

AQUARIUM

35¢





IT IS A Wonderful World of Water to this youngster and to millions of children and adults who are fascinated with aquarium life and concerned with the care and well being of their aquariums. Because they care they feed their tropical and marine fish the best... and the best is Wardley's New Wonderbar Imported Flake Food. Made in West Germany, to Wardley's exacting specifications, New Wonderbar Flake Food contains all of the essential nutrients to give your fish the well balanced diet they need and deserve. IT'S EASILY DIGESTIBLE, SO LIGHT IT FLOATS and for the well being of your aquarium, IT WON'T CLOUD AQUARIUM WATER. You'll find Wardley's New Wonderbar Flake Food wherever tropical and marine fish are sold, and in THREE DIFFERENT SIZES... a one ounce canister, two ounce canister and the large eight ounce can. A Wonderbar exclusive—sets of colorful tropical fish stamps are attached to every canister of Wonderbar Imported Flake Food. There are 12 different sets that you can collect and paste in Wardley's Wonderful World of Water Tropical Fish Album. See offer below. In addition, each large eight ounce can of Wonderbar contains a set of colorful measuring spoons that can be utilized for many various aquarium tasks; measured feeding, dispensing of remedies, etc. So see your aquarium dealer, today, and ask for Wardley's New Wonderbar Imported Flake Food. You'll find IT IS A Wonderful World Of Water too...

WRITE FOR NEW WONDERFUL WORLD OF WATER TROPICAL FISH ALBUM Series A! plus 36 page, colorful booklet "FIN FACTS." Just enclose 25¢ in coin or postage to cover handling. In addition we'll send you free tropical fish stamps to start your collection. Offer good in U.S.A. only!

WARDLEY'S FISH ALBUM OFFER
44-01 -11th Street, Long Island City, N.Y. 11101



THE AQUARIUM

Contents

A BEAUTIFUL DORADID CAT	4
IS THE MALE LYRETAIL SWORDTAIL STERILE?	6
EXPERIENCES IN KEEPING DISCUS	8
ABOUT OUR AUTHORS	16
SOCIETIES AT WORK	20
BARCLAYA LONGIFOLIA	32
A HISTORY OF THE AQUARIUM HOBBY IN AMERICA	36
AN AMAZONIAN ADVENTURE	44
THIS IS MY PROBLEM	52



On The Cover

Platydoras costatus displays its tuxedo-like markings for April's issue of THE AQUARIUM. Braz Walker's feature article on this and other Doradid catfishes begins on page 4. (Additional credits appear on page 71.)

EDITOR:
Albert J. Eise

MANAGING EDITOR:
Sigmund J. Albert

ASSOCIATE EDITOR:
Helen Sinkovits

ART & DESIGN:
John E. Hayes
Kenneth M. Goodman

PHOTOGRAPHY:
Andrey Roth

SENIOR CONTRIBUTING EDITOR:
Braz Walker

CONTRIBUTING EDITORS:
Jim Kelly
Paul V. Loebelle
Diana Schofield
Richard F. Stratton
William A. Tamey
Arend v.d. Nieuwenhuizen
Gerald F. Currier
Cleveland M. Smith

CONSULTING EDITOR:
Gene Wolfheimer

CONSULTING ICHTHYOLOGISTS:
Robert F. Miller, Ph.D.
Jim Thomson, Ph.D.
Hermann Mainken

CONSULTING PARASITOLOGISTS:
Sylvan Cohen, M.D.
Robert J. Goldstein, Ph.D.

SALT WATER CONSULTANT:
Robert Stroughton

CONSULTING ARTISTS:
Peter Peck
Kappy Springer

\$3.50 per year 35¢ per copy

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

Address all correspondence to PET BOOKS INCORPORATED, 87 Rt. 17, Maywood, N.J. 07067. THE AQUARIUM is not responsible for any unsolicited submissions. To insure return, include self-addressed envelope. Neither contents nor illustrations may be quoted or used without written permission of the publisher. Second class postage paid at Farmingdale, N.Y.

a beautiful doradid cat

by BRAZ WALKER

The Doradid Catfishes (family Doradidae) are peculiar to South America and are commonly known to aquarium hobbyists as "talking catfishes" because of their rather unusual ability to protest audibly when removed from the water or otherwise annoyed. Enabling these catfishes to make such sonic utterances is a modification of the anterior vertebrae and subsequent physical connection to the gas bladder (swim bladder). This is known as the Weberian Apparatus and is shared by all cypriniform fishes including catfishes, loaches and min-

A head-on view of *Platydoras*, resting on coconut shell, showing the dorsal fin fully erected.

nows. The presence of an exaggerated disc-like connection firmly attached to the gas bladder in these "talking catfishes", is useful in generating and amplifying vibrations which are in the frequency range which we know as sound.

A few years ago, a "new" catfish appeared on the scene under the name "Rafael" or "Raphael" catfish. The strong, toothed pectoral fins and the series of bony plates along the sides, each carrying a rear-projecting spine, left little doubt that this handsome tuxedo-clad and bewhiskered fish was an outstanding member of the doradid cats, of which *Acanthodoras spinosissimus* was most familiar.

continued on page 38





A female with both lyretail and hi-fin.

IS THE MALE LYRETAIL SWORDTAIL STERILE?

by DOROTHY O'QUINN

What would this hobby of ours be without our old friend the swordtail, *Xiphophorus hellerii*? To those of us who are relatively new in the hobby, the swordtail is a common sight, prevalent in almost every shop or fish room. But it hasn't always been that way. When the original swordtail stock was imported from Eastern Mexico back in 1909, they sold for ten dollars a pair, which must have seemed like an exorbitant price at that time, and I can well imagine they were rarely found in the average aquarium.

Swordtails now fit into almost any price category. They make a congenial, showy addition to almost any aquarium. In fact, it would be hard to find a fish more ideally suited to beginner and expert alike. With

continued on page 76



A female with lyretail and normal fin.



A male hi-fin swordtail with the normal, sword-like tail extension.

photos by EDWARD SYMMES



Experiences in Keeping Discus

by HANS J. MAYLAND

Before embarking upon the keeping of discus (*Symphysodon discus*), I naturally studied the appropriate aquarium literature and inquired of friends who were more or less successful in such matters. Professor Sterba has written, for example, that discus are best kept in very soft, slightly acid water, with generous numbers of aquatic plants and sufficient swimming room. The hardness recommended is about 2 to 3 DH; pH about 6.5. However, one rarely is lucky enough to obtain such water without considerable alteration of the original. Nonetheless, taking his advice to heart I prepared my tank. It soon turned out, however, that it would be impossible to duplicate "natural" conditions as there are a host of factors that play their role. Overall in importance is that a sort of biological balance must be obtained. All hardness is not alike, either. One type is the result of the presence of small amounts of bicarbonates. The other, sulfate hardness, is not as important in my opinion.

For my 50-gallon asbestos-cement tank I obtained two young brown discus that were tank-bred. At this stage it was not possible to sex them, but of far greater importance at the time was the fish were strong and healthy. This was my first attempt and but a prelude to a strain I hoped to establish.

black & white photos by R. V. LEETON

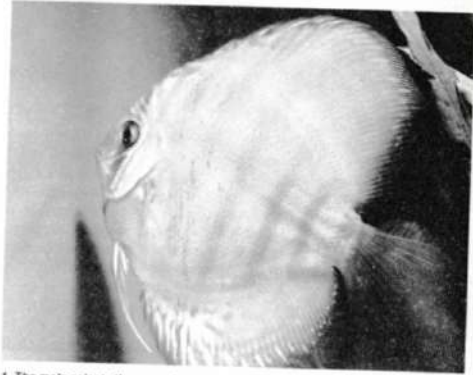
The tank was well-stocked with large Amazon sword plants, as well as with pieces of wood, sand and gravel. Temperature was maintained at a constant 80° F by the use of two heaters regulated by a single thermostat. For lighting, a warm-white and a Gro-Lux bulb were employed. Tankmates included a school of twenty cardinal tetras, a blue "whisker" catfish (*Ancistrus dolichoptera*) and several apple snails (*Ampullaria*). Much to my surprise, the young discus took all foods offered and, contrary to some literature, doted upon tubifex. I made sure, therefore, that the worms supplied were always well-cleaned. In the summer months I fed small portions of daphnia; in both summer and winter they were given mostly bloodworms (*Chironomus plumosus*) and white gnat larvae (*Chaoborus crystallinus* and *Coretha plumicornis*). With regard to the feeding of mosquitos, their larvae and pupae, these were passed up as they placed my marriage in jeopardy! In addition to the tubifex, I used a few drops of a vitamin preparation (after first letting the fish go hungry a few days).

In due course, my small discus developed into handsome specimens. Conspicuously, one was larger than the other. At the beginning I took no notice of this but later, however, I asked a specialist who told me that the consensus was that the male was usually smaller, the female larger. My hopes, therefore, rose. Naturally, I realized that the presence of both sexes made possible some nuptial play or better still, an actual spawning.

One day, at which time the fish were approximately 1½ years old, I was entertaining company. It was on a Sunday afternoon and I was proudly showing off my two wonderfully-colored discus. As we entered the room, our astonishment was great as we found the fish, intensely colored, laying and fertilizing their eggs. I quickly conducted my guests to another room so that the discus would not be in the least disturbed. At the conclusion of the spawning there were about 100-150 eggs on one side of the tank. Our joy was short-lived, however, for a few hours later, all of the eggs had disappeared. The pair apparently had eaten their spawn. My disappointment wasn't total, however, as I had established that I had a pair of fish which might spawn once again. After exactly five days, a second spawn appeared. This time, the number of eggs was a third higher. They were not eaten immediately and my hopes rose—but in vain! A little later, all had disappeared again.

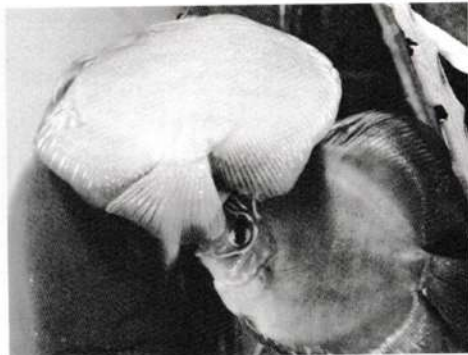
At this point, I removed all of the other fishes and the snails, acidified the water a bit more (over a period of hours), and waited anew. After another five days, the spawning activities began again and this time, the coloration of the fish was even more intense (by now, the pH had decreased to about 5.5). This spawn was as large as the second one. With a pounding heart I waited. Would the eggs disappear? This time the discus were alone. All of the other fish were no longer in the tank.

Success! The eggs of this third batch were not eaten, and only a few



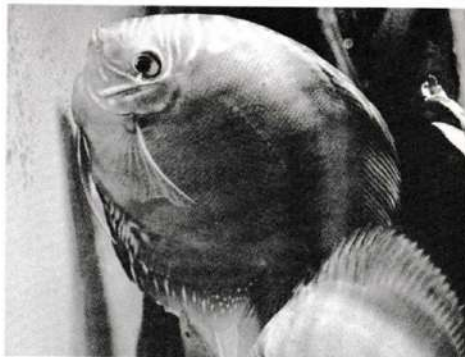
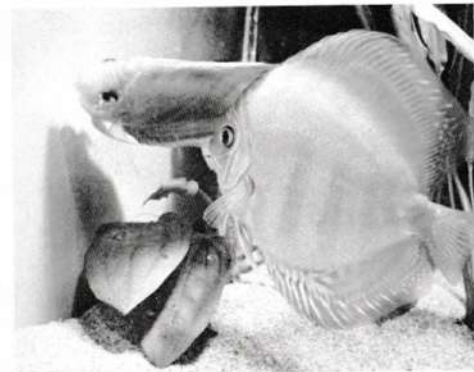
1 The male selects the spawning site.

2 The female makes sure the site is to her liking.



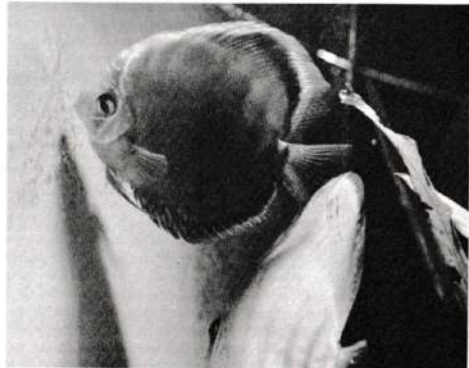
3 The male makes a run over the site as in fertilizing the eggs.

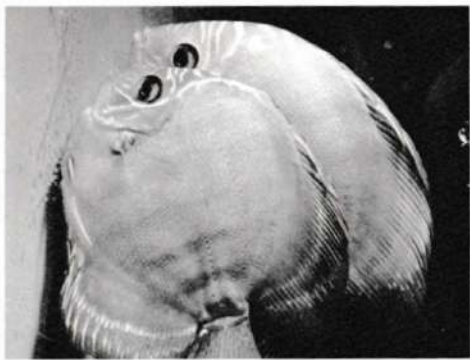
4 The female makes one of very many "dummy runs".



5 Satisfied with the site, the female makes spawning runs, followed by the male who fertilizes the eggs immediately after they are laid.

