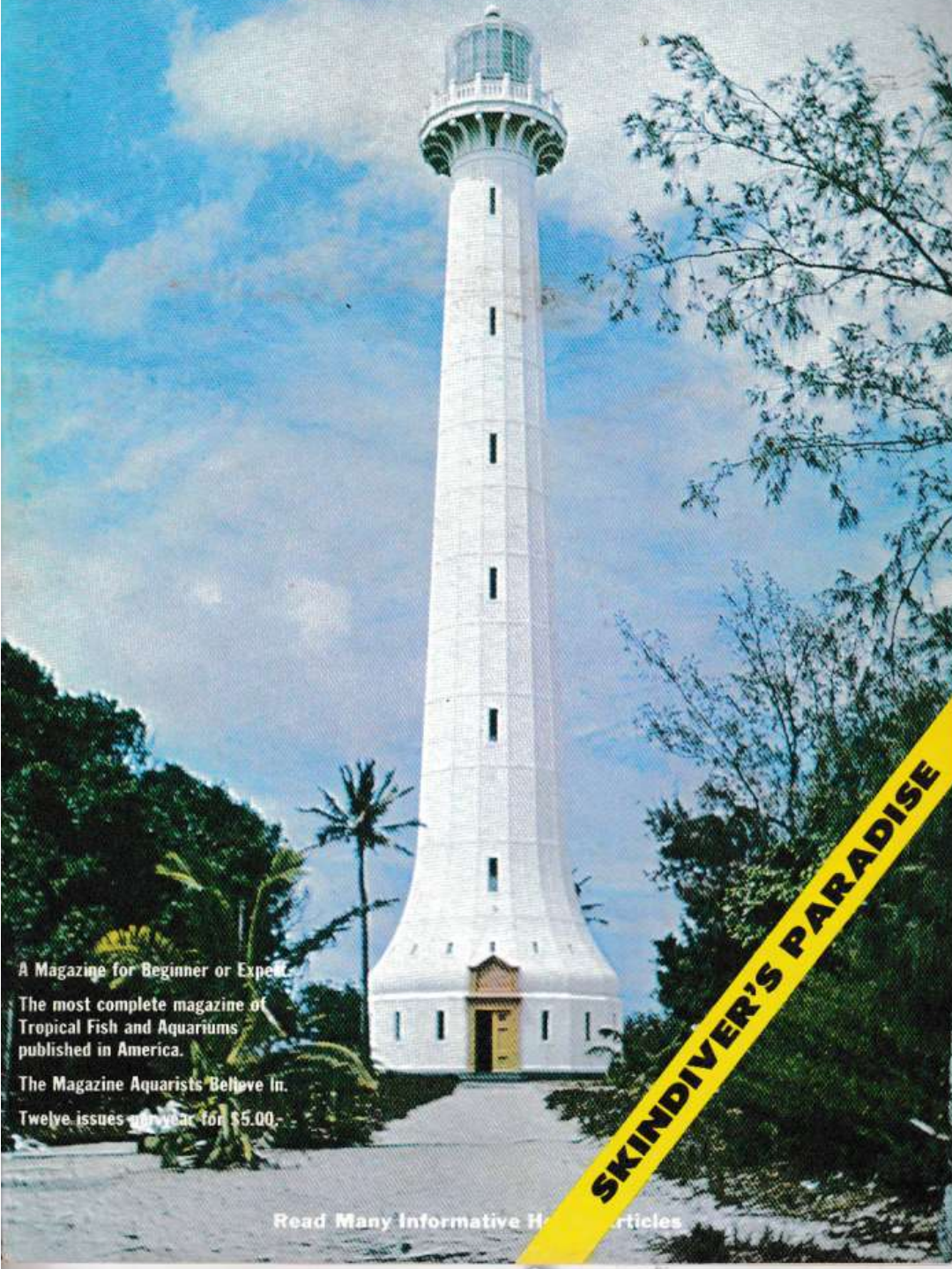


11 / 1963 • 50 CENTS

aquarium journal



A Magazine for Beginner or Expert
The most complete magazine of
Tropical Fish and Aquariums
published in America.
The Magazine Aquarists Believe In.
Twelve issues a year for \$5.00.

Read Many Informative How-to Articles

SKINDIVER'S PARADISE

Published by the
San Francisco Aquarium
Society, Inc.

Executive Editor
James W. Crawford

Technical Editor
Stanley Weitzman, Ph.D.

Office Manager
Jeanne Heim

Consulting Editors
Earl S. Herald, Ph.D.
James W. Atz, Ph.D.
James N. Adams, Ph.D.
W. I. Foillett

Associate Editors
Albert J. Klee
Gene Wolfsheimer, F.A.I.
Arthur S. Campbell, Ph.D.
Frederick H. Stoye
Kirk Strawn, Ph.D.

OFFICERS OF THE SAN FRANCISCO
AQUARIUM SOCIETY FOR 1963
President emeritus: Charles P. Bange
President: Robert Dempster
Vice-President: Frank Tufo
Secretary: Treva Bell
Treasurer: Theodore Steinhauer
Librarian: Ray Cabrera

BOARD OF DIRECTORS FOR 1963
Charles Bange, Percy Bell, Treva Bell,
Ray Cabrera, James Crawford,
Robert Dempster, Velma Echeverria,
Lee Heise, Fred Jennó,
Theodore Steinhauer,
Frank Tufo, Joseph Zins,
Earl Herald*
Maurice Rakowicz*
*ex-officio

Published monthly by San Francisco
Aquarium Society, Inc., Steinhart Aquar-
ium, Golden Gate Park, San Francisco
18, California. Telephone BAyview
1-0054. **Subscription rates:** \$5.00 yearly
in U.S., Canada, and Latin America,
elsewhere \$5.50. Copyright 1963 by San
Francisco Aquarium Society, Inc. Con-
tents of the Aquarium Journal may not
be used or quoted without permission of
the Society. Authors alone are respon-
sible for statements made and opinions
expressed in their respective articles.

Entered as second-class matter February
11, 1948, at the post office at San
Francisco, California, under the Act of
March 3, 1879.



aquarium journal

The Magazine Aquarists Believe In

Volume XXXIV
Number 11
November 1963

contents

A Diver's Paradise	Douglas Faulkner	475
Club News	480, 488, 504, 509, 514, 515, 516	
Instant-type Fish Kits, Part II	Gene Wolfsheimer, F.A.I.	482
Under the Cover Glass	Albert J. Klee	484
Ideas by Hobbyists	486, 488, 494, 513	
The Dwarf Cichlids, Part I	Paul Loiselle	490
American Guppy News	Lawrence Konig	496
Ten Pairs of Bettas	Diane Schofield	498
Twig Catfish	Braz Walker	502
Reverse Locomotion in Post-larval <i>Cynolebias</i>	R. Vaz Ferreira, B. Sierra-de-Soriano, and S. Scaglia-de-Paulette	508
The Odd Shrimpfish	James W. Atz, Ph.D.	511
Product News		514
Salt Water Fishes	Robert P. L. Straughan	515
Programs for Society Meetings		515
Letters to The Journal		517

cover photograph

Amédée lighthouse on the barrier reef, near Noumea, New Caledonia, as photographed by Douglas Faulkner. For more about this entrancing spot, turn to Mr. Faulkner's article beginning on Page 475.





The author is delighted to discover
an idyllic spot for collecting fishes

A Diver's Paradise

PART I

AFTER having traveled for five months in the South Pacific, most of my travel poster preconceptions were painted over with a new, less idyllic picture. I had completely forgotten about the possibility of finding that special type of island with a white sand beach and calm, blue waters where life moves slowly and nothing is for sale. Such then was my surprise when I stepped ashore at Amédée Lighthouse. I was staying in New Caledonia for about a month for the purpose of photographing fishes. This particular morning was my first trip to the barrier reef, a

Douglas Faulkner

Summit, New Jersey

reef which completely encircles New Caledonia. Earlier I had been diving on another part of the reef with M. Monet and several other skin divers. All of us were in the mood for being favorably impressed. We were a little chilled from our dive and a choppy ride along the reef but when we reached the lee side of the island, the dominant colors of the blue water, green trees

Photo: Sylvain with a few of his shells. All photos by the author unless otherwise credited.



and white sand had their effect on us. The engine was cut and the boat's bow brought us to a gentle stop as it touched the beach. We felt the warmth of the noon sun reflected from the white sand. I could hardly believe that this little island was to be my home for the next few days. As a professional photographer I had obtained permission through the tourist bureau to remain on the island and return to the mainland with the pilot boat. My diving companions were only out for the day.

Emerging from under the trees where the little red-roofed houses were nestled, Sylvain Napoleon approached smiling. As he strode down to the beach to greet us, he seemed perfectly a part of the beauty of the place. Ultimately, it was Sylvain and his family that made the island a real paradise for me with their warm hospitality. I had come prepared to sleep on a plain mattress in one of the rooms of the radio house and spear my own fish for food. Sylvain's wife sur-

prised me by making up the bed and cleaning the cobwebs and dust from the room. Then, as if that was not enough, I was invited to eat all my meals with them.

