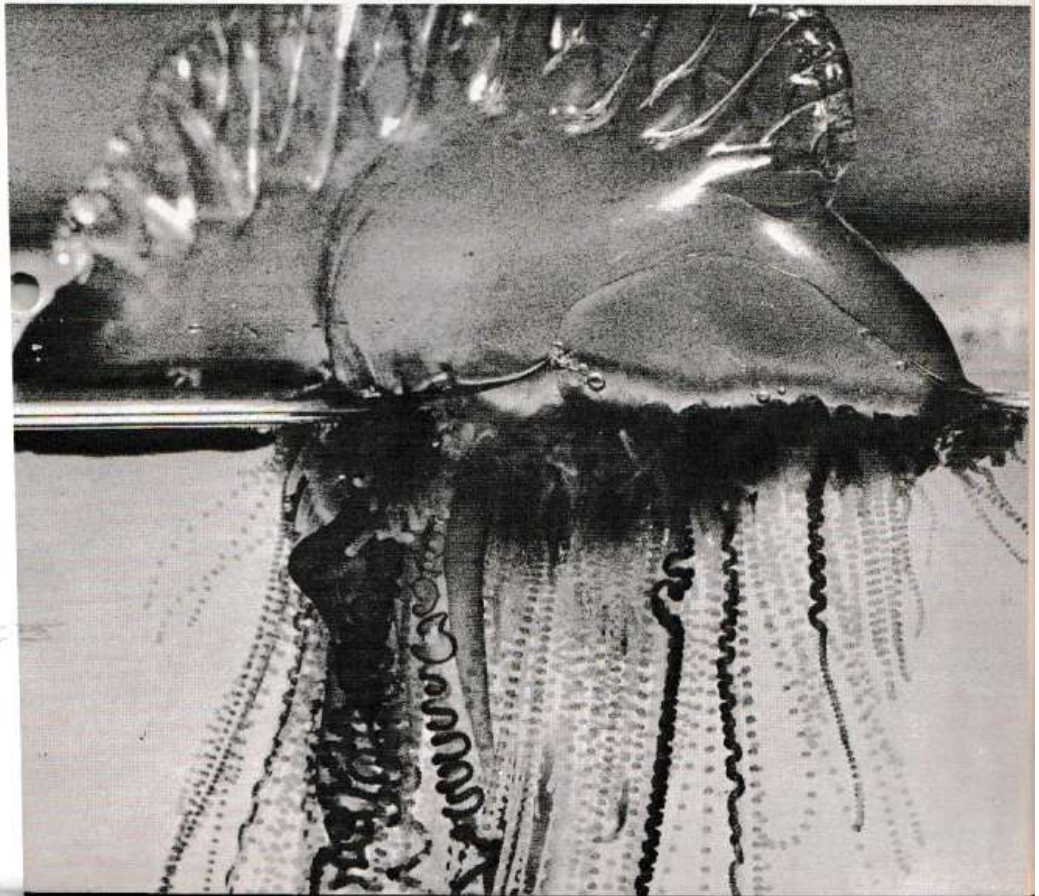
several feet apart from horizon to horizon. It was most exasperating, especially since I had many orders to fill. Month after month the evil creatures stayed with us and so in order to get any specimens at all, I was compelled to dive in amongst the floating death traps. On several occasions I had another diver with me who would stay in the boat and call out when a jellyfish approached too closely. But on other occasions, I went diving by myself and had to watch for the creatures when I submerged and when I surfaced. At the same time, I had to keep my eye on the fish I was collecting so that I could catch them. It took extreme concentration.

I knew it was foolish to dive under such conditions, especially since I want to be around when they make that moon shot, but here I was again, out on the sea diving all alone. I had done it for twenty

thousand hours plus, and managed to survive but in the past few years near tragedies made me aware of the fact that my luck couldn't last forever. Would I be like the pilot who flew one more test plane before retiring only to get it that last time? I don't think I could withstand another horrible encounter with a jellyfish even if it didn't kill me; the mental anguish of the torturous pain would probably be enough to bring on heart failure. At any rate, I dove that day with some misgiving but vowed to be extra cautious.

Some strange things have happened to me in a lifetime under the sea and a few of them have been without explanation. Today would add new meaning to my diving career. My first hint of danger came on my very first dive. I swam only

Photo: Dreaded "man-o-war" jellyfish with poisonous tentacles, as photographed by Robert P. L. Straughan.



a few hundred feet from the boat and was searching ahead for both jellyfish and specimens when I saw the outline of a dangerous shark rapidly circling me. The water wasn't too clear and although it wasn't an especially large shark, I have found that smaller sharks are sometimes more aggressive than the large fellows. I kept him in view as I continued my search for specimens. Finally I noticed men-of-war converging on me from three sides and the shark was still swimming around me, so I decided to move to another area close by. I swam back to the boat and quickly leaped aboard in case that young shark didn't know he wasn't supposed to attack skindivers as a lot of misinformed books had said in the past.

I moved to a new spot about a quarter mile and went back into the water. I began to catch a few coral shrimp, angel-fish and "butterflies" and noted that the jellyfish were coming at me from all sides. Also to my disgust, the shark had

CLUB NEWS

Aquarium Society of Wichita

The A. S. W. will hold their Eighth Annual Tropical Fish Show on September 12 and 13, 1964, at the Coca Cola Building, Harry Street and George Washington Blvd., Wichita, Kansas. Josephine White, show secretary, announced. Those interested contact Miss White at P. O. Box 332, 514 W. 12th St., Newton, Kansas.

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THE AQUARIUM JOURNAL

Steinhart Aquarium

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apparently followed the boat and was swimming rapidly about me as before. I didn't like the situation, for the tide was rising and the water wasn't too clear. I heaved a few rocks out into the air so they would fall near the shark but the water was so dirty he didn't go away. Instead he kept circling me always staying the same distance. I decided to move again. I swam quickly back to the boat and leaped aboard. Then I started the motor and once again, I moved about a quarter mile away. The men-of-war were still all around and I felt rather foolish to be diving among them but I needed specimens so in I went. As I circled the boat in search of specimens, a strange sight met my eyes. There was the shark right directly ahead of me lying flat on the bottom, belly up and huge fins sticking straight up. I approached cautiously and looked at the cold, staring eyes. The creature was stone dead! I looked at it in amazement and then gingerly poked it with my net. It was dead alright. Then I surfaced and studied the current for a moment. I was directly downstream from the last diving spot and I reasoned that the shark must have followed me back to the boat and when I started the motor, the propeller must have caught it and killed it. It was a strange thing and as I pondered it in my mind and looked around for jellyfish, I felt it was an omen or warning that I had no business diving under such conditions. I had a strong urge to leave that very instant but I fought the urge and summoned all my courage to stay.

