

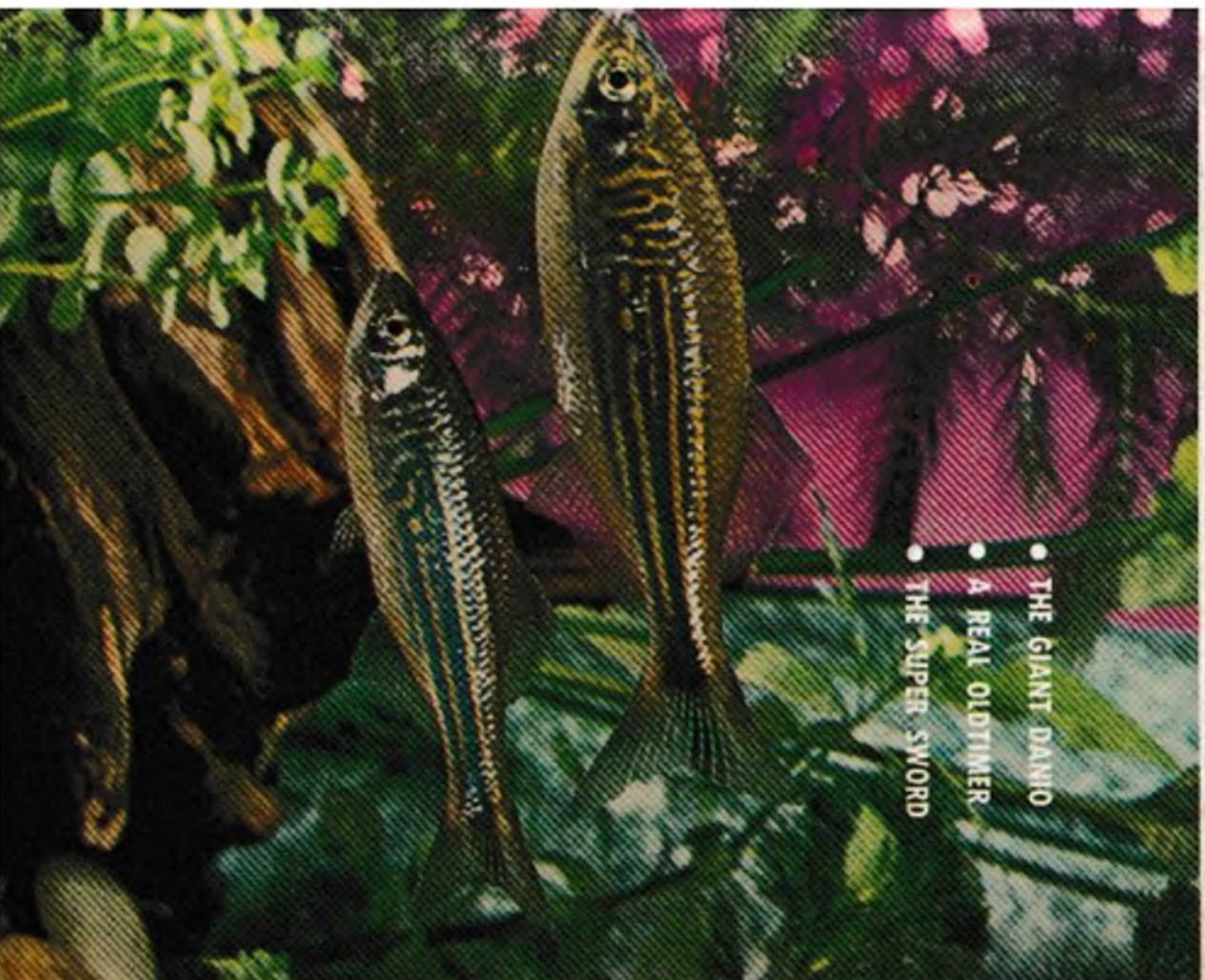
THE

# AQUARIUM

JUNE, 1969  
VOL. II NO. 8

British Isles 2/6 DOMESTIC 35¢

- THE GIANT DANNO
- A REAL OLDTIMER
- THE SUPER SWORD







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# THE AQUARIUM

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COVER

Andrey Roth used a Bronica/S2 camera with a 75mm Nikkor lens to capture this beautiful pair of Giant Danios. (Additional credits appear on page 69.)

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## THE GIANT DANIO

FROM SUNNY OPEN PONDS and streams in India the Malay Peninsula, and certain islands in the Indian Ocean, come a small group of cyprinid fishes commonly known as danios. Slender, graceful and of attractive color and pattern, they occupy a unique position in the aquarium world in that they are the only common aquarium fishes which are constantly in motion in the tank. In the large community aquarium, to which they are ideally suited, their endless travels back and forth, their quick, graceful executed turns as they reverse direction, give life and color without which the underwater picture is not complete.

Roughly there are four sizes of aquarium fishes. These might be represented by guppies for the smallest, platies for the next largest, the giant danio for the third, and the larger cichlids such as the zebra cichlid (*Crotalaria nigrofasciatus*) standing for the type of big ones. This classification may be open to argument as it ignores the really tiny fishes such as the mosquito fish and the enormous fishes such as the Oscar, but at any rate it gives the reader a fair idea of the size of the subject of this article. A large, hungry giant danio, although in general nature a peaceful fish, is liable to swallow a neighbor the size of a small male guppy. The size and shape of this fish also suggest the need of plenty of swimming room. Unless the tank is of at least 10-gallon size, it is best not to try this fish.

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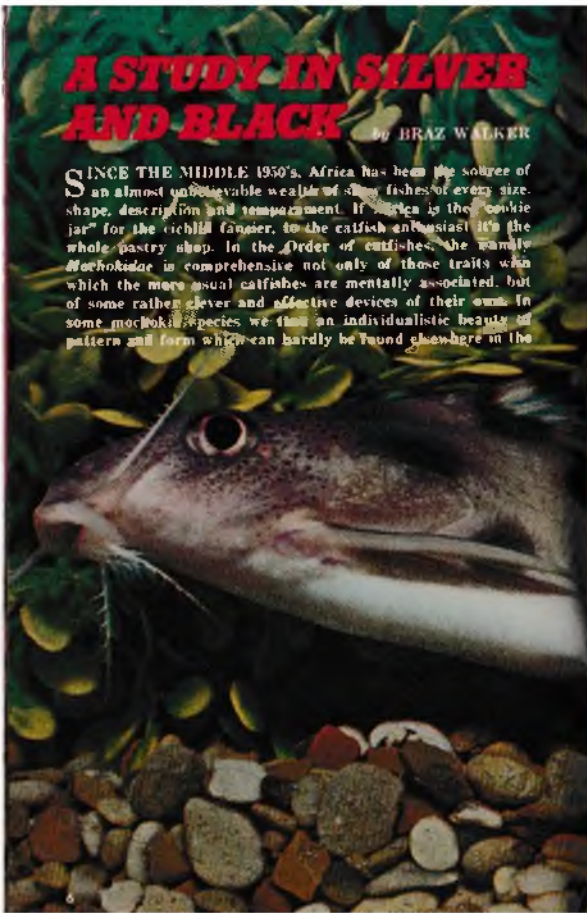




## A STUDY IN SILVER AND BLACK

by BRAZ WALKER

SINCE THE MIDDLE 1950's, Africa has been the source of an almost unbelievable wealth of new fishes of every size, shape, description and temperament. It is often the "cookie jar" for the cichlid fancier, to the catfish enthusiast it's the whole pastry shop. In the Order of catfishes, the family *Mochokidae* is comprehensive not only of those traits with which the more usual catfishes are mentally associated, but of some rather clever and effective devices of their own. In some *mochokid* species we find an individualistic beauty of pattern and form which can hardly be found elsewhere in the



world of fishes. One of nature's more striking examples of beauty through-simplicity is *Somodontis decorus*, native to the upper Congo region.

The *Somodontis callihues* are commonly referred to in the aquarium hobby as "upside down catfishes" because of the rather novel manner in which some species swim. Through a progressive re-orientation of the gas bladder, the center of gravity of some species shifts as the creature ages and makes an inverted swimming position as easily maintained as the more conventional dorsal-side-up attitude. So strongly has environmental adaptation, or perhaps chance, influenced some *Somodontis* species that a reverse pattern of coloration has evolved, and such creatures have assumed a dark belly surface contrasted with a lighter dorsal side. *continued on page 74*



## A REAL OLDTIMER

By BRAZ WALKER

QUITE A NUMBER OF YEARS AGO, I recall being somewhat amazed upon seeing my first specimen of *Anostomus anostomus*. Having kept several of the little pencil fishes, at first glance *Anostomus* seemed almost to be a specimen of *Nannostomus trifasciatus* with a thyroid condition. Instead of an aquarium parallel to Gulliver and his Lilliputians, however, the resemblance of *Anostomus* is merely superficial as far as the pencil fishes are concerned since this is a representative of another South American family, the *Anostomidae*.

The name, *Anostomus*, means "turned-up mouth". This is characteristic of most of the anostomids and in some genera is quite exaggerated. Portions of the fins of *A. anostomus* are bright red, including the little adipose fin, and the brownish to black longitudinal stripes vary in intensity against the whitish to golden sides. These variations can be due to age, lighting or conditions as well as some variation between individuals.

Although the prices of *Anostomus anostomus* have never been really low, the attractiveness and oddity of this fish have always made it a good seller. A mythological reputation for peacefulness surrounds the creature, probably because of its easy-going pace of life. A more appropriate word than "peaceful" would possibly be "sneaky" for in a large aquarium and conditions to its liking, in the presence of this and many anostomid relatives, flowing fins somehow mysteriously grow shorter. Often the fins of such adequately self-defensive fishes as *Cirrhilabrus* species may become a bit ragged. Some of this foul work is done with the blatant abandon of a thief who works on the premise that if you act like you know what you're doing, you can steal anything in the house. This fish habitually grazes along the leaves of natural and artificial plants, nibbling at algae and other organisms present there, and it will often graze right off the end of a plant and onto a nearby fish fin. A rear-end approach is usually employed, and some fishes in the aquarium usually manage to keep a weather eye peeled for the approach.

This is not meant to discourage those who might be interested in keeping this species, for little damage results from these ordinarily petty

*continued on page 44*



## TRADING, SHIPPING AND RECEIVING FISHES

By  
LINDA GALE

**T**RADING FISHES IS AN EASY, foolproof way of acquiring "new" species — if done properly. However, in order to retain the friends that you make through long-distance trades, there are two standards which you must maintain:

1. Never "oversell" your prospective trades.
2. Always be sure that the fishes you send are in good health.

The biggest difficulty in trading fishes with other hobbyists is that of locating the aquarist with the right fishes. If you specialize in a certain family or species, you should try to contact the various organizations that cater to them. If this fails, check through the back issues of aquarium club publications. When you find an article on the species or related species of fish you are interested in obtaining, write a letter to the author in care of the club. It may take some time for the letter to sift its way to the addressee, but most clubs are quite good about getting mail to their members. If you are not a member of an aquarium society, check *THE AQUARIUM'S Societies at Work* column for possible leads. When this fails, contact your local zoo librarian, or inquire at your local library. Quite often, club publications are sent to both these sources.

When you believe that you have located the fishes you desire, write to the hobbyist, explaining that you are searching for a particular species. Be very specific about the correct Latin name for the fishes in which you are interested and those which you offer in trade.

If the fishes that you offer for trade are not too well known, give a detailed description of them: their scientific names, size, number of each species, number of males and females (if sexable), whether they have spawned before (if mature) and a good general description. Be sure to include the size of the tank in which your fishes have been kept; for some species this is important. State the fish's approximate age, and the temperature, pH and hardness to which they have been acclimated.

Remember that you will want pairs of some species, trios of others; tell the correspondent just how many males and females of a certain species that you want. If you trade for young, unsexed fishes, you should request a minimum of six, twelve would be better, to insure



Pure oxygen is the best method for filling bags for shipment. Although an air-line, unhooked from a tank and placed into the bag, is suitable.

that you do get at least two-three pairs, or trios. Five will insure a good chance of one pair.

All of the information that you give the other hobbyist is important, as it may determine how well your prospective trade will go. It may take a few letters before the final trade has been agreed. Once agreement has been reached, the task of shipment procedures are begun.

Most fishes are sent *air mail special delivery* if any great distance is involved. For shorter distances, check with the freight department of cross-country buses. If very few transfers are made, and the trip can be made in a few hours, this method of shipment is less expensive than air mail. Air freight may be used, but there is a minimum charge which will quite probably be double that of air mail shipments. When cross-the-nation shipments are involved, we prefer to use air mail. Most shipments are received in 24-hours or less. Special delivery packages cannot be delivered outside certain postal areas. Check with your local post office and ask your trading hobbyist to be sure that he can receive special delivery shipments.