6 After every fertilisation run by the male, the female inspects the eggs and picks minute particles off them.





7 Occasionally the male moves in unison with the female on her spawning runs.

fungused. In a few days, the first signs of life appeared. Carefully the female carried the eggs to another site—a large, steeply sloped piece of wood that previously she had cleaned well. A little later I had a quivering collection of fry in my tank. My first worry concerned the filter inlet tube, so I fastened a piece of netting over the opening with a rubber band. This insured that no fry would accidentally be drawn into the filter.

The young hung on the sides of their parents immediately after hatching, drawing nourishment from the skin secretions. After ten days, I started feeding brine shrimp (newly-hatched). When I placed the shrimp in the tank, the parents would swim cautiously with their swarm of young in to the midst of the food as if saying to their fry, "Try it and see how it tastes!"

Of course, not all of the approximately 90 young attained maturity. Still, one could expect little more for the first time with so beautiful and difficult a species. But as the spawning and hatching caused me many a skipped heartbeat, so did the second phase of rearing. This consisted mainly of a search to provide additional kinds of live foods. For young discus, about 1.5 cm (a little more than $\frac{1}{2}$ inch), adult brine shrimp is almost too large. What to feed now? The answer at hand presumably was daphnia and cyclops. But however attentive the breeder may have been to published breeding reports, he is confronted with the realization that

continued on page 54

GOOD NEWS FOR GARDEN POOL OWNERS

Just Out...

Supreme[®] POOLMASTER



**THE ONLY UNIT THAT
BOTH FILTERS and CIRCULATES
WATER IN GARDEN POOLS!**

New Combination Filter and Pump Keeps Garden Pools Clean and Fresh!

There's nothing else like it, anywhere! The Poolmaster is a filter and pump combined, that is designed for use in all kinds of outdoor and indoor pools, including ponds, goldfish pools and fresh water minnow tanks.

The Poolmaster is placed at the bottom of the pool completely submerged and out of sight. Water is drawn through the filter and returned to the pool by the pump. Because the Poolmaster is so compact, it can be easily moved to all parts of the

pool to pick up any accumulation from the bottom.

With the Poolmaster, you can create your own beautiful waterfall or fountain by simply connecting a hose to the pump outlet.

The Poolmaster is quality-built by the foremost manufacturer of aquarium and pool products. It is constructed to give you superior, trouble-free performance year after year. Supreme materials and workmanship are guaranteed against defects for one year from date of purchase.

SPECIFICATIONS
115 x 40 Castles
150 to height of 3 ft.
—pumps 200 gph/hr.
150 to height of 5 ft.
—pumps 120 gph/hr.
Weight 5 lbs.
Size: 13 1/2" x 9 1/2" x 7"

EUGENE G. DANNER MFG. INC. 1660 Summerfield Street • Brooklyn 27, N. Y.

15

ABOUT OUR AUTHORS



HANS J. MAYLAND

Born in 1929, Hans Mayland still considers himself one of the members of the "younger generation" of fishkeepers in West Germany. By way of vocation, he is a fabricator of materials such as plastics and wood for use in sundry decorative applications, e.g., trade fair exhibitions. His firm also manufactures heavy curtains used for decorative purposes. With a background such as this it was natural that he turned his talents to the use of aquaria in the planning of room decor. Many of his articles have been published in the German aquarium literature.

Located in Frankfurt am Main, he is strategically situated between the world renowned Senckenberg Museum of Natural History, and the famous Frankfurter Zoo. This provides an opportunity to discuss technical aspects of the hobby with qualified scientists, as well as access to a great store of scientific literature. Consequently, Hans Mayland's interests have also included studies of the requirements of fishes and the diseases that affect them. His first love, however, remains the creation of "living pictures" as it applies to the aquarium. We hope to have some examples of his decorative art in the aquarium in a future issue.



DOROTHY O'QUINN

Dorothy O'Quinn's introduction and involvement with the aquarium fish hobby is best told in her own words:

"I think our whole way of life changed on the day my husband, Harvey, came home with a five gallon aquarium tucked under his arm. Although I had no intention of getting involved at the time, I soon caught this "most contagious of diseases" and before I knew it, was knee-deep in tanks, pumps, filters and aquarium literature. You see, with the "disease" hard upon us, we couldn't be satisfied just sitting around looking at the activities inside an aquarium. We wanted to experiment with the breeding of the many species we had been reading about. Consequently, the number of our aquariums grew at an alarming rate.

Now, twelve years later, we are constantly finding something new and different and interesting in the hobby and the people with whom it brings us in contact.

We have lived in East Point, Georgia, a suburb of Atlanta, for more than 30 years. Our one son and one daughter and five grandchildren live in the Washington, D.C. area, too far away for frequent visits. This

continued on page 53

DIATOM FILTER

FILTERS OUT FISH KILLERS Diatomaceous filtration actually filters out protozoan parasites such as "ick".

- **POWERFUL**
- Never needs cleaning—Simply back-flush and recharge.
- No foul odors.
- No messy irritating glass wool.
- No valuable tank space lost.
- Self-contained—Quiet operation.
- Positively does not change water chemistry.
- May be moved from tank to tank without spreading disease.



Ask Your Distributor or Write:

Fillings of new special tank. Diatom filter "backed up" in a diatom tank containing ammonia, nitrite, nitrate, etc., and then recharged. Water was stirred and filtered. The filter was removed and the water was stirred and filtered. The filter was removed and the water was stirred and filtered. The filter was removed and the water was stirred and filtered.

Only \$34.95 Retail

BREAKTHROUGH!

New Filter Bag of Dupont REEMAY[®] Flows 10 Times Longer -- Backflushes Clean

Tests prove this new material flows 10 times longer with no plugging from swelling or fish slime.

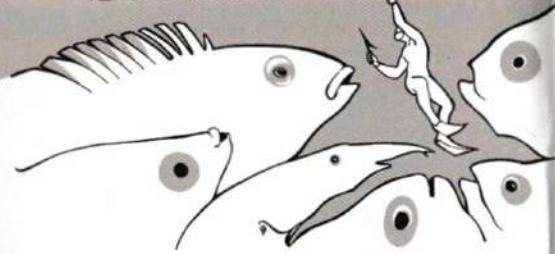
Available now through your dealer or order direct. Send check or money order for \$3.95 plus 25¢ postage. Order by name, "REEMAY" Filter Bag.



G. 4142 Fenton Rd. • Flint, Michigan 48307

17

Societies at Work



By HELEN SIMKATIS

DR. THORNTON LIPSCOMB DISCUSSES *Some Basic Aspects of Water Chemistry* in the November-December issue of *The Scavenger*, published by the Louisville Tropical Fish Fanciers. He takes up the three main chemical properties of water which he considers of interest to fish fanciers. The material is somewhat technical but those hobbyists who are cognizant of the value such an article provides will find it rather easy going if they read it carefully. pH is explained and its importance to fish is gone into. Water hardness is also explained and the manner in which most municipal systems are managed is described. He recommends zeolite to remove calcium (this is a mixture of sodium aluminum silicates), and explains why water softened by this product is not equivalent to distilled water. Ion-exchange resins are also discussed as well as the type of kits that are available to test water hardness. The last characteristic of water which Dr. Lipscomb considers important to aquarists is osmotic pressure. Although the aquarist cannot control this to any great degree, a knowledge of the osmotic process is beneficial when fish are being transferred from one type of water to another. All in all, this is reference material and will be most helpful to the serious student of tropical fishes. In this same issue Marion Hayley goes into *Genetics* with a comment "Believe it or not: It really is interesting." He explains how a knowledge of genetics can help the breeder to improve or change his basic stock both with plants and fish. *The Scavenger* is a well-produced bulletin and information regarding it and the publishing society can be had by writing Editor A. L. Hayley, 122 Dorchester Road, Louisville, Kentucky 40223.

Doris Fite considers aquariums for shut-ins in her *The World Within Four Walls* in the November issue of *Aqua-Focus*, published by

the Aquatic Researchers of San Antonio. She points up that the average shut-in's monotony is only broken when a visitor appears for a little while and by reading material which is at best vicarious living. An aquarium brings a small world into the life of the shut-in and can be populated according to the invalid's personality and needs. Either a tranquilizing or stimulating effect can be created by the species of fishes selected. The author suggests species that will provide the kind of theatre the shut-in will most appreciate. Even though he or she may not be able to participate in the maintenance of the aquarium, interest will be stimulated, and also a new field of reading material can be added by way of tropical fish literature. This is a thoughtfully written piece and those with an invalid in their household should give it consideration. *Aqua-Focus* is one of the older bulletins that has earned a firm position in the fishkeeper's hobby. It is edited by Leona V. Bradley and information regarding it and the publishing society can be had by writing *Aqua-Focus*, 301 Blanco Road, San Antonio, Texas 78212.

Tropical News, published by the Sacramento Aquarium Society, is a small bulletin but one is never disappointed in reading it and you can be sure it will carry at least one excellent article. The December issue is no exception. It carries J. Kirchner's *Under Swords Crossed*, a brief but cogent piece on the swordtail. Author Kirchner collected his first specimens from a polluted stream in Mexico some years ago and has been working with the species ever since. He suggests that the ideal set-up for the fish is to keep a trio (two females and a male) in a well-planted tank large enough to accommodate the swords and a variety of community-tank species. The female about to produce young should be moved to a 10-gallon tank to herself. As soon as the young are born, the mother should be removed to a 5-gallon tank alone. Here she can be left to recover for three or four days and then returned to her original home. The fry should be fed generously with brine shrimp four or five times a day. The author admits that the sword is an easy fish to handle but the information he gives in this article will answer a number of questions that keep reappearing in the mail we receive from our readers. Certainly this is material worthy of reprinting in other bulletins. *Tropical News* is published by the Sacramento Aquarium Society and information regarding it and the publishing society can be had by writing Sacramento Aquarium Society, P.O. Box 1204, Sacramento, California 95806.

Bettas are spotlighted in the November issue of the *Colorado Aquarist*, published by the Colorado Aquarium Society. Ella Pittman's *Is Spawning Bettas Easy?* answers the question by saying it is comparatively a breeze until you want to spawn "that special pair." Young breeders are the surest bet, the author tells us, and some have been known to breed at 3 months of age. Of course, they should be from an



LOOK FOR THE FAMILIAR RED, WHITE & BLUE BOX — YOUR ASSURANCE OF HIGH QUALITY IN PET PRODUCTS.



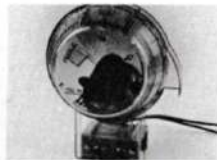
#242 PICTURE-WINDOW BREEDER

(Pat. Pend.) A new and unique breeder featuring smooth surfaces, covers that do not trap fry, non-toxic (FDA approved) material, and the "Picture Window" which provides unobstructed observation of parent or fry. The perforated surfaces may be cleaned without fear of tearing or changing the size of the openings. Plastic hinge feature permits easy set-up and, if desired, including for storage. Set up, breeder measures 6" x 5 1/4" x 5" high.



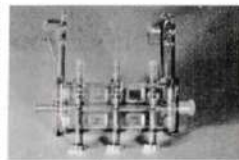
#231 JUMBO CORNER FILTER

Largest of the 6 Lustar corner and bottom filters: 60, except the economy #242. Features the Lustar-originated anchor plate — cover anchor plate with gravel; filter will not float or tilt. All filters with anchor plates feature filter plates made of tough, non-shattering Eastman substrate. Also available are the economy #238 Outside Filter with syphon flow starter, and the large capacity #234 Outside Filter with both syphon flow starter and the #236 Bulk Flow Starter.



#224 AUTOMATIC FISH FEEDER

Originally developed to fill the need for an automatic fish feeding device while the hobbyist is on vacation, this unit caught on as a means to feed fish a set amount of food at regular intervals — 2 or 4 times daily. Full instructions are included, but to place in use the feeder need only be filled with food to indicated level & plugged in to a 120 volt AC outlet. Amount of food per feeding is adjustable, and a "Food Agitator" prevents food caking in humid conditions.



#253 GANG VALVE (shown)

This patented gang valve, available in any practical number of units from 2 to 8 (more if you have the need) and with or without hangers, features invisible O ring air seals, Eastman plastic, and the best in solid brass stems. Non-slip grip of O ring on the stem assures proper air flow adjustment when once set. Design of these units plus use of a tough, transparent industrial type of plastic was directed to effect a practical aquarium air valve that would not corrode or require much space, and therefore does not detract from the aquarium appearance.

21

This is the Dynaflo Motor Filter.
The best aquarium filter in the world.
We couldn't make it better,
so we made a bigger one, too.

Strong words, perhaps, but they're backed up by 35 years of being in the aquarium and necessary business. There's why we can speak with authority. The revolutionary Dynaflo is commonly simple. Yet it will keep any aquarium clear on a month's spring. The

new Magic Magnet Drive™ is a miracle of efficiency, with only one moving part silently rotating on a nylon ball. No other gimmicks. No gaskets. No valves. No rubbing. Nothing. And what's more, it operates on a 15-watt. An 18-ounce soft foot hangs on the

back of any aquarium, whether that of a beginner or professional. We couldn't make one better, we never had to know why we had to make one better.