After we were introduced to Sylvain, he proceeded to show us around. We followed him over to a wooden crate that was in the shade of the trees. He wanted to show M. Monet something. Our eyes widened as he lifted the top of the crate. We saw hundreds of beautiful shells packed together. The decaying animals were being eaten by thousands of ants. It was explained to us that the ants were a slow but sure method of cleaning the animals out of their shells. When Sylvain saw we were impressed with the beauty of the shells, he invited us to his house where one room was devoted to his collection. Hundreds and hundreds of shells of all kinds were neatly displayed on shelves.

Photo: View of the leeward beach including dock and sand bar. The mainland in distance is barely visible through storm clouds.

There was a table in the center of the room on which was displayed a beautiful piece of coral. Among the delicate white branches were the most beautiful and perfect shells.

A white sand walk led from the beach to the lighthouse at the center of the island. Like everything else on the island, the lighthouse seemed a part of the place. The island was neither primitive nor modern. The lighthouse was over a hundred years old, yet it seemed immaculately clean. The outside was painted white and it looked like it was given a new coat every week. No one lived in the lighthouse, yet all the brass fixtures were polished, including the name plates and plaques on the doors and walls. We climbed the circular stairway to the top landing just under the light. A doorway led to an outside catwalk. From our vantage point we could see the whole island and its reefs. On the windward side the living coral had been destroyed by the wave action.

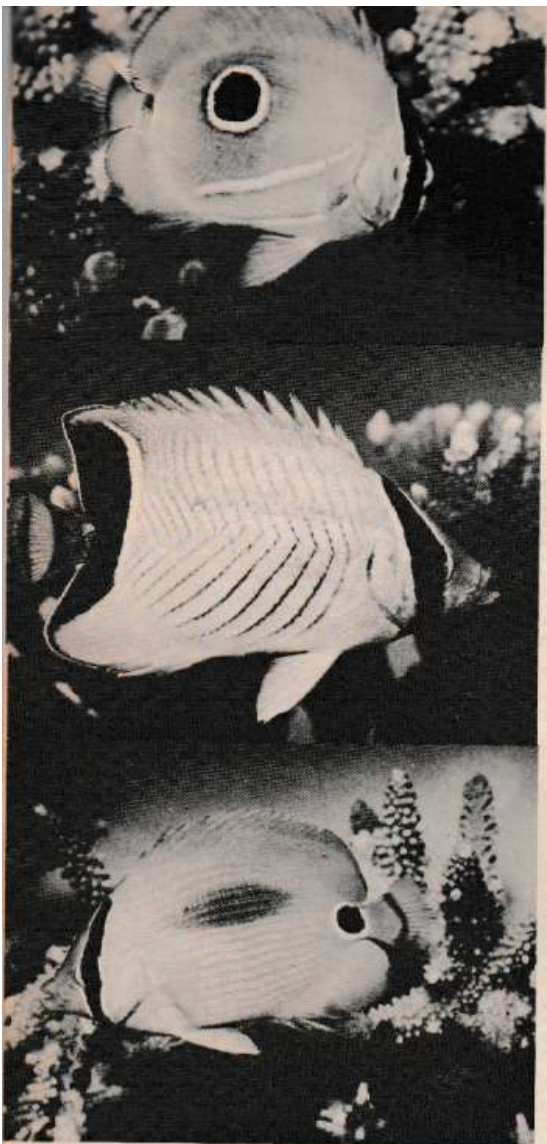
Only a shallow barrier of dead coral rock remained a few feet below the surface. As the reef extended around to the lee side of the island, the water grew deeper and the coral growth became luxurious. In the distance we could see Little Amédée Light, an old white cement structure across the channel. It was situated on a reef that does not quite break the surface. Later I was to dive there and I found it to be the nicest general diving reef in the area. The top of the reef was mainly dead coral rock but directly in front of the light, on the windward side, the reef dropped off abruptly. The reef, from ten to fifteen feet on down, was like a hillside of coral, little affected by the windward wave action. A diver could snorkle in the upper regions on calm days or scuba dive further down the slopes.

On the first part of my trip, I did a great deal of diving at nine islands in French Polynesia. Although some of the

Photo: Dr. Meslet
collecting coral
about 100 feet
down outside
barrier reef.



NOVEMBER, 1963



islands, especially Bora Bora, had beautiful reefs, none of them had anything to compare with the barrier reef off New Caledonia. As many skin divers know, there are areas of very delicate coral growths in water almost too shallow for swimming. Such reefs are usually found in protected bay areas where

the water, more often than not, is not very clear. These areas, though sometimes very beautiful, do not fulfill the diver's dream simply because the diver does not have a sensation of diving. It would be comparable to viewing a reef from a glass bottom boat when the real joy is being able to dive. The barrier reef off New Caledonia fulfilled my dream perfectly.

After our tour of the lighthouse, Sylvain asked us if we wanted to go diving with him while he speared a few fish for lunch. We collected our diving equipment and were off. We waded into the shallow water, sat down and put on our masks and fins. Sylvain and the others pushed off with their spear guns and I followed with my camera. On the main body of the reef the coral grew in a solid mass. The variety of colors and shapes was endless. Some corals were all pink or blue or blue with pink tips. Others were blue green or pastel yellow. Yet, for all the shapes and colors, the reef was not gaudy. It had a subdued majesty due perhaps to the twilight effect of the water. The main body of the reef was about one hundred feet wide running parallel to the shore. At the outer edge there was a fifteen to twenty foot drop to the sandy bottom below. We had been warned by Sylvain not to venture too far out over the sandy bottom which dropped away rapidly. He told us his cousin had been collecting shells in the deeper water and was killed by a shark.

After watching my diving companions for a few minutes, I decided that the most dangerous creature in the ocean wasn't the shark. Sylvain was an expert diver and spear fisherman but the other divers were spear fishing for the first time. I wanted to photograph Sylvain spear fishing but not in the midst of those waving spear guns. So off I went

Photo: Beautiful Butterfly fishes collected near New Caledonia in the South Pacific. Top: *Chaetodon bennetti*; Middle: *Chaetodon* species unknown; Bottom: *Chaetodon plebeius*.

by myself to photograph the reef fishes which had been my purpose in going to New Caledonia anyway.

I was particularly interested in photographing symbiotic cleaning relationships, consequently I was always looking for any cleaning activity that I could find. As it happened, I got my most spectacular "cleaning" picture of the trip on that day. While swimming I came upon a small group of squirrelfish hovering over a large, stoney coral reef. A *Labriodes dimidiatus* was swimming near the group. As I watched one of the "squirrels" opened his mouth when he was approached by the wrasse which immediately entered part way and began picking parasites inside the oral cavity. As I approached the squirrelfish, he became nervous and began to close his mouth. The wrasse backed out but did not swim very far away. I surfaced, took a few quick breaths and made another dive. I approached the fishes carefully until I came to a rest on top of the coral four to five feet away. The

camera was focused for three feet. I have found that the best way to photograph most fishes is to pre-focus and pre-set the lens opening. The focus is based on the size of the fish. I try to get as close to the subject as possible. Most fishes will not hold still long enough for the photographer to approach them, focus, adjust the aperture and speed and then take the picture. Everything must be done beforehand. When the wrasse approached the squirrelfish I was ready. The same act was repeated and just as the wrasse entered the "squirrel's" mouth I closed in and got the picture. While I was photographing, suddenly I saw a big lobster propelling itself full speed astern across the coral. I know from experience that he wasn't out for an afternoon swim. someone had flushed a lobster but without a spear gun there was nothing I could do other than watch a beautiful

Photo: Amedee Light from the air showing the reef in the foreground. The upper right hand area of the photograph shows part of the outer barrier reef. Photo credit: Noel Cale



meal go by. I went back to my photographing with the hope that someone had had a few direct hits.

As it happened (I should say as it usually happens when diving) I lost track of time and was late for lunch. Fortunately Sylvain had speared several fishes and together with ones M. Monet had speared earlier, there was still enough food left on the table when I arrived. I promptly proceeded to eliminate that situation. Even if I hadn't been hungry, it wouldn't have been very difficult to clean the table. Sylvain had prepared the most delicious fried fish I had ever eaten. Later meals consisted of such delicacies as canned beef and potatoes or canned corned beef. Canned foods are truly delicacies to the island people of the South Pacific. That night, when I was served corned beef with onions as one of the courses, I was served the best in the house. Sylvain and his family ate fish every day; it was no delicacy for them and of course it would not do for a guest. If I had been able to speak French better than I *can't*, and if I could have been certain not to hurt Sylvain's feelings, I would have asked him to save his canned foods and have more fried fish. Even so, I ate the beef and potatoes just as if they were delicacies, as to me they were because of the beauty of the spirit in which they were given.

After lunch was devoured I reloaded

my camera and we all went diving again. I became engrossed with my photographing and when I finished time had flown again. My diving companions had all seen the sights and returned with M. Monet to the mainland. I walked back along the beach. When I passed the sand bar where the sea gulls roosted, I waved my arm and the gulls took flight, hundreds of them circling over the water. The wind lifted thin sheets of sand from the beach depositing them in little ridges further on. Other than the wind and the gulls, the island seemed uninhabited. The houses were hidden among the trees. There was an absolute serenity about the place.

That evening I asked Sylvain how he collected his shells. I knew he dove for them because they were in excellent condition. I had collected a few shells myself but I usually found them in a haphazard manner when collecting fishes or photographing. Sylvain told me that at night the animals burrow through the sand as they feed. During the daylight hours they suspend operations and rest. In order to know where they are, the collector must look for them early in the morning in the first few hours of daylight before the fresh trail or ridge of sand is hidden by the motion of the water. The shells lie buried where the trail suddenly stops.