Determine when air mail packages leave your post office. Decide on

the date and time that it would be most convenient for you to mail the package. Ask when the addressee can expect delivery. Always plan shipments to go out between Monday and Wednesday. If sent later in the week, the fishes might be fatally delayed over the weekend.

Write to the other hobbyist and include all the shipping information above. Remember to include the date of shipment if you are to ship first. Set a date in the future for shipment, and allow at least one week for your letter to reach the hobbyist and for receipt of his reply. It is important that the hobbyist be expecting the shipment so that he can be at home to receive it or make arrangements for it to be picked up at the post office. If the hobbyist cannot receive special delivery packages, the shipment can be mailed "plain" air mail. Advise him of the day when he should expect shipment. Give shipping water conditions (pH and hardness) to allow him to prepare a tank for his new arrivals.

Be sure to have the other hobbyist send his telephone number, and include your own in your letter. The post office can immediately contact him by telephone, upon arrival of the shipment. This last bit of information, to be noted on the package, may save the life of the fishes if an unexpected delay occurs.

While awaiting his approval for shipment, a shipping container can be "homemade" or purchased. Any container which is not completely air-tight — which allows some air to penetrate — can be used. Containers should be made of a material that will not allow fast temperature changes. If you are to ship a large amount of fishes, a dealer may sell or give to you one of his shipping containers. If you are shipping only one or two pairs of fish, you can purchase small styrofoam ice-chests at local variety stores. The container should be as small as possible, to save shipping costs, yet not so small that the necessary amounts of water and air would be shorted. The shipping containers should always be enclosed in a sturdy cardboard box to avoid punctures of the container and bags of fishes.

Containers can be made at home at little expense. They have the advantage in that they can be made in the exact size needed, thus saving extra shipping weight. Choose a sturdy cardboard box. Line it with one-inch-thick sheets of styrofoam, cut to form a bottom, sides and top. Styrofoam is often used to pack appliances, and you may be able to find usable pieces by browsing around furniture, appliance or plumbing stores when equipment is being uncrated.

Sheet insulation as used in the construction of houses can also be used. Soft, fluffy and easily molded to fit a box, Fiberglas perimeter insulation, about one-in-thick, allows retention of water heat and cushioning from shocks. Be sure that any insulation used will not

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## VIEWS AND REVIEWS

*The Salt Water Aquarium Manual, by Robert V. Valenti, Aquarium Stock Company, Inc., 31 Warren Street, New York, N. Y. 10007, 185 pages, 138 illustrations, 107 in color, price \$5.95. Reviewer: A.K.Lee.*

The Aquarium Stock Company of New York has added to its list of endeavors yet another of its privately printed books detected solely to aquarists (an earlier entry well known to discerning hobbyists was Nachreut and Tuschke's *Breeding Aquarium Fishes*. For this, they certainly are to be commended.

*The Salt Water Aquarium Manual* is authorized by Robert V. Valenti, presently a research assistant with the Osborn Laboratories of Marine Sciences, a distinguished research organization prominent in the field of marine biology in the New York area. Mr. Valenti is also affiliated with the American Museum of Natural History and the Department of Marine Sciences at Long Island University.

The book is divided into five chapters, viz., a general discussion of the marine aquarium, the nature of salt water itself, marine plants, marine invertebrates, a short catalogue of marine fishes, and diseases

of marine fishes. Each chapter is followed by an excellent bibliography which should be of great value to those aquarists desiring to explore the literature on their own.

Without reservation, the book is well worth the money. Valenti, while not a writer in the exciting style of an Alan Fletcher, the personal involvement of a Robert Straughan, or the empathy of a Helen Sinkovits, imparts knowledge well. For such a small book, its information content is nothing short of remarkable. Without making a fuss, Valenti destroys several aquarium myths that should have been abandoned years ago. He points out, for example, that charcoal or activated carbons lose their capacity for removing dissolved gases within a few days of use, and is reduced then to serving as a fine filtering material only. But Valenti notes that this is indeed a useful property, one upon which the material can stand alone. He also cautions that indiscriminate killing of marine bacteria (as for example, via prolonged application of ozone) may do more harm than good since beneficial denitrifying bacteria will be killed in the process also. His explanation of mimicry among ma-

rine fishes is excellent, as is his discussion of the "biological clock".

Of the 107 color illustrations in the book, about one-half are by the author himself. This is unfortunate because, regrettably, they include some of the worst this reviewer has ever seen published. (For the most part, Mr. Valenti's camera sees but one color — yellow.) However, a good deal of the photography is rescued by the brilliant work of Douglas Faulkner. Indeed, his name should have been included on the title page as befits an important and significant contributor, as his photography clearly narrows the gap between mere skill and art.

Where *The Salt Water Aquarium Manual* can be faulted is in its surprising carelessness. There are numerous misspellings and improper use of trade names (pg. 33, for example), illustrations sans credits, and incorrect employment of scientific abbreviations (e.g. pg. 139). A section entitled "Sexing Marine Fish" (pgs. 131-132) has nothing whatsoever to do with that subject at all. Mr. Valenti is uncertain as to whether the plural of fish is "fish" or "fishes"; he employs both. The classification used (pg. 85) is after Berg (1940), an outdated, outmoded approach which the author could have profitably deleted.

On page 25, the author confuses pH with alkalinity and, along with many others, thereby confounds a measure of ionic dissociation with that of the buffer capacity of a fluid. It would have been useful, furthermore, had he pointed out the possible hazard to the aquarist of *Conus* (pg. 69), and supplied more information about the spinal cutting practiced by some shippers, rather than just noting it tersely in a caption (pg. 148). In the main, however, these difficulties are more annoying than serious, and we rec-

ommend it to the marine hobbyist, be he fledgling or veteran.

This past winter has been an exceptionally hard one for Florida fish farmers. Now that warm weather is here again, it seems easier somehow to appraise a letter we received from Ross Socolof, of Bradenton, Florida (Ross Socolof Farms, Inc.), last December 17th (1968):

"Today is the second day of a very hard freeze in Florida. The low this morning was 25 degrees and this is the same temperature we have had for two days. Hopefully, it will come up today. The water temperature is at present 49 degrees in the outside pools. As you know, we run warm water into the pools from deep underground wells that have consistent year-round water temperatures of between 72 and 74 degrees. The fish will gather under this stream of warmer water and in checking, I find that the temperature under the stream of water will be anywhere from 4 to 8 degrees warmer than the surrounding water.

"The statement that I am about to make is that the fish that are today alive under the circumstances described above, would most certainly have been dead five to ten years ago. The observation that I make, and I have kept careful records for many, many years, is that we have gradually developed a strain of livebearers in Florida that is resistant to cold. This is nothing more than Darwin's principle of 'survival of the fittest', and it was not done on purpose but evolved naturally through attrition in previous cold periods.

"There is no question in my mind that this has happened, and the living proof is visible at the moment. I do not know to what extent this particular freeze will affect the crop this year, but as we are the

southernmost major farm on the west coast, I would think very little. This particular cold spell is the second coldest in the last twelve years and, as far as I can see, we are almost unaffected to date by the cold. The vast majority of my unskid crop may be dead by tomorrow, but the point I make now is that it is alive at this writing, and would most certainly not have been alive if these same type of fish were subjected to this environment ten years ago."

Ross also passes on the story of one of the fire eels (*Mastacembelus erythronemus*) they sold to a customer. Evidently, the fish at one time had been caught on a hook and line in its native habitat of Bangkok, Thailand. The hook and about three inches of line passed through its body, and the manager of the store to which it was sold noticed the ends of what looked like a piece of fish line trailing from the anal opening. In due time, the fish passed both line and hook, and appeared none the worse for the experience. With his typical whimsy, Ross writes: "For your collection and verification of this above factual occurrence, I enclose as my New Year's gift to you the actual evidence — one hook plus three inches of genuine Bangkok fish line!"

Some time ago, while reviewing club publications, *The Aquarium* took a rather dim view of what appeared to be a report of disposing of an unwanted fish, live, via flushing down the old commode. Dick Ibeling, a member of the North Star Aquarists and author of the report in question, dropped us a line and apologized for creating the impression that this had actually happened. Dick does not actually dispose of a fish unless it is dead.

This is a good opportunity, however, to once again remind aquarists that there are better ways to dispose of unwanted fishes. Large (in the aquarium sense) fishes are killed by a quick and forceful throw to the floor (a hard floor). Smaller fishes can be given away to those who maintain large, predatory fishes so that the latter can do "what comes naturally".

While on the subject of correcting wrong impressions, one magazine recently stated that the 1963 Rosen and Bailey revision of the poeciliid livebearers was reviewed by Dr. Rivas and that the latter "presented his opinion that the names *Lebistes*, *Limia* and *Mollisnesia* should be retained". This is not true. What Rivas actually said was: "In this writer's opinion, the lumping of *Mollisnesia* and *Limia* with *Poecilia* is not justified". In short, no ichthyologist has criticized the Rosen and Bailey inclusion of the guppy in the genus *Poecilia*, and as it stands, this is the recommended genus for the fish.

The following account is hard to believe in this day and age, but it is well documented in Ohio newspapers and television. Cletus Switzer, of Morrow, Ohio, drove to Canada and purchased about 3,000 walleye pike in March of 1968. The fish, legal size in Canada where the legal length is 14 inches, were purchased at Tilbury, Ontario, and brought through Michigan and into Ohio where the legal length is 15½ inches. Switzer brought the fish to Ohio for restocking in a private lake in Hamilton County. Before he could do this, however, he was arrested by representatives of the Ohio Wild Life Conservation Department on charges of possessing

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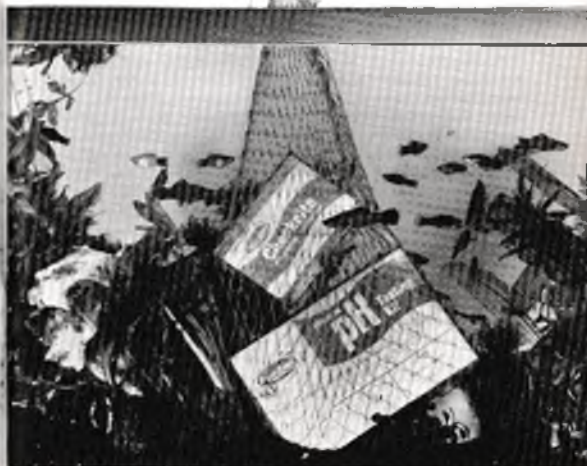
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## Societies at Work

By  
HELEN SIMKATIS

*Bumblebee Bulletin* No. 15, published by the American Cichlid Association, reflects a busy and growing society with some of the headaches that attend a club that is relatively young and thriving. Cichlid buffs will find this issue filled with exciting material and in that they make up a large group within the hobby, the AMC's publication satisfies a definite need. There is no doubt that running an organization exclusively through correspondence, occasional meetings, and conventions entails a great deal of effort on the part of the participating membership, but if the interest we see in cichlids from our mail can be translated into good organization and a dedicated hard-core, there is reason to believe that the ACA is well on the way to success. It is good to see articles by writers such as Dr. R. J. Goldstein and Dr. Henry Lee appearing in this issue. Both men have made substantial contributions to cichlid literature in the past and their efforts should serve as an inspiration to still unheard voices who have much to share from first-hand experience with fellow hobbyists in this area of the fancy. Dr. Goldstein's piece is entitled *The Rift Lake Cichlids of Africa* and in it he gives a history of the discovery and first accounts of what have come to be called the Nyasa Cichlids but which will be referred to in the future more often as Malawi cichlids in that Lake Nyasa has been renamed Lake Malawi. He cites the papers that were originally written on these species and promises us that "aquarists haven't even scraped the surface of what these lakes [Lakes Malawi and Tanganyika] (not to mention others) have

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to offer." An editor's note to this article explains the difficulties of exploiting these lakes and the problems involved in transporting specimens in good condition to shipping points. Dr. Henry Lee's piece is comprised of, and entitled, *Excerpts from a Letter on P. Auratus* from him to Editor Linda Gale. It is a study of behavior and spawning procedure, with a substantial Editor's Note comparing observations and experiences. Both Dr. Goldstein's and Dr. Lee's articles are reference material for those hobbyists interested in the respective areas of cichlid lore. Inquiries regarding membership in the American Cichlid Association should be directed to Guy D. Jordan, 6548 Celia Vista Drive, San Diego, California 92115. Trading Post Wants and Haves, "bits of information", and articles should be directed to Editor Linda Gale, 125 S. W. 7th Street, Moore, Oklahoma 73060.