23

inch to an inch and a half in length. When the female is ready, and she must be, she will have a small white protrusion at the anal area. Author Pittman favors an 80°F temperature and plants (or an escape hatch of some kind) should be provided for the female. The pair should be separated at first either by a partition or by placing the female in a floating jar. The female is released when the male is finished building a bubble nest. A combination of infusoria, fine-grind dry food or newly-hatched brine can be used as a first food; the tank should be covered for the first six weeks or until the youngsters have developed their air-breathing organ. Jerry Vinareik's *Bettas Aren't Bad! How to Spawn a Rogue Male Betta* has been picked up in this issue from *The Wet Thumb*, published by the Cleveland Aquarium Society to give some idea how to spawn the problem specimens Author Pittman mentions in her piece. Certainly this is an excellent spot for a reprint for Jerry discusses rather carefully the cases of the male who eats the eggs and the male who loses interest after the female has released her eggs. Both instances call for artificially incubating the eggs and the author gives his method for so doing. These are only two of several fine articles in this issue and they are enough to make it reference material. The *Colorado Aquarist* is well-produced and carries excellent photographs as well as drawings. Write to the society at P.O. Box 19278, Denver, Colorado 80219 for information regarding the club and its publication.

Julius E. Maki describes his method of raising adult brine shrimp in his *Adult Brine Shrimp From Baby Shrimp*, appearing in the November issue of *The Fish Fancier*, published by the Houston Aquarium Society. As a container, the author used a 60-gallon old dishwasher tub made of porcelain. He patched the openings with single strength glass and used Silastic as the sealant. The tub was placed outside and the salinity read at 1,040. Yeast and a product called Infameal (undissolved form) were the foods used. Within four weeks the first shrimp had grown to about one-half an inch and his yield was about 2 ounces (liquid volume) per week. It would be interesting to know what the mean temperature of the water was so that hobbyists living in areas north of Houston could determine whether such an experiment might be practical for them, considering the part of the country in which they live. A source of adult brine shrimp would be a prize for most aquarists, especially those working with salt-water species. Information regarding *The Fish Fancier* can be had by writing the Houston Aquarium Society, Inc., P.O. Box 391, Bellaire, Texas 77401.

There is an illustrated article entitled *Microscopic Life In a Drop of Water* by Virginia S. Workman in the December issue of *Aqua Jewels* (Aquarium Society of Broward County) which could very well launch a number of hobbyists into a new phase of the aquarist's never ending

**THIS IS
"ATLANTIS" ...
OUR NEWEST
3-D BACKGROUND.**

As with our six other colorful styles, "Atlantis" is available in sizes to accommodate most aquariums from 5 to 29 gallons. In addition, the "Rocks & Caves" style is manufactured in 36 and 48 inch sizes.



AT - "ATLANTIS"

**If you can't make up your mind...
buy six more tanks!**



A - "AQUARAMA"



E - "ROCKS & CAVES"



I - "SHIPWRECK"



D - "DIVER"



T - "TREASURE CHEST"



O - "ORIENTAL"

AVAILABLE AT QUALITY PET OUTLETS EVERYWHERE.

©1967 PENN-PLAX PLASTICS, INC., 1901 W. 100th FOSTER AVENUE, BROOKLYN, N.Y.



EUREKA
Assures More Healthful Aquariums!

POWERHOUSE VIBRATOR PUMP
STAINLESS STEEL DIAPHRAGM
NEVER NEEDS CHANGING



2 YEAR GUARANTEE MADE IN U.S.A.
QUIET! LONG LIFE!
HIGH POWER!
RUNS 10 OUTLETS!

Nifty AQUARIUM HOUSE CLEANER



NEEDS NO PUMP

The sensational EUREKA NIFTY will thoroughly house clean your aquarium, purging the gravel right in the tank without disturbing equipment. No mess or bother.

EUREKA PRODUCTS CO., 4 Bruen St., Newark, N. J.
WORLD'S FINEST AQUARIUM PRODUCTS

IF YOUR SOURCE IS UNABLE TO SUPPLY YOU WRITE FOR INFORMATION

search for new horizons. Strangely enough there are new horizons in something as minute as a drop of water. Author Workman begins her piece by wondering if Noah brought any of the simple forms of life aboard his Ark. Actually, he didn't have to—they were all around him and had nothing to fear from the flood. These are the protozoa that are found both in fresh and salt water. She points out the formidable power of such living things en masse and uses as example the damage that can be caused by the "red tide" which is a blooming of one kind of flagellate that sometimes appears on the surface of coastal waters and is so dense, the water takes on a red hue. All living things in such an area of water are killed for the dense floating mass of protozoa gives off toxins, preventing the water from taking on oxygen at its surface. She then discusses the interest psychologists take in the study of protozoa since they represent the animal mind in the most primitive form. Do they have consciousness? Do they experience sensations? Do they learn from experience? Do they know pleasure or pain? Recent explorations were made into these questions when a group of scientists worked out a method of photographing the growth of a cancer cell in a human being. It was learned that the white blood cells that either destroy or come to the defense of red cells when they are in trouble, deliberately pass by a cell gone wild or one that has become cancerous. How does the

"LIVING WONDERS OF THE SEA"



NEWS RELEASE

Genuine CORAL GRAVEL now available for immediate shipment directly to hobbyists!

We do not "Just Sell" salt water tropicals, but CATER EXCLUSIVELY TO THE NEEDS OF THE MARINE HOBBYIST.

Our line also consists of LIVE CORALS, beautiful decorative corals, gorgeous shells and last but not least, our clean healthy feeding "undrugged" marines.

If you care to own and train small SHARKS OR MORAY EELS, we have those also. By the way, they make excellent pets and are easy to keep.

Oops—We nearly forgot to mention our long list of invertebrates.

Won't you drop us a line? We shall be looking forward to hearing from you.

"LIVING WONDERS OF THE SEA"
Box 1895, G. P. O. New York, N. Y. 10001

white cell make such a selection? A superficial explanation may be that each type of cell is programmed much the way a computer can be programmed. This leads to another premise. Are higher animals programmed? Does this explain how a cichlid knows how to prepare a compression in the sand when it has spawning on its mind? Does this explain how a robin knows how to build a nest? And why each robin's nest is built in a similar fashion? If so, does it also mean that each human being is somewhat programmed? Author Workman tells us there are over 20,000 species of protozoa, and describes the behavior of the well-known amoeba and how the Globigerina is responsible for the wall-to-wall carpeting of mire on the ocean floor. This well-written article should encourage more than one reader to dust off his microscope and examine the "microscopic life in a drop of water."

In this same issue Dean Younger gives excellent instructions for constructing an outside pool. The pool he has built is equipped with filter, pump, and lights and is considerably more sophisticated than those usually discussed in aquarium literature. Part II will appear in the January issue of *Aqua News*. The author does not find the plastic sheet type of pool practical and tells why. This first section of the piece lists material needed and partially carries the reader through the construction process. Hal Storick offers some interesting data on

"WOOD'S VEILTAILED MOLLIES"

Outstanding opportunity for hobbyists to develop new color varieties of this new fish. Fish shipped will be over 2" long. Most females 3" to 3½" long.

Veiltailed Sphenops \$10.00 per trio.
Six trios \$40.00

Veiltailed Black Mollies.
(First time offered) \$15.00 per trio.

Young fish 1" to 1½" long ½ price.

Postpaid in continental United States.

Airmail special delivery.

Live arrival guaranteed.

25% discount to retailers } Use your

50% discount to wholesalers } letterhead.

Calif. residents add 5% tax.

Make check payable to:

John A. Wood
El Rancho Tropi-Cal
Rt. #2, Box 192
Thermal, Calif. 92274

Phone:
714 EXpress 9-4258

28

Hydra and recommends the use of 5 grains of ammonium nitrate to a gallon of water to eliminate it. The December issue of *Aqua Jewels* is as superbly produced as preceding ones, and certainly its content is as thought provoking. Write to Editor Doris Vilda, Editor, P.O. Box 115, Ft. Lauderdale, Florida 33302 for information concerning the publication and the Aquarium Society of Broward County.

The Pomona Valley Aquarium Society will hold its Fourth Annual Tropical Fish Show on May 18 and 19, 1968 at the Los Angeles County Fair Grounds in Pomona, California. All aquarists are invited to participate in the three general classes, Senior Hobbyists, Junior Hobbyists, and Novice Aquarists. Trophies will be awarded to first-place winners. In addition there will be trophies for winners of a Sweepstakes Contest, People's Choice, and for the Best Planted Aquarium. There will be an International Section and entries from abroad may enter the beta, guppy, goldfish, and killifish Sections. Information regarding the show may be had by writing Marvin Nebel, Show Manager, 14040 Rexwood Street, Baldwin Park, California 91706.

The Second Annual Independent Pet Industry Trade Show will be held in Chicago, Illinois, at the Sherman House Hotel, June 2, 3, and 4, 1968. Manufacturers, importers, distributors, plant and livestock breeders, are invited to participate. Write to H. H. Backer Associates, Inc.

ED'S multi-LINE

FOR BROAD-SCOPE MEDICATION

Created originally for use
in our own stores, our hatchery
and our import department

these medications have proved so effective

that we are now making them available to the hobbyist.

MULTI-Q for ich and internal parasites

MULTI-M for velvet & ich and minor fungus infections

MULTI-KURE for fin & tail rot, also effective against minor fungus and bacterial infections

SUPER-MULTI for dropsie, cataracts, severe fungus and internal parasites

MARINE CURE for salt water velvet

ED'S TROPICAL DEALERS: SPECIAL INTRODUCTION OFFER
Ed's Aquariums 2 SCRANTON AVENUE, LYNBROOK, N. Y.

29

2151 North Hudson Avenue, Chicago, Illinois 60614. Miss Sue Busch Backer will be most happy to answer questions regarding the show and her telephone number is Area Code 312-248-4200.

The 13th annual exhibit of the Milwaukee Aquarium Society will be held at the Mitchell Park Pavilion, Milwaukee, from May 17th through 19th. The public is invited to view the exhibit free of charge. The Shedd Aquarium of Chicago will provide their traveling mobile unit containing two 100-gallon marine tanks, one with specimens from the Atlantic Ocean, the other with specimens from the Pacific. There will also be a bonus exhibit of freshwater fish native to the State of Wisconsin, provided by the Wisconsin Conservation Department.

A special display project will consist of an area in the pavilion that will be converted into a cavern containing both stalagmites and stalactites. To complete the cavern, there will be a pool containing blind cave fish. The awards in competition will be trophies and ribbons of many kinds, of course, and a very special class this year will be the Junior Betta Growers class for which the original bettas were provided by the betta breeders in the Society. Additional details may be obtained from Mrs. Dolores Bialk, Publicity Chairlady, 2140 Delafield Avenue, Waukesha, Wisconsin 53186. ●

NEW!
CERAMIC
COLOR
GRAVEL



CERAMIC BAKED-ON BEAUTY

ON GORGEOUS NATURALLY SHAPED SMOOTH STONES APPROXIMATELY ¼" SIZE
ABSOLUTELY CLEAN — NO DUST — NO WASTE
NON-TOXIC — PERMANENT TO CERAMIC COLORS
CAN'T FADE — WILL NOT DISCOLOR FRESH OR SALT WATER

ASK YOUR JOBBER FOR THIS REALLY "HOT" ITEM
JOBBER: WRITE IMMEDIATELY FOR PRICES AND SAMPLES

MANUFACTURED BY: AQUARIUM PRODUCTS
4100 AQUARIUM PLACE, BALTIMORE, MARYLAND
(MANUFACTURERS OF REGULAR COLORED GRAVEL TOO)

30

Introducing the Bon Air™ pump.
The "champagne" of aquarium air pumps.
Now you know why
we're making them in France.

Valid!
The French do have a way of creating some of the world's most distinctive things.
Like perfumes.
Fashion.
Champagne.
And here is a great aquarium air pump for tropical fish hobbyists all over the world.
For over 17 years, this superb pump mechanism has provided trouble-free

performance for millions and millions of aquarists... and now Manufacture into France Bon Air to America.
A fact that shouldn't come as a surprise to you, because wherever a new product, or new idea is developed, it usually does come from Metropolitan France.
After all, we didn't get to be Number One without good reasons.
In this instance, we took a fine French mechanism, designed or hand some case for it, and then put it in a pretty box.

Now, the rest is up to you.
The Bon Air mechanism is depend-able. So dependable that it is guaranteed for life.
It will operate any aquarium size on the market.
And it will do so efficiently, powerfully, and silently.
In fact, it's so quiet, about all you can hear when it's operating is the sound of the bubbles.
Just like champagne.

METAFRAME



31

by WILLIAM A. TOMEY

THIS RELATIVELY SMALL WATER LILY from the island of Borneo (and perhaps also from parts of Sumatra and the peninsula of Malaya) is being used more and more often as an aquarium plant. This is as it should be as it not only is very suited to the aquarium, but it develops into a fine beauty admired by all.

Its rather tall leaves can vary somewhat in length and breadth, as also can its color. These uncertainties are dependent upon the lighting, the size of the aquarium and the manner of cultivation employed. It is not difficult to bring this plant to blossom in the aquarium, however. Its flower is green-colored on the outside, with wine-red or purple leaves, sporting long pointed tips, on the inside.

Oddly enough, if the flower opens by itself, ripening seeds are not found. On the other hand, should the flower remain closed, it pollinates itself, producing fertile seeds. The ripening of the fruit takes place just below the surface of the water, through the warping of the long stem which supports the floating flower. *Barclaya longifolia* is then, a typical self-pollinating plant (Cleistogame) but its exact fertilization process is still imperfectly known.

Barclaya, should it flower, usually has a life span of one year although this is longer if flowering has not occurred. Some aquarists, however, have reported that they have kept individual plants for as long as three years.