I began to catch more fish, dodging jellyfish on nearly every dive and had several extremely close encounters with them. One time as I returned to the boat, a jellyfish hit the boat almost the exact second I had climbed aboard. That was too close for comfort I thought. Still I dove again and caught more fish. Then it happened! I had just netted a beautiful orange and black

porkfish after a strenuous swim and had placed him in the collecting basket which was anchored close by. As I looked into the basket to survey my catch, I could not believe my eyes! I actually had to pinch myself to see if I was dreaming or even alive. There in my basket, a few inches from my face was a huge, glistening, man-of-war jellyfish! It was too horrible to comprehend. Here I had been so cautious and so careful to avoid the jellyfish at all costs and yet I had come so close to one that I had unwittingly engulfed one in my net as I surfaced with a fish. The thought of how close I had come to a horrible,

★ IDEAS ★
BY HOBBYISTS

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Growing Mosquito Larvae

I have been using a method of growing mosquito larvae for my fishes for quite some time. At one time I worried about using mosquito larvae collected in ponds and stagnant pools because of the possible introduction of harmful organisms with the larvae. However, once while collecting them I noticed some of the small mosquito egg rafts. I took a few of them home and placed one or two of them in a quart jar with clean water. I then put in a few bits of pellet fish food (shrimp). Also a small bit of infusoria tablet would work. By the time the eggs hatched the infusoria were there for the eating. In this way the mosquito larvae were free of any unwanted organisms. If the larvae hatched too rapidly and there was not enough infusoria, I found that the larvae would go down to the bottom and eat the crumbling tablets. After a week or two they are large enough to feed to fishes. — *James L. Froland, Napa, California.*

AUGUST, 1964

torturing death nearly made me sick. I stared at the pulsating horror in my basket and then looked around me at the thousands of other jellyfish all floating towards me as if coming in for the kill and I realized that this was my second warning not to dive any more that day. I had a feeling that if I went back into the water, something truly horrible would happen to me. I scooped the evil creature out of my basket, as well as the fish it had killed with its poisonous tentacles and started on the long trek towards home. I would have to make a twenty mile boat ride through choppy seas and then drive sixty miles by car. Collecting isn't all fun, but it sure is interesting. The bad days add a little spice to life and perhaps a few more gray hairs but the good days more than make up for it. The only thing I haven't so far met is a mermaid and if I really meet one some day out on the deep reef, I wouldn't be too surprised. I'd sure try to catch her though! ◀

CLUB NEWS

Exotic and Tri-County Aquarium Societies

A combined tropical fish show and exhibition by these two groups will be staged on the 9, 10 and 11 of October, 1964, according to Gus Miranda, show chairman, 89 Pleasant Ave., Garfield, New Jersey.

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TRIDENT

P.O. Box 677,

W. Covina, Calif.

I MUST confess to having a weakness for "oddball" fishes but I rather imagine also that it is a weakness shared by many hobbyists. Of course there is always the possibility that such interests represent nothing more than the passing fancies of fads and consequently, the motivation behind them is not particularly praiseworthy. But a true and abid-

(a pioneer in the collection of central Peruvian aquarium fishes). *Acestrorhynchus* is one of the many South American characins, a number of which are predators as other fishes. Some of these have a pikelike form and from time to time, have turned up as isolated aquarium specimens. They are, in addition, excellent fishes for public aquaria.

Albert J. Klee

looks

• Under the Cover Glass



"I think that you're going to have to give up the hobby!"

ing interest in those fascinating facets of Nature herself is its own justification, and one need not apologize for attending to what is unusual.

This then was the case when I received a specimen of some still unidentified species of *Acestrorhynchus* (let us agree that an acceptable pronunciation of this rather formidable scientific name is AH-SES-TRO-RIN'-KUS) from my friend, Jon Krause of Columbus, Ohio

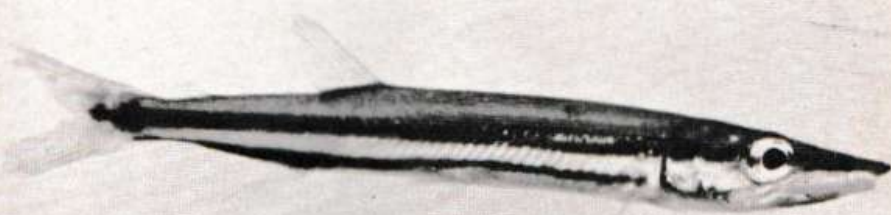
The genus *Acestrorhynchus* features fishes with very long jaws. This scientific name is derived from the words "acestra," which means a darning needle, and "rhynchus," which means snout. A quick glance at the photograph makes the name self-explanatory. Moreover, it is exceedingly appropriate! Fishes of the genus *Acestrorhynchus* are widely distributed throughout South America but because they grow to a large size, sel-

dom are imported. German aquarists, however, have known these fishes since at least 1913. At times, they are caught in their natural habitat in such quantities that they serve as food fishes. It would appear that this would be one dish that carries its own toothpicks! While young, these fishes tend to travel in schools and in British Guiana, are tagged by the natives with fascinating designations such as "Macuse" and "Ghawarrikang."

My own specimen presently is three inches long and perhaps less than one-half inch deep at most. There are two broad, black longitudinal bands, the upper one starting at the very tip of the lower jaw, running through the eye and terminating in a black blotch in the tail.

Furthermore, they do not meet but rather tend to "gap" in the middle. Here, the needle-like teeth can easily be seen.

My first problem was to decide how to keep the fish. The collector told me that he had had little success in bringing fish like this back alive in the past, and that the three specimens he brought back on this trip represented the zenith of his success. I checked all of my old German reference books and found recommended, a roomy aquarium, shallow water and lots of heat. Since these were pitifully inadequate observations, I concluded that these authors didn't know much more about the fish than I did (which in itself, was a big "goose egg"). So, I plunked my fish into a vacant five-



The lower band actually starts at the tip of the lower jaw and runs into the ventral surface just behind the anal fin, but this band is very light until just after the gill covers. Above the upper band, the fish is brownish; below the lower band it is light-brown. However, the area between these bands is gold, a very pretty sight indeed. There is a bright red spot in the upper lobe of the caudal fin and this fin in general is pinkish. For the most part, all other fins are colorless. The upper jaw is somewhat longer than the lower.