(To Be Continued)

CLUB NEWS

Florida Marine Aquarium Society

The group held its strictly marine tropical fish show in Miami at the Simpson Garden Center in September. About 750 persons attended the show. Best of Show winner was Jerry Poe, 17 years old, who exhibited a Jacknife, Yellow-head Jawfish and Butterflies, according to Joseph E. Turner, Jr., membership chairman.

TROPICAL FISH IMPORTERS!

Protect your investment by using dependable Port of Entry service, Re-oxygenation, Temperature correction, Customs clearance, Re-forwarding.

AIRPORT ANIMAL SHELTER

(Specialist in Handling All Types of Animals)
International Airport

P.O. Box 8245 San Francisco 28, Calif.
Phone: JU 9-2553 Cable: 415-698-9188

PART II

THEIR OPERATION of the hatcheries was simple. The aquariums were tiered and put in place endwise to allow a maximum number in a minimum space. The tiered racks ran the full length of the hatcheries, each hatchery totaling well over a thousand square feet of floor space. Large fifty-gallon plastic drums were stored at the top of the highest tier available and acted as water storage.

Several species of annuals were being bred, including *Nothobranchius guentheri* in a great quantity, as well as *N.*

that each day one area was worked on and in the interim of one working week, every aquarium received special attention beyond daily feeding and observation. The water in each aquarium was siphoned off and this carried out the egg-laden peat moss. The water storage drums were used each day to re-fill the partially emptied aquaria. The drums were then re-filled later in the afternoon to be used again the next day. The water they contained barely had any time to age or warm up. It was hard to believe that such supposedly sensitive creatures

Instant-type Fish Kits

palmquisti, *N. melanospilus* and *Cynolebias whitei*. The *palmquisti* and *melanospilus* were more of an experiment and their mass production was later abandoned. *Nothobranchius rachovii* was also attempted and some are still being kept but was never mass-produced because of the extended length of time required for the eggs to hatch. They require at least twice as long or even longer than the other species. *Cynolebias whitei* gave excellent results and these were also produced in quantity.

One of their breeding tanks held approximately twenty-five fish, about 65% of these being females. The tanks were aerated and the bottom glass was covered with boiled peat moss in which the fish laid their eggs. The racks were divided up into five areas per hatchery so

NANTANALUKS AQUARIUM

60/21 Paeng & Companion Lane,
Din Daeng Road, Bangkok, Thailand

BREEDERS and EXPORTERS

Siamese Betta Splendens; Goldfish and
all kinds of common and rarer
tropical fish.

Gene Wolfsheimer, F.A.I.

Sherman Oaks, California

could survive this treatment. They not only did so, but responded by having a very high egg-production and a low mortality rate. Certain of their breeding *guentheri* grew to be over three inches in length and lived more than eighteen months with full egg production until their demise.

The complete diet for all their stock consisted of newly-hatched brine shrimps for the young fry being raised as future breeding stock, chopped tubifex worms as soon as the fishes could devour them and finally whole tubifex worms that were fed twice daily to the breeding stock. The diet never varied from birth to death. This might cause those who condemn tubifex as even a secondary food to think about this a bit.

The siphoned peat moss was caught by a net, gently squeezed to a semi-moist state to remove the bulk of the water and spread on muslin-covered racks. It was left this way just long enough to reach the proper degree of semi-dryness for a prolonged storage. The peat moss was then put in plastic

(Continued on Page 507)

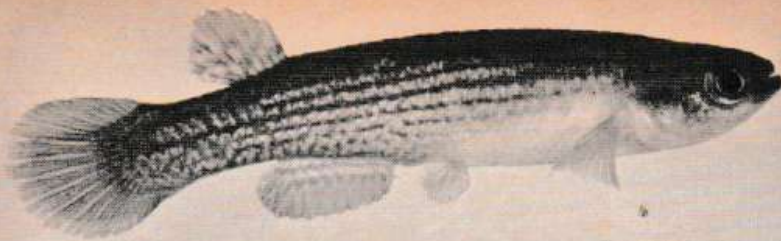


Photo: *Rivulus liminicochae*, male, as photographed by the author.

IT HAS OFTEN been stated that our British friends are somewhat without humor. Nothing, however, could be farther from the truth. Who could fail to be amused by a Peter Sellers movie? In aquarium humor at least, the following item should end the argument once and for all. It was discovered (author unknown) among the files of the Croy-

ical. It is recommended that they be placed poop over sprit. The captain must always be visible, as a ship which sinks without its captain will be penalized as unsporting.

4. Glass marbles are to be at least half an inch in diameter, the larger the better as more decaying food and other debris can be accumulated be-

Albert J. Klee

looks

• Under the Cover Glass

don Aquarists' Society and reported in the British magazine, "The Aquarist & Pondkeeper" (Vol. XXVIII, No. 3, 1963):

Recommended Standards for Tank Furnishings Other Than Fishes and Plants

1. Divers should be large-headed, big-booted and of heroic stance. Any sign of Duck's Disease will be penalized. Inclusion in the same tank as number 5 below to be considered dangerous.
2. Frogs. Bubbles ejected from the mouths of ornamental frogs shall be spherical, 1 inch in diameter, and released at regular intervals of 30 seconds. Bubbles passing out from the other end will be disqualified. The frog is to be highly colored and of no known species.
3. Sunken galleons must be small enough to look ridiculous when compared with the accompanying fishes, and must not be shown in marine tanks where they might appear more logical. It is recommended that they be placed poop over sprit. The captain must always be visible, as a ship which sinks without its captain will be penalized as unsporting.
4. Glass marbles are to be at least half an inch in diameter, the larger the better as more decaying food and other debris can be accumulated between them. Colors are to be violent and to clash with one another as much as possible.
5. Mermaids will be judged in two parts. The upper half is to resemble as nearly as possible "B.B.", but with hair reaching to the waist. The bosom must be well developed and evenly balanced. The lower half should bulge attractively at the hips, then taper off disappointingly to end in a caudal fin unlike that of any known fish.
6. Treasure chests should have four sides and a lid. The lid may be permanently open, in which case the treasure should be tawdry and glittering. When the lid is closed, but bursts open at nerve-racking intervals to release a gob of air that knocks fishes sideways, no one will care whether there is treasure or not. Preference will be given to chests so overgrown with algae as to be unrecognizable.

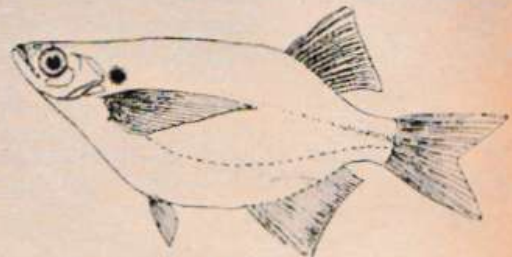
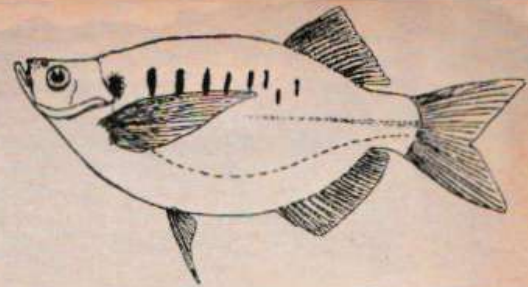
Sketches: (Upper) *Chela caeruleostigmata*. (Lower) *Chela mouhoi*, both after Meinken.

7. Submerged castles must give no indication as to why they are submerged. The highest turret must be below water level; aerial turrets will be penalized. There should be enough room inside for dead fish to lie unnoticed. The architectural style recommended is Butlin's Fun Fair, early period.

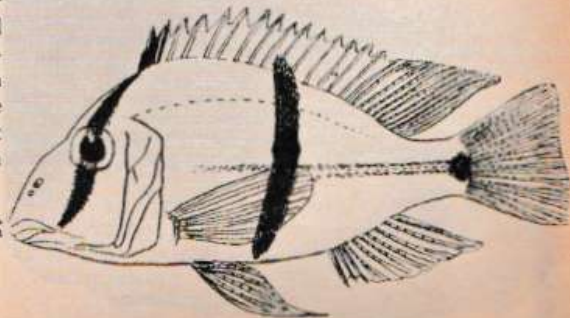
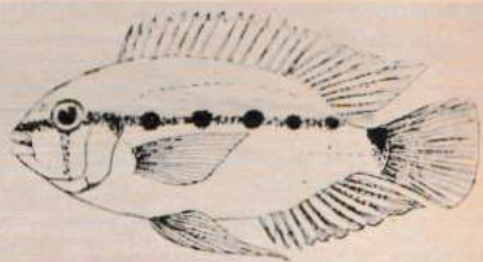
Scale of Points

Whimsicality	20
Gaudiness	20
Futility	20
Disproportion	20
Tastelessness	20
	100

Although the following account will probably become a classic in the hobby, it is offered to support an important point, viz., that the scope of the hobby is so broad that it is an anachronism to have one person judge an all-species fish show. Some time ago, a Cincinnati aquarist who entertains a rather dubious reputation as an "expert" (mostly in guppies) was invited to judge an all-species show in a nearby city. Entered in the show was a superb pair of blue gularis (*Aphyosemion coeruleum*) . . . very large, colorful and stately. The fish frankly stole the show and spectators not familiar with killifishes pressed to learn what kind of a fish it was. Such interest forced even this poor excuse for a judge to rate the fish highly. However, the fish did not win best in show (or even best in its class), a surprise to all concerned. The judge rated the fish tops in deportment (the fish had its fins spread constantly), size and color, but marked its truly magnificent finnage (the finest to be seen in many years) down because "its anal fin was ragged"! One may well expect an aquarist not familiar with killies not to know that the anal fin of a blue gularis is by nature "ragged," but there is no excuse for such incompetence on the part of a judge who has accepted such an assignment as an "expert." To even accept such an



assignment in the first place is unethical by any judging standards. As a result, the exhibitor lost out on two trophies and spectators went away lamenting that such a beautiful fish "lost out because of defective finnage." There are so many fishes that it seems only common sense that one man cannot be expected to be knowledgeable in all of them. Show committees would do well in ensuring that provision is made for multiple judging in all-species shows, and that a "guppy judge," a "killie judge" or a "beta judge" is not necessarily competent to judge fishes other than within his own specialty.