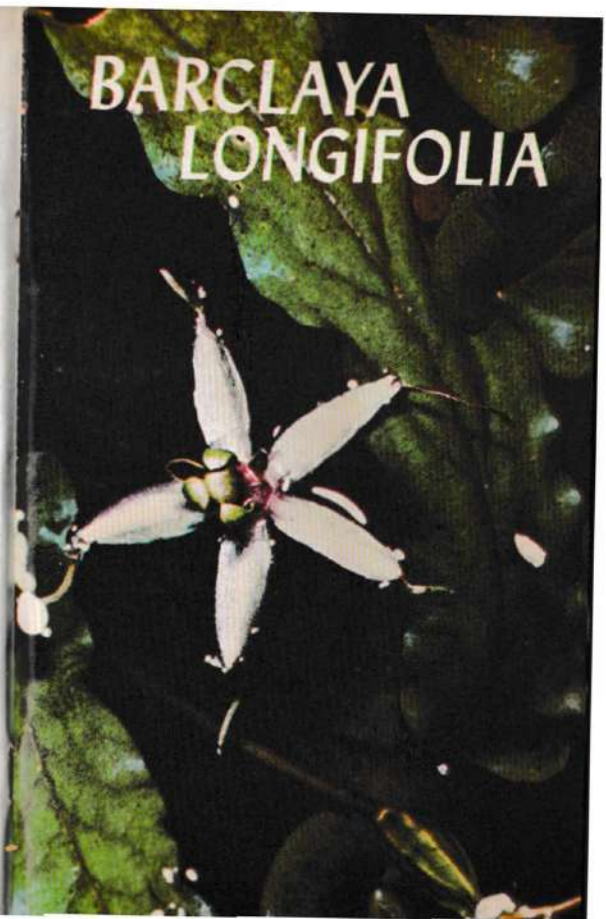
A cross-section through the flower reveals some stamens which are incapable of producing pollen, and others which are. The same section shows the flower to have a sort of double bottom, i.e., the real one and a false one, the latter formed by the stigmas (the part which receives the pollen grains) and which point out to give the flower its star-like appearance. The cavity between the stigmas and the real bottom fills up with a whitish-colored, spongy tissue during the seed-ripening process. Further, this tissue then fills with air and it is in these "pockets" that we find the somewhat prickly seeds of *Barclaya longifolia*.

If the seeds ripen satisfactorily, cracks arise in this spongy tissue through which portions work their way out, ultimately floating on the surface of the water to spread and subsequently propagate the species. At this point, it is possible for the seeds to become attached to the fur of animals (deer, wild pig, etc.) that come to drink in the forest lakes. This, also, aids in distribution of the seeds. After a few days, the spongy tissue dies off and the seeds sink to the bottom. After germinating, new plants are formed.

In the aquarium, *Barclaya longifolia* requires moderate lighting, a temperature of not less than 68°F, and some soil about its roots (use a pot for this purpose). The seeds obtained from this plant are usually very fertile and, as there are many of them, propagating the species is fairly easy. ●

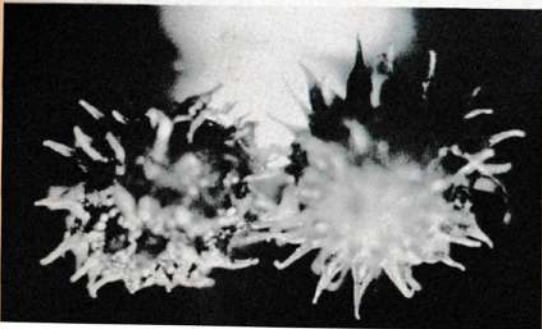
32

BARCLAYA LONGIFOLIA



A cross-section through the flower. Note the false bottom.

These are the seeds of *Barclaya longifolia*. Note the projections or "hooks" on the surface which enable the seeds to adhere to the coats of fur-bearing animals. This assists in distributing the seeds over a wide range.



The broad leaves of *Barclaya* strike through, just left of center, a clump of fine-leaved, short-leaved and narrow-leaved aquarium plants.



Near the bottom of the picture is the false bottom and just below, the seed pods can be seen lined up in vertical hoppers.



The cover of the April 1895 issue of THE AQUARIUM. This was the first real aquarium hobby magazine in the world.

A HISTORY OF THE AQUARIUM HOBBY IN AMERICA - PART 5 BY ALBERT J. KLEE

AFTER HIS ARRIVAL IN NEW YORK CITY toward the end of 1888, Mulertt set up a business which he ran from his home in Brooklyn, where he sold fish, plants, equipment and supplies. A great many of the plants sold were cultivated by Mulertt himself, and he developed at this time a strain of *Ludwigia natans* which came to be known as "*Ludwigia mulertii*". Further, he manufactured his own brand of fishfoods and aquarium cement. Nor was his activity in the publishing field overlooked for he wrote new editions of his older books and published one or two pamphlets regarding natural history as well. But without doubt his most important achievement was resumption of publication of America's first real aquarium hobby magazine. We say "real" for although the *NEW YORK AQUARIUM* technically had priority in time, that publication was primarily a house organ and not a fancier's magazine as such. Mulertt's effort, however, was truly a hobbyist publication.

Upon resuming publication in Brooklyn, the magazine, *THE AQUARIUM*, became a quarterly usually numbering about 24 to 26 pages per issue. At first the price was 15¢ per copy or 50¢ per year, but this was later increased to 25¢ and \$1.00 respectively. Volume III appeared in 1892 and the last issue appeared in 1897. In point of fact, the United States published the first and second aquarium magazines to appear anywhere in the world, counting Mulertt's magazine as number two.

A typical issue was that of April 1897 (Vol. IV, No. 43). The lead article, *The Care of the Parlour Aquarium*, was a comprehensive history and guide to the principles of the aquarium, its setting-up, stocking and maintenance, and was illustrated with woodcuts. Although it was unsigned, it was written by Mulertt himself. Then followed a column authored by H. B. Small, called *Fish Gossip*. This concerned some odds and ends about fish behavior and biology. An illustrated (woodcuts again) article entitled *Outlook of the Water Lily*, written by George B. Moulder,

continued on page 60

37



As if unable to decide whether it is fish or fowl, *Platydoras costatus* spreads its "wings" and gracefully glides toward the camera.

WALKER: continued from page 5

Although the doradids are generally a rather inconspicuous group, their twilight-loving nature makes them even less noticeable under most aquarium conditions. *Platydoras costatus*, also known as *Doras costatus* by some authorities, is not only beautiful but possesses what is certainly among the most striking patterns of coloration found in aquarium fishes, catfishes especially. As is so often the case, Nature, the master designer, does this devoid of gaudy splashes of color or other fakery such as the so-called "psychedelic" color effects so popular today, through the use of an utterly simple pattern of mere black and white.

Assigning popular names to aquarium fishes sometimes bears a remarkable resemblance to a rather unsuccessful game of aquatic "pin the tail on the donkey", since it is difficult at times to imagine how certain names ever got pinned on certain fishes. For instance, out of

someone's nomenclatural grab-bag the name "chocolate catfish" somehow became tagged onto *Platydoras costatus*; unfortunately, the name stuck. My sympathy is extended to one whose color perception would confuse tar and whitewash with chocolate. Due to the resemblance of coloration, a seemingly more appropriate name would be "skunk talking catfish" or "skunk doradid".

Although the skunk doradid grows to a larger size than the average aquarium clean-ups such as the various *Corydoras* species, the relatively small mouth and generally agreeable disposition makes this fish a safe companion for fishes which would not be safe with most catfishes in the four to six inch class.

On the other hand, where a fish or two is needed to act as "scavenger" in an aquarium containing a large, heavy-feeding individual specimen in order to clean up smaller scraps in which the latter might not be interested, the ability of the skunk doradid to defend himself in a clutch (plus the solitary nature and preference for seclusion if it is available) should make this fish worthy of consideration for such a position.

Platydoras costatus, in spite of being certainly among the most handsome of the Doradidae, is one of the more primitive members of the family. Along with such fishes as *Franciscodoras marmoratus*, this species shares the distinction of being more like its original doradid ancestors than the majority of its contemporary relatives.

Platydoras costatus.



38

39



The toothed fins of *Platydoras costatus* are clearly evident in this photograph by staff photographer, Andrey Roth.



Dorsal and ventral views of *Acanthodoras cataphractus*. Its marbled belly makes it easy to distinguish from *P. costatus*.

Although we have been unable to find any information on the subject, *A. cataphractus* seems to be able to eject a milky white fluid, as can be seen within the circled area. Our photographer, Andrey Roth, found this substance to be rather irritating to the skin. Thus, its function may be defensive. Any further information or comments from readers would be most appreciated.

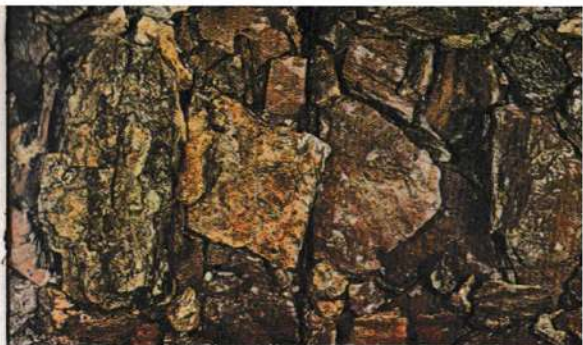
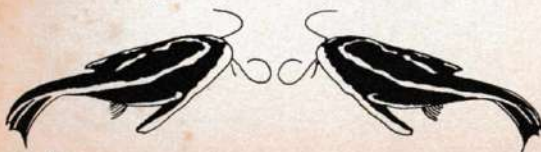


One of the rarer catfishes mentioned in the article, *Franciscodoras marmoratus*.

Several of the unrelated African catfishes of the genus *Synodontis*, known to aquarists as "upside-down catfishes", have "vocal" ability of their own. Almost as if in trade for this characteristic, a number of doradids including the skunk doradid have a definite fondness for the upside-down position from which the other group derives its name. The tendency in the case of the doradids is restricted mostly to resting upside-down in caves or brush instead of the topsy-turvy swimming attitude of the Mochokidae (*Synodontis*).

Feeding *P. costatus* could hardly be less of a problem. Almost any type of fish food which reaches it without having time to sour will be eagerly accepted. However, a period of adjustment for any of the doradids may be necessary before they learn about the daytime or lighted-aquarium feeding schedule employed by most aquarists. Until that time, it may be difficult for them to get anything other than scraps left by the more sharp-eyed daytime-active members of their aquarium. After a short while, the first rattle of the aquarium cover which indicates an imminent feeding, or even the commotion of the other fishes gathering at the appointed spot from which their manna always falls, will bring the doradids tumbling out of retirement and racing to the scene.

For many medium to large tank and fish situations, especially where the owner has a leaning toward the other-than-ordinary, *Platydoras costatus* can unquestionably fill the catfish position. ●



There is nothing more natural than Nature itself . . .

THE MILFORD AQUARIUM BACKGROUND UTILIZES NATURE'S OWN MATERIALS

AVAILABLE FOR ANY SIZE TANK

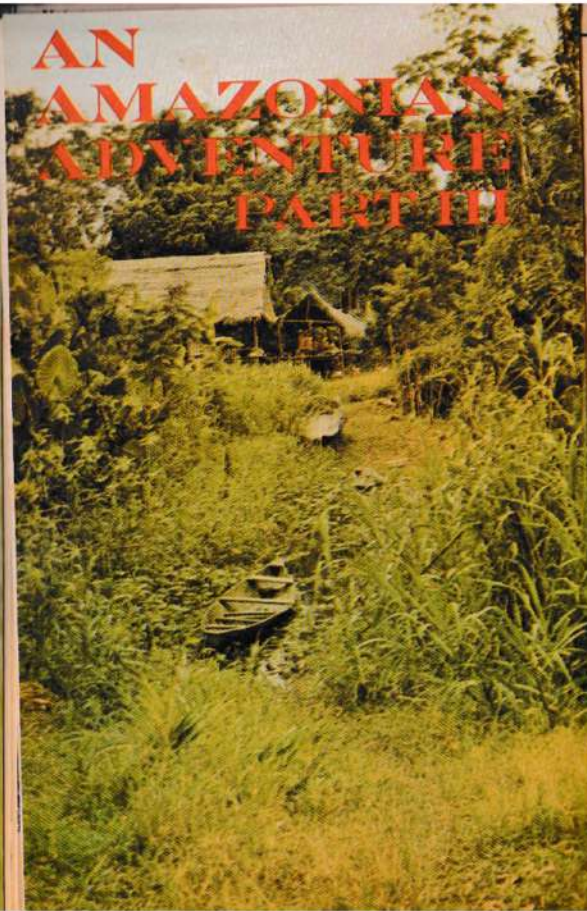
The above picture cannot possibly show the full beauty of the Milford Aquarium Background. Once it is placed inside the aquarium and the lights are turned on, the background becomes an impressive wall of red and green shale, a mixture of both subtle and bold natural colors and ridges. It is so elegant, so attractive that the tank looks beautiful even before fish, plants, and ornaments are added. And the background is specially made to be trouble-free. The shale will not react with the aquarium water and is bonded together firmly with nonreactive plastic so that it will not come apart. Solid support is achieved on top with two simple-but-strong clips, on bottom by the natural support of built-up gravel or sand. Special sponge-plastic strips keep fish from going behind background.

Also caves, ledges, food guards, made of same material.