Photo: *Acestorhynchus* species, as photographed by Albert J. Klee.

gallon tank containing soft water at about 75° F.

It appeared to be quite comfortable in these surroundings, hovering motionless about two-thirds of the way to the top of the tank. At first, shredded beef heart was offered and without exception, was refused. Getting desperate, I tossed in some $\frac{3}{4}$ to 1-inch long *Rivulus hartii* fry and watched carefully. As soon as the fry hit the water, his eye did a quick turn in its socket. However, he made no sudden moves whatsoever. In fact, he did not appear to move at all. One of the *Rivulus* fry about three inches away,

started to rise slowly through the water to the surface. Although he did not seem to move any of his fins, the *Acestrorhynchus* slowly oriented himself so that his head was pointed directly at the middle of the fry's body. In addition, as the fry rose through the water, so did he. It was as if they were connected by an invisible rod for they maintained precisely the same rate of rise. Then, with a movement that was so fast my eye could not perceive it, my fish had the fry in its mouth. I have never seen a fish move this fast before . . . it was truly amazing.

The *Acestrorhynchus* now had the fry broadside in its mouth, the needle-teeth

★ IDEAS ★

BY HOBBYISTS

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Cottage Cheese Carton

For the past few years I have devoted most of my time and tanks to the breeding of the fancier hybrid live bearers. Since time is important I try to raise the fry to a size suitable for market in a relatively short period of time. In order to do this I feed them mostly live food supplemented with dry foods. Since tubifex are plentiful down my way, they make up the major portion of the fry's diet. I also like to decorate my tanks but I find that the tubifex tend to burrow into the gravel before the fry can eat them all, even if the worms are placed in a feeder. In order to avoid this problem I got the idea of sinking a small plastic cottage cheese carton in one corner of my tank. After this I scooped gravel around the sides. In front of this carton I set a large rock which conceals it nicely. So now whenever I feed my fry tubifex I just drop a ball in the carton, from which the worms cannot escape. — Max Greene, Sherman Oaks, California.

holding it firmly. In a series of jerking motions, he then eased his victim around so that it was headfirst in its large mouth. Then, in two or three gulps, the fry disappeared. The photograph was taken about an hour before all this took place, and the fish looks hollow-bellied, I know. But not after he gulped down the fry! Now there was a rather large bulge to its stomach. On the first gulp I noticed that the skin on the lower jaw extended, somewhat similar to that of the South American Leafish (*Monocirrhus*) when it swallows its prey.

I have watched this process many times now, and my *Acestrorhynchus* grows fatter and bigger. Also, my *Rivulus* collection grows smaller and smaller. However, I was able to switch to live-bearers which eased my conscience considerably (killifish fanciers will know what I mean!).

One might be tempted to use the term "vicious" to describe this odd fish but I think that one would mistakenly be introducing purely human standards, to the exclusion of all of Nature's other realistic "rules." *Acestrorhynchus* preys so that it might live. It does not molest fishes that it cannot swallow. It advertises its intentions by its very appearance and this is one quality that dissembling man has yet to attain. ◀

CLUB NEWS

Aquarium Hobby Club of Indianapolis

The A.H.C.I. will hold its Second Annual Tropical Fish and Guppy Show at the Eastgate Shopping Center auditorium, Sunday September 20, 1964, according to George Sharpe, secretary. Those interested in the show are invited to contact Mr. Sharpe at 3523 Brookside Parkway, South Drive, Indianapolis, Ind.

Join the S.F.A.S.

AS BARLOW has pointed out for *Cyprinodon macularius*, the colored pectoral fins of this species stands in perfect contrast to the blue body color of mature males. This combination of colors probably works in just the same way as the "throat-signal patterns" which we are studying among species of *Epiplatys* (less developed among aphyosemions). *A. cinnamomeum* has no conspicuous throat pattern. The difference between males and females is only the difference in the dark pigmentation, i.e., mature male = dark throat, females and immature males = light throat. It is likely that the brilliantly colored pectoral fins and perhaps

momeum could not be separated from *A. nigerianum*. The study of the coloration system, however, separates these two forms from one another. The results of the crossing of these two forms supports this conclusion. This cross is very easy to establish (as is usual within this genus). There were no fertile eggs with abnormal development of the embryo. The hybrids were very viable and both sexes were present. There were eight males and five females. No individual had intersex characters. At an age of 2½ months, the males started maturing. The yellow color first develops in the anal fin, then in the lower part of the caudal.

Aphyosemion cinnamomeum

PART II

(Translated from the Danish
by Albert J. Klee)

also the yellow edge of the caudal fin, play the role of the throat pattern when seen in contrast to the nearly black body color.

Aphyosemion australe and *A. cognatum* both have highly colored pectoral fins. Both have a highly reduced brilliance on their body sides, just like *A. cinnamomeum*. There is no conspicuous throat pattern on specimens of *A. australe* and during fighting and spawning, the male develops a very black throat color. This primitive system is found mostly among *Epiplatys*. *E. senegalensis*, *E. fasciolatus* and in some respects, *E. sheljuzhkoii*, are examples. The throat pattern of *A. cognatum* does not differ much between the two sexes. However, the male does not develop a black or dark violet throat coloration during fighting and spawning. It might be that colored pectoral fins within *Aphyosemion* play a somewhat different role than it does in *Cyprinodon macularius*.

If only the usual zoological counts and measurements are compared, *A. cinna-*

Joergen Scheel

Copenhagen, Denmark

First the color is lemon, then it gradually changes into the more orange coloration. This means that one particular male may become orange in the anal fin and lemon in the caudal fin. At this age the young males have no red dots on their body sides except for the area just behind the pectoral fins. The brilliance of the sides of the body is not a uniform one as in *A. nigerianum*, but is more marbled as in *A. cinnamomeum*.

The female's characteristics were intermediate. The yellow color of the unpaired fins was weak. The dots on the sides of their body were present but the number of dots was low and they were very small. They spawned but with their brothers and a male *A. nigerianum* — all eggs were infertile. The size of their eggs varied between 1.60 and 1.75 mm. The egg size of *A. nigerianum* (Akure stock) is about 1.0 mm. and that of *A. cinnamomeum* is 1.5 mm. The egg surface had a marked reticulated pattern as did eggs

from *A. cinnamomeum*. Eggs from *nigerianum* normally have only a weak reticulated pattern. Variation of egg size is known also from some other *Aphyosemion* hybrids.