Recently we received both the January and February issues of the Hamilton & District Aquarium Society's *Monthly Bulletin* which we haven't seen before and, in that there is no volume number given, we cannot tell whether it is just making its appearance or has been published in the past and we just didn't happen to see it. At any rate, it presents an excellent format, an attractive cover, and good typography. It contains a number of short and concise articles and a number of well laid out advertisements. We were somewhat startled to read the following *Hint*, however, in the February issue: "Try using half boiled and half rain or distilled water in the breeding tank — you may find your batch of eggs will produce more adult fish." We were reminded of an ad purported to have appeared in an urban newspaper: Elderly Chinese gentleman desires to meet elderly Chinese lady. Object: elderly Chinese children. This is, however, a well produced bulletin and we hope we have the pleasure of reviewing future issues. Write to the society in care of Leonard Andrews, 32 Brentwood Drive, Stoney Creek, Ontario, Canada for information regarding the society and its publication.

The old adage "The way to a man's heart is through his stomach" was a bit of advice to nubile maids in search of a mate. It apparently applies to fish, too, for we learn that the ban on the importation of members of the family Clariidae has been lifted in Florida in that fishermen have reported that *Clarias* is delicious "fresh from skillet." This morsel of information comes from the January issue of *Aqua-Focus*, in an article by Tina Mann entitled *Long Live the Albino Clarias!* Editor Leona V. Bradley footnotes the piece by saying, among other things, that she picked it up from *The Trader*. Upon reading Author Mann's article, we are once more reminded that Chicken Little had to be a very close relative to man and that Diogenes had considerably more chance to find an honest man than an honest reporter. It seems that the albino *Clarias* was first maligned by a fish biologist who, at first blush, reported the species had no natural enemies in this part

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of the world (which he later retracted), and that its escape from captivity into the waterways of southern Florida spelled disaster to the balance of nature in that area. Reporters were happy to have such an exotic subject as a strolling, impervious, vagabond fish, and embroidered the tale to the degree that any columnist, beset by a lack of newsy material, eagerly picked it up, supplying new embellishments of his own of a most creative nature. Any good aquarist knew that this was something that shouldn't happen to a fish, but no one from the fourth estate consulted an aquarist about it. In fact, soon *Clarias* was purported to be a fish that took extensive jaunts on land, attacked small dogs, nipped the ankles of strolling elderly couples, and was in the process of carrying on its own population explosion with remarkable success. At any rate, we are happy to report here that the *Clarias* bubble has been pricked and now columnists and reporters will have to search elsewhere for a colorful subject to which they can add their own hues. Edward Vielmas gives an account of his aruana in an article entitled *My "Prized" Fish* in this same issue and Editor Leona V. Bradley footnotes it by saying this species must be registered in Texas as it is listed as one of the "least wanted fish" in that state. This specimen was acquired by the author when it was 6 inches long and was kept originally in a 15-gallon tank with a whip-tail catfish but has now been graduated to a 50-gallon tank of its own. We are warned by this piece that the aruana is a talented escape artist to its own detriment (this specimen brushed with death twice because of this questionable ability). It accepts frozen brine shrimp, beef heart, and shrimp, along with supplements of live minnows. *Aqua-Focus*, of course, is a surprise package every month, and this issue (January) is no exception. For instance, there is an account of the discovery of the coelacanth in South Africa, there is a rundown by Henry A. Nichols, F.A.I. (a regular contributor) of how biologist Ferdinand S. Ruth of the University of California is promoting education in the field of what he calls "ecological awareness," and coverage of the tropical fish hobby in Japan. To review all of this provocative material carefully would take more space here than is provided this writer for all the society bulletins combined, but we must take the liberty to say that *Aqua-Focus* is a phenomenon in aquarium literature that should never be taken for granted. It is produced by Editor Leona V. Bradley and information regarding it and the publishing society, Aquatic Researchers of San Antonio, should be addressed to Editor Bradley at 301 Blanco Road, San Antonio, Texas 78212.

*Michiana Tropical Times* is a new bulletin to us and must be fairly new to everyone in that the publishing society, the Michiana Aquarium

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## WHY IS MARINE FISHKEEPING SO DIFFICULT?

by B. F. CHHAPGAR

**T**HIS QUESTION HAS BEEN RAISED by many an aquarist who, fascinated by the beauty of the denizens of the sea, has switched over from freshwater fishes to marine creatures. To understand why, it is first necessary to know some of the basic properties of sea water.

Nowhere else on earth are conditions so unchanging as in the sea. The creatures inhabiting this stable environment have become so accustomed to it, that they are intolerant of change. This would not have mattered had sea water retained its capacity to remain stable. However, unfortunately for the aquarist, once it has been removed from the sea and is no longer part of an infinitely large body of water, it begins to change. The only way for the aquarist to keep fishes healthy is to slow down the rate of this deterioration.

Within half an hour of removal from the sea, discernible changes take place in the sea water. Foremost in importance is the tremendous increase in the number of microorganisms—up to 100 million bacteria per millilitre within a week. After a fortnight, both the number and the kinds of varieties of microorganisms are reduced; seawater stored at room temperature for six months is practically sterile. Sea water, during the initial period of multiplication of microorganisms, also changes its chemical properties, the oxygen being reduced, carbon dioxide increased, pH lowered and, sometimes, methane and hydrogen sulphide being released. Aquarists using natural sea water should store it for six weeks in darkened glass containers in order to minimize the toxic reactions to marine creatures caused by the above-mentioned chemical and bacterial changes.

Apart from these short-time changes, sea water also alters its chemical contents after long use in an aquarium. We need not go into the details of all the changes, but two are of vital importance—a lowering of pH, and a build-up of nitrates. Both are a result of the metabolic

activities of the fishes and cannot, therefore, be avoided. Methods to reduce these changes will be considered later.

Another obstacle encountered by the marine aquarist is the inability to achieve a "balanced" aquarium. In a freshwater aquarium, this balance is achieved because of the stability of the bacterial population, some absent in sea water. The only way, apart from cleanliness, of avoiding overfeeding and overcrowding, is to keep down the number of bacteria. This can be done in three ways, viz. by filtration, addition of antibiotics, and exposure to ultraviolet rays.

Filtration through sand can remove as much as half the population of microorganisms. Filtration enables a greater number of fishes to be kept. While as many as 450 gallons of sea water may be required to comfortably keep one pound of fish alive, with filtration this may be reduced to as little as 100 gallons. Of course, the larger the ratio of volume of sea water to weight of animals, the longer we can use the sea water. To maintain normal pH, it is advisable to have a layer of calcium carbonate (in the form of marble chips, coral sand or sea-shells) in the filter, which will neutralise the acid. Sodium bicarbonate or slaked lime, gradually added to the aquarium, can also achieve this effect, but any sudden and drastic alteration in the pH should be avoided, as the fishes will go into a state of "shock".

Accumulation of nitrates, which is also due to the metabolic activities of fishes, can adversely affect the breathing of marine invertebrates. Since there is no chemical method of removing the nitrates without harming fishes, the best way is to encourage growth of denitrifying bacteria in the filters and of algae.

A weight of the filter sand at thirty times the weight of the animals in the aquarium can support a sufficient number of denitrifying bacteria to neutralize the waste products.

Antibiotics such as streptomycin and chloromycetin may be used to prevent excessive bacterial multiplication in new sea water and also to cure diseases in fishes. But indiscriminate use in the aquarium will affect the population of useful bacteria, and may also sometimes harm invertebrates.

Ultraviolet treatment, by allowing sea water to run slowly in a quartz glass tube which is exposed to a UV lamp, will make the sea water practically sterile. Because of the reasons mentioned above, the UV lamp may be kept so that the water returning from the filter is exposed; this will allow bacteria to flourish in the filter while killing all germs before the sea water enters the aquarium.

To sum up, the ideal marine aquarium would have 100 gallons of sea water to every pound of fish, with the water circulating once every hour through a filter containing 75% sand and 25% marble chips, there being half a cubic foot of these filtering agents per lb. of fishes. ●

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## THIS IS MY PROBLEM

by HELEN SIMKINS

From: Emily Mullen, Arvenc, New York.

I purchased an odd-looking fish recently and after scouting through my fishes book, it seems to match the description of *Hypopomus areoli*, the South American knife-fish. My specimen is quite shy and I have not seen him eat, although he seems healthy enough. As he is in a community tank, I presently feed a commercial dry food, live tubifex, frozen daphnia and salmon eggs. What would his diet demand? Will he find sufficient leftovers (I feed 4 times daily) foraging at night? Anything you might tell me about this fascinating fish will be appreciated. You have a fine magazine with superb photography. I'm looking forward to the start of my subscription.

**Answer:** *Hypopomus areoli* is naturally a crepuscular fish, searching for food at twilight or dawn, but eventually will learn to show up for meals when his tankmates do. Earthworms can be added to your fish's diet, along with small pieces of lean beef, but in general the diet you are providing is adequate.

From: Robert Marcovitch, Montreal, Quebec.

I am a 12-year-old hobbyist who is quite interested in tropical fish. Though I only have four tanks at this moment, I still breed a number of

fish. I concern myself mainly with cichlids. I know of no one in my immediate area who follows these same interests and would like very much to correspond with a serious hobbyist of my own age. I would also like to know if there is a national aquarium club in Canada.

**Answer:** Robert Marcovitch's address is 4419 Van Horne Ave., Montreal 26, Quebec, Canada. As his letter states, he would like to correspond with another 12-year-old hobbyist who is interested in cichlids. There is an active aquarium society in Montreal. We do not have a current address for this society, but the last one we received may be still good. It is The Montreal Aquarium Society, P.O. Box 621, Station B, Montreal, Quebec, Canada. There is a national association of aquarium societies in Canada, Canadian Association of Aquarium Clubs (CAOAC), but its members are individual clubs, not individual aquarists.

From: Mrs. J. A. Givens, Albany, Georgia.

I would like some information concerning my black mollies. I have a 10-gallon tank and I have one pair of red wags, one pair of sun wags, and had one pair of mollies. All of my fish are getting along fine except my male black molly. I bought two males

since my first one died. Now, why I am so curious is that the male is the one I can't get to live. I'm sort of "put out" with the mollies for this reason. My female molly should have young pretty soon and, until I find how they make out, I won't buy any more.

**Answer:** Mollies are often considered a beginner's fish and yet, many fairly experienced hobbyists have trouble with them. First of all, they usually like an aquarium to themselves. That is, devoted to mollies. They like a well-lit aquarium and a well-planted one. A half teaspoon of salt (aquarium salt) added to the water is helpful as mollies come from brackish water. An aquarium that has an algae growth on the sides and rear of the tank is ideal for them for they like to forage in such growths. The water temperature should be in the high 70's or low 80's. The tank should have vigorously growing plants in it. If no algae are present, supply a portion of cooked chopped spinach once a day. Be sure your fish get some high protein food. Brine shrimp is good, but if you do not have any at hand, substitute tiny pieces of minced canned shrimp. Wash this before feeding and freeze what is left over for further feedings. It is discouraging to lose fish, but we hope you try mollies again under the conditions described above. They are a most pleasant species.

From: Joel Witten, Ashland, Kentucky.

I have a 15-gallon aquarium with a fluorescent light. I was told that brown algae are caused by a lack of light. My aquarium gets about 14 hours of light a day, but I still have brown algae. What causes brown algae and how can I get rid of it?

**Answer:** It is true that brown algal growths thrive in aquariums where light is not sufficient to sustain green algae. It may be that the fluorescent tube you are using is not designed to

simulate plant growth. The problem of algae, however, is always with us and no one has come up with a control that is completely satisfactory. Based on what we do know about it, we can approach the problem in the following ways. Rooted plants should be encouraged by good planting methods, sufficient light, and uncrowded conditions. That is, do not have too much competition between rooted plants to hinder their growth. Do not have too many fish so that there is an overabundance of waste material which eventually converts to plant nutrients. Make a partial change of water at least every two weeks. In your situation, where brown algae have a foothold, a scraping job is in order. Be sure the fluorescent tube you are using is one that is properly balanced for aquarium use. If the aquarium water is brownish in color, either make a complete change of water or employ a type of power filter that will filter out the suspended material. Floating plants such as *Riccia* will help to decrease the plant nutrients present in the water.

From: C. Lawson, Bluffs, Delaware.

I have an iron or steel piece shaped like a book shelf. When it is lying flat, it would make four compartments. I should like to make it into a tank for fish or plants. Can the inside be painted so that it will not harm the fish?

**Answer:** There are paints or coatings that can be used to paint interiors of containers for fish. They are rubberized, plastic, or epoxy paints. However, no matter what you used in an iron or steel container you would always be running into the danger of the coating cracking or blistering and eventually flaking. There are so many other types of containers that can be used for fish or plants that do not call for the effort or risk that your piece of iron or steel does. Your proposed use for it seems impractical.