Sketches: (Upper) *Aequidens itani*. (Lower) *Geophagus surinamensis*, both after Meinken.

A number of new aquarium fishes have appeared on the scene lately, "new" either in the sense that at least it has been some time since their last importation, or else are brand-new fishes indeed. In the United States, for example, quantities of Asian fishes are being seen at importers fairly frequently. I was pleased to obtain a specimen of *Osphronemus goramy* at the Fish Bowl in Irvington, New Jersey, this summer, and a rather strange member of the *Gastro-myzontidae* from Paramount Aquarium in Ardsley, New York. The former fish is the original "gorami," lending its name in emended form to a whole series of familiar aquarium fishes. It has become quite a pet in my household and comes to the surface to accept food from the fingers. Although not pretty, its unusual form and interesting motions ensure it a permanent place in my collection. The latter fish is a real "cliff climber" and has astounded me no end by being able to climb the vertical and rather smooth sides of a plastic container, right up out of the water!

Asian fishes seen in Germany lately include *Chela caeruleostigmata* (see figure) and *Chela mouhoti*, fishes that I popularly call "glass barbs." These fishes are quite transparent, resembling glassfish (*Chanda*) in this respect. However, they are not glassfish but are related to the barbs and minnows. They originate from Thailand. An excellent reference to these fishes is in the German

The Genuine English Translation
of the Famous German Book

**"FRESHWATER FISHES OF
THE WORLD"**

By Gunta Sterba

\$12.50 postpaid

Send Cash or Certified Check to

PURKISS CARTWRIGHT, Accountants
Barclays Bank Chambers, Grand Parade
Harringay, London, England

aquarium magazine, DATZ, Vol. 16, No. 9, 1963.

In killifishes, many new kinds have been seen. Among these are *Austrofundulus transilis*, *Pterolebias maculipinnis*, *Pterolebias zonatus*, *Aphyosemion spurrelli*, *Epiplatys sheljuzhkoii*, *Micropanchax cabindae*, *Micropanchax normanni* and *Rivulus limnocochae*. In addition, there are three or four more species, the identification of which are in doubt. Both *Pterolebias* species are interesting but *zonatus* promises to become a much-sought-after fish. It is basically a *Pterolebias* with vertical stripes. Of the *Micropanchax* species, *cabindae* should prove to be immensely popular. It is a large, bluish version of the hummingbird *Micropanchax* (*M. myersi*), easy to breed, raise and to keep. We plan to report in considerable detail on this fish shortly. The other species is somewhat less attractive (but very similar) and will be reported upon

★ **I D E A S** ★
BY HOBBYISTS

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

Heat or Cool Tanks

Save those plastic bags! On those extremely hot summer days, when your aquarium temperature goes into the 80's, just put a couple of ice cubes in a plastic bag and hang it inside your tank with a pincher clothespin. This way your fish will not get a chill or ich. The reverse can also be done. If you want to bring the temperature up, while fixing your heater or if power failure takes place, simply put hot water in the bag. The change of temperature in either case is gradual. — Harry Rudolph, Woodbury, New Jersey.

in the *Journal* by Col. Scheel very soon, also. Past articles in the *Journal* have already mentioned *Aphyosemion spurrelli* and *Austrofundulus transilis* (see issues for Vol. XXXIII, No. 10, 1962 and Vol. XXXIV, No. 5, 1963) and readers are referred to these issues for additional information.

The *spillmanni* subspecies of *Epyplatys sheljuzhkoii* differs from the type in that the males carry the vertical bars as do the females. The American Killifish Association is currently making the distribution of this fish possible to aquarists all over the world. Finally, the *Rivulus* species being imported today are without doubt, going to elevate the genus in the estimation of aquarists everywhere, and impart to it a reputation for containing some of the most beautiful fishes in the hobby. *Rivulus limonocochae* (see photograph), a crisp,

★ IDEAS ★
BY HOBBYISTS

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

Get Rid of Springtails

Enchytraeid cultures are often infested by springtails and perhaps mites. To get rid of them, remove the cover and wait till all white worms have disappeared under the surface of the culture medium. Then by using a piece of rubber tubing lead the steam from a kettle of boiling water to the surface of the dirt. This will kill the creatures. — Robert J. Wyndham, Upland, California.

FANCY GUPPIES

Customers tell us we have the best. Large bodies with long, wide tails and beautiful colors. Now featuring our variegated Blue-Green-Red and also Clear Red and Multicolors. \$6.00 a pair and two pair for \$11.00. Trio \$8.00 and two trios \$15.00. Airmail with guaranteed live delivery. Send check or money order. Dealers wanted.

RAINBOW GUPPY AQUARIUM

P. O. BOX 535

LEESBURG, FLORIDA

green-striped fish is a case in point. Incidentally, other pretty *Rivulus* species have been imported also, but their correct names are yet to be determined (as of this writing).

In Germany two new cichlids have been introduced: *Aequidens itani* from Surinam, and *Geophagus surinamensis*, also from that country (see figure). The latter identification is, however, not definite yet. This short account of new fishes is not, of course, intended as a first description of any of these fishes but merely to answer the perennial aquarist's question of, "What's new?". The answer is "Plenty!", and hobbyists have much to look forward to in experimenting with new and exciting fishes. ◀

CLUB NEWS

Potomac Valley Guppy Club

The Fourth Fall Fish Fair will be held October 19 and 20 in the Holiday Room of the Arva Motor Hotel, 2201 Arlington Blvd., Arlington, Virginia, according to Mrs. Julia L. Menges, Secretary. The Arva Motor Hotel, incidentally, is only one mile from the Lincoln Memorial in Washington, D.C., Mrs. Menges said.

• • •

Stanislaus Aquarium Society

(Modesto, California)

Bud Jensen of Modesto was declared winner of the overall trophy at the Third Annual Tropical Fish Show held by the Stanislaus Aquarium Society in Modesto, according to Dr. J. A. Porter, Publicity Chairman.

• • •



The author-aquarist shares a bonanza of information about this species

The Dwarf Cichlids

PART I

A FEW DAYS AGO, while cleaning off several years' accumulation of aquaristic esoterica from my limited shelf space, I came across a set of notes I took while doing an experiment with *Nannacara anomala*. This accidental discovery set me to searching for other little notes I have made on the behavior, appearance, and general idiosyncrasies of the various dwarfs I have dealt with over the last five years. As any aquarist well knows, five years can see a great deal of information jotted down on scraps of paper, scribbled on the back covers of journals or reference texts, or else filed in that most fallible of all registers, the human memory. I have here assembled what I hope is a relatively coherent mass of data that I would like

Paul Loiselle

La Mirada, California

to share with my fellow aquarists.

Before I go on, I had best clarify my ideas of success in breeding not only the dwarf cichlids, but any fishes. I personally am concerned with the behavior of fishes prior to and subsequent to spawning, not with the raising of the fry. I learned long ago that to break even financially on any breeding venture required far more time and space than I was able to devote. Consequently, I consider my efforts successful if I can raise enough fry to replace my original breeders, and have a few pairs left over

Photo: Female *Apistogramma ortmanni* guarding newly-spawned eggs on flower pot. Aquaphoto by Gene Wolfheimer.

to give to interested friends. The adoption of this policy will save the fledgling connoisseur of dwarf cichlids much grief, as no fishes are less suited for commercial breeding than the dwarf cichlids.

This is not to say that the dwarfs are, as a group, excessively difficult to spawn, nor that their fry are very hard to raise. However, as no South American dwarf lays more than two hundred eggs, it can readily be seen that unless the prospective breeder has several synchronized pairs of breeders, he must be prepared to allocate a good deal of tank space to a few fish or else accept heavy losses to cannibalism. The aquarist who deals with these fishes will avoid a good deal of disappointment if he accepts the fact of small clutches and smaller hatchings.