Hybrid males were very brilliantly colored and were one of the most handsome *Aphyosemion* hybrids produced within our tanks. When fully matured and developed, the brilliance of the sides of the body was not broken but was rather uniform, the coloration being just like *nigerianum*. The development of the red dots differed somewhat, forming a more marbled pattern than in *nigerianum*. The pattern of dorsal and anal fins, however, was like *nigerianum*. All hybrid males had yellow edges on all fins. The pattern of the caudal fin was more or less a compromise between the two species. Most males did not develop an unbroken separation line all along the edge of the fin as in *cinnamomeum* but the upper and lower lyre pattern formed by these lines did not turn up and down

as in *nigerianum* (and most aphyosemions possessing this pattern) but rather turned towards the center of the hindmost edge of the caudal fin. Only one male at an age of more than 15 months developed an unbroken red line all along the caudal fin. The yellow coloration of the hindmost edge of this fin was not a pure yellow when the red line was not completely closed, but merely a yellowish-green. The pectoral fins were colored as in *nigerianum*, however, there was more yellow color near the edge as normally seen within yellow males of *nigerianum*. The outermost edge was pale red.

The throat pattern also was very much like *nigerianum* and the male's throat did not develop a blackish color during fighting and spawning. The caudal fin of *nigerianum* does not develop long streamers as do many male aphyosemions. This fin in *cinnamomeum* is said to be rounded and so it is normally. However, old aquarium-kept males often develop some prolongation of the upper and lower rays, approximating the shape of *nigerianum*. The hybrid male when old is intermediate. It might be of some importance that the *nigerianum* male used for this cross came from the usual Akure population. The hybrids did not differ from the parent species in their haemoglobin spectra.

The female *cinnamomeum* was also crossed with the generic type of *Aphyosemion*, *A. christyi*. Only a few fertile eggs were harvested. The embryo did not develop normally and its length did not exceed 90° on the equator of the yolk. The development of the blood system was poor. One embryo lived inside its egg for five weeks before it died but by far, it did reach the full development of its organs. I do not think that viable embryos can be obtained from this cross.

The same female was crossed to a male *A. labarrei* and 14 fertile eggs were obtained. The development of the em-

(Continued on Page 411)

CLUB NEWS

San Francisco Aquarium Society, Inc.

The next regular meeting of the S.F. A.S. will be held Thursday August 6, 1964 at Steinhart Aquarium, California Academy of Sciences, Golden Gate Park, at 8:00 p.m., according to Robert P. Dempster, president.

Program for the evening will be a talk by Maurice Rakowicz, entitled: "The Interesting Anabantids," in addition to a showing of color slides taken at the famous Everglades Aquatic Nurseries in Tampa, Florida, also by Mr. Rakowicz, according to Frank Tuffo, program chairman.

Fish of the Month for the August meeting: (1) tetras (*Hyphessobrycon* and *Hemigrammus*), (2) egglayers — junior members only, (3) tidepool fish, (4) tropical saltwater fish, and (5) plants, according to Charles P. Bange.

Why You Can't Grow Plants

Wm. Dewhurst, M.D.
Los Angeles, California



A lot of people who are pretty good aquarists will say, over and over again, "I like plants, but I just can't get them to grow." Such people either give up on plants entirely or else use the artificial plastic ones that are getting more and more available and even fairly realistic. There are some things to be said for these plastic ones, but they do not contribute to the natural balance of an aquarium, nor do they provide food for some plant-eating fishes.

Most aquarists also really seem to want to have living plants in their tanks. They are still prettier than the plastic ones, and beauty is one of the main reasons people keep fishes in the first place.

Also, they reproduce—if kept properly—far more rapidly and especially easier than most fishes, thus giving their owner something to be proud about. Their growing helps to clear the water of some excess nitrogen, thus reducing excess algae and chances the water will foul or go "sour," or "thick." Living plants also directly provide food for some fishes and act as foodstuff for small organisms that eventually are eaten by the fishes. So you can see that there are many reasons in favor of living plants in your aquarium.

But if you are among those who have trouble getting them to grow, then perhaps the following list of items you can

check will provide the solution:

1. *Too little light.* If your aquarium receives no daylight, or if it is not right by the window, a minimum of eight to ten hours of artificial light is required; twelve are better; more will do no harm. This means light from bulbs right over the water in a standard reflector.
2. *Foul water on bottom.* Reams have been written about how putrid water will kill fishes. Plants also succumb, although not as quickly. If the plants rise up and the roots are either gone or black and foul-smelling, the bot-

tom may be putrid even though the water is clear. Very black sand or a faint haze just above it may indicate that this is either here or soon on the way to developing.

3. *Too much circulation.* Regardless of the type, whether it be airstone, inside or outside plastic, subsand or power pump action, if the CO₂ is removed too quickly from the water, plants will then slow down, stop, and even decline. While it is true that the plants don't really matter too much in this regard, as far as the fishes are concerned, they need the

WANT ADS-\$2

Hobbyists, breeders, and dealers (only) may now place Want Ads in *The Journal*. An opportunity to contact other hobbyists for wanted fishes or equipment, or sell same in a Journal Want Ad! The cost is nominal: \$2.00 for 20 words, plus 10 cents each additional word. Send your ad along with payment today!

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100% dehydrated worms—for aquarium fishes. 12 grams, \$1.75, 8 grams, \$1.20, 4 grams, 65c, postpaid. Coarse, medium or fine. Lake Sawyer Worm Gardens, Route 1, Box 979-A, Kent, Washington.

Far East Tropical Fish—Write for price list today for the high quality fish with the most reasonable price: Larsens Aquarium, Prekanong P.O., Box 125, Bangkok, Thailand.

Live cultures—Dwarf white worms, \$1.50. Microworms, \$1.25, including instructions. Airmail 50c additional. Add sales tax where applicable. Blue Lagoon Aquarium, 1644 Irving St., San Francisco 22.

Salt Water Fish—coral, sea horses: not cheap, but fish are all healthy and disease free! Coral Reef Exhibits, P.O. Box 59-2214, Miami (AMF BR.), Florida.

Live Cultures—(with instructions) USA only. Drosophila (wingless) \$1.75. White Worms \$1.50. Tropi-White Worms \$1.50. Dwarf White Worms \$1.50. Micro Worms \$1.00. Daphnia (pulex) \$2.00. (Food different for each culture \$1.00 per box.) Live delivery guaranteed. Postage prepaid. George Hansen, Box 414J, St. James, N. Y.

Serious?—Then feed fish live food! Directions (we pay postage): Wingless fruitflies (\$1.75), Microworms (\$1.25), Whiteworms (\$1.50.) Sudden service! Airmail .30c extra. Special delivery .30c extra. Aqua Engineers, Box 1-B, Ortonville, Michigan; or Box 97, St. Basile le Grand, Quebec, Canada.