MILFORD SPECIALTIES CO.
55 ESSEX STREET HACKENSACK, N. J. 07601

AN AMAZONIAN ADVENTURE PART III



By ALBERT J. KLEE

THERE ARE BUT TWO WAYS TO ENTER OR LEAVE Leticia; by water or by air. One road out of town merely leads to the "airport," the other to the small village of El Marco which is situated on the Colombian-Brazilian border, but there are numerous dirt paths which are used by the natives for their daily treks between town and the surrounding plantations. One such path led to a crude footbridge constructed of logs over which dirt had been compacted. We could see several small fishes darting to and fro in the water beneath and elected to catch them.

As the others unpacked their nets, I set up the portable laboratory supplied to me by the La Motte Chemical Co. of Chestertown, Maryland, some years ago. This most excellent water analysis kit enabled me to make eleven chemical and physical tests on water samples, including the more involved ones such as oxygen, iron and alkalinity. Just prior to our trip, the kit had been completely refurbished with fresh chemicals. The major portion of the analyses from this habitat is shown in Table I. The water was definitely acid, probably due to the dissolved organic material which also colored it a pale brown. As expected, the sample contained little in the way of other dissolved materials such as chloride, hardness, etc. An interesting observation, however, one that I have made with regard to other South American water samples, is the significant iron concentration. As the water was sampled at 2:00 P.M., the hottest part of the day, the oxygen concentration was low, a characteristic previously encountered in other South American waters also. The water sample came from directly under the bridge which afforded some shade. Consequently, the water temperature, although high, was not excessive. In aquarist's terms, then, the water in this slow-moving quebrada (creek) could be characterized as warm, acid, soft, low in oxygen and with a discernible iron concentration.

Table I

Water Analysis: Quebrada At Outskirts of Leticia, Columbia

Date: May 30, 1966	
Time: 2:00 P.M.	
Water Temperature: 78°F	
pH	5.9
Hardness (total)	less than 17 ppm
Alkalinity	15 ppm
Chloride	trace
Iron	1 ppm
Oxygen	2 ppm

The entrance to the Ticuna Indian village. The reedy swamp here harbored many thousands of neon tetras!



The LaMotte water testing kit in action. Water temperature is taken with a West-At this point, an oxygen determination on stainless steel thermometer (glass is in progress. This test takes about 20 thermometers are much too fragile for jungle work). Note how dark the water is at this site.

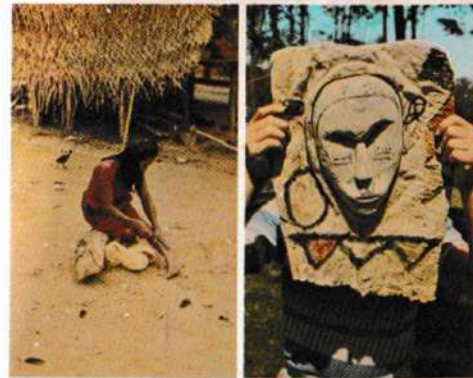
Table II

Water Analysis: Quebrada At Outskirts of Leticia, Columbia

Date: May 31, 1966	
Time: 10:00 A.M.	
Water Temperature: 79°F	
pH	6.0
Hardness (total)	less than 17 ppm
Alkalinity	15 ppm
Chloride	0.5 ppm
Iron	0.5 ppm
Oxygen	5.0 ppm

Repeat water analyses were made the following day, the results of which are shown in Table II. As expected, very little changed. This sample, however, was taken early in the morning as compared to the sample of the previous day and consequently, its oxygen content was appreciably higher. The iron content was down a bit, mostly because of the diluting effect of rain runoff water. These rains, by the way, continued to dog our footsteps throughout our trip.

Unfortunately, the bridge was hemmed in by the jungle, making it impossible to fish with a seine. The only feasible access was through a hole in the bridge itself, but this was too small to permit effective use of our nets. Consequently, we were forced to resort to the minnow traps



This Ticuna woman is making rope, twisting the strands of hemp by rolling them along her leg.

A Ticuna "monkey mask."

The houses of the Ticunas are up on stilts to keep them dry when the Amazon overflows its banks.



(Right) One got used to seeing all sorts of strange objects tucked under arms on the waterfront. This is the winner of the 1968 Charles De Gaulle look-a-like contest!



(Center) The market at Leticia. Our visit took place in the so-called "dry season" but it rained almost every day.



(Bottom) Win Rayburn, holding a blue tanager.



that we had brought with us from the States. We located one trap, baiting it with bread, and the next day (the day of the second water sample), returned to find a rather scant catch of but a dozen or so fishes. Included, however, was a tiny *Apistogramma*-like species that was new to me. The remainder included one *Callichthys*-type catfish, one *Aequidens* species, and several *rosaceus* tetras and nondescript, silvery-colored tetras. We bagged our catch and started back to town.

The next day permitted early risers to sample the delights of the market at Leticia which was located right on the Amazon River. Here, river craft tied up and loaded and unloaded their cargoes. Various kinds of Indians were well represented and occasionally, their wares were strange indeed! I almost stepped on a South American porcupine which was tethered to a piece of wood lying on the banks. The smells of the market were as interesting as the sights. One native set up a bread stand on the waterfront. The bread, being fresh-baked, was an olfactory delight. Perhaps the most interesting building on the waterfront was the hide warehouse, however. Inside were thousands of caiman ("crocodile") and peccary (wild pig) hides, each rolled up in a mixture of salt and paris green. The aroma here left much to be desired!

We ran into some trouble as we photographed the two gunboats moored by the market. The Columbian Government keeps these vessels at Leticia (they are old World War II destroyer escorts, obtained from the United States) as a precaution to possible hostile action from the Peruvians (the Peruvian town of Ramon Castilla is just opposite Leticia, across the river). This is a sensitive situation, reflected in the fact that the Governor of Amazonas Province, in which Leticia is located, is a Columbian Naval Officer. Thus, administration is vested in the military. The Columbian sailors had fits when they saw our cameras pointed their way and when they shouted and commenced to secure their sidearms, we scattered! Later, I had to explain to several members of our group just what the sign, "Se prohibe sacar fotografias," meant!

Almost immediately after landing in Leticia we had made contact with Mike Tsalikis, an American of considerable influence in the town and a candidate for a Reader's Digest "most unforgettable character" profile. Indeed, in the May, 1966 issue of that magazine, an article appeared which described his activities in Leticia ("Revolution On The Amazon"). Mike is part owner of the Miami-based Tarpon Zoo but spends most of his time in Leticia where he oversees an extensive animal compound (more about that later). In any event, Mike arranged canoe transportation for us to Mari-Acu, a Ticuna Indian village in Brazil some 30 minutes downstream from Leticia (but one hour to fight the current upstream back to Leticia!).

When traveling downstream it is customary to keep to the center



The author's son (in shirt) and a friend holding two of the "monkey sticks" carved in a fish moil.

of the Amazon; when traveling upstream, to keep to the banks. This is to take advantage of the currents which are swift at the center, and much less so near the shore. The Amazon is not ordinarily a rough stream, but it is both swift and muddy. After a half-hour had elapsed, our guide turned into the mouth of a reedy tributary that emptied into the Amazon. Mike remarked that neon tetras could be caught by the thousands among the vegetation. This took me by surprise since I had always thought that neon tetras were inhabitants of peat-stained, acid waters of jungle pools.

We tied our boats to the shore and proceeded afoot into the jungle. The Ticunas are basically a river tribe and as such, their huts are on stilts rather than directly on the ground. Most of the men were in the jungle, cultivating their banana and other crops—only a few oldsters were in the village. One of them, however, was in the process of drying wood for arrows, the great lengths of which made me observe that the Ticunas didn't need to get close to their game—with those long arrows, they were already close to it!

All of us bartered with the Ticunas for various items—small necklaces, arrows, wood carvings and the like. We used only one peso notes (= 6¢) as the Indians could not tell the difference between them and notes of higher denomination (they were often victimized by traders because of this failing!). In the live bird department, we even managed to trade for two blue tanagers and a South American version of a kingfisher. In the meanwhile, we learned of the peculiar "hair-pulling" rite practiced by the Ticunas to celebrate the female marriagable condition. When a Ticuna girl attains the age of puberty, the villagers prepare great quantities of an alcoholic beverage called "chicha," made from the roots of a local palm tree. The women of the tribe paint several of the hairs on

her head with a bright-red paint, then tie it into a bundle.

Then follows several days of dancing and drinking. At various times, male tribal members dressed in masks and costumes of bark cloth representing monkeys, dash out of the jungle carrying "monkey sticks." These participants dance wildly and use their sticks to pound upon the ground. Many of the sticks, which are made of thick halsa-like wood, are carved in fish motifs and several of us managed to secure a few.

The length of these festivities varies. The merrymaking is strenuous and the Indians may elect to halt and "sleep it off," only rising to resume the ritual. Sooner or later, however, the dancing and drinking stop (usually the chicha gives out!), at which time the women of the village take the girl and pull out most of her hair, several strands at a time, leaving only the bundle in the center previously painted red. The process, although uncomfortable, is not unbearable and it is borne in silence. (We saw several girls who had recently undergone the ceremony, and their heads appeared covered with a fuzzy down!). Finally, the Chief of the village takes the girl down to the river and, in a sort of baptismal rite, dunks her head under three times, after which he pulls out the remaining bundle of hair. At this point, the youngster is considered eligible for marriage. Knowing the torture that American women go through in our beauty parlors, I can't see very much difference!

To be continued

AMERICA'S LARGEST PRODUCERS OF AIR EQUIPMENT FOR THE HOBBY TRADE

REGARDLESS HOW YOU WANT TO BLOW YOUR HAIR TO BLOW THROUGH...
COSMIC...
COMPLYING IN LATEST EXCELLENT PERFORMANCE

MODEL "T" All Cosmic Pumps are made of American materials only!

MODEL "T" 1" CYLINDER

MODEL "T" 1" CYLINDER

MODEL "T" 1" CYLINDER

MODEL "T" 1" CYLINDER

WHERE ENGINEERING KNOW HOW IS A FACT! NOT FICTION!

MODEL "T" 1" CYLINDER

MODEL "T" 1" CYLINDER

NEW ROCHELLE MFG. CO. INC., 207 WASHINGTON AVE., NEW ROCHELLE, N. Y.



THIS IS MY PROBLEM

by HELEN SIMKATIS

From: Ray Pavcisk, Savannah, Georgia

I would be very grateful if you could give me some information about zebra fish. I've followed the instructions in my book carefully to the letter for spawning this species but the young always die within two or three days. They stick themselves to the glass and stay there until they fall to the bottom where the poor things never rise again.

Answer: From what you say, we would guess your youngsters are starving to death. A fine grade of dried food especially for newly-hatched fish and newly-hatched brine shrimp should be given in quantities enough to take care of the large spawn. Such feedings should be offered at least four times a day the first week or so. These youngsters should not be crowded.

From: Mike Lena, San Francisco, Calif.

My father and I are planning to set up a salt-water aquarium. Please tell us how to mix the water.

Answer: From the terminology "mix the water", we gather you and your father are going to use artificial salt water. Whatever brand you use

will give instructions on how to mix the water and these instructions should be followed to the letter. Do not mix brands.

From: Richard Child, Weymouth, Mass.

About 24 to 36 hours before we have a weather change such as rain or damp weather, my 20-gallon tank will get cloudy and no matter what I do I cannot get it clear until about 24 hours before the weather clears and then the tank clears. Can you explain this. I have used filtering devices and tablets but these do not help.

Answer: The loach known as the "weatherfish" seems to be able to detect the onset of a change in the weather (although to be perfectly honest, this is one of things that really should be checked out by some bona fide aquarium experiments on the part of aquarists interested in doing some real experimentation) and it has been suggested that it does this by reacting to a change in barometric pressure. If so, there is no reason to doubt that other fishes may be able to do this also. If such a change would, at the same time, cause a change in the feeding habits of the fish, this might

AUTHORS: continued from page 16

is one reason we are glad to be involved in an interesting hobby. As charter members of the GREATER ATLANTA AQUARIUM SOCIETY, we have taken an active part in all its functions. On the side we have placed several aquariums in the wards at Our Lady of Perpetual Help Cancer Home and one in the reading room of a Trappist Monastery nearby. We also help maintain an aquarium in a pediatrician's waiting room (where the doctor calls it his "baby sitter") and one in a school. We have found no limit to the aspects of the hobby—only to our personal strength and time, of which we wish we had more to give." May we add that, from our personal experience, Dorothy is a charming and gracious lady, and much too modest. She has done notable work with bettas and is an aquarium writer of great perspicuity, one of the best in our opinion. ●

From: Lena Davis, Wichita, Kansas

I have a 10-gallon aquarium with three Yucatan mollies (a male and two females), three wagtail platies (a male and two females), a Chinese algae eater, and two catfish. I have been giving them a little frozen brine shrimp, every day, in addition to their dry diet. Is this too often to give them shrimp? They seem to prefer it to anything else.

Answer: A feeding of brine shrimp once a day is a good diet when in addition you are giving your specimens a variety of dry foods. This is not too much brine shrimp. ●

"Where Better **GOLDFISH** Are Grown"

YEAR 'ROUND SERVICE

Fantails — Moors — Calicoes — Shubunkins — Comets

Over 400 acres producing water

OZARK FISHERIES INC.