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## THE WHITE BODY MALADY IN GUPPIES

by JOANNE NORTON

THERE IS A GUPPY DISORDER, which I shall call "white body malady", that can cause high mortality rates in guppies. From my observations and conversations with other people who keep guppies, I think white body malady is common and widespread. Guppies having this condition turn white and opaque, first in the rear half of the body. As the fish gets worse, the whitish area of the body becomes even lighter, more opaque, and more extensive until finally, most of the body becomes white. At this stage, the fish eats little or nothing, becomes thinner and listless, and eventually dies. It may take several weeks from the time a guppy has the first visible symptoms until it dies. All guppies in the tank then may die, a few at a time.

By microscopical examinations of skin scrapings from white body guppies I did not find any parasites. However, there are skin parasites, one-cell animals, that can cause symptoms on a guppy that might be mistaken for white body malady. In these infections by one-cell animals, the fish gets a white coating, often appearing first on the top part of the body, around the dorsal fin, or on the head. If a scraping of the white area is examined under a microscope, it may be found to be infested by one-cell animals. One such animal, *Chilodon*, caused the white coating and skin damage on the guppy pictured in this article. In later stages of an infection by a one-cell animal there may be some tissue destruction and sometimes bloody spots. In comparison, in white body malady the body turns white and opaque, but usually without etching or blood-spotting. Also, in white body malady the fish does not appear coated on the surface, but seems to have milky internal tissue, especially in the rear half of the body. Because of this opaque condition of the flesh, the spine is not clearly visible in a white body guppy. In a healthy guppy the spine is visible through the translucent flesh of the rear part of the body.

The cause and prevention of white body malady has not been known by anyone who has described the symptoms to me or brought me specimens of white body guppies. Some people have suggested that white body occurs in guppies as a result of inbreeding. However, I do not think this is the cause. Several years ago I first suspected that white body occurred in guppies fed an improper diet. I had kept guppies of one strain for eighteen months on a diet of live newly-hatched brine shrimp twice a day, along with several feedings per day of dry food. During this time, none got white body malady. Then, trying to get larger guppies, I started

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Healthy female guppy.



Female guppy with white body malady

feeding guppies of this same strain nothing but live newly-hatched brine shrimp. After being fed this for about two months, many of these guppies got white bodies. I then suspected that this white body trouble might have resulted from a diet of brine shrimp alone. I began feeding these guppies live brine shrimp twice a day along with frequent feedings of a commercial dry food. This diet seemed satisfactory because the white body malady symptoms disappeared and did not recur in any of my guppies of several strains for the next two and a half years. But then, at the end of this period, many of my guppies, of several strains and in about ten tanks, started getting white bodies, even though they were being fed both brine shrimp and the same brand of dry food. I started trying to find out whether this occurrence of white body might be due to variation in the dry food or variation in the proportion of dry food to brine shrimp in the diet. I also started testing several kinds of foods, including certain brands of commercial dry foods as well as scraped frozen beef liver, freeze-dried liver, Gerber's high protein baby cereal, and liver paste (a cooked food containing beef liver and Gerber's high protein baby cereal).

After six months of observing guppies on various diets, I made these conclusions:

1. White body malady occurs among guppies that are fed partly or entirely newly-hatched brine shrimp. Both Utah and San Francisco brine shrimp were tried, with the same result.

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White body malady in guppies can be prevented and even cured in some cases by proper diet. However, many of those that are very sick are not saved. Guppies were cured and remained free of white body malady when fed only Tetraamin guppy food or only scraped frozen beef liver. It is not inferred that Tetraamin guppy food is the only dry food that can cure and prevent white body malady. It is one that I happen to use that worked. There are many brands of dry foods that I have not tried. My main objective was to find out if white body malady can be controlled, and at least one way to do this.

Feeding scraped frozen beef liver was discontinued when one group of guppies fed this food developed fin rot. However, all symptoms of white body malady had disappeared in these guppies that were fed liver. Guppies ate liver eagerly and grew well.

Freeze-dried liver was not satisfactory for curing white body malady because the white body guppies did not eat it well.

White body guppies would not eat much Gerber's high protein baby cereal and were not cured of white body when fed this food alone. They often take a bite, then spit it out, although some fish such as mollies, gouramies and swordtails do eat this food very well. Also, healthy guppies without white body malady eat this cereal fairly well.

Liver paste was not fed long enough to obtain meaningful results as to whether or not it can cure and prevent white body malady. However, since this food contains liver, which can cure white body, and since guppies eat it well, liver paste seems worth further testing.

Other fishes in the same tanks with white body guppies have not had this trouble. These fishes include mollies, swordtails, platies, and several species each of tetras and catfish. Also, I have fed some fish, such as various species of killifish, nothing except newly-hatched brine shrimp for several years, raising successive generations of these fish, none with white body. I have seen white body malady only in guppies.

There are more things to find out about white body malady, such as:

1. Are there variations in guppy strains in their susceptibility to white body malady?
2. Is white body entirely a nutritional problem or is an internal parasite also involved?
3. Does white body occur in guppies that are fed no brine shrimp but certain other food or foods? In all cases that I know of the guppies were being fed brine shrimp.

In trout, biotin deficiency causes a "disease" called "blue slime disease." Trout with blue slime disease have been described as having a bluish slime over the surface of the fish that eventually sloughs away giving the fish a patched appearance. I have not seen trout or pictures of them with blue slime disease but for several reasons have considered the possibility that white body malady in guppies might be comparable to

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# A HISTORY OF THE AQUARIUM HOBBY IN AMERICA PART 19

by ALBERT J. KLEE

**A**LTHOUGH THE UNITED STATES was in the throes of a depression in the early 1930's the aquarium fish industry was most fortunate. During this time, the volume of fish business increased by leaps and bounds. The depression was not to finally catch up with the hobby until 1936, as we shall see later, but in the interim the period was marked by the appearance of a host of new aquarium magazines, some of them of outstanding quality.

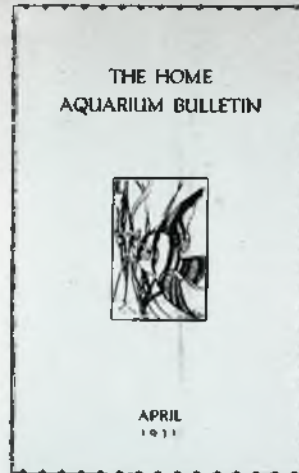
Before examining these publications each in their own turn, a few remarks are in order about progress in the hobby. Depending upon one's point of view, the advent of the first real aquarium novelty in 1930 can be considered either "progress" or a pox. In any event, in this year the Chase Novelty Mfg. Co. of Chicago, Illinois, placed on the market a metal diver bending over a treasure chest. The diver was piped for air, the bubbles of which were released from the diver's helmet. In short, the device was not unlike what is available today. Its price was rather steep, \$2.50 (about \$4.40 in terms of today's currency), but it did signal the beginning of the novelty market in the aquarium field.

The decade of the 1920's saw the introduction of electric heating, lighting and aeration on a wide scale. In the following decade, use of these devices became the norm for the hobbyist. Air pumps became available in smaller sizes, the piston type predominating. The "Boy-Wonder", an inexpensive piston pump, could be purchased in 1932 for \$10.50 (about \$22 in terms of today's currency). The "Sa-Ja" piston pump, operated on an induction principle, was also popular but considerably more expensive.

The design of the tank itself became neater and less rococo. Some heaters and thermostats for the first time resembled those we are used to seeing in the hobby today. Reflectors also made their appearance at this time. The one thing, however, that had not been developed commercially was the airlift-operated filter. Although the principles of filtration were known and many aquarists built their own such

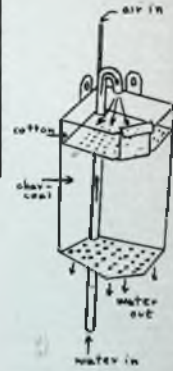
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The cover of the HOME AQUARIUM BULLETIN in its first year. This magazine was one of the finest ever to be published in the United States.

The first inside filter available to American aquarists. It was introduced in 1932, but it was not until after World War II that filtration became generally accepted throughout the hobby.



A stand and tank arrangement circa 1937. By this time, tank design had become less "gingerbready".

## THE SUPER SWORD

By LLOYD E. GROENKE

**S**OME THREE YEARS AGO, on a cold wintry night as I sat watching the fish in my community tank, my large beautiful red-tailed shark came into sight. Near by were my Simpson swords with their fins torn ragged by the shark. An idea came to mind; why not try to develop a swordtail as beautiful as the red-tailed shark? In the following months I



started on the project. Instead of speaking about my failures, I will describe my success which produced these beautiful super brick red hi-fins with black bodies.

I began by crossing my best Simpson hi-fin wags with a large vigorous common black low-fin sword. From a brood of 35, there resulted two hi-fin males with black bodies and red fins. At the same time, a large common black male was crossed with red lyretail females. This produced a small percentage of black bodied lyretail females. Then the two black hi-fin males were crossed with the best lyretail females, some red and some black. I continued to inbreed the best from each brood, son to mother and father to daughter. (The fathers were always Simpson hi-fins. My male lyretails have never been fertile.) I have also crossed some brothers and sisters and have noticed that red lyretail females crossed with Simpson black males give the greatest percentage of deeper red fin lyretails.

The females in the Groenke strain usually do not grow as long a dorsal fin, but they are long enough. Note the very large pectoral fins as well.

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Note the long dorsal fin of the male in this strain, which drapes behind the tail.

To strengthen the strain, I suggest that you bring in outside blood. If you cannot find any Simpson blacks at your pet shop, develop your own. Buy a large low fin black male and a red Simpson female. You should then have a good percentage of hi-fin blacks.

Heavy culling is absolutely necessary. For example, within a 24-hour period, three of my best females had young. There were 103 total. Thirty were culled out at once because they lacked the proper body color. During the next seven days, five more were culled out because they did not develop properly. At three weeks I culled out all the low fins. This left 48 hi-fins, Simpson and lyretails. Of these 48, about 10% to 15% will qualify as first class breeders.

Secondly, environment is extremely important in raising large fish. The swordtail, in its natural habitat, enjoys fresh clear running water. I use airstones very extensively. This increases the oxygen supply in the water and forces the fish to swim. The more they exercise, the more they eat; consequently, they grow faster. Airstones also help to expel gases. During the first four weeks of the fry's life, I use two or three airstones per 10-gallon tank.

For the very best filtration, I use one large power filter for two 10-gallon tanks, with one syphon in each tank and a tee at the return. A sponge filter also runs continuously. The power filter is turned off while feeding.

In my opinion, it is important for the growth of the fish to change some of the water frequently. Not only does it help to keep the water clean, but it also helps to replenish the minerals fish take from the water. However, if your water supply is too hard or contains too many



A closeup of the beautiful, heavy red dorsal fin of the male Groenke super sword.

minerals, changing too frequently may hinder the growth. You must experiment on your own. During the first month I change one-tenth of the water every other day.

When the fish reach the age of four weeks, the air flow is decreased, the feeding program reduced, and the water changed less frequently. However, I continue to change one-tenth of the water each week. I have found that the first four weeks require the most care for proper growth.

As far as pH is concerned, swords do well in water of about 7.0 to 7.2 pH. However, they are capable of adjusting to any reasonable water quality. Temperature for swords should be about 74 degrees. However, since my swords are born and raised in 80 degree water, I continue this temperature.

Swords like bright light. It shows their beauty and keeps them active. The choice of light is yours, but I do believe they show their beautiful bright colors best under Gro-lux. I use light about 12 hours a day, but not any plants or gravel. My fish get their vegetables from a paste food I mix, which is high in protein and vegetable content. I also feed some mollie food to compensate for the lack of plants.

The feeding program is equally important as the environment. The first week, the young fry continually have live brine shrimp from morning until evening. This means about three feedings a day as the brine shrimp live about four or five hours in the aquarium water. By the second week



These Groenke strain fry are just four weeks old, and about an inch long. The lyretail is just starting to take shape.

they have grown considerably and should be fed brine shrimp, live or frozen, every two hours or about eight times a day. At three weeks, I start adding some dry food.

When they reach the age of four weeks, they are moved from the 10-gallon tank to larger tanks, 15 to 30 gallons, depending on the number of fry. The feeding program also changes at this time. More dry food (as great a variety as possible) tubifex, worms, adult frozen brine shrimp, live brine shrimp and the paste food. For the next four weeks they are fed about six times a day. When they reach the age of two months, their bodies are about two inches long (overall from the tip of the nose to the tip of the tail, they are three inches). At this time I move out everything but the very best, which will become the breeding stock. This is absolutely necessary when you have only a kitchen type setup with about a dozen tanks.

In addition to raising lyretail swords, I also raise *Corydoras aeneus* catfish. Not only are they very compatible with the swords, but they do an excellent job eating the excess food and keeping waste moving in the water so that the filter can pick it up easily.