Aquarium Show Plants—greenhouse grown—Includes one Amazon Sword; 4 Crypts; and at least 8 other varieties. Satisfaction guaranteed. \$5.50 pp in U. S. Westleigh Aquarium, Box 11, Staten Island 10314, New York.

Exotic Marine Specimens—Aquarium supplies, illustrated catalog. Write Box 626-116, Dania, Florida.

Live Cultures—Tropical red worms, \$1.25; white worms, \$1.25; micro-worms, \$1.25. Any two for \$2.25. All three for \$3.00. Generous cultures. Shipped postage prepaid. Instructions included. Air mail 50c additional. Culture Gardens, 454 Leonard, N.E., Grand Rapids 5, Michigan.

Marine Fishes from Philippines—Exporters, Conditioned, various colorful species. Inquire direct: Tropical Pet Shop, 1008 Ongpin Street, Manila, Philippines.

CO₂ in order to survive, produce energy, and to build up their tissues. Without it they steadily decline, starving, even though light and nitrogen requirements are being met. Additionally, subsand filters, if run all the time seem to interfere with root action as well.

4. *Improper temperatures.* Most local wild or pond plants will not grow in the aquarium. In temperatures consistently below 70° F., the usual tropical plants will stand still or fade out.
5. *Plant killers.* An excess of snails or many plant-eating fishes may be the source of trouble. The snails will leave numerous small holes in the leaves. Large cichlids will tear out plants; the silver dollar tetras will devour them.
6. *Lack of time in place.* Most plants need to be settled for a time before they grow or reproduce. If they are constantly being moved about, they won't get a start. So be patient, when you locate a plant, give it a month or more at least before deciding it ought to be moved.
7. *Crowding.* Most bunch plants, *Sagittarias* and *Vallisnerias*, can grow side by side. The other large rooted ones, such as sword plants and Aponogetons, need plenty of "elbow" room, for their roots spread out, so devote a distance of third of the plants, height to space around the crown. If the top layers are loaded with duckweed or other floaters, these may starve out the rooted plants because they block light.
8. *Improper planting.* Do not cover the crown of rooted plants, or the new leaves will be damaged or killed by the covering sand. Be sure that a node of any stem on a bunch plant is under the sand; otherwise no roots will grow there, and the plants will eventually float to the surface.

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9. *Wrong water conditions.* Plants may fail because the water is either too hard or too soft, too acid or too alkaline. The commoner varieties are little affected by these factors, but many of rarer ones are.

10. *Too much nitrogen.* An aquarium standing for a long time will accumulate nitrogen compounds from fish wasters being added all the time. Eventually this will be just as toxic as excessive fertilizing is to a terrestrial plant. To avoid this, remove a quarter to a third of the tank volume at least once a month and replace it with fresh water.

If some of these conditions are true of your tank and you correct them, you are likelier to have success with plants. There are other, rare causes of plant failures; but these are quite unlikely to happen to you.

— Reprinted from the *Los Angeles Aquarium Society Bulletin*

ATZ

(Continued from Page 387)

ental behavior of both mammals and birds. Prolactin is secreted by the pituitary gland, the small "master gland" located at the base of the brain in all animals with backbones. Endocrinologists wondered whether the pituitaries of reptiles, amphibians and fishes secreted prolactin and if they did, what use these creatures made of it. Since these cold-blooded vertebrates appeared on earth long before the birds and mammals, the study of prolactin looked like an excellent opportunity to find out about the evolution of a hormone whose function must obviously be different in animals that don't suckle their young.

One of the earliest indications of how a cold-blooded vertebrate used its prolactin was found by a South American physiologist who showed that prolactin influenced the secretion of the coat of jelly with which frogs and toads sur-

round their eggs. Not long ago, American zoologists found that prolactin is the hormone that drives the red eft to water and changes it into the bronze-colored, aquatic salamander we call the newt. In fishes, Dr. Grace E. Pickford of Yale University discovered that prolactin stimulates pigment cells in the skin to manufacture an important, brownish pigment and that it also enables some species to live in fresh water. Just two years ago, a Japanese endocrinologist reported that injections of prolactin into young discus changed their skin, making it resemble the skin of adults that were engaged in feeding young.

More recently, two German investigators obtained the same results with prolactin injections, but they also described changes in the behavior of the fish, which began to act as if they were taking care of eggs or young. Without a doubt, there are biologists all over the world who would like nothing better than to have several of those Indian catfishes around so that they could inject some prolactin into them.

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Greater Pittsburgh Aquarium Society

At the May meeting the G.P.A.S. held a "Plant on the Month" competition, instead of the usual fishes. Four varieties of *Cryptocorynes* and some swordplants were on display. Competition was followed by a panel discussion of the plants shown.

AUGUST, 1964

PROGRAMS

Readers and societies are invited to submit ideas to The Journal for Aquarium Society meeting programs, including lectures, slides, films, demonstrations, etc. There is no charge for these listings.

"Saltwater Aquarium in the Home," a new 16mm film in color. Running time, 25 min. Rental: \$15. For information: Coral Reef Exhibits, P.O. Box 59-2214 Miami 59, Florida.

"Story of the Brine Shrimp," a 30-min. color and sound 16 mm film that also covers the tropical fish hobby. Rental: \$10. For information: San Francisco Aquarium Society, California Academy of Sciences, San Francisco 18, Calif.

"Fascinating Marinelife of the Pacific Northwest," a visit to the Seattle Marine Aquarium. 30 color slides 35 mm. Rental: \$5.00 plus postage. For information: Eric Friese, 105 NW 49th Street, Seattle, Washington 98107.

"Diane Schofield's Color Slides," a selection of different programs of color slides complete with commentary by Miss Schofield. Each program rents for \$5.00. Sample programs: "Familiar and Strange Fishy Little Faces," "Fish of India," "Fish of Hawaii," "Marineland of the Pacific," "Seeing the Seaquarium," etc. For more titles and information, write Diane Schofield, 739 E. Valencia St., Burbank, Calif.

"Killifishes," a slide-tape program created by Al Klee, Franz Werner, Richard Blanc and George Maier. The program is available for aquarium societies on the West Coast by contacting Alan Markis, 2607 Bryant St., Palo Alto, Calif. Midwestern and East Coast societies may obtain it from George Maier, 802 Belmont Ave., Chicago, Ill.