Area 314 Phone 765-3322 Stoutland, Mo., 65567
(Home Office)

Tropical Aquatics, Inc.
Box 281B
Route 2 Lakeworth Florida
Specializing in Livebearers, 400 Ponds

Please use letterhead to request prices
JOBBER INQUIRIES INVITED

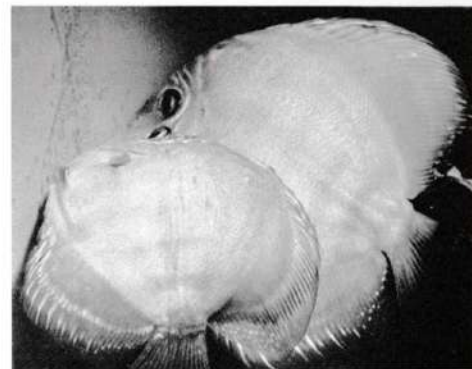
MAYLAND: continued from page 14

the truly perfect food does not exist. The number of (I could almost say "synthetic") live foods that are absolutely sterile, as is brine shrimp, without danger of concealed diseases, is strictly limited. Since the local waters are strongly contaminated with organic material, great care is needed. There is great danger in introducing skin parasites such as ich or *Costia*.

I now checked with several of my friends about the best places to hunt for live food. With luck and some elbow grease, I found a place far from my home which was suitable. A few of the fry did not pull through the normal fight for life but the rest, to my joy, were large and strong.

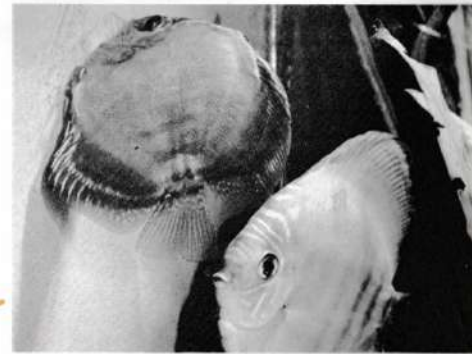
My hope naturally was that I would now have things my own way in breeding and that I would make a good thing of it. Unfortunately, I had reckoned without my female discus and her problems. She was stricken a few weeks after the successful spawning with the notorious "hole disease". A few days after the outbreak of the infection, she died. The disease, which was first brought to my attention by the presence of crater-like holes between her mouth and forehead, was found by Dr. H. Reichenbach-Klinke to be a form of fish tuberculosis. The holes appear only in the final stages of the disease. For the average aquarist then, this means that at this point we are too late to do anything. An injection of an antibiotic into the open places, followed by an increase in temperature

8 A close up shot of the actual spawning.



9 More and more spawning runs are made until the spawning is completed. This occasion took about one hour.

10 Seeing the camera for the first time almost at the end of the spawning, the male takes up an "on guard" position.





11 The young female Discus. At this age she had spawned only about ten times.



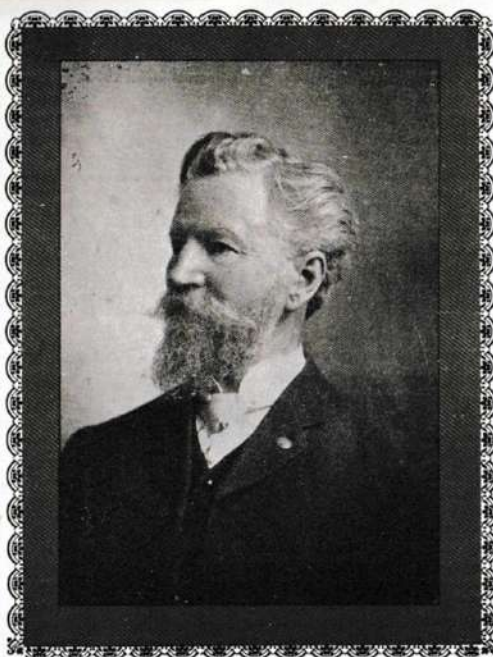
12 Male Discus. Quite a young fish and only partly coloured up.

to about 98 to 100° F, can bring temporary relief. However, the danger to a fish already weakened is great, following this temperature rise.

If one is to keep discus successfully, then I believe that the following conditions must be met: (a) Provide a sufficiently large tank (at least 12 gallons of water per fish); since they are shy and may be disturbed by other fishes; (b) Provide spawning sites that are secluded on one side of the tank, a swimming area on the other; (c) Every 3 to 4 weeks, make a partial water change (up to 25% of the total amount); (d) Now and then, feed a vitamin supplement; (e) Keep the fish in a regulated light environment such that there are no sudden changes (my fish know when it is time to "go to bed"—they swim to their preselected resting places and wait for the light to go out!)

EDITOR'S NOTE: We have been asked, at times, how many species of discus there are. The hobby has traditionally known but one species, *Symphysodon discus*, but in 1960, Dr. Leonard P. Schultz revised the genus to include two species, one of them with three subspecies. The latter "species", *Symphysodon aequifasciata*, was split into subspecies on the basis of color and pattern (i.e., one each for the common "brown" discus, the "green" discus and the "blue" discus). We, however, take a rather dim view of this "revision". For one thing, two out of the four descriptions were based upon single specimens. Schultz, for example, separated *S. discus* from *S. aequifasciata* on the basis of vertical scale rows; e.g., 44 to 48 indicated the former, 50 to 61 the latter. Yet, he examined only one specimen of *S. discus*. I have examined the meristic data upon which Schultz based his revision, and I find no statistical difference among his four forms with regard to anything else other than vertical scale count. One specimen seems a beggarly sample upon which to start altering names right and left. The same holds true for the "subspecies", *S. aequifasciata haraldi*, also based upon but a single specimen. In our view, Schultz' revision is an example of the "splitter's" art in extreme. Dr. George Gaylord Simpson had this to say about splitters: "A splitter is one who, if able to distinguish between two fishes, will place them in separate genera but if unable to distinguish between them, will place them in two separate species".

Perhaps a more damning indictment against the naming of subspecies in *Symphysodon* is that these "subspecies" (which are supposed to represent forms from different geographical areas) have been pulled right out of the very same body of water, swimming side by side! Dr. Ernst Mayr has defined subspecies as follows: "A subspecies is an aggregate of local populations of a species, inhabiting a geographic subdivision of the range of the species, and differing taxonomically from other populations of the species". Since Schultz' "subspecies" do not differ taxonomically from each other, nor do they clearly inhabit different geographical areas, they do not appear to be subspecies at all. ●



Hugo Mulertt, Father Of The Aquarium Hobby In America.

KLEE: continued from page 37

followed. After this came an announcement by the Chief Clerk of the College of Agriculture, Ithaca, N. Y., of an offer of assistance by the College to all parents and teachers interested in introducing nature study into school curricula. A column called *Driftwood* dealt with technical items about aquarium fishes, and announcements of the activities of groups concerned with the hobby, both here and abroad. This also was written by Mulertt although it was unsigned. A column, *Answers and*

Queries, filled out the editorial material in this issue, although it was followed by 7 pages of advertising, 3 of which were house ads for Mulertt's own business.

THE AQUARIUM, edited by Mulertt himself, was well-balanced, authoritative and all-in-all, a very excellent magazine. It, for example, published an address by the eminent American ichthyologist, Samuel F. Garman, and one by Fred Mather of New York Aquarium fame. Another "graduate" of that institution, A. W. Roberts, contributed an article on fish parasites as late as 1896. Upon occasion, there were even articles on the salt water side of the hobby, although it primarily was a freshwater magazine. At one time, Mulertt was invited on a dredging expedition off the New York coast, and his detailed experiences were written up in the magazine, with illustrations.

Aside from its importance as a repository of historical facts of interest to the hobby of today, Mulertt's *THE AQUARIUM* was the rallying point of the aquarium hobby in the 1890's. It popularized the hobby and disseminated information, laying the groundwork for the foundations of the organized hobby as we know it today. Due to space limitations, we cannot reproduce all of the many articles of interest to present-day aquarists that appeared in *THE AQUARIUM*, but the following, somewhat brief selection (written by Mulertt himself), should give the reader



PROTECT DELICATE TROPICALS

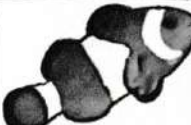
NO CHILLING
NO OVERHEATING

SINGLE TUBE HEATER-THERMOSTAT
Heater and thermostat in one compact assembly equipped with pilot light, static condenser, and jumbo adjustment controls. Leak proof.

25, 50, 75 watts - 8"	75, 100 watts - 10"
\$395	\$425

#4283 Dual Thermostat 8" - \$495
OTHER SIZES AVAILABLE
At your local dealer or order direct from

AQUARIUM STOCK COMPANY, INC.
31 WARREN ST. N. Y. 10011



ATTENTION HOBBYISTS!
Don't Miss Fabulous:

SALT WATER AQUARIUM MAGAZINE

- BEAUTIFULLY ILLUSTRATED
- LATEST FINDINGS IN SALT WATER FIELD
- PUBLISHED BI-MONTHLY
- APPRAISED BY READERS WORLD WIDE

\$3.50 per year \$6.00 for 2 yrs.
(Sample copy 50¢)

CORAL REEFS EXHIBITS
BOX 2214 AMF BLDG. DEPT. A
MIAMI, FLA. 33159

The complete set of all 18 issues, covers all back issues to date, \$10.00 postpaid
(Up to Nov. Dec. 1967)

OFFICE OF
HUGO MULERTT, AQUARIST,
 (Oldest Aquarium Establishment in America.)
 173 NOSTRAND AVENUE, BROOKLYN, N. Y.

PRICE LIST & CATALOGUE



CHOICE AQUARIUM PLANTS

Grows under cultivation especially for the purpose.

Negitiera "New Era." An improvement on the old-fashioned Negitiera. It grows in the same manner. Price per gallon, each \$1.00.

Negitiera "Princess M." A hybrid of great size. It grows in the same manner. Price per gallon, each \$1.00.

Negitiera "Windsor." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 2." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 3." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 4." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 5." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 6." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 7." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 8." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 9." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Negitiera "Chino No. 10." A variety of the same, similar to the Princess M. Price per gallon, each \$1.00.

Choice Ornamental Fish.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Chinese Paradise Fish. \$1.00 per pair. Should be added when receiving. Large of variety only. When ordering please specify what species you prefer the gold or the black.

Hugo Mulertt's price list for 1895. To convert the prices shown into today's prices, multiply by four.

a fair sampling of the material offered. The article, which appeared in the April 1895 issue, is, in its own right, a historical document for the hobby.

"THE BRAZILIAN ZEBRA FISH"

"This new aquarium fish was first brought to Germany by an enthusiast a year ago, and was successfully propagated last summer. We saw the original imported fish with their fry. Our picture is a good representation; we reproduced it from *Natur und Haus*.



The cut of *Gichlasoma facetum* which appeared with the article on the "Brazilian Zebrafish" in the April issue of THE AQUARIUM.

"The fish attains a size of about five inches in length by two inches in width. The general appearance of the fish is that of a sunfish; the ground color of the body, which is entirely covered with small scales similar in size to those of the Paradise fish, is a brassy yellow marked with a number of irregular vertical bars or stripes of black; the dorsal and anal fins are large and long, being composed of a great many rays, of which about two-thirds are spinous; they are black in color; at times, however, when the fish is excited, the yellow of the body become brighter and runs in streaks into the black dorsal fin, making this appear as if it was a continuation of the body; the ventral fin is colorless and trans-

FLORIDIAN TROPICAL FISH FARM

Breeder and importers of rare and exotic fish. We also carry a full line of the standard egg layers and our own raised livebearers.

Plus a large selection of Pacific and Atlantic marines.

SCATS
 ARAWANA
 TRI-COLOR SHARKS
 SEAHORSES
 GOLD SEVERUMS
 COBRAS
 BLUE HECKEL
 PIRANHA
 RAMS

Route 1, Box 330
 Sebastian, Florida

Perpetual Motion SATellite

Aquarium Aerator \$1.98

Starting at the bottom of the aquarium the Satellite rises with a slight twirling motion to the surface — pauses to release a burst of tiny air bubbles — then descends. Fascinating to watch because the Satellite is continually in motion.

Supplies oxygen as necessary for healthy fish and plant life.
 Easy to install.
 Simply attach to air pump.
 Releases maximum amount of air to no waste.

Distributors in your vicinity:
 Size U. S. A. Size
AQUARIUM STOCK COMPANY, INC.
 31 WARREN ST., N. Y. 10017

parent; the caudal fin is rounded. The eyes are yellow, flashing like fire on some occasions, resembling those of the moss bass.

"The fish is very attractive, especially when excited; it reminds one of a herald of the middle ages, whose dress used to display the colors of their masters in stripes. At other times the fish will assume a very plain grayish color, with only one irregular black spot on each side of the body, midways and near the ends of the dorsal and anal fins. Young specimens show these peculiar markings even more distinct than the adults.

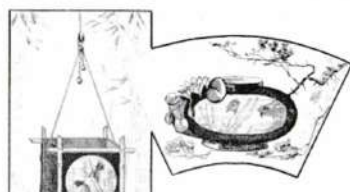
"The habits of the Zebra fish are very much like those of our Moss bass; they are very pugnacious and display the same motions when attacking one another as the Moss bass does, but their point of attack is the mouth, which, if they succeed in grasping they hold firmly, much like fighting male Paradise fish do, until the weaker one gives up. But although they fight a great deal, we have not yet seen one that was seriously hurt; they seem to be on friendly terms again soon after.