I have bred with some success the two species of *Nannacara*, *N. anomala* and "*N. taenia*," and three species of *Apistogramma*, *A. ortmanni*, *A. pertense* (?) and *A. cacatuoides*, also known as "U2." I have kept pairs of *Apistogramma ramirezi* (which is my favorite dwarf) and of *Pelmatochromis kribensis*. While I have had pairs of these two species

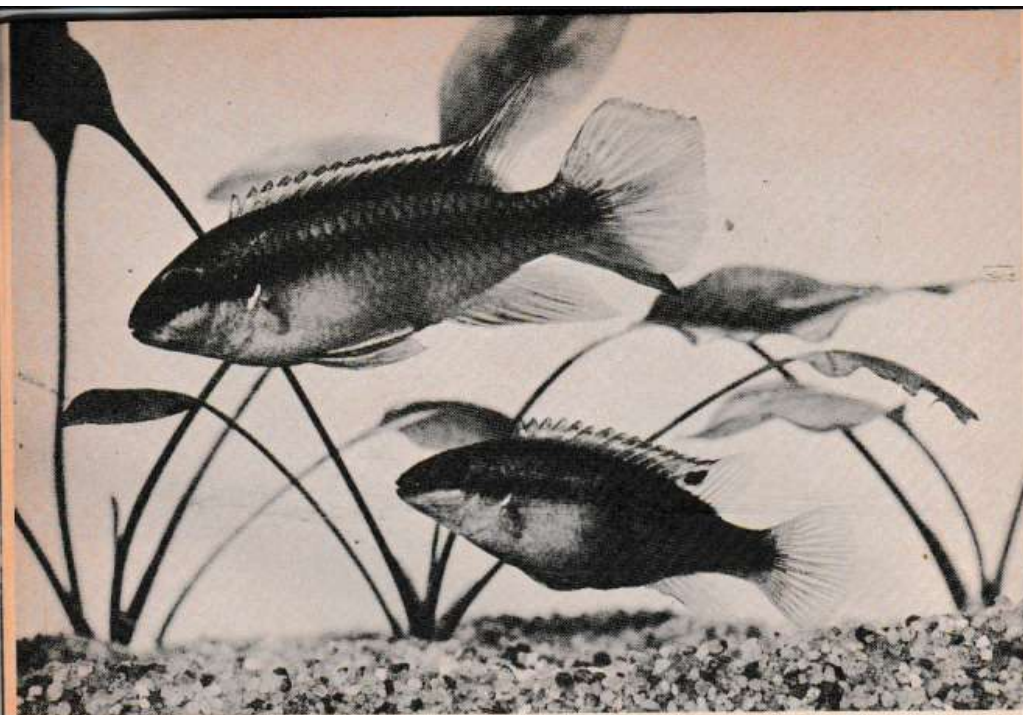
spawn for me, a combination of circumstances and disinclination have prevented me from rearing any fry. To make matters simpler, I will start with the Latin Americans, and then proceed to the *kribensis*, the only African in the "group."

Were I asked to nominate a single pair of any species of dwarf to a newcomer to these fishes, that choice would unhesitatingly be *Apistogramma ortmanni*. This fish has everything to recommend it, color, hardiness, a good disposition, a willingness to spawn, and general availability. This fish generally comes in mixed with *Nannacara anomala* and *N. "taenia"*, as the two species are caught together in their native Guianas. In New England, this species, along with any other *Apistogramma* that is not obviously *A. ramirezi*, is sold as *A. agassizi*. I have never seen *agassizi* alive, though from the excellent color photographs I have seen, it is beautiful. Any and all dwarf cichlids with a lyre-shaped tail are usually sold as *A. ortmanni* here on the West Coast.

The true *ortmanni* is not easily for-

Photo: *Nannacara anomala* with young. Aquaphoto by Gene Wolfheimer.





gotten once seen in good condition. It has the typical body of *Apistogramma*, colored grey or light brown with a distinctive blue cast. The opercular region is liberally striped with metallic blue, and these stripes extend as dotted lines onto the flanks. The female, of course, is more subdued in coloration, tending more towards the beige and buff tones, and with much less metallic fire than her mate. Both sexes possess a distinct black line through the eye, and a similar spot on the caudal peduncle. Depending upon their mood, they can also possess a horizontal line running from the eye to the caudal peduncle, or else a black spot about midway along the length of the body. The male possesses a lyrate tail, and a magnificent orange, grey, and buff colored dorsal. Both dorsal and anal are drawn out into fine points, as are the male's ventrals, which are edged in an intense chrome white. The female's fins are shorter, rounder, and colored a uniform yellow shade. Her ventrals are edged in black. This

is one of the easiest ways to sex this and any other *Apistogramma*, for all species possess this distinctive feature at an early age. The female is also characterized by an intense yellow coloration at spawning time.

These fishes are not particularly prolific, and the largest spawn I have ever had numbered seventy-five eggs. The female is a model parent under most conditions, but as with all of the dwarfs, young females may devour their brood for the first few spawnings. If fry rather than families are the breeder's object, let him remove the eggs from the female's care, and place them in a shallow tray supplied with brisk aeration. Fresh water with the same pH and hardness as the breeding tank's should be used, and of course, the temperatures of the two must be identical. If no air bubbles are allowed to touch the eggs, and either antibiotics or else chem-

Photo: A pair of cichlids, *Palmatochromis kribensis*.
Aquaphoto by Gene Wolfshelmer.

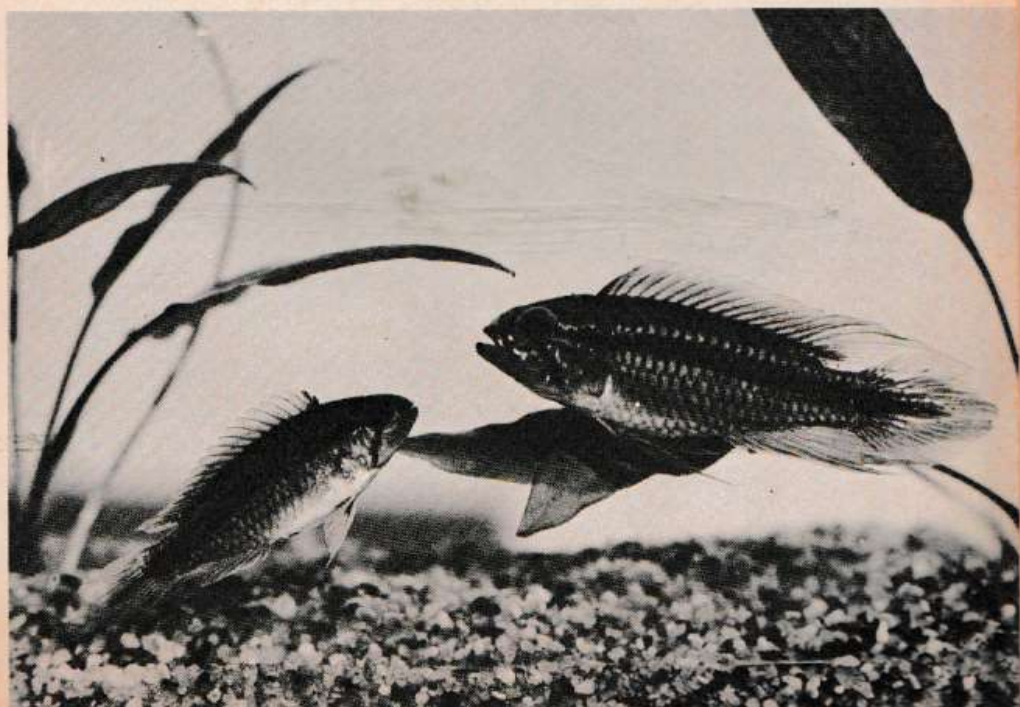
ical fungicides are used, a fair percentage of the eggs can be expected to hatch. The fry greedily consume brine shrimp or microworms and grow rapidly.

Apistogramma cacatuoides is a darker fish than *ortmanni*, and its metallic markings tend more towards the green. The only other difference lies in the magnificent, bannerlike dorsal of the male. The first eight or so spiny rays of the dorsal are greatly elongated in this fish, producing the effect of a cockatoo's crest. The orange, blue-grey and russet coloration of this fin gives it a greater resemblance to an Indian warbonnet in my mind, but whatever interpretation one chooses to give on the matter, no one can deny that the sight of this fish with its dorsal spread is a splendid sight indeed. Like *ortmanni*, the cockatoo has a lyrate tail, and an extended dorsal and anal fins. The female is much smaller than her splendid mate, and usually has to take quite a bit of harrassment from her mate, a situation that changes radically once spawning is over. Then the female proclaims

by both her intense orange-yellow coloration and her bellicose actions that the old order has passed.

This fish is on a par with *ortmanni* with regard to the size of spawnings. However, the female is less reliable, and may take it into her mind to gobble up her offspring at the slightest provocation. To make matters worse, the eggs are far more difficult to hatch artificially. Antibiotics and aeration would be the best bet here, though I have never used them. The young are a bit more delicate than fry of *ortmanni*, and more room and infusoria for the first few days might also be a boon to them. Once the point is reached where the fry can take brine shrimp, growth is quite rapid. Another impediment to breeding success with this fish is the tendency of some males to ignore females of their own species, and take a liking to those of another species of dwarf, or else of another family of fishes altogether. Perhaps the use of hormones could correct

Photo: A pair of *Apistogramma agassizi*. Aquaphoto by Gene Wollshelmer.



this behavior. Nothing else I tried did. In some cases, the affected males return to normal on their own.