"Aquarist Adventures in Southern California," an educational tour of aquatic topics. Local fishes, field trips, fish shows, shops, hatcheries and Marineland with society programming in mind. 50 color slides 35mm. incl. 50 narrative "read cards." Directions. Rental: \$15.00 ppd. one way. For information: Gene Wolfheimer, 4549 Tobias Ave., Sherman Oaks, Calif.

Hazel Hall

(Continued from Page 374)

dots and only one row of bristles. All these "bushies" have worked out very well for me. They eat cooked food, liver, spinach and baby food, with relish, but they eat algae too. They never bristle up at the other fishes like a regular *Plecostomus*. Where does one find these bushy-mouthed catfish? With the exception of the black one I found mine in dealers tanks, passing off as regular *Plecostomus*. This may not be very re-

★ **I D E A S** ★

BY HOBBYISTS

The Journal will pay \$5.00 for original ideas published. Keep less than 200 words. Send your idea today!

Raising Infusoria

If you have trouble raising infusoria for the fry of egg layers, try this: Take a large, wide-mouth jar and fill it with water from your aquarium. Put in some dry grass and some debris from an old filter. In a few days the water will be swarming with microscopic organisms. On the other hand, you can make a culture with only one form of life in it. Boil some dry grass in water. Put this in a gallon jar and add enough boiled water to fill it about to the top. Let this stand for a few days. Order a culture of a large microscopic organism from a biological supply company. *Paramecium caudatum* or *P. multimicronucleatum* will do nicely. Biological supply houses such as Ward's Natural Science Estb. Inc. or Ward's of California have these cultures for sale. The cost for this will be about \$5.00. Add this to the culture medium to start your culture. To keep a culture going, make a culture medium as above and add a couple of drops of the old culture. The new culture will be ready to use in a few days.
— Robert Lee Williamson, Kansas City, Missouri. ◀

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warding. Many *Plecostomus* can be squinted at, but perseverance will finally pay.

Just last week I found a small bushy that had come in with a shipment of *Plecostomus*. The 15 gallon tank I put him in is already looking brighter. But never let it be said that these sucker mouth, i.e. bushies, will never harm plants for they do, but not in the same manner as a *Plecostomus*. They don't dig up plants, but they love to use, for their day-time hideout, the underside of broad leafed plants, such as Amazon swords and hearts swords, and in such instances they definitely damage the leaf, causing round spots to appear. Those spots turn brown and have to be pruned. However, in the process of "bushy cleaning" I don't believe there is much damage to plants. If any, it is slight. I have never had a *Farlowella* so can't comment on its algae eating habits.

The algae eaters that I have mentioned, and have working for me, I would recommend to anybody, but please remember that if you want efficiency from your algae eater, regardless of which ones you use, you will have to help out by using common-sense lighting practices. Don't expect impossible miracles from these fishes by leaving the tank lights on forever, or the tank set where direct sunlight hits in it for long periods of time. If such is your practice, my advice to you is to don't bother with the algae eaters and roll up your sleeves and use old fashioned elbow-grease on your algae. ▶

CLUB NEWS

Potomac Valley Guppy Club

The Fifth Fall Fish Fair of the P.V. G.C. will be held October 10 and 11, 1964, at the Arva Motel, Arlington, Virginia, according to Elliott R. Tracy, secretary. Those wishing to enter the show should contact Mr. Tracy at 2855 S. Abingdon St., Arlington 6, Virginia.

AQUARIUM JOURNAL

PRODUCT NEWS

"Lazy Susan" Fish Feeder

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parasitic infections and heals ulcerative skin infections; by intestinal absorption it aids internal disorders; and helps to regenerate split-tails and fins.

Two capsules with container and controlled drop-plug retail for 89c, and when put into solution are enough Vita-Trop for 3-months' use in a 10-gallon aquarium. A drop per gallon is added to the aquarium daily.

Distributors throughout the U. S. and Canada now have Vita-Trop in stock.

Mr. Rekow adds that fish require the same essential minerals, proteins and vitamins as other living animals. However, the intestinal tracts of fish—both small and large intestines—are very short, and are very close to those of a typical meat-eating animal. In fact, the digestive system is not long enough to allow any appreciable vitamin manufacture of bacteria in the intestines. This shortcomings in a fish's digestive system is taken cognizance of in the development of Vita-Trop by supplying the vitamins in a digestible form. ◀

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Simon

(Continued from Page 373)

Parfum at \$25 an ounce is better than perfume at \$3 an ounce. The best car is the one that costs the most. Mink is a better fur than squirrel because it costs more. Did you ever hear a golfer brag about how little his set of clubs cost? The tendency is so prevalent that many people get apologetic when they admit that something didn't cost much. "It's just a cheap little rug, we're going to get a better one as soon as we can afford it." And that's why it worries me to hear people brag how cheap a hobby keeping tropical fish can be.

Believe me, I don't advocate a hobby that tears gaping holes in your wallet; but at the same time I feel certain that when you say that tropical fish are cheap to maintain, you are lessening the desirability of tropical fish. For some emotional, illogical reason — cheap fish lack dignity, lack excitement.

Which do you value most — the six zebras that cost you \$2.96, or the mated pair of discus that you paid \$25 for? Isn't your opinion of the hobby higher since you replaced that \$4.98 vibrator pump with a \$24.95 piston pump? Doesn't your \$5 Madagascar lace plant have a lot more dignity than the clump of corkscrew val at 5c? If your answers to these questions lean towards the better in place of the cheaper, you will begin to see what I am driving at. I contend that prices don't matter much; it is the interpretation we place on them.

Value — not price — is the true criterion when judging the worth of anything, be it fish, food, or finery. An investigation into the so-called "bargains" and "cheap substitutes" to which the gullible hobbyist is exposed will generally reveal that the items being offered are decidedly inferior and, frequently, even lethal to fish. That bagful of fish you buy at a sale — "angels, 9c; guppies,

3c; mollies, 5c" — is sure to contain more tricks than treats. The survivors — and there probably won't be many — will give you a good opportunity to use up any bottles of ick and fungus remedies that have been sitting on your shelves. And if you want to replace filter floss with milady's discarded stockings that have been sudsed in frequent detergent baths — by all means, go ahead. But don't be too surprised if your tank of fish suddenly shows a high mortality rate, since detergent residues and dyes from worn stockings can prove fatal in an aquarium.

I think we got into the habit of talking "cheap fish" back in the days when most people bought a 29c bowl and put one goldfish in it, and we've never broken the habit. If we, as hobbyists, breeders and dealers, continuously emphasize to newcomers how cheaply you can keep tropical fish, then we are giving potential new fanciers the impression that tropical fish don't rate very highly after all, and perhaps it would be better to get a French Poodle for \$175. (By the way, did you ever hear anyone talk about a cheap French Poodle?)