As the breeders continue to grow, I use about three gallons of water



The gonopodium fin of the super sword male. In the author's experience, the lyretail males have not been fertile. Some others raising lyretail swords believe that they are capable of spawning before the gonopodium is completely developed.

per fish in large 30-gallon tanks. Feeding is also decreased to three times a day. In my opinion, this gives the reproductive organs a better chance to develop. I have noted from past experience that some females which were force fed would not reproduce. I decided to cut down on the feeding program and within a few months they began to bear young. With constant forced feeding, much of the oxygen that is taken in by the fish is used to aid organs of digestion, and the result is that the reproductive organs get less oxygen and do not always develop properly.

At present, I am using the population breeding method in one tank where my Simpson black males are three to four generations distant from the lyretail females. This has produced some very good fish, as shown by the photos.

I hope there will be more hobbyists interested in developing similar swords of their own. Anyone can go to a good pet-shop, buy a couple of low-fin black males, a few Simpson females, and lyretail females and be on their way to success if they choose the right breeders and give them the proper care and feeding. Good Luck! ♦





These fish are egg droppers and are easily bred but they are extremely fast in their movements and will eat their eggs as they fall. Therefore, when breeding giant danios, a spawning trap is required.

continued from page 4

The scientific name of the giant danio is *Danio aequipinnatus* (not *Danio malabaricus* as is reported in the aquarium literature; this is another species, not yet imported as an aquarium fish), and it comes from India, its range including the Himalayas at Darjeeling (where the famous tea comes from!), the whole of the Assam District to Tenasserim in Burma and south to the Deccan District of India where it meets up with its close cousin, *Danio malabaricus*. In captivity, the usual size is about four inches but in the wild, specimens up to six inches are not uncommon. Its color is gray-blue along the back, steel-blue with three broken yellow stripes or lines on the sides, and white below. In appearance the female differs but slightly from the male, the only distinguishing features being a somewhat more grayish body color and a deeper and more rounded ventral profile. Ordinarily, the fins of both sexes are transparent, but at breeding time they are suffused with rosy pink.



This male giant danio, *Danio aequipinnatus*, has an expected life span of 6 years.

As we have hinted, a fish of the size and activity of the giant danio is, of course, not at home in a 2- or 5-gallon aquarium. A pair can be kept alive in a 10 or 12 inch tank, but to thrive they require a twenty or twenty-four inch tank, i.e., a large community aquarium. Whatever planting arrangement is employed should take into account the need for open swimming space, and there should be plenty of sunshine or its equivalent in artificial light.

The giant danio is as hardy as the average tropical fish, and will take almost any ordinary food. Furthermore, it will withstand fairly low temperatures, at least temporarily.

Like its cousins, the smaller *Brahmhydanio* species, the giant danio is an egg dropper. Unlike them, however, its eggs are adhesive and cling to the plants around and through which it swims while spawning. The breeding requirements are: (a) a large aquarium, at least twenty inches in length; (b) bunches of nylon spawning mops or other artificial spawning media, weighted down to the bottom of the tank; (c) a temperature of 77 to 82° F; (d) and last but not least, a vigorous well-conditioned pair.

As these fishes are very fast in their movements and love to eat their own eggs as they fall, it is advisable to keep the water in the breeding tank rather shallow. Six inches from the top of the spawning medium to the surface of the water would be about right for a full-sized pair of breeders.

The pair, having been previously brought to breeding condition by generous feedings in the community or other large aquarium (frozen adult brine shrimp, shredded beef hearts, live food, etc.), are transferred



The female danio is distinguishable by its somewhat grayish body color and a deeper and more rounded ventral profile.

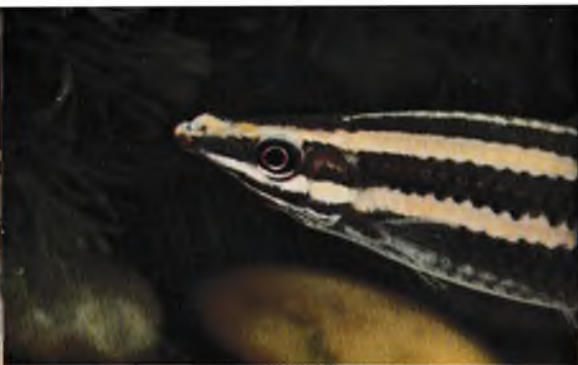
in the evening to the prepared spawning tank. The following morning driving rain may start, male and female alternating in the pursuit. The courtship will be strenuous if not actually stormy but, as a rule, there will be no violence. At the proper moment the two fish will come close together over or near the plants or spawning medium and five to fifteen eggs will be ejected and fertilized. This will be repeated until as many as 300 eggs have been laid.

When the spawning is over, the fish should be removed promptly. Otherwise, the usual feasting on newly-laid eggs will ensue. The young will appear two days later as tiny transparent splinters, hanging to the glass or spawning medium. About twenty-four hours later they will be ready for food, and should then be given frequent and generous meals of liquid fry food and powdered dry food or infusoria. In about a week, they will be able to take newly-hatched brine shrimp.

The young are not difficult to raise. They are very active and spend much time at the surface where they can get plenty of light, sunshine if it is available. For the first month or two they are somewhat sensitive to water changes but thereafter they require no more care in this respect than the adults.

Various aquarium fishes undoubtedly all have their own natural approximate lengths of life. It rather seems that the smaller fishes die first. This is in line with our own observation of the length of life of the giant danio. It seems to outlast the little *Brahmhydanio* species considerably, living to an average age of about six years. ♦





The name, *Anostomus*, means "turned-up mouth", as this photo clearly depicts.

Walker, continued from page 9

aggressions. An individual tankmate may be selected, however, at which the anostomus seems to take particular delight in nipping, and in some cases one or the other may eventually have to be moved.

Another "characteristic" which somehow seems almost automatically to be attributed to anostomids by most writers is that of being in most instances "headstanders". Although certainly this is true of *Abramites* and some of the others, it has been my experience that in the cases of most *Leporinus* and *Anostomus* species this is not as much a characteristic as a sign of discomfort or uneasiness. When kept in aquaria with plenty of swimming space and shelter available, many anostomids including *A. anostomus* seem to spend little, if any, more time in a head-down position than other fishes. While considerable time is spent picking at the bottom of the aquarium, a hundred other abnormal positions are also employed to position the upturned lips toward whatever morsel might be discovered in whatever location. It is common to see *A. anostomus* turned completely on its back, nibbling algae from an upward-facing leaf.

Feeding anostomids including this one could hardly present fewer problems. Since anostomids are usually kept with other relatively large species, a steady diet of live or frozen foods can become a bit impractical because of the quantity which can be ingested. For years I have used one of the high quality dried dog foods, pre-soaking the nuggets in a bit of water in order to soften it so that large fishes can take large chunks, and



Portions of the fins of *A. anostomus* are bright red as can be seen in this view of the tail section.

smaller ones can nibble what they want from the pieces. While this has been an excellent food, it sometimes will leave the water a bit cloudy for a few hours if large quantities are fed. In the last year or so, I have changed almost entirely from dog food to oatmeal, and besides having the advantage of leaving the water even in the largest aquarium in excellent condition almost immediately after feeding, many fishes seem actually to prefer it. Oatmeal (or "rolled-oats") is highly nutritious and surprisingly is greedily eaten by even carnivorous fishes such as some of the large pimelodid catfishes (*Sciades*, *Sorubim*). Obviously, with partially vegetarian fishes like *Anostomus*, it has advantages. Certainly other foods should be supplemented occasionally. Dog food, beef heart and commercial trout or catfish food can be used. The little compressed pellets of rabbit food are excellent for vegetarian fishes, since they are compressed from alfalfa hay.

*A. anostomus* and its torpedo-shaped kindred are tremendous jumpers. An uncovered aquarium is an invitation to disaster, and sooner or later will result in a brief aerial journey to the piscatorial Happy Hunting Ground.

Spawning these fish under aquarium conditions is a rather unlikely undertaking for the average fishkeeper, but not beyond the realm of possibility with well cared-for fishes in a large aquarium. Although anostomids of one or two species have been observed spawning, this is



A beautiful pair of *A. anostomus*.





Although classified as a member of the "headsticker" family, *A. anostomus* seems to spend little if any time in a head-down position.

usually accidental. If an attempt is made, I would suggest bunches of fine-leaved plants in the lower corners and sides of a large aquarium, a temperature of 80-84°F, heavy aeration and a pair which had been seen spawning previously in another aquarium. Spawning procedure for *Leporinus fasciatus* seems to consist of the pair swimming side by side in almost perfect unison as the eggs are dropped. I have observed this in a large seven-foot aquarium of other fishes, and I have spoken with others who have seen a similar occurrence. The pair at the time assumed an overall golden color and the ordinary jet black bands faded considerably. Possibly *Anostomus anostomus* would spawn in a similar manner.

A very effective display can be achieved through a combination of such fishes as *Anostomus anostomus*, *Leporinus fasciatus*, other fishes of these genera, *Laemolyta*, *Abramites*, *Curimata* and other self-sufficient fishes of contrasting pattern and color. A large aquarium is necessary and only the sturdiest plants can survive, but nowhere can the cigar-shaped beauty of the color and graceful form of the fish with the turned-up mouth be effectively exhibited than when in the company of its own family. ●

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## This is our Squeeze Bulb Aqua-Vac. It has an extension tube for deep tanks. You might say, we've really helped to get to the bottom of things.

This addition to our famous Aqua-Vac line also solves the problem of keeping the aquarium gravel clean. The special easy-to-use squeeze bulb, long good polyethylene valve allows that most used replace.

The special clear tubing lets you see the dirt as it is removed from the gravel with an gravel pick up. And the disposable Aqua-Vac bag can be reused or replaced easily. Thus, as you can see in every advertisement, the entire unit is readily packaged for easy handling and shipping. The fish shouldn't come as a surprise to you.

Because whenever a new or better product is introduced, there are those who are not satisfied. Also, the Metacroma didn't get to be the leader in the aquarium industry with out our Research and Development Department constantly striving to bring you new and better products. The Squeeze Bulb Aqua Vac proves it once again.



Key: continued from page 32



The first aquarium novelty, introduced about 1930

devices, filtration was not widely employed throughout the aquarium hobby. In 1932, however, the Empire Tropical Fish Import Co. of New York City, placed on the market several imported inside box-type filters of German manufacture. One of them proved to be the forerunner of the inside type as we generally know it today. In this design (see sketch), water was pumped via an airlift to the top of a clear plastic box suspended in a corner of the tank. By gravity, the water then fell through a layer of cotton, thence, through a deeper layer of charcoal (then known as "active coal"), returning to the main body of water via holes in the bottom of the box. Although the device was cheap, the idea of filtration did not catch on immediately. In 1934, the Wm. Tricker Inc. firm, of Independence, Ohio, introduced the first outside airlift filter in this country. The acceptance of filtration was slow and although by 1938 it was not uncommon, the universal use of filtration devices in the aquarium hobby in America did not take place until after World War II.

On another note, however, it is interesting to note that in some other respects the basic flavor of the aquarium hobby in this country hasn't changed much since the early 1930's, as evidenced by the following dialogue written almost 40 years ago:

### PART OF THE GAME

**Bill:** Hello, Jack. I haven't seen you for a long time.  
**How are the Guppy?**  
**Jack:** Hello, Bill. Come in and look 'em over.  
**Bill:** Nice young Bettas. How old are they?  
**Jack:** Six weeks old tomorrow.

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On the left a typical aquarium thermostat of the 1930's; on the right a typical heater (sand-filled).



In 1933, this was quite an innovation in that it combined into a single unit of convenient shape and size, both a thermostat and a heater.

**Bill:** I have a bunch five weeks old and they are twice that size. How old is this bunch of swordtails?  
**Jack:** Those will be three months old in a day or so.  
**Bill:** Mine are twice that size and they are only two months old. I get growth on my babies. How old are these young fish?  
**Jack:** Those are about five months old — don't tell me they are not well-developed for that size?  
**Bill:** Oh, Heck! When my baby reds are five months old they have had several batches of babies.  
**Jack:** Say, let's take a look at these beautiful young sets. They will not be born until the middle of next month. How's that for development?