"Their breeding habits, too, are much like those of the sunfish family. They 'pair off' during the summer and prepare a nest on the bottom of the tank, where the female deposits her eggs, which both guard. Four days after spawning the young hatch. These are as carefully guarded as the eggs were, and later on they are instructed for their future career by both parents, who swim about with them, as a hen walks around with her chicks. We find that the Zebra fish stand captivity well, enjoying their meals, which consist of scraped raw beef or I.X.L. fish food (*Editor's note: . . . a dry food prepared and sold by Mulertt*), immensely.

"Their native home is the La Plata valley; the South Americans call them 'Chanchitos,' which means 'pig,' either because their shape is somewhat like that animal or because they fight in a similar manner to that of young pigs. In Germany the name 'chameleon fish' is proposed, owing to the ability of the fish to change its colors. This, however, we consider no denominative feature, as nearly all of our sunfish and also the Chinese Paradise fish possess this ability, in some cases even to a greater extent than the Zebra fish does. We selected the latter name for them, because we find that through their color and stripes this fish resembles a zebra more than anything else, especially when the fish are most brilliant in colors and the yellow appears in the dorsal fin; even the markings of the mane of the zebra are then represented."

Another article written by Mulertt is of interest as it gives an idea of the types of aquaria available to the hobby of the 1890's. Indeed, much of the material discussed would be of interest even today to the "do-it-yourselfers" or to those who like to dress up their tanks. The article was titled, *Shapes of Aquariums*.

"Any kind of a vessel that holds water and the material of which



Two examples of small aquaria encased in decorative cabinets. Note that one is designed to hang from a ceiling.

does not affect the water, may be used to harbor a collection of aquatic plants and animals. For the cultivation of water lilies, or other water plants, whose beautiful flowers or leaves are the principle points of attraction, or for the keeping of turtles, wooden tubs meet all requirements.

WHERE DOES QUALITY COUNT? — AT PARAMOUNT OF COURSE!

Live bearers are raised on our own Farm under careful supervision. South American imports are brought in on our own plane with experts in attendance. All Fish are fully acclimated before being sold. Stock Tanks are inspected daily to maintain the healthiest fish obtainable. Orders are individually filled by highly skilled and trained personnel only.

Economize with the best — Buy PARAMOUNT.
 2 Locations to serve YOU, Better!

WHOLESALE ONLY

Paramount Aquarium

ARDSLEY, N. Y. 10502 P.O. Box 627, Tel. OWens 3-4800-3-4801
 VERO BEACH, FLA. 32960 Emerson Ave., P.O. Box 277, Tel. JOrdan 2-5487

But when one wishes to keep fish in order to enjoy their graceful motions or study their shapes and habits, a vessel that admits a view from the side, a transparent glass vessel, as necessary. Fishes must be seen as they see one another, not from the top, as such a view gives an incorrect idea of the fish. Think how different a person looks when seen from a fourth or fifth story window on the sidewalk, and when one meets the same person on the same level, or meets him in his own house where he is perfectly at ease. We find just as much difference in fish when kept in lakes and fountain basins as in glass-sided aquariums.

"The old-fashioned fish globe has seen its day; they are still manufactured to be sure, but the manufacturers have greatly improved on



Mr. Parnell Fisheries
INC.
"QUALITY AND SERVICE"
"THE FISHERIES OF THE EAST"
MERCERSBURG, PENNA.
AREA CODE 717-369-3018

AQUARIUM PLANTS
Our 31st Year in Business



AMAZON SWORD—BEST CENTER PLANT
Full size best Aquarium Plants
Greenhouse grown plants are better! We have 200 ft. greenhouses for growing most beautiful plants in the world!
Dealers write on letterhead
Also 1968 Water Lily Catalog illustrated in color

SLOCUM WATER GARDENS
Dept. A., 1101 Cypress Gardens Rd.,
Winter Haven, Florida, 32980



WHY RILA MARINE MIX?
Simply because you'll be getting the finest synthetic sea salt available — proven by years of consistent, dependable performance.
A quality product guaranteeing the highest degree of uniformity and purity.
Contains the 19 major trace elements of natural sea water.
Provides the ideal media for all marine life.
Ask your dealer today or write for complete Product Information Bulletin and free Salt Water Bulletin.
RILA PRODUCTS • Box 114, Teaneck, N. J. 07666

66



The parlor aquarium described by Mulerff, its frame decorated by a wood moulding in a Greek motif.

them. The shape of the new globe, the so-called 'new pattern globe,' is not quite so round as the former ones, being more in the shape of a Japanese jardiniere, the widest part being near the top. They are a decided improvement on the old shape, and fill the bill, as a cheap round aquarium intended for decoration, very well.

"For observation and study the sides must be straight. Our pictures illustrate some very attractive patterns for window decoration, or for a small table. Next to these come the plain rectangular tanks. These may be made all of one piece of glass, shaped in a form while in a soft state, or they may consist of a metal frame, into which the bottom and side and end glasses are cemented. The latter ones have the advantage that when a glass breaks, it can be replaced by a new one, which cannot be done when the tank is made of one piece only. The exterior of such a tank can easily be ornamented with wooden moulding to suit one's fancy. One of our illustrations shows one, of a large pattern in this case, that is decorated with fluted pillars and otherwise trimmed to form a design somewhat Greek in appearance. The wood is stained a dull black, to represent antique iron, and the smaller borders are kept in a shiny, creamy white, to represent old ivory. The effect of the whole is very pleasing. The stand on which it rests forms an antique oaken cabinet.



The twin aquarium recommended by Mulerff especially for school use. The facade is of wood, it and the two tanks behind placed in front of a window for light.

"Two of the above mentioned smaller sized tanks might be used on one window-sill; they would then form a twin aquarium. The advantages of such a screened twin aquarium are very important, especially in kindergartens. Each tank can be stocked with different objects, each one can be changed and rearranged without molesting the other; both are protected by an ornamental front, which hangs on hinges below, and is fastened to the window with hooks. Over the tops of both is a wire-cloth screen, to prevent books or lunch remnants from coming in contact with the water.

SNAIL-RID IS THIS YOUR PROBLEM?



WE HAVE THE ANSWER

ONE OF THE FASTEST MOVING, INTERNATIONALLY ACCEPTED AQUARIUM PRODUCTS IN THE FIELD TODAY!

IF UNABLE TO OBTAIN FROM YOUR DEALER SEND \$1.00 TO:
ARSAN RESEARCH 375 S. HANLON WAYNE, MICH. 48184

MASTER BREEDER CULTURES by DALECO

Give your fish nutritional values found ONLY in LIVE FOOD.
DALECO method guarantees Continuous supply at a convenience only dreamed of!
CLEAN, DEPENDABLE, FOOL PROOF

Mail Coupon Today! DALECO, 414 Glenholly Tonawanda, N. Y. 14150. I enclose \$

Rush postpaid on Money-Back-Guarantee:

- DALECO Culture Method \$ 25
- DROSOPHILA (Fruit Flies) 1.50
- DROSOPHILA MASTER BREEDER Culture (over 3 yr. ACAR supply) 3.00
- ENCHYTRAES (White Worms) 1.75
- GAMBUSIUS (1/2" minnows) 1.50
- MIEROWORMS 1.00
- MIERO MASTER BREEDER Pkg (Culture, Breeder set & Media) 3.00
- PROTOMAL (16 Protein Food for Gammarus & Tropical Fish) 1.00
- TENEORIO (Meal Worms) 1.75

*Special Cultures

Name _____ Address _____

68

1968—18th Anniversary in the United States
THE INVISIBLE FRENCH FILTER & AERATOR

Still Unique with Sandlike Body

A highly efficient aquarium conditioner, achieving a natural balance. Originally conceived to be buried under sand, to work without cleaning, out of sight. Bacteria-activated porous member can be used with any grade of gravel, or even in the bare tank, and still work biologically. Does not hinder plant growth but stimulates it by natural fertilization. Sets without dismantling tank. Maximum aeration, ideal for breeding. (Patented).

Originated by

M. & A. VANSTEENKISTE
149-54 114th PLACE
SOUTH OZONE PARK, L.I., N.Y. 11420

CLEAN AQUARIUMS ONE HAND OPERATION LARGER VALVES LONG LIFE GUARANTEED



"One Hand"

IS THE ANSWER

MILLIONS OF FISH AROUND THE WORLD ARE HEALTHY BECAUSE OF

"One Hand"

CLEAN AQUARIUMS

SOLD BY FINE DEALERS AND DISTRIBUTORS EVERYWHERE

FREE CATALOG

Framar Mfg. Co.

3958 ALLA ROAD
LOS ANGELES - CALIF. 90066

WHY WORRY WHY WORRY WHY WORRY

ARGUCIDE'S ONE STEP TREATMENT KEEPS FISH SWIMMING

Kills and Prevents anchor worms, fish lice, ick and other parasites.
For Tropical Fish—Goldfish and Bait Minnows.

Easy to Use Nothing to Remove Will not harm Plants or Snails

Ask for ARGUCIDE at your Dealer or Write:

ARGUCIDE COMPANY
P. O. Box 39125
Cincinnati, Ohio 45239

"The 21-inch size is a good shape for a breeding tank (Editor's Note: Mulertt refers to a tank 21 inches long by 14 inches wide and 16 inches high). When one wishes to raise some young Paradise or goldfish, or for breeding sticklebacks, its length permits dividing it in two or more apartments by simply placing one or more pieces of glass between the sides.

"The window sill aquarium, represented in another illustration, it will be observed is rather long compared with its width and height; it is designed for an ordinary window sill. The dimensions, 30 inches in length, 12 inches in height, and 10 inches in width, experience has taught us to be the correct ones for the welfare of the collection and convenience of study, as well as for ornament.

"In the tank represented, each end is formed of one solid plate of cast-iron; against the upper and lower bars that form the front and rear of the tank they are fastened. These ends are lined with ordinary glass. The bottom consists of rough (rolled) plate glass $\frac{1}{4}$ -inch thick, and the front and rear of the best double thick French or English glass. It is not necessary, however, that the ends should be of one solid piece of cast-iron; the tank may be made of angle iron. All that would be necessary in such a case would be to give the outside of the end glass two or more

ATTENTION PET SHOPS!
Have you received our No. 5 catalog on Aquarium supplies? Over 1000 items listed for your aquarium department. Write to us on your business letterhead.

**TEMPEL'S
TROPICAL FISH**
2005 E. Olive St.
Decatur, Ill. 62526



Never Buy Fishfood!!... Again, Man.
Just grow your own... It's cheaper.

1. UNIVERSAL AQUARIUM FOOD \$1.75
This food, when used on a regular basis, will keep your fish healthy and bright. It contains all the vitamins and minerals they need. (For 200 fish in a 10-gallon tank.)

2. AQUARIUM FOOD \$1.00
This food is especially good for goldfish, tetras, and other small fish. (For 100 fish in a 5-gallon tank.)

3. AQUARIUM FOOD \$1.50
This food is especially good for cichlids, angelfish, and other large fish. (For 50 fish in a 10-gallon tank.)

4. AQUARIUM FOOD \$1.25
This food is especially good for all types of fish. (For 100 fish in a 10-gallon tank.)

5. AQUARIUM FOOD \$1.50
This food is especially good for all types of fish. (For 100 fish in a 10-gallon tank.)

AQUA ENGINEERS
Box 1, Ortonville, Michigan 48462
Box 97, St. Basile le Grand, Quebec

coats of paint.

"The two brackets, seen on the right and left of the tank, are to imitate the banks or borders of a brook. To form such a bank, a strong galvanized wire is bent into shape of a capital letter U; each end is then bent to form a little hook, and after the whole is bent in the middle to form a right-angled bracket. When the support has been shaped to fit snugly (the hooks nicely over the edges of the ends and the wires running alongside the corners of the tank), a piece of ordinary glass about four inches wide and as long as the tank is wide, is placed upon it, and the brackets are ready to receive the plants intended for the decoration of the embankment."

Undoubtedly, Mulertt had a sense of humor. Further, he despised bureaucracies and the pettiness so often accompanying their operations. In October 1892, he reprinted a story from the San Francisco Examiner regarding a question of the California Fish Commission, viz., whether or not the German carp could be established in certain waters. They debated the matter through several meetings, grew red in their faces over it, and to save heat and a possible disruption of the Board, submitted the question to the prominent fish culturist, Doctor Hochstadter. Numerous water samples were delivered to the good doctor and within a short while, he rendered a report and a bill for \$100. The report indicated that the carp would indeed live in those waters, and the Fish Commission proceeded, unfortunately, to turn loose that undesirable fish to subsequently disorder the rivers. As aquarists residing in that State know so well, the California Fish & Game Commission hasn't improved its judgment much in 65 years. Some years later, when asked how he had come to his very correct conclusion so quickly, Dr. Hochstadter replied: "Why, I bought a carp for ten cents, and put it into the water. It lived!"

Soon after he arrived in New York City, Mulertt paid a visit to one of the members of the New York State Fish Commission. The conversation drifted away from the usual aquarium topics to Mulertt's ex-

**Get Our New Large Catalog with
OVER 600 Illustrations, many in Color
\$1.00 Postpaid**
BELDT'S AQUATIC and PET SUPPLIES
Since 1920
Hazelwood, Missouri 63042

CREDITS

PHOTOS:
Cover, **THE AQUARIUM**; pp. 4-5, William A. Tomey; pp. 6-7, Edward Symmes; p. 8, **THE AQUARIUM**; pp. 11-14, R. V. Leeton; pp. 33-35, William A. Tomey; pp. 38-41, **THE AQUARIUM**; p. 42, Braz Walker; pp. 54-56, R. V. Leeton; pp. 77-78, Symmes.