Let's compare our hobby for a minute with one of the allied hobbies—dogs, for instance. Now, it is perfectly true that you can get a mongrel pup for nothing and feed it table scraps. But dog owners with full-breed dogs can hardly refrain from sneering at mongrels — and the mongrel owners themselves feel a lot better about their dogs when they can manage to spend a couple of hundred dollars a year on shots, collars, leashes, food and vet bills. It isn't really cheapness that attracts them, is it? It's the dog himself. The fact that it costs a great deal to maintain that dog the way "everybody" maintains a dog, instead of detracting from the owner's pride — as sheer logic would dictate — adds to his pride.

AUGUST, 1964

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I contend that Americans do not value "cheapness" at all. Thus, it is wrong to emphasize the cheapness of tropical fish. Several noted race horses in the past few years have sold for over a million dollars each. Has this lessened the desire of millions of Americans to own a race horse, or a stable of them? Instead it has probably added a little booster that urges a few million more Americans to covet secretly the day when they, too, can afford a race horse. Thoroughbred horses have stature, dignity and excitement.

Collecting diamonds is probably a lot of fun. I've never tried it. But even diamonds don't dash and dart about and reflect all the colors of the rainbow, or reproduce themselves with intricate courtship dances. They do have prestige. I'll have to admit. I wish tropical fish did.

Many tropical fish stores have closed up in the past few years. Many are skimping along on a bare subsistence level, unable to risk a nickel on any progressive moves to promote public interest in tropical fishes. The profit motive in tropical fish is so minimum that the retail business does not attract the kind of alert, aggressive people with new ideas who are absolutely necessary to supplement the work of the aquarium societies and individuals. What kind of impression does this leave with you?

(Continued on Page 414)

CLUB NEWS

Toledo Amateur Aquarium Club

The T.A.A.C. announces its 31st Annual Show scheduled for September 5, 6 and 7, 1964, in the Aquarium Building of the Toledo Zoological Park, Ernie Lange, show chairman, announced. The show judge will be Max Holmeister, Curator of the Aquarium Building. Those interested contact Mr. Lange at 1703 Heatherdowns, Toledo 14, Ohio.

Scheel

(Continued from Page 400)

bryos was normal. After the hatching, the hybrids were very feeble and some were bad swimmers whereas others "lost their air" and rested at the bottom. All died before maturing.

Once more, this female was crossed to the fish that has been kept first under the name, *A. striatum*, then (USA) *A. lujae*, then *A. cameronense* and at present again, *A. striatum*. It comes from the Congo River north of Leopoldville. Only three eggs were obtained. Two eggs developed and hatched but the fry did not grow. At the age of six weeks, they only measured 8 to 10 mm. After some time, they died. Next, the female *cinnamomeum* was crossed with an unidentified *Aphyosemion* from the Ndiar River, north Camerium. Morphologically, it also is close to *A. cameronense* and it is not possible to separate these two forms. It may stand rather close to *A. nigerianum*. I obtained 31 eggs, 22 of them being fertile. Normal development and hatching was observed. These hybrids were rather feeble also and were difficult to raise to maturity. At the time of maturing they developed different colorations. Some were weakly colored males whereas others developed mostly into females but with more color than normal within this genus. Later on, they developed a more and more malish appearance. After maturing their coloration, the hybrids were more hardy and most lived for more than one year. Some hybrids of the male type had yellow edges on their unpaired fins, others had no yellow.

At present, it is very difficult to place *Aphyosemion cinnamomeum* in the right niche inside the genus *Aphyosemion*. From what could be seen from the crossings, the behavior, color patterns, etc., we probably have to place this form as a blind outshoot from some form close to *nigerianum*.

A. cinnamomeum is a bottom living form. It takes time to train this fish to come to the surface to take fruitflies. In such situations, the fish rush to the surface, catch the fly and rush down again. Compared with *nigerianum*, this species is more peaceful but matured males will fight violently. Unfortunately, it is not a robust fish like *nigerianum* and tuberculosis and oodinium may kill your stock if you are not careful. We have kept this species in slightly acid water of zero hardness and in our ordinary tap water which is alkaline and has 15-20-DH. In the water type first mentioned, the fish will spawn and eggs will develop but disease may be a problem. In the latter water type, the eggs normally will spoil but the control of disease is much easier. We always use peat as a bottom layer, dim lighting and a temperature between 68-78° F.

Spawning normally takes place at the surface of the peat. However, if one separates the two sexes for a week or so

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and then forms the breeding team, spawnings mostly will take place all over the tank at any water level and even into the *Riccia* at the water's surface. The percentage of fertile eggs is often rather low when breeding this species. The reason for this seems to be found in the water type used. Calcium ions probably should not be present, not even when the water type is acid. Peat-loaded water seems to improve the results. As the percentage of fertile eggs often is higher in the crossings when a female *cinnamomeum* is used, it may be the sperm which does not adjust to the water. Several males suffered a thyroid condition and became sterile. I used an iodine-bromide mixture without results.

The eggs measure 1.5 mm and have a very conspicuous reticulated surface pattern. When taken out for wet development in small glass containers, they nor-

mally do not show any delay in development. However, normally eggs do not hatch when ripe and it is often difficult to force the fry to hatch. Drying of the bottom peat for four to six weeks gave the best results so far. One egg receiver during 1963, Mr. Johannes Franz of Dresden, raised three males and four females. Maturing started at an age of four months, and a size of 35 mm. Spawning took place at an age of five months, but even at that time, the males were not able to fertilize the eggs. At last, at an age of six months, fertile eggs were harvested. Most eggs were resting eggs, i.e., their development stopped just after fertilization. The delay in development was more than eight weeks. Franz used a water of 6 DH and best results were 70% fertile eggs. My own females produced up to 80 eggs each spawning after one week's heavy feeding. ◀