**Moral:** Even in aquatics the worm will turn.

In 1930, a member of the Newark Aquarium Society (New Jersey), George C. Hindenlang, organized a club publication for that society. Hindenlang obtained the copy, typed it and ran it off on a mimeograph machine. It should be noted that the Newark Aquarium Society was a very active and influential group at the time. On its Board of Directors was none other than Max. G. Hammerschlag, the pioneer aquarist who, in 1898, had visited the Philadelphia Aquarium Society one month after its inception to become the first aquarist to start a liaison

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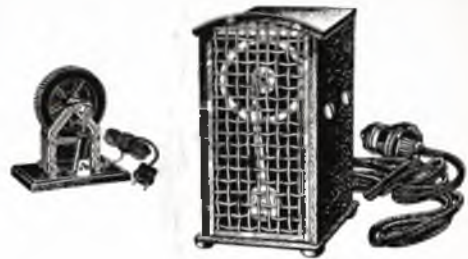
between the New York/New Jersey and Philadelphia groups. It is perhaps difficult to comprehend but the Newark Aquarium Society had, in 1931, a membership of over 500! The club publication was received with much enthusiasm and, after twelve issues, it was decided to turn it into a commercially printed magazine or "slick", but as a prové venture. The magazine was owned by Hindenlang together with Louis and Elliot Kautzmann. The day-to-day business of the magazine, however, was handled by Hindenlang who occupied the post of Managing Editor. The Editor of the publication was Charles H. Peters, the President of the Newark Aquarium Society.

Appearing under the name of the *HOME AQUARIUM BULLETIN* in March 1931, the magazine consisted of some 22 to 24 pages at the start. A monthly, yearly subscriptions were \$1, individual copies 10c (these prices were later changed to \$1.50 and 15c respectively). From its inception, the magazine was outstanding. There are many today who believe that it was one of the finest aquarium magazines ever published, and for good reason. The editors seemed to have a close rapport with the hobby. Admittedly, they edited the magazine primarily for fun. Where August Roth was a sort of "lone wolf", somewhat isolated in Baltimore, Peters and Hindenlang were right in the midst of the "action". Therefore, and without trying to minimize the achievements or influence of either Roth or *AQUATIC LIFE*, the *HOME AQUARIUM BULLETIN* was clearly a better magazine. In truth, it brought aquarium publishing into its modern phase. *HAB* was more readable and more informal than *AQUATIC LIFE*. Its Question & Answer department was pragmatic and to the point. Many oldtimers in the aquarium hobby will recall that William T. Innes started a monthly feature in the *AQUARIUM* called "The Aquarist's Calendar", which reminded hobbyists of topical chores each month. *HAB*, however, was the first to employ this device, calling it "Do It Now!". The magazine had a "Laboratory & Research" department to which any reader could send an unknown fish for identification. Peters and Hindenlang campaigned for show standards for tropical fishes, and attempted to obtain uniform common names for all aquarium fishes.

The following rather amusing account appeared in the *HAB* in 1931 and is typical of the way the magazine would strike a responsive chord with its readers. It is obvious from the article that it was written by one hobbyist talking to others on common ground.

**THE MRS. AND THE HOBBY**  
By Most of Us

"It seems just bad that the Mrs. does not see the hobby in the same light as we do. She simply cannot understand that it is necessary to



Two piston type air pumps of the early 1920's. On the left: the famous "Se-Je" pump, operated on an induction principle. On the right: The "Boy Wonder" pump, less expensive than the Se-Je.

have a tank on the library table, another in the living room window, two small tanks in the east bedroom window, a tank and a half-dozen of various sized jars in the kitchen window, and infusoria jars and white worm boxes in the pantry. She cannot understand why the parlour windows must be used for our pet community tank. She will not listen to rational reasoning when we explain that the shades in the living room must be up — up all the way, instead of being at the more conventional half-mast. She cannot realize that shrimp must be cooked, even if the process does smell a LITTLE. There's no reason why she cannot see the need of having cans of fish food on the mantel in the living room — the brightly colored boxes are surely as decorative as the chipped old antique urns that are perched there.

"She simply cannot understand the need of our driving ten miles to visit Bill's home simple because his swordtail gave birth to a family of one hundred and thirty (babies). She cannot realize the importance of things aquatic at all. She cannot figure out why we must purchase a male *Scalohokum* at a time when we cannot afford new shoes for the youngest heir. She doesn't realize that the youngster will need the shoes next payday more than he does today. I can't understand how the Mrs. can be so unreasonable.

"Last season we raised four black swordtails and sold them for three dollars — and I gave her the three bucks, too. The black swordtail



The first outside type filter, introduced to American aquarists about 1934. Although there were a few water pumps with filters to match available to hobbyists, siphon filters were slow to meet their approval.

parent were a beautiful pair — I got them cheap at eight dollars.

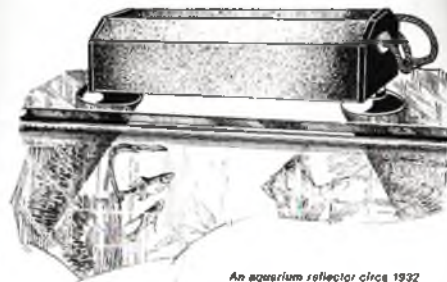
"Last year I planned to make a lot of extra dough by breeding *Ambassis lala* but she spoiled a perfectly good idea just because the tank that I had on the radio — where it had to be breed good lalas — broke and damaged the radio. Just because of that little incident she crabbed about putting a second tank up there to such an extent that I decided not to make any money on the lalas.

"She can't realize I am doing something in a big way for humanity when I speak to a visitor for three or four hours when she has her hat on ready to go to the movies. We saved 30 cents many times that way but she doesn't appreciate this. Then there's the case of the last tank I bought. It cost me ten bucks but I lied like a gentleman and told her it cost only three — well, I had to buy her a dress that set me back fifteen bucks to square that.

"Then the scalare case — I bought three beautiful scalare dirt cheap — only twenty dollars. Of course I told the Mrs. a friend of mine who I had told how to breed them gave me the fish to show his appreciation. Then Jim Nutt pays me a visit and says in the presence of friend wife that I got those scalare cheap at fifty dollars — I had lied to him and said they cost me fifty. The Mrs. said — let it go at that, its too painful to recall besides, although the incident occurred two months ago she has not yet had her final words on the matter.

"If I sat down and figured it out. I have paid three times as much in bribes to the Mrs. to keep peace in the family as I have paid for the fish I have bought. Think of the wonderful collection of fish I might now possess if I hadn't paid that hush money. It's an unjust tax!

"I am not permitted to use the family dishes to sterilize plants — in fact I can use nothing I absolutely need around the house. Last summer, while the Mrs. was away, I commandeered a cut-glass bowl in which to breed a beautiful pair of tetras, and you should have heard the



An aquarium reflector circa 1932

rumpus when she returned home. I only knocked one little curlidge out of it — you couldn't notice it if it was set with the broken part away from observation.

"I would tell you what the Mrs. said the time the ceiling came down on the living room because the water that was supposed to be in the tank upstairs spread itself all over the floor, but the edison says so be very careful of the language and the grammatical construction in the *BULLETIN*, and the grammatical construction and the language of what she said were not correct.

"Then there was the time the bird down south sent that pair of mudpuppies to be exhibited at our big show. I had to keep them in the bathtub two months because he thought the show was to be in July instead of September. I wrote to the fellow and asked him if folks went bathing in where he caught the mudpuppies. He answered in the affirmative and I called the Mrs.' attention to it but she would go bathing with no slippery mudpuppies. They weren't too awfully slippery — I held one in my hand for a quarter of a minute once. And although it bit my finger it didn't do much damage — I could use the hand a week later.

"Then the time four swordtails jumped out of the tank during the meeting of the *Kill Time Ladies Society* is still clear in my mind. Mrs. Smoak scraped her nose climbing a chair. Mrs. Fourtz attempted to get up with her legs wrapped around a table leg and Mrs. Muffelling



swallowed her cigarette. The Mrs. was very much put out about the breaking up of that party (because Mrs. Yodel had just gotten to the scandalous part of the gossip), and she told me so in no uncertain terms.

"Everything considered, and knowing not only that my personal efforts in the worthwhile endeavors of culturing tropical fish are hampered but that there are many aquarists hampered as I am, I am in favor of doing something about it. I think that an organization of aquarists should be formed. The organization should have a highly dignified title that would make the desired impact on the Mrs. or other Mrs. Something like the "Amalgamated Association of Antagonized Aquarists of America". This is as far as I have progressed with the idea up to the time of going to press but I might enlarge on the idea if I am allowed space in a subsequent issue.

"In the meantime I wish other husbands who are in need of an organization to protect them from their Mrs. and possibly their mother-in-law, would write suggestions on the course to pursue."

It is interesting to note that, in the heyday of the early 1930's, the hobby was dominated by men to a somewhat greater extent than we find today.

One of the things that concerned the editors of the HAB was that "The opinions of novices would put to shame the fairy tales of Grimm and Anderson". The statement is as true today as it was almost 40 years ago when it was written! In any event, HAB articles were extremely useful. Examples: Classifying the various beta varieties, sex differences in angelfish, birth rate data on livebearers. The magazine once circulated a questionnaire asking what fish the aquarist would put into a community tank if one were restricted to 10 pairs of fishes. Such material was most utilitarian, especially in the 1930's.

The HAB had a distinguished stable of writers. Included among them were Dr. Carl L. Hubbs, one of the country's foremost ichthyologists, and Dr. Myron Gordon, the eminent ichthyologist and geneticist who studied under Hubbs. Incidentally, we have read many biographical sketches of Dr. Gordon, but all are rather lacking in how he became interested in fishes. An account in the HAB for March 1935 adds the following information:

"Myron Gordon bought his first pair of guppies for seventy-five cents in a pet shop on 125th Street and Park Avenue, New York City, in 1916. Soon he was pumping the old timers for information about tropicals. He went to Brooklyn and talked with Hermann Rabenau. He roamed the Bronx and found Taubles at Tremont Avenue. He went to upper Manhattan and saw the Best-Yet outfit of Walker Laanoy Brind. He travelled to East Eleventh Street and interviewed Silver, the red swordtail Burbank. Hugo C. Nelles was recommended. He went



Two very prominent ichthyologists who were interested in the aquarium hobby and who rendered assistance of great value to the hobby. Left: Dr. Carl L. Hubbs. Right: Dr. Myron Gordon. Both pictures taken about 1930.

to see Nelles on Third Avenue.

"He remembers buying a guaranteed breeding pair of Daphnia from Brind, a box of white worms from Jenny at Singac, and several pairs of platies from Rabenau. He still has the direct descendants of Rabenau's platies. He has seen over ten generations from them.

"Myron Gordon was a bird fancier too. He did kitchen police duty in the bird house of Bronx Park in the summer of 1921. The next three summers were spent in rearing Chinese ringneck pheasants for Maryland at Gwynbrook and for New York at Middle Island, Long Island. During the rest of these years he was studying biology at Cornell University. He was graduated in 1925 and took his doctorate degree in 1929.

"The University of Michigan, through the interest of Dr. C. L. Hubbs, sent him to Mexico to collect fresh water fishes. In 1930 he collected over a hundred species, ten of which were new to science. Myron Gordon went back to Mexico in 1932 to get all the living species of platies and swordtails. This was accomplished in two months. The expedition was partly financed by the aquarium societies and dealers of tropical fishes."

The last sentence will no doubt come as a surprise to many aquarists. It is likely that many of the livebearers that aquarists have in their tanks today, came from descendants of fishes Dr. Gordon caught in Mexico in 1932!

To be continued.

Gale continued from page 12



This is an example of how a professional breeder ships his fish. Note the styrofoam box and sheet insulation used in shipping.

puncture the shipping bags. When insulating the shipping box, take care to see that no portion of the box is left uncovered by the insulation. Cold weather shipments require more insulation than warmer weather.

A day or so before shipment, acquire some heavy plastic bags. Some traders ship fishes in doubled or tripled tear-off bags used by housewives. However, these thin bags can easily be punctured by the spines of the fish's fins. Perhaps you can obtain some bags from your dealer. These are much better for shipment as they are tough plastic, through which air may enter and harmful gases escape without water leakage. Choose bags large enough to allow adequately for water and air.

Do not feed fishes for 24-hours prior to shipment. This eliminates a large amount of waste products that might otherwise build to a dangerous level in the shipping water.

On the day of shipment, fill the bags about one-third to one-half full, depending on the length of the bag. Use water from the aquarium in which the fish are kept. The water should be deep enough to completely cover the fish whether the bag remains upright or is placed on its side. Net the fish and gently place them in the bag. Allow enough room for them to remain uncrowded. Remember that males and females of some species cannot be shipped together without harm to the female. When in doubt, place the sexes in separate bags — and separate quarrelsome

males. If shipping several fish of the same species in small bags, place only two or three, depending on size, in one bag.

Before closing the bags, fill them with air. Don't blow into them! Unhook an airline from one of your tanks and place the end of it into the bag. Gently close the bag around the airline and allow the pump to fill the bag with air. Do not fill the bags so completely that they might burst. Fill only enough to keep the bag in shape without being too 'tight'.