FISH:
Cover, *Platydoros costatus* supplied by Goldenrod Aquarium, Long Island City, New York; p. 8, *Symphysodon discus*, Goldenrod Aquarium; pp. 38-40, *Platydoros costatus*, Goldenrod Aquarium; p. 41, *Acanthodoros cataphractus*, supplied by Dade County Fisheries, Bronx, New York.



The big 10 advantages: 1. An ample continuous supply of air-free air for several tanks. 2. Precision-built for long life, quiet operation. 3. Rotary positive displacement. 4. No diaphragms. 5. No pistons. 6. Interior surfaces are ground to low micro finish. 7. Easily serviced—any renewable part is replaceable with screwdriver. 8. Cushion-mounted. 9. No vibration. 10. Beautiful sea mist green finish.

Larger units available for hatcheries and up to 500 tanks (20 gallon size).

Write or phone for details:
CONDÉ MILKING MACHINE CO., INC.
Dept. PM, Sheepskill, N.Y. 12483 Tel. 515-365-1300

CONDÉ PUMPS



**NEW
AQUARIUM FILTER
& STERILIZER**

The Ultraviolet Sterilizer slips right into a specially designed outside hanging filter. It's out of sight—all you see is a completely different aquarium. Kills bacteria & fungus. Eliminates cloudiness. Reduces unsightly odor. Absolutely safe for fish & plants in freshwater or saltwater. At your dealer or order direct. \$28.95 postpaid. Free brochure.

STERAQ
15702 S. F. Mission Blvd.
Granada Hills, Calif. 91344

**37
YEARS
OF RELIABILITY—
QUALITY • SERVICE •**

That's EVERGLADES!!
Known for fine Aquarium Plants • Home Grown Tropicals • Conditioned Toppicals
PET DEALERS & JOBBERS
We want you on our mailing list!

WHOLESALE ONLY
Write us!
EVERGLADES AQUATIC NURSERIES, INC.
P.O. Box 557, Tampa, Florida

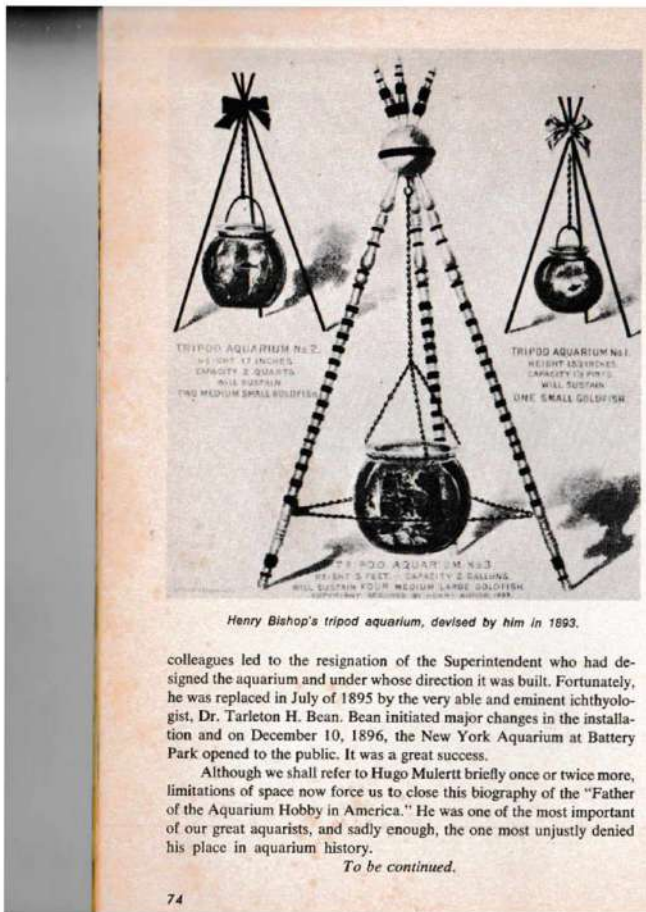


The window sill aquarium with end plates of cast iron. The interesting innovation here is the presence of two platforms, one at each end, permitting bog plants to grow up and out of the aquarium.

hibit at the Cincinnati Centennial Exposition of 1888. In New York at that time, a great deal of interest was being generated in the great Columbian Exposition to be held in 1893, and it was thought likely that it would be held in New York City. Mulertt's friend hoped to have the fish commissions of the various States and of the Federal government, display live fishes at an elaborate aquarium to be built in Central Park. This aquarium, according to the plan, was to remain as a permanent exhibit after the Fair was over, to be run either by the City or the State.

As is known, however, the Fair went to Chicago but nevertheless, a bill was introduced in the legislature, and passed, appropriating the sum of \$160,000 (equivalent to \$615,000 today) to get the project under way. Unfortunately, however, the legislature placed the proposed aquarium under the charge of the Board of Public Parks, rather than the Fish Commission. The Board decided to locate the aquarium in the Old Castle Gardens (an ancient fort in Battery Park, under the control of the Board of Public Parks). One consequence of all of this was that the Fish Commission was "frozen out" of the planning and consulting stages of the aquarium.

Renovation of this ancient structure started in 1893 and continued to 1895. On February 16, 1895, Mulertt was one of several experts and scientists invited to inspect the installation before its official opening. Mulertt was furious. He announced to a reporter, "The plant will not work." The distinguished group of visitors found the tank shapes to be all wrong. For marine tanks, water was pumped directly from the Bay to the aquarium, and in February, the month of the inspection, the tanks were near freezing. For freshwater, water was piped directly from the city mains. Nowhere was there provision for storage or temperature conditioning of the water prior to usage. The outcry from Mulertt and his

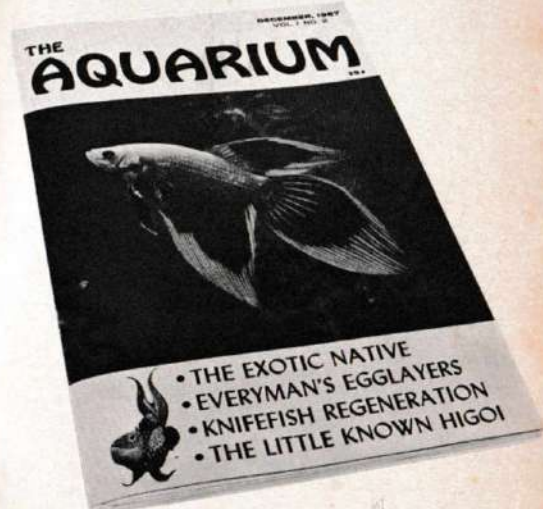


colleagues led to the resignation of the Superintendent who had designed the aquarium and under whose direction it was built. Fortunately, he was replaced in July of 1895 by the very able and eminent ichthyologist, Dr. Tarleton H. Bean. Bean initiated major changes in the installation and on December 10, 1896, the New York Aquarium at Battery Park opened to the public. It was a great success.

Although we shall refer to Hugo Mulertt briefly once or twice more, limitations of space now force us to close this biography of the "Father of the Aquarium Hobby in America." He was one of the most important of our great aquarists, and sadly enough, the one most unjustly denied his place in aquarium history.

To be continued.

This is the new **AQUARIUM**
The world's standard
monthly magazine for beginners
and experts.



THE AQUARIUM 4-68
87 ROUTE 17, MAYWOOD, NEW JERSEY 07607

<input type="checkbox"/> 1 YEAR (12 ISSUES)	\$3.50
<input type="checkbox"/> 2 YEARS (24 ISSUES)	\$6.50
<input type="checkbox"/> 3 YEARS (36 ISSUES)	\$9.00

NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

O'QUINN continued from page 7

a better understanding of their requirements, they have become easy to keep and easy to breed, which certainly makes them attractive to the beginner. But it is through the tedious work of the experts—the careful culling, cataloging, line-breeding and cross-breeding—that their development has come such a long way in the last few years.

The first swordtails were iridescent-green with a metallic-green in the tail spike and a red saw-tooth line along the center of the body. The red variety, which has become more popular and makes a more outstanding display, first came from an unknown red platy-swordtail cross in the aquarium of a Mr. Silver in New York City in 1923 or thereabout. (Innes' *Exotic Aquarium Fishes*.)

As we know them today, swordtails may be had in a variety of colors, color combinations and fin variations. One of the most exciting variations was started about ten years ago when a Gardena, California couple, Mr. and Mrs. Thomas Simpson, found the first little "high-fin" among a group of their baby swordtails. From this little fish, which turned out to be a male, they developed the strain which has become known as the Simpson swordtail and has now been distributed and produced by the thousands all over the country.

By the time the Simpson swordtail hit the market, regular swordtails had become so prolific and the price had been so drastically cut, that practically every aquarist had them at one time or another. It was accepted as one of the mainstays of the hobby and many of the "old-timers," seeking something different, were turning their attention in other directions. But it took only one glimpse of this gorgeous new swordtail with its exceptional finnage to make them sit up and take notice. Naturally their estimation skyrocketed and so did the price. And naturally, being true lovers of the unusual, my husband and I were among those who were most anxious to obtain some of these exotic fish.

But the excitement didn't stop there. Last year our dealer received a shipment of lyretail swordtails from Florida. They came in an assortment of colors: green, green wag, gold, and red—all very large and the females very heavy. While we had read about the Simpson swordtails before we had a chance to see them and become more or less prepared for them, the lyretails took us quite by surprise. If we thought we had acquired something special in the Simpson swordtail, we were now overwhelmed by the size and beauty of this innovation. The male had a long point on the top of his tail as well as a longer point, or spike, on the bottom. The female, who was originally a rather plain-looking fish, now had the long double points on her tail with a wide spread in between. If anything, she was even more beautiful than the male. Both fish had short, pointed dorsal fins and very long fluttery pectoral fins. Strangely enough, the anal fin on the female had a point rather than the familiar fan-shape. (This tends to make sexing difficult in the early development,



A male with a lyretail and a normal dorsal fin.

though the anal fin on the male eventually becomes many times longer.)

My husband and I considered ourselves very lucky to get a pair of these handsome new fish (at a fancy price, to be sure) and felt well repaid when the female produced 125 young within a few days. Although our pair was red, the young were all colors which showed that the mating had not been carefully planned. And, as it turned out, less than half of the young had the fancy fins. Knowing what I know now, I feel sure these fish had been left to mate with their plain brothers or cousins, probably in outdoor pools.

But no matter. I soon had the colors sorted, and in a very short time was able to sort the lyretails from the plain, or regular ones. Being partial to the reds, I selected the best of this group with the best shaped tails and gave them the special attention all prospective breeders should have.

Meanwhile, my fine big female presented me with 36 new babies, also in assorted colors. A few weeks later she had another ten and then, after a short period, a final four. Since then she has never even looked the least bit heavy. She must be all of two years old or more by now, and she is still a big healthy fish with a fine body and a perfectly shaped tail.

But back to my story. As soon as I had a young, mature male, I put him in the tank with his mother, but she refused to let him come out of the corner, and I finally had to remove him for fear of losing him. I later put another young male with her and, although she accepted him as a tank-mate, she still did not become pregnant.

By this time I was working with my selected group of young males and females, all well-developed with good color and perfect fins, but nothing was happening. I optimistically kept this up for some time with



This is a lyretail, normal-dorsal female; however, the fish is still young and the tail is not yet fully formed.

no results. Then I learned that other people in this area who had bought fish out of the same lot were having the same problems and it became obvious to me that the male lyretail swordtails were good for show purposes only.

My next move was to put my biggest young female with a good male Simpson swordtail. Lo and behold! In about five weeks I had 96 baby swordtails. This time about half of the young were plain swordtails and a few had the high fin but not the lyretail. Most of the ones with the lyretails also had the high fins, especially the males, which enhanced their beauty.

And now we come to our second generation from this cross. This time for my breeders I had selected females with the best lyretails and the longest dorsal fins, but I had chosen the males with long dorsal fins and WITHOUT lyretails. About the same time I was selecting my breeders from this new group, a friend who is a guppy expert and who has worked with guppies almost exclusively had become fascinated with these beautiful lyretail swordtails and asked if I would let him have three pairs. I told him about the difficulties I'd had and suggested that he take at least one of the males without the lyretail, but he said he'd rather have all lyretails.

My second generation from my Simpson-lyretail cross arrived a few days ago, a fine, healthy-looking "tankful." Yet my friend, who has actually put more size on his breeders than I have on mine, has had no results with the breeding and told me the other day that he is now ready to introduce a Simpson male. ●

IS THE MALE LYRETAIL SWORDTAIL STERILE?



Photo by Friedrich-Meyer, Berlin, G. Germany

**Rx for healthier fish:
Reduce salt content of aquarium water
with better foods**



FACT: An undesirably high salt content of water is a danger signal to which successful fish breeders pay special heed. But did you know that the food you feed your fish can adversely affect the salt content?

We know that salt ions in water conduct electricity. Using this principal, we tested different types of food to learn their influence on salt content. In unfavorable cases the conductivity measurement rose drastically — from about 80 mS* to nearly 200 mS within 14 days! It is a finding that may well clarify many a hobbyist's "unexplainable" failures.

And it adds more proof, we think, to the principal that scientific research is your best insurance that TetraMin brings you a safe, nutritious diet — always.

*Micro-Siemens



**Our Research and Your Success
Speak for TetraMin**