Letters to The Journal

Claus Stranger-Thorsen
Oslo, Norway

To introduce myself I should like to add that I am presently secretary to the Norwegian Aquarist Association as well as to the Oslo Aquarist Society. Our hobby is for the moment feeling the draught because of a higher standard of living. With T.V. and increasing numbers of cars as heavy competitors, we are only a few of diehard enthusiasts left who hang on by the skin of our teeth, hoping for a revival of our dear hobby. In Norway we have for the present no periodical but we are very luckily working in close contact with the Swedes. They have a very good little magazine "Akvariet" which incidentally claims to be the oldest in the world. Most Norwegians read Swedish and quite a few of the authors and contributors are Norwegian. Also, we have a hobby "effort" done on a "spirit-

reproducer" sent at irregular intervals to the clubs that are members of the N.A.A. For a nation dependent on fisheries there is a great lack of public aquaria. We have one on the West Coast in connection with the University, but they work only with food fishes and neglect tropicals. In Oslo we have a committee working on a public aquarium. The money has been collected and the plans are more or less clear, but alas, certain politicians have entered the project and very little is being done effectively now, shame to say. I do not believe that the aquarium hobby will flourish here until a public aquarium makes its appearance. In one of Oslo's suburbs some enthusiastic hobbyists have formed a society called the "Boeler Aquarium Society." They are planning to have a show in near future. That is also one of the best means to make our hobby known. This is a little to let you

know how we in Norway fight to maintain our hobby. We hope that we will be able to revive and prosper as soon as our people become accustomed to the current wave of prosperity. People now prefer to be entertained than to have an active hobby.

• • •
From: Ercan Ynalan
Ankara, Turkey

Though I have bred blue gouramis more than 10 times, I have not been able to keep them alive more than 10 days. I have fed the fry with the only available food, infusoria, but within a week 99% of them were dead. Water was "normal," heating and lighting were correct. I don't know why I could not keep them alive. Is it because of food or plenty of snails? What food do you suggest? How can I prepare dry food for the fry younger than 15 days old? The above is one of the snails in the breeding tank, how can I dispose of them?

REPLY: *The snails should not be the cause of death for all your young. Per-*

CLUB NEWS

Chicagoland Aquarium Societies

The five major aquarium societies of the Chicago area pooled their efforts in the exhibition at the Chicago World Flower and Garden Show at McCormick Place, March 7-15, 1964. Total attendance at the show exceeded 350,000 persons. On display were over 270 tanks, consisting of ideal and novelty aquariums, guppy and betta competition, marine displays and special exhibits. One of the major attractions in the special exhibits was the "Tropical Fish from Around the World," measuring 14 ft. high and containing 26 two-gallon tanks with a different species of fish in each tank. When a light went on above each tank containing a particular kind of fish, another light went on at the particular spot on a large map. This second light indicated the habitat of the fish. ◀

AUGUST, 1964

haps they could kill a few weak ones but not all by any means. I simply try to keep the snail population down by picking them out, either by net or hand. It would be hard to say what kills your fishes but as you suspect it is probably insufficient food. Do your young grow at all or do they simply starve? If you have good infusoria culture and feed the young three times a day there should be no trouble. Dry food for young at that size usually does not work well. It must be "powder fine" and slowly become wet and fall slowly to the bottom. However, dry food feeding almost always produces great fry mortality. I suggest you try several ways to produce infusoria cultures. Use several different plant materials. Feed young from cultures in which you can barely see organisms swimming with your naked eye. If there is only a "dull grey cloud" present, you probably just have bacteria and not the necessary "food sized" micro-organisms. Most important, feed at least three or more times a day.

• • •
From: Richard E. Dubois
Las Vegas, Nevada

Congratulations on your article Photographing Tropical Fishes. I had a letter ready to go asking just how it was done. A photographic record of one's achievements allows for quick reference to see if you actually are improving your stock as it is almost impossible for you to remember what your original stock looked like. I have only fancy guppies and have been a serious hobbyist for about a year. I now have good stock to begin a strain with thanks to your recommendations a few months ago. I have been doing a lot of reading and have bought almost every book published on guppies. However I have found that some authors disagree on a few points: 1. Do frayed tails result from acidity or alkalinity? 2. Are plants of value other than good looks when large traps are used? 3. I use 30 watts of light per 10 gal.

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tank, 40 watts per 30 x 12 x 12 and 60 watts per 30 x 12 x 18. How many hours should these lights be on? 4. Is it true or false that young male guppies that begin to show color first will not be as good for breeding as the slower color developing?

REPLY: 1. No, not directly. Usually frayed tails are due to attacks of other fishes or a disease. If in a few rare instances a fish is weakened because it is not adaptable at all to, in some cases alkaline or in other cases acid waters, it may become weakened and subject to disease. More often the disease is fin rot, introduced by infected fishes or water plants. In guppies old males with long fins sometime get frayed tails. This is simply a result of age and the mechanics of swimming. 2. No. 3. Despite published formulas, it "all depends." If your tank is crowded with plants, I would say at least 12 hours or more (for the plants), if not so crowded, just 8 hours. However, what kind of plants do you have? Light requirements differ greatly for different plants, once again, it "all depends." For most fishes, a good 12 hours daily is all that is necessary. 4. Not necessarily, although those that show color early will usually mature early and remain smaller.

*From: Patrick F. Travers
Chicago 44, Illinois*

I have a small aquarium in which I raise swordtails and guppies. I recently

CLUB NEWS

Stanislaus Aquarium Society

More than 3,000 persons attended the Fourth Annual Tropical Fish Show and display held by the S.A.S. in Modesto the weekend of June 12. The show featured 140 tanks of colorful tropicals, fancy goldfish and California freshwater fishes, according to Dr. James A. Porter, chairman. ◀

acquired 2 catfishes. One of them has gotten very large and it will spawn. I have inquired in all pet stores around here and they could tell me nothing about how I can raise these catfishes. Any information you can supply me with, would be appreciated. They are cream colored and about one and a half inch long.

REPLY: Many catfishes are difficult to spawn, even if they fill with eggs. Therefore, you cannot be sure they will spawn. Since I do not know the identity of your catfish I can tell you little about how they might spawn or what to do about it. There are many species of catfishes in the world and at best over 100 have been kept in aquaria in recent years. The description you give isn't enough for me to identify them. ◀

Simon

(Continued from Page 410)

That the retail tropical fish business is at best a rather shady enterprise? Does this generate enthusiasm in you for your own aquariums, or does it make you apologetic?

The only solution I can see is for all of us to make an assessment of how much tropicals mean to us, and then to resist the pressures to see how cheaply they can be obtained. Don't even mention the word "cheap" to anyone else. Let's get out and promote tropical fishes the way they deserve to be promoted — as a hobby of great interest, great beauty; a hobby of deep satisfaction out of all proportion to costs in time and money; a hobby that anyone can get deep rewards out of, no matter how much or how little he has to spend. Let's concentrate on how beautiful and exciting tropical fishes are — not how cheap. ◀

— (Reprinted from "The Wet Pet Gazette," Norwalk, Conn., Aquarium Society)