The fish I have tentatively identified as *Apistogramma pertense* is a lovely animal indeed. But this fish is the most bellicose and aggressive dwarf I have ever kept. I refer to them as "Mephistogramma," and I would certainly not recommend adding them to a community tank containing smaller fishes, especially if the half-grown young of other cichlid species are among the other fishes. This is the fish I am working with at present, and the reason I

am so doubtful about their status is that they do not resemble either the color or the black and white photos in reference works by Innes or Axelrod, to name two. In appearance, they seem to be a xanthic cockatoo, with slightly fore-shortened fin rays in the male. The base color is yellow instead of brown, and the fins are a yellow-grey tint with vague markings of a darker hue. All of the black markings on this fish are especially intense, and the female at spawning time is a sight to behold.

Whatever her feelings towards other fishes at spawning, the female of this species has no rancor for her mate, and permits him the role of sentry for the breeding site. She is a model mother, though there are exceptions to this rule. So intense is the protective instinct in these fishes that should the aquarist remove the spawn from the female's care, the instinct "dams up," and is re-directed towards any small wriggling objects. Their keeper is then treated to the sight of a female cichlid valiantly, if a bit futilely guarding a ball of tubifex worms against all comers.

The young of this species are well able to manage brine shrimp naupli, and grow readily on such a diet. They are less sensitive than are the cockatoo fry to bacteria, but not as hardy as the *ortmanni* fry. If the aquarist desires to rear the young apart from their parent, antibiotics and frequent water changes are available.

With all of these species, it is advisable to provide the best conditions possible if success is desired. It should be remembered that most of the dwarfs offered for sale, with the exception of rams and *kribensis*, are imported fish, and have to make an adjustment to aquarium life. Roomy tanks, well planted and with many hiding places are best for this purpose. Once the fish have settled down, and begin to display an interest in spawning, they can then be trans-

★ IDEAS ★
BY HOBBYISTS

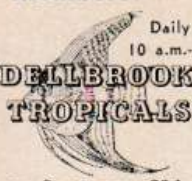
The Journal will pay \$5.00 for original ideas published. Keep less than 200 words. Send your idea today!

pH Shock

Do your Bettas ever clamp their fins and act uncomfortable when you clean their jars? If your water supply is alkaline they may be undergoing pH shock. In such a confined area as a pint or jar the wastes of bodily processes can make the water quite acid. An occasional pH check will make life a little better for your lovely charges. —R. C. Forsyth, Rochester, New York

10% Off to S.F.A.S. Members!

ALSO MARINE FISH AND SUPPLIES

**DELLBROOK TROPICALS**

Daily & Sun.
10 a.m.-9 p.m.

1930 Lawton Street near 26th Ave.
LOmbard 4-2330

ferred to smaller tanks, one pair per breeding setup. Do not try to feed these fish dry food. They will have nothing to do with it, and will take it only if

practically starving. My beasts get frozen brine shrimp and live tubifex as their diet, and thrive on it.

(To Be Continued)

American Guppy News

THERE has been some criticism in regards to the proposed "constitution" that has been presented subject to revision by the majority vote of the A.G.A. clubs. Certainly there is merit to many of the critical comments. These comments will cause some changes to be made. There are provisions made in the proposed constitution so that changes can be made as they are needed.

It was my privilege to help draw up the "Interim Board of Directors" of the A.G.A. who will serve until the first elected officers are installed in 1965. Stress has been placed on the fact that

the proposed constitution does not outline coverage of the A.G.A. membership by regions with regional directors for each region.

It is unfortunate that there are very few sections of the country that have what can be called a group of active guppy societies that have been cooperating "together" to stimulate interest in guppy breeding. The exception that I have noted in my travels and communications is that the area that has the most active and cooperating groups as far as guppies are concerned is in the middle-west. This area covers from Chicago to Milwaukee and from Akron to Cleveland and on to Cincinnati. Because of the above fact you will find that the majority of the "Board of Directors" come from that area.

The directors that were selected or elected from other areas are from groups that have been active since the A.G.A. movement was first started, and these persons have shown their sincere intent and ability to further the good and welfare of the A.G.A.

Since I have been putting in quite a lot of time for the good and welfare of the A.G.A. it is also my concern that the reorganization of the A.G.A. should be accomplished to benefit the majority of our membership.

The record that is being written by middle-west clubs bears out my contention that they are qualified to bring about the successful conclusion of the reorganization and with the help of our A.G.A. groups outside of this area, I know we will succeed.

— Lawrence König
Exec. Secretary, AGA

STATEMENT REQUIRED BY THE ACT OF OCTOBER 23, 1962, SECTION 369, TITLE 38, UNITED STATES CODE, SHOWING OWNERSHIP AND MANAGEMENT OF THE AQUARIUM JOURNAL, published monthly at San Francisco, California.

1. The names and addresses of the publisher, Executive Editor, Technical Editor, and Office Manager are:

Publisher: San Francisco Aquarium Society, Inc., California Academy of Sciences, Golden Gate Park, San Francisco 18, Calif.

Executive Editor, James W. Crawford.
Technical Editor, Dr. Stanley H. Weitzman.
Office Manager: Jeanne Helm.

2. The owner is (if owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation the names and addresses of the individual owners must be given. If owned by a partnership, or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

San Francisco Aquarium Society, Inc., California Academy of Sciences, Golden Gate Park, San Francisco 18, California.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are none.

4. Paragraphs 2 and 3 include in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also, the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than of a bona fide owner.

I certify that the statements made by me above are correct and complete.

JAMES W. CRAWFORD, Editor



For all of you
"fish widows"
and "widowers"

Ten Pairs of Bettas

Diane Schofield

Barbank, California

THERE IS an often unhappy segment of the female population who may be called "fish widows." Their husbands have found the company of fishes much more attractive than that of their spouses. Bit by bit these rejected wives often build up resentments.

In the case of Rose Masek it was as described. When her husband, George, would ask her to feed his fishes while he was at work, she would often develop a mental block and forget. However she wouldn't dare to tell him. George Masek had been keeping fishes for 5 years and was involved to the point where he had built a small house for his finny collection. In a 5-year period, a wife can get heartily sick and tired of a thing like this.

However, Rose often trotted along to the meetings of the Miami Aquarium Society when George went, but the speakers could have been speaking in

an obscure language as far as she was concerned.

After one of these meetings a fellow female sufferer said to Rose, "Let's not let these men get the best of us anymore! I'll breed angels and you pick out something that you'd like to breed." The friend never followed through with it, but Rose got to thinking that perhaps bettas might not be so bad. She had observed the spawning procedure in George's tank.

Rose swept out into George's fish house and snatched up 10 pairs of bettas out of his total of 25 and installed them in a series of one gallon tanks, which she had acquired just as impetuously and put them all into their bedroom. Since the bettas were kept in jars, why wouldn't a whole gallon of water suit them just dandy for spawning? The fe-

Photo: Rose Masek standing by a portion of her 3,000 jars of bettas. Photo by the author.

males had no place to flee or to hide in so small a space and most of them were promptly killed. Those that didn't and managed to spawn, Rose killed their young by dumping a whole infusoria tablet into their water, thereby fouling it.

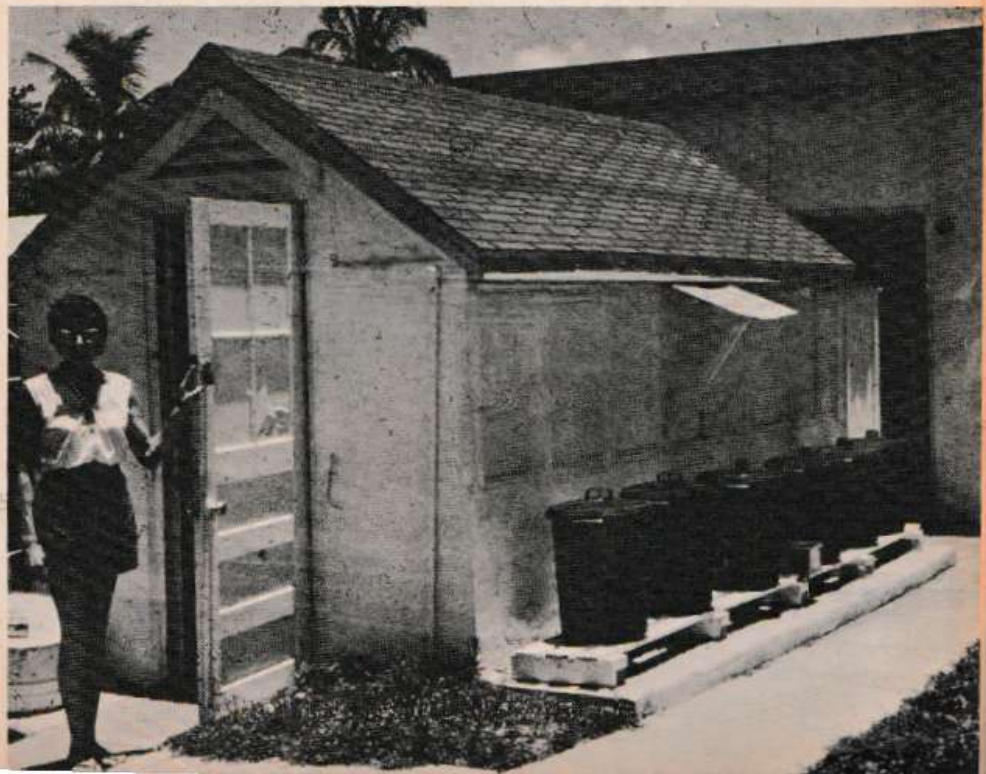
Suddenly she understood that she had forgotten to take time out to learn a thing about raising bettas. For one month she suspended all operations as she bought books, sent for literature and dug up information in the public library. At the end of that month, she tried again, but found that not only was some of the information that she had gleaned contradictory, but that raising fishes is like an old experienced cook trying to tell a young upstart how to make a cake, "You take a pinch of this and a dab of that." In other words, Rose discovered that in order to successfully breed fish you have to take a certain amount of information, true, but experience gained from effort and trials is absolutely necessary. Therefore, she set

out on a new fact. She mentally "threw out" all of the information that she had crammed into her head during the last month and started using a combination of common sense and her own "grass roots judgment." Since she couldn't have been any greener at the time, the "grass" bit at any rate seemed to be most apropos.