Pure oxygen is much better for shipment, but most aquarists don't have easy access to an oxygen tank. When the bags are well-filled with air, twist the tops lightly shut, double the twisted top down, and fasten it tightly with two rubberbands, in case of accidental breakage of one. All shipping bags should be doubled, to avoid loss of fishes if a leak does occur. Thinner bags may be tripled. If fishes are unusual, rare, or not often seen, remember to label the bags with a felt marking pen, as a friendly gesture.

Fishes should be shipped in as much water as possible, depending on size. A single guppy needn't go into one-gallon of water; two or three cups should be adequate. But don't expect fishes to arrive in good shape if there is barely enough water in the bag to keep them wet! Allow enough room for some movement.

Place the shipping bags into the container in such a manner that they will hopefully remain in good position during their journey. Avoid laying the bags on their side, if possible, as this lessens the depth of water. Close the shipping box and seal it with wide tape. Fix a large, legible label with your return address, the destination, and the following legend: TROPICAL FISH. KEEP WARM, POSTMASTER: CONTACT ADDRESSEE AT (telephone number) IMMEDIATELY UPON ARRIVAL. And don't forget zip codes!

When the fishes arrive at their destination, the receiving hobbyist should immediately write to tell you that the shipment arrived in good condition. He should also include the date and time when he will ship

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his fish to you, and the date you should expect them. Immediately answer if the shipment date is agreeable; suggest another date if it is not.

If a shipment does not arrive at the time that you think it should, check with the post office. Just recently, a shipment of ours arrived late. Had we not tracked it down to the main post office, it would have spent the night there before being delivered to us. Postal workers are surprisingly helpful in these cases. Most of the time, you can expect the postman to ring your doorbell with a sloshing package and a puzzled look on his face.

When your new fish arrive, quickly unpack them and open the bag to give them fresh air. Gently aerate the water by lifting some of it with your hand or a small cup and allow the water to fall back into the bag. When you are assured that the fish have sufficient air to remain in the bag during acclimation, seal the bag again and float it in the tank in which the fishes will live.

While the temperature of the water in the bag is adjusting to that in the tank, check the pH of both bag and tank. Shipping water will turn slightly acid, so don't be alarmed if the water is not identical with what the other hobbyist said it would be. Acclimate the new fish to the tank by pouring a small amount of water from the bag, and replacing it with an equal amount of water from the tank. This process may be repeated, at about 30-minute intervals, for as many exchanges necessary to replace all the water in the bag with water in the tank. Once the fish have become accustomed to their new home, you may slowly begin shifting them to conditions of your own liking, if you think it necessary. Remember, though, that these fishes should be pampered for a week or two, to get them through the shipping ordeal in good condition — no matter how well they looked upon arrival.

Newly-received fishes should be quarantined in their own especially prepared tank (set up according to the other hobbyist's directions).

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I won't be surprised if the new fishes refuse to eat for a day or two; they are most probably excited after their journey, and must adjust to their new surroundings. Give them time to become "settled" and their appetites quickly pick up. Most fishes, when first introduced into a tank, chase up and down the glass sides. Do not feed until the fish have quieted, to avoid fouling the tank.

Most important, when you have told a hobbyist that you will ship fish on a certain date, *ship them!* Many a trading hobbyist has become frantic when his shipment of new fish didn't arrive — and he later discovers that the shipping hobbyist "forgot" to ship them!

We have never received a dead fish, or a fish in bad condition, even though shipped from great distances. We hope that you have the same luck. Happy trading! ●

*Societies: continued from page 20*

Society, formed as recently as September 1968. The group meets at St. Joseph Bank Branch, 52530 U. S. 31 North (at Darden Road), So. Bend, Indiana the 3rd Sunday of each month at 6 p.m. Visitors and guests are always welcome. The *Michiana Tropical Times* contains club news, some reprint material as well as original pieces, and the January issue contains Randall Barfell's *Herostilapia multispinosa*, a

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cichlid that is popularly known as the rainbow cichlid. As pointed out by Albert J. Kloe, the subject species is sometimes confused with *Cichlasoma centrarchus* which, in Mr. Barfell's opinion, is a much drabber species. Spawning colors of *H. multispinosa* is a chrome yellow, the fins of the female turning jet black. When guarding the young, the parents turn black except for "the portion above their black, broken, horizontal line, and the front portion of their gill covers which remains yellow" and the top half of the dorsal fin, which is light blue, becomes a more vivid blue. Apparently, this species tolerates a wide range of temperatures, but the author prefers to keep his specimens in water reading in the high 70's F. Adults attain about 4 inches, the female being slightly smaller than the male. The free-swimming fry can be fed newly-hatched brine shrimp and the author leaves the young with the parents until their size indicates removal to larger quarters. Write to *Michiana Tropical Times*, c/o Ree Collins, Editor, 1130 McKinley, So. Bend, Indiana 46617 for information regarding the society and its publication.

We received Volume 1, Issue 1, January 1969, of *Kootenai Aquarium* — *Nauts*, published out of Libby and Troy, Montana, and edited by Sue Wellman. We gather that this is not only the name of the bulletin but also is the name of the publishing society. For a first issue, this

is an excellent beginning in that it contains several well-selected reprints and a piece by Ed (?) Hartley reviewing several exchanged bulletins entitled *What's Happening?* Reviewer Hartley briefly gives the highlights of the bulletins he receives with a somewhat critical eye and it is obvious that this society wishes to participate in the "exchange game." We note that the President of the society is listed as Frank Hartley and wonder if the Ed of the signature for this review might have been a typographical slip for what should have been Frank. By way of suggestion only, we should like to point out that a bulletin gives an association an excellent opportunity to introduce itself to aquarium societies nationally and internationally, and that a thumbnail sketch of its history is a helpful way of doing this. We missed this in this first issue and certainly a name like Kootenai Aquarium — *Nauts* invites explanation. At any rate, this bulletin reflects an enthusiastic membership and correspondence regarding it and the publishing society should be directed to Editor Sue Wellman, Box 820, Libby, Montana 59923.

The January-February issue of *Water World* (published by the Suburban Maryland Aquarium Society) perpetuates the high standard of production that accompanied this publication when it first appeared on the bulletin scene. The striking cover shows *P. volitans*, or what



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is commonly known as the salt-water lion fish (sometimes zebra fish). We note inside the cover a "Special Message to All Exchange Editors" which states that "Although *Water World* is copyrighted, permission is hereby given to all societies exchanging their publications with us that articles may be reprinted from *Water World* if credit is given. At present we are exchanging publications with thirty-six societies whose informative publications are eagerly read by our members." Such a note should do much to assuage some of the confusion caused by the fact that *Water World* is copyrighted, and it evidences that the publishing society wishes to participate in the exchange system. Kenneth E. Schemm's *Salt Water Fish — Too Expensive and Not Hardy?* is an effort to set both of these beliefs aside, and he gives a very apt description of how an individual specimen is collected, shipped, distributed, and retained, accompanying the account with the physical effort, danger, and monetary expenditure that goes into this complex operation. What he tells us is not overstated, and the wonder of it all is that the fish (and sometimes the people) involved ever survive. Perhaps it is just as well that there are no lists available of the casualties. On the other hand, any effort has its moments of triumph, and a beautifully arranged salt-water aquarium with its colorful fish performing endless aquatic

bulletins soothes us into forgetting all of the endeavor necessary to make such a pleasing display possible. Author Schemm's article is a graphic reminder. Bill Brannon tells us about turtles in his article entitled *The Armored Cruisers of the Reptile World*. This is reference material for the aquarist who wants to add a turtle or two to his aquatic collection. Species, maintenance, and collecting are gone into which is a large order for a short piece on the subject. Guppy buffs will find Fred Samuelson's *To Better Color in Guppies* easy to read and very well detailed. The author offers his blueprint for breeding for color and this will be a reference treasure for the hobbyist who has been operating without the benefit of a prescribed method. Fred Samuelson's guppies have won a place of distinction on the guppy scene and it is seldom that such a successful breeder gives a step-by-step account of the procedure he follows with the particularity that is found here. The price of *Water World* has been raised from 15 cents to 25 cents but the increase in price is understandable considering the excellence and content of the publication, and doubtlessly necessary if the publishing society is to maintain its high standards. Write to the Suburban Maryland Aquarium Society, 6027 Springhill Drive, Apt. 201, Greenbelt, Maryland 20770 for information. ■

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*Norton: continued from page 30*

blue slime disease in trout. A low biotin level was found in livers of trout with blue slime disease. I do not know of any tests having been done on guppies for biotin levels. However, besides the similarity in symptoms, there are also the following similarities between blue slime disease of trout and white body malady in guppies:

1. Faster growing trout are more likely to get blue slime disease than slower growing (larger) ones. When trout grow so fast that they are using biotin faster than they get it from their food, then they get blue slime disease. Likewise, guppies that get white body malady are the growing ones, not those that are full-grown. Also, in a brood of guppies, white body often occurs in females more frequently and before it appears in the males. Female guppies, since they are considerably larger at maturity than males, grow faster than males, starting when the females in a brood become larger than their brothers. Therefore, it seems that faster growing guppies are more likely to get white body malady, just as faster growing trout are more likely to get blue slime disease.
2. Addition of 3% cod liver oil to the diet of trout causes increased growth rate, also increased mortality, possibly due to the increased growth rate (1). In guppies, feeding brine shrimp is likely to cause increased growth rate, and also can result in more cases of white body, which also possibly

could be due to increased growth rate.

3. Blue slime disease can be cured by feeding trout either beef liver or dried brewers' yeast, although some brands of yeast are not effective or have only slight effect. It is interesting that Tetramin guppy food, which cures white body malady, contains halibut liver, calf liver meal and Torula dried yeast. I have tried feeding liver meal to guppies, but found that they do not eat it well by itself.

As already mentioned, increased growth rate makes trout more likely to get blue slime disease. From my observations and those of others who raise guppies, it is agreed by most that guppies grow larger (therefore faster) during their first five months if they are in large tanks instead of small ones. I fed only Tetramin guppy food to guppies in eight tanks of various sizes. Of these tanks, each containing some guppies with and some without white body, there were two 5-gallon tanks, one 15-gallon tank, three 30-gallon tanks, one 60-gallon tank, and one 150-gallon tank. Forty-five days later there were no white body guppies in any of these tanks except the two largest ones. In the 60-gallon and 150-gallon tanks there were still a few guppies with white body, although fewer than before the time they were started on a diet of only Tetramin guppy food. In another month there were no longer any white body guppies in the two larger tanks. So it took longer to cure guppies in larger tanks.

In a few cases I have records of the number of fish that recovered

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from white body when they were fed nothing but Tetramin guppy food. For example, in a 15-gallon tank there were four healthy-appearing guppies and four with white body (two of these in bad condition, the other two less severely affected). Forty-five days later, all eight of these guppies looked healthy. In another case, four white body guppies (three of these in bad condition) were isolated. Forty-five days later, one of these had died and the other three looked healthy.

In one tank containing apparently healthy guppies that had lost white body symptoms after a period of being fed Tetramin guppy food, the guppies started getting white bodies again one week after brine shrimp was added to the diet. Apparently white body malady is not only reversible but in a delicate balance. However, many of my guppies that were cured of white body when fed Tetramin guppy food now are being fed moderate amounts of live brine shrimp along with five or six feedings of dry food each day, with no white body symptoms appearing.

I know one person who raises many guppies and has never had any with white body malady. He feeds no live brine shrimp but gives them about two feedings per week of frozen brine shrimp. Once a day he feeds his guppies a dry food consisting of about equal parts of ground trout chow, fish meal, Gerber's high protein baby food, and a commercial flake food. The trout chow and fish meal are sold as feeds for farm animals. These guppies do not get white body malady but do not grow as large as guppies that are fed more frequently or ones that are fed live brine shrimp. Perhaps these guppies do not get white body because of their slower growth rate. It would take some testing to find out whether or not this dry food mixture can be fed along with brine shrimp without any guppies getting white body malady.

White body malady in guppies is influenced by diet, age of fish (occurring in those that are still growing), and tank size. Although white body malady can occur in guppies that are fed entirely or heavily with brine shrimp, it may not necessarily be true that all guppies fed this diet will get white body. There are many factors that may be involved, such as temperature (which affects growth rate), frequency of feeding, degree of crowding, frequency and amount of brine shrimp feedings, and possible differences in susceptibility among guppy strains. One or more of these factors might have an effect on whether or not a guppy will get white body malady. For example, guppies fed brine shrimp only might get white body at 80°F. At a lower temperature their growth rate would be slower and perhaps they would not get white body when fed this same diet. Or, even at 80°F they might not get white body malady when fed brine shrimp alone if the feedings are small. As another example, guppies fed a diet of mainly brine shrimp and only a little dry food might get white body. But if they are fed less brine shrimp and a larger proportion of the same dry food, they might not get white body.

I do not recommend raising guppies without brine shrimp. Fed dry food only, guppies are not likely to grow as large as those that are fed live brine shrimp. I think that guppies should be fed live brine shrimp along with sufficient amounts of other food or foods to prevent white body malady. Some people feed guppies live brine shrimp three times a day with good results. If your guppies get white body malady, I think you should discontinue feeding live or frozen brine shrimp, temporarily, if you have been feeding this. Then feed other foods, which could be Tetramin guppy food, frozen liver, or any brands of foods that you want to try. Fed properly, the guppies should be free of white body symptoms within one or two months. Then start feeding them moderate amounts of live brine shrimp along with frequent feedings of other foods. By trial, you can find how much and how frequently you can feed your guppies brine shrimp without any occurrence of white body malady. ●

- References:**
1. A. M. Patten, G. B. Bowers, M. Brown, E. G. Rogers, and C. M. Winters. The culture of some Central American fishes. Report No. 14. Michigan State University, Michigan State University, Lansing, Michigan, 1938.
  2. A. M. Patten, G. B. Bowers, and C. M. Winters. The culture of some Central American fishes. Report No. 14. Michigan State University, Lansing, Michigan, 1938.
  3. A. M. Patten, G. B. Bowers, A. J. Kott, and C. M. Winters. The culture of some Central American fishes. Report No. 14. Michigan State University, Lansing, Michigan, 1938.
  4. A. M. Patten, G. B. Bowers, A. J. Kott, and C. M. Winters. The culture of some Central American fishes. Report No. 14. Michigan State University, Lansing, Michigan, 1938.
  5. G. A. Rogers. Biology of the guppy. In: *Proceedings of the American Society of Zoologists*, 1938.

**CREDITS**

**FISH:**  
**GIANT DANIOS** supplied by Mr. I. Geller, Sebastian, Fla.;  
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**PHOTOS:**  
 B. Walker, p. 6-7, 77; E. G. Symmes, Jr., p. 34-39; A. Roth, p. 4-5, 8, 11, 40-48, 58, 76-78; J. Norton p. 29.

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**Views & Reactions: continued from page 18**

underized fish. The case was tried last April in Franklin Municipal Court by Judge J. T. Riley, who found Switzer guilty but suspended two \$200 fines although ordering the fish confiscated. Judge Riley remarked that he hoped the fish would live until Switzer could appeal (Switzer had brought them in a tank truck). Switzer did appeal but many of the fish died. In a split decision, the First District Court of Appeals affirmed the conviction. One of the majority judges let the cat out of the bag when he remarked somewhat apologetically that whatever harshness there may have been in upholding the conviction was tempered by the wisdom of the trial court in suspending the fines. This right-thinking jurist, however, overlooked all those fish that the Ohio "protectors" of wildlife killed in the process. Here we have a man who legally purchased fish for stocking a private lake, clearly none of the government's business, being deprived of his property by the pettiness of public officials. Think it over, fellow aquarists — they could visit your fishroom next. 1984 is not that far away! ●

**Problems: continued from page 25**

From: Ronny Casey, Raleigh, N. C.  
 I wonder if it would be possible to breed Jack Dempseys in a 20-gallon aquarium containing other fish. I presently have a 4-inch male Jack Dempsey along with two 3-inch embers, a small *Cichlasoma custeri*, a firemouth, and a small silver dollar. If it is not possible to breed the Dempseys this way, please tell me how to breed them. Also, tell me a good dwarf cichlid that is hardy and easily bred that would breed in a 5-gallon aquarium possibly containing a few zebras and guppies.

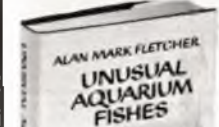


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should be offered along with micro-worms. By two weeks they can take a flake food and frozen brine shrimp. If a battle ensues before spawning, between the pair, the female should be removed if it seems she cannot hold her own. *Pelmatochromis kribbensis*, or *Mwanasara unimaculata* might spawn in a 5-gallon tank but a 10 would be better. Incidentally, *Cichlasoma catleri* is a synonym for *C. nigrofasciatum*, the zebra or congo cichlid.

From: Jim Ericsson, Clagrin Falls, Ohio

Question: I have two three spot

Walker: continued from page 7

*Synodontis decorus* is neither a frequent upside-down swimmer nor is its coloration reversed, but the impression left by a mature specimen with its contrasting black-to-dark brown against a silver-white ground color, all arranged in patterns of bars, spots and dots, captures the beholder's eye in prospect of closer scrutiny. The tail is deeply forked and sharply pointed, and is even more magnificently striped than that of the

gouramis. They are about one inch long and they are always chasing and nipping one another. Why should they do this?

Answer: This is a kind of play or exercise and should be tolerated unless they really do some damage. Unfortunately, such behavior is often upsetting to other members of a community tank. Perhaps it would be best, should this be the case, to set up the fish in a tank to themselves.

Question: Is it usual for medium-sized cichlids to eat large snails?

Answer: We don't exactly know what you mean by "large snails", but it is natural for cichlids to eat snails. ●

## Tetra Tickles

By LARRY ARNOLD



atus, are employed as a sort of amplification system. The Weberian Apparatus is a hookup arrangement between the inner ear and the gas bladder which is accomplished by certain modifications of the vertebral structure.

Catfishes, generally, are rather retiring creatures of twilight and darkness. This aversion to light is apparent in most *Synodontis* species and for this reason the aquarium in which they are kept should be provided with caves, root structures or other places of concealment. Oddly, by application of this bit of reverse psychology, the aquarist often finds that shy fishes tend to be more bold if sufficient shelter is provided to give them a feeling of security. Unfortunately, *Synodontis decorus* prefers seclusion, but since it is a heavy feeder which likes to hit the chow line before all the groceries are gone, at feeding time the fish will soon either learn to emerge or grow hungry.

There exists a bit of confusion over the proper name of this fish. Mr. J. Lambert of Belgium, who is an expert on *Synodontis* as well as certain other African fishes, was kind enough to clarify the matter. On page 130 of *Living Fishes of the World* by Dr. Earl S. Herald, is a New York Zoological Society photo captioned "*Synodontis acanthomias*". Close scrutiny of the photo reveals that the maxillary barbels (upper) are branched, much in the manner of willow rootlets. *Synodontis decorus* has branched maxillary barbels; *S. acanthomias* has not. A picture of the same species appears on the July 1956 cover of *Aquarium Journal* under the name *S. acanthomias*. Both photos, therefore, are of the true *Synodontis decorus*, the same fish pictured with this article.

Page F-573.00 of *Exotic Tropical Fishes* shows a very good color photo of a fish captioned "*Synodontis decorus*". This is not this species and although the photo does not reveal whether or not the maxillary barbels are branched, I have kept this fish and in checking a preserved specimen, the maxillary barbels were found to be unbranched. The pattern of the tail fin is also more crescent-shaped in that fish than in the true *S. decorus*, which has a barred caudal or tail pattern. The humeral process of *S. decorus* is broad and rounded (this is the bony process or projection which is visible just under the skin following the gill openings on many catfishes). In the other fish it is narrower and more pointed, and the adipose fin is a distinctly different shape. Mr. Lambert points out that the humeral process of *Synodontis acanthomias* is very long and armed with spines.

Having had upon occasion show fishes made somewhat less attractive by a hungry or aggressive tankmate removing their long, flowing fins (especially anything as worm-like as the dorsal filament of *Synodontis decorus*) I had suggested the possibility that even mature specimens from nature might lack this decoration. Mr. Lambert, who has collected many specimens of this fish in nature, says that although the length of the



*Synodontis decorus* will produce a most audible and surprising sound.

flag-tailed fish, *Prochilodus insignis*.

Certainly the crowning feature of the mature fish is the dorsal fin. After a length of more than two or three inches is attained (in the aquarium) the curved dorsal spine of the fish begins to "sprout" in much the same manner as the several rays of the dorsal in the case of the breathtaking featherfin catfish from Africa's White Nile, *Synodontis superius*. In *S. decorus*, only the first ray is elongated into what is at last a filament reaching to the caudal or beyond, patterned with alternate black and white markings.

Perhaps one of the most startling experiences in fishkeeping occurs at the time the aquarist first hears a plainly audible "growl" issuing forth from an aquarium. Although a number of fishes are capable of producing sound of one kind or another, so effective are the vocal efforts of many of the *Synodontis* species that they are often nicknamed "squeakers" (South Africa) and "talking fish" (Uganda) "because they squeak or grunt when removed from the water". *Synodontis decorus*, along with *Synodontis anatus ocellatus* are, of the thirty or so species of *Synodontis* which I have kept, easily the most audible and most frequently inclined to produce sound spontaneously. It is at least coincidental that these are two of the species which seem to prefer swimming right side up.

The sound produced by these fishes is caused by the grinding or rotation of the pectoral and dorsal spines in their sockets. There is a possibility also that the gas bladder, and perhaps the Weberian Appar-

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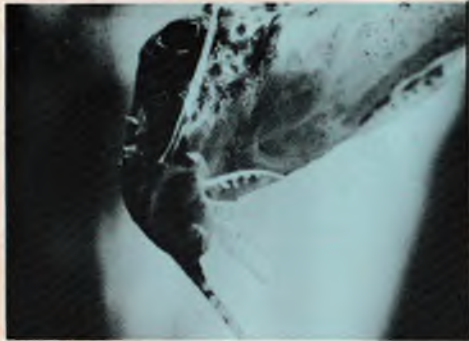
The center fish is one of the most fantastically finned of all the *Synodontis* species — *Synodontis superius*.

filament varies considerably, this may be due to age, sex or state of maturity. He points out that because of the venomous nature of the dorsal spine (which man himself finds extremely painful upon receiving a penetration), for fishes to molest the appendage, especially small species, would be, as he puts it, "like tickling the dragon's tail". At the same time, however, in my own aquarium-oriented experience with such species as those of *Anostomus*, *Leporinus*, *Abramites*, *Laemolyca* and *Exodon*, plus other fishes prone to nipping at a juicy, trailing fin, it would not seem too surprising if they found the filament irresistible.

*Synodontis* species apparently have exceptional longevity, and I have had several live in excess of ten years. Large quarters and plenty of hiding places seem to be helpful in improving the dispositions of these fishes. Seldom do they molest other fishes with the exception of other *Synodontis*, but occasionally they develop dislikes for other catfishes, especially those of competitive size and similar habits. Its disposition, which is hardly ever really bad but may necessitate separation of individuals occasionally, seems to mellow with age.

Care is very simple. Pellet-type or tablet-type fish foods are preferred next to ground beef heart and frozen brine shrimp. All live foods are eagerly accepted, but considering the small mouth size of most species, including *Synodontis decorus*, their capacity is rather amazing. Boiled oatmeal (rolled oats) is an excellent non-messy food which has much nutritional value, and by adding occasional supplements of ground





The distinguishing characteristic of the *Synodontis* family is the four branched barbels on the underside of the mouth.

shrimp meat, spinach or other ingredients while the oatmeal cooks, a varied diet containing all the essentials can easily be worked out. Pre-soaked dried dog foods are soft, easily fed and are excellent also, but they perhaps tend to cloud the water slightly more than oatmeal.

If not kept there for prolonged periods, temperatures down to 60°F do little harm, and on the high end of the thermometer 90° seems perfectly safe in clean, well aerated aquaria. Hardness and pH seem not to matter too much to most species, and since these fishes are primarily of interest to the collector rather than to the breeder, my recommendation is not to tamper with your tap water after it is dechlorinated.

Collecting rare or unusual fishes can be as interesting as any other aspect of the hobby. There is a fascination to observing fishes under satisfied, well cared-for conditions which could hardly be as well-studied in nature, and which have for one reason or another not become generally available.

A point which should be made here is that the terms "rare" and "unusual" are by no means meant to reflect price. How many friends in the hobby have you ever seen who SERIOUSLY attempted keeping some of our own, easily available, North American oddballs such as pickertel, garpike and the beautiful and common sunfishes and darters? These in their way are rare and unusual. As a catfish fancier, however, I cannot imagine a more handsome, exotic, odd and satisfying fish than *Synodontis decorus*! ●



#### Tetra Guppy Food

The Guppy is a very unpretending fish. It is content with simple food, yet is an enthusiastic spawner, and on this score is often called "little Milton-Fish." Specially bred Guppies, however, demand a lot of values in their food, and only when getting a really good diet do they develop the full splendor of their fins and colors. Tetra Guppy Food is a new food created especially for Guppies and is being hailed by successful breeders all over the world. It should be fed to growing Guppies frequently, at least three to four times a day. One other meal per day should be of baby brine shrimp (*Artemia salina nauplii*). The combination will insure the very best nourishment you can provide. Fully grown Guppies should regularly be fed TetraMin Staple Food, with Tetra Guppy Food added once a day, and baby brine shrimp two or three times a week. Feed your Guppies properly and you will enjoy them longer. Feed them better with Tetra Guppy Food.



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