After it seemed as if Rose was making real progress in a relatively short time, George invited her to take her 15 tanks and 1500 jars out of their bedroom and into his fish house. This may not have been the smartest thing that George Masek ever did. Before too long, all of the rest of his fish got edged out in favor of Rose's bettas. However, it must be said for George that he gained one thing—a bedroom.

Fortunately the betta fever started to grip George too, otherwise it might not have been beyond the realm of possi-

Photo: "His" fish house (George's first house, which Rose promptly acquired) with Rose in the doorway. Photo by the author.



bility that Rose would have lost a husband and gained 3,000 bettas. It griped George to the extent that in February of 1962 they decided to build another and bigger hatchery on the back of their lot. This room would hold a total of 100 tanks and 3,000 betta jars, plus an outdoor pool! In the R & G Betta Farm, as the name of their new business was to be, there is absolutely nothing but bettas. The "R" stands for Rose, of course and the "G" for George. Note, please, the order of this "billing."

Within a short time after the onset of her betta fever, Rose got her first order for bettas. Her reputation has spread where she is now shipping to all states in the Union, including Hawaii and Alaska, plus Mexico and Canada.

Although Rose starts out with the conventional feedings of infusoria for 10 days and then newly hatched brine shrimp, she then uses her own methods. Leaning steadily on her own judgment and common sense, she turned from the 2 pounds a day of frozen brine shrimp that she was using (and which was costing her a small fortune) to buying beef heart from the slaughter houses which only cost her approximately 11 to 19 cents a pound. This she puts through her blender and freezes. She takes out a pound a day for use, lets it defrost and then adds enough water to it to make a sort of gruel, thin enough to be slurped up into an "eye-dropper." This arrangement is not an eyedropper

per se, but a 4 inch piece of plastic tubing which has been taped onto the conventional rubber end of an eye-dropper. Most of the usual glass portion of droppers have too small a tip to allow the passage of the "chewed up" heart. With this contraption, she can go right down the line of not only her jars of bettas, but also the tanks, as the unsexed babies are given feedings of this gruel, since the particles are small enough for them to assimilate. The young are also fed brine shrimp.

This is the only food that the bettas from the R & G Betta Farm ever get, and whether it is the food or their genetic "background," her fish have exceptionally long finnage, even the females. When I first went into her hatchery, the first tank that I spotted by the door looked as if she were trying to spawn two males! Upon closer observation I discovered that sure enough, what I thought to be a male because of "his" long finnage, was in truth a female! She had fins that were as long as many males'. All of the females are put outdoors into a large concrete pool and kept there all of the year around, only being covered at night and when a strong wind comes up.

A year ago, Rose spotted two fishes in a spawning that looked quite different. They *were* yellow. She isolated them and ultimately they turned out to be a male and a female. Through breeding them

(Continued on Page 510)



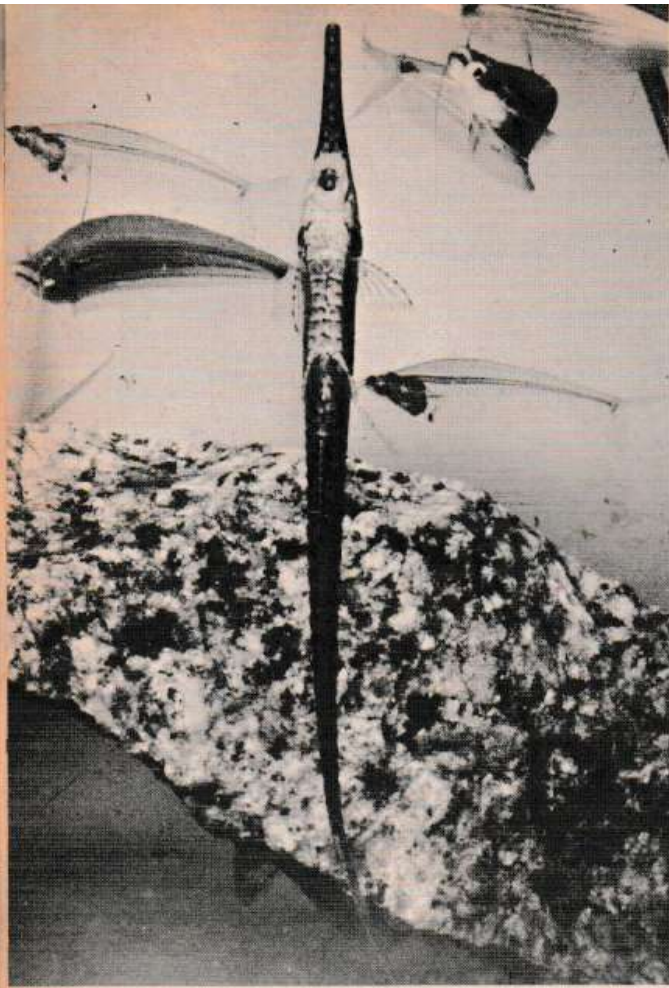
R. & G. BETTA FARM
160 N.W. 51st Street
Miami, Florida 33127
PLAZA 43262

ALL POPULAR COLORS

WE HAVE ONLY THE
VERY BEST

Send for Price List

LIMITED SUPPLY AVAILABLE
OF RARE COLORS
WHOLESALE ONLY



If you crave
the unusual
in scavengers —

Twig Catfish

Braz Walker

Waco, Texas

THERE ARE GROUPS of South American catfishes which, instead of being covered by a smooth, scaleless skin as our familiar North American catfishes, have their bodies encased in what amounts to a piscatorial coat of mail. These groups are very popular among aquarists because many of them, such as species of *Corydoras*, are droll little fellows, entirely harmless, which remain small enough to keep with all but the tiniest of fishes. Almost all are excellent scavengers, very hardy and long lived. Many of them are very handsome fellows and some possess strikingly attractive coloration. A

number of them are easily identified as catfishes by anyone who has ever baited a line or caught a bullhead on a cane pole. There is one family, however, the Loricariidae, which will draw an argument every time from a fisherman when you tell him he is looking at a catfish.

Feeding off mud and algae and almost anything else they can rasp loose with their fat sucker lips and teeth, most of the loricariids are in appearance more like ancient fossilfishes. Their lips are a

Photo: Twig catfish posing for camera. Photograph by the author.

modified "suction" disc and all of these fishes are capable of hanging by their lips from the aquarium wall or other vertical objects for long periods of time and seemingly with no effort. Reputed to be good algae eaters, all are popular not in spite of their ugliness but more likely because of it. One genus, *Ancistris*, has a great number of fleshy filaments growing from the top of his head giving them the appearance of a woolly old man who has long since needed a shave and a haircut. This "hair" is possibly composed of delicate sensory organs.

In the waters of the mighty Amazon River and other South American rivers

manner of swimming which he does poorly gives him the appearance of a waterlogged twig being washed gently about in the water. This is accomplished by strange gyration-like movements of the dorsal and anal fins and if the need arises he is able to rise straight upward and hover for a few seconds like a helicopter. The twig catfish is not at all fond of swimming and seldom moves more than a few inches at a time unless alarmed. Due to complete faith in his camouflage, it is unlikely that you will ever overtly frighten this fish. Even when attempting to net him it is difficult to panic him into a half-hearted attempt at escape. He may be scared to death



where literally millions of predators spend their lives in search of flesh on which to feed, what finer possession could there be for a small creature than that of almost flawless camouflage. One of nature's finest examples of protective adaptation to surroundings are the various species of *Farlowella*, the twig catfishes. This fish looks more like a scrawny twig on an underwater branch than the real thing. His coloration, which can be changed from a yellowish brown to almost black, can be adapted according to his background. Even his

but he won't show it by moving. In my experience only the banjo catfish is easier to net from the aquarium.

Various species of *Farlowella* are those kind of fishes which are immediately attractive to almost anyone who sees him, whether they have "aquaristic" tendencies or not. Unfortunately this fish has a largely undeserved reputation for being delicate and short lived in the aquarium. This is due mostly to a misunderstanding of his requirements. Actu-

Photo: Another view of the twig catfish, photographed by the author.

ally with very little extra attention this fish can be kept more easily than a number of other fishes which are more popular but certainly less interesting.

The twig catfish is an algae eater. He is probably the most efficient but one of the least popular of a family of fishes whose popularity is based largely on their reputation for being algae eaters. It is true that the twig catfish often dies in a short while when kept in the aquarium. This is due to starvation and is not the fault of the fish but the fault of the fish keeper. The twig catfish is almost completely nocturnal and spends the daylight hours hanging motionless from a plant or rock or filter stem, trying to look as much like a water soaked stick as possible. If he is pushed or prodded when it is light, he will move lazily away for a few inches and resume the important business of being a stick. Darkness affects this little character like the full moon affects a wolf. The minute the lights go out he becomes the busiest

CLUB NEWS

Green Water Aquarist Society

At a recent meeting Frank Popp was elected president; Robert Senecal, vice-president; John McMahon, treasurer; Eleanore Mass, secretary, and Ernest Mass, recording secretary. For exchange bulletins, address 8400 W. 132nd St., Palos Park, Ill.

Get your copy of the booklet

THE BRINE SHRIMP and how to hatch its eggs

An 8-page booklet prepared by The San Francisco Aquarium Society. It describes the Brine Shrimp, the Eggs; equipment needed for hatching; 3 requirements for a good hatch; how to hatch eggs; large scale hatching for commercial users; reason for a poor hatch; storing eggs; raising brine shrimp to maturity.

For your copy, mail 25 cents to:

SAN FRANCISCO AQUARIUM SOCIETY
Steinhart Aquarium
San Francisco 18, Calif.

inhabitant of the aquarium. In the darkness he covers every inch of every plant, rock and glass in the aquarium, sucking and rasping loose any scrap of algae which he might come across. It is in the darkness when he should be fed for the other fishes have long since cleaned up any scrap of food which might have been left. If possible feed him some green algae at least every other night. This can be scraped from the walls of an aquarium which has been receiving too much light. A razor blade is ideal for this purpose, since it will remove the algae cleanly and will not scratch the glass. To this fish, algae is eaten and even the hair algae which plagues outside tanks is eaten with relish. Contrary to popular belief this fish enjoys prepared foods, especially those soft ones which usually have an oatmeal base.

Certain types of dried dog foods are also excellent for feeding all of the sucker mouth catfishes as well as almost all other tropicals. To prepare this dog food it should be presoaked in water until it will sink. This not only makes the food soft and easy for your fishes to eat, but if too much dried dog food is eaten by greedy fishes such as Barbs before it becomes water soaked, it will swell tremendously inside the fish and might possibly cause his death. Presoaking eliminates this hazard. Obviously the dog foods which are advertised as "making their own gravy" are not recommended for use in the aquarium. To summarize, the only tricky thing about feeding the twig catfish is to turn out the lights first.

If you are a fancier of aquarium oddities, don't miss the opportunity to keep one of nature's best imitators. The twig catfish or "needle nose," as he is sometimes called in England, although he is homely and seems to be lacking in personality, will find a place in your heart soon after he has found a place in your aquarium. ◀

Wolfsheimer

(Continued from Page 482)

bags, each marked with the species of eggs it contained and the date. It was here that WHAM-O's quality-control started. These eggs did not go on to the production lines to be picked out and packaged for the kits. Had this been done, both fertile and infertile eggs would have been packaged together. Instead, the bags were stored away beneath the tiered rows of aquariums. By using this technique, enough embryonic development occurred to insure that only fertile eggs were being packaged. The girls on the production line had orders not to package until they saw the eyes within the eggs. This usually took a storage time of about six weeks. Consider a moment the amount of hand and eye work necessary to package hundreds of thousands of egg packets, guaranteed to contain a minimum of six viable eggs. Each egg was hand-picked from the peat moss with a special pair of tweezers designed not to crush it.

The picked-over peat moss, supposedly devoid of eggs, was saved and stored once again. At the proper time it was placed in an aquarium and water was added. Not only did the overlooked eggs that still remained hatch out but this action allowed a constant production check as well as provide new breeding stock that were always under way.

The instant-type fish craze is on the wane. It has had its day. The killi-keepers can breathe easy again, knowing that the toy companies do not intend to prolong production indefinitely as part of their regular line. The major producer, the WHAM-O Corporation, is not accepting further orders. At the time of this writing they are producing at about one-third normal capacity, and only to fill back orders.

As far as the tropical fish hobby is

concerned, there was one small but positive contribution made amid the negative head-shaking. Possibly because of the intense in-breeding of their stock, some albino *Cynolebias whitei* appeared in the WHAM-O tanks. Considered by them as a novelty at first, it was explained that they could be a valuable addition to the hobby. They could just as easily have bred them out of their stock, since they were a weaker fish than the normal ones. But instead, WHAM-O quietly catered to the hobby and especially the killi-men. Today they have hundreds of albinos as well as their eggs. However, none are being let out until it's been decided what to do with them. It is very likely that some eggs have escaped into their kits although there have been no reports of them elsewhere. This statement is not to be construed as a gimmick to revitalize sales. The kit production is about ended.

It's a small ironic twist of fate that the

FILL IT... SET IT... THEN FORGET IT

FOR AS LONG AS 12 MONTHS ON ONE FILLING!

Era PRODUCTS
automatic FISH FEEDER

... IT NEVER FORGETS TO FEED YOUR FISH! 6V - HIGH OVERALL
115 VOLT 2.7 A
A.C. Only. AC Cord
Power Protection

•Adjusts to feed right amount of dry food once a day.

•Attaches easily to your aquarium.

•Trouble-free, reliable, durable. High quality. Beautiful aqua plastic.

•Precision engineered with electric Synchronous Timer.

•Transparent window shows food level.

NEW EXTENDED GUARANTEE: 2 YEARS

STAY AT HOME OR BE AWAY—ERA FEEDS THEM EVERY DAY!



POSTAGE INCLUDED

\$16.95

In California includes Sales Tax \$17.93

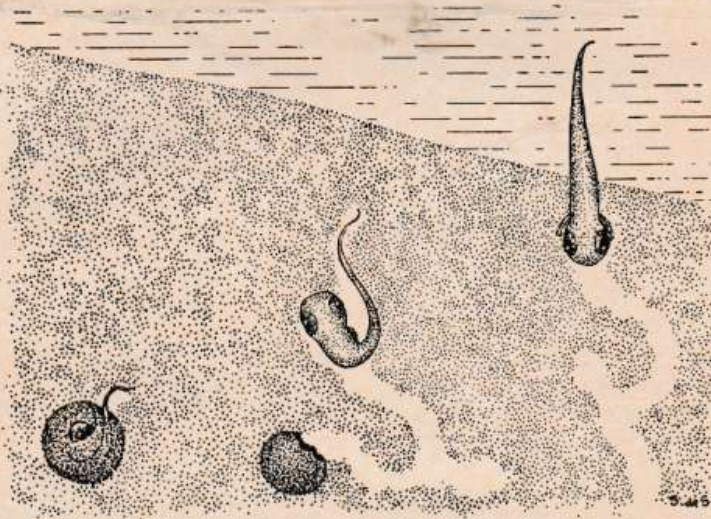
At Your Pet Store Or Directly From . . .

Era PRODUCTS 361 THURP ST. • SAN FRANCISCO 12, CALIF.

legend of the mythical albino *Cynolebias whitei* circulating the killifish "grapevine" is true and the fish are most desired

by the same persons who gave the first and most vehement condemnation to the "instant fish" companies. ◀

Reverse Locomotion and Normal Escape Effort of Post-larval *Cynolebias* in Peaty Soil



THE VARIOUS species of the genus *Cynolebias* Steindachner are usually found in temporary pools which, here in Uruguay, usually dry up in the months of November to April.

It is well known that the members of this genus lay their eggs in the soil and two of us, Vaz-Ferreira and Sierra-de-Soriano, together with Soriano-Señorans, have studied this in the natural environments of *Cynolebias* in Uruguay (see Proceedings of the 16th Internat. Congress of Zoology, 1963, vol. 1, p.251).

We have taken from various areas of Uruguay samples of dried soil from pools

R. Vaz-Ferreira
B. Sierra-de-Soriano
S. Scaglia-de-Paulette*

containing eggs with resting embryos of the following species of *Cynolebias*, *C. bellottii* Steindachner, *C. nigripinnis* Regan, *C. irregularis* Ahl, *C. adloffii* Ahl, *C. melanotaenia* Regan and of two species to be described as new by us (see

*Departamento de Zoología Vertebrados. Facultad de Humanidades y Ciencias. Universidad de la República, Montevideo, Uruguay.

Com. Zool. Mus. Hist. Nat. Montevideo, vol. 7, No. 104). We placed the eggs with slices of their accompanying peat or humus between plates of glass 3 millimeters apart. By submerging the glass, peat and eggs in water, we were able to follow the process of hatching and subsequent movement of the newly hatched postlarvae through the peat.

About one hour after saturation of the medium containing the eggs, but sometimes earlier, the resting postlarvae begin small movements of the tail and eyes, soon followed by rotation of the entire body. Those movements become increasingly more vigorous and increase in frequency. At the same time the egg increases in diameter, the membrane (or "shell") becomes thinner. The thinning of the membrane is, at least in part, due to the increase pressure from move-

ments against that membrane concurrently being weakened by enzymes.

At 20° Centigrade and thirty minutes after young of one of the species to be described by us initiate movements within the egg, the membrane is broken by the tip of the tail. The tail immediately protrudes and oscillates or waves laterally until it gains a hold on soil particles. The tail then moves forcibly and the head and body of the wedge-shaped or cuneiform postlarva are pulled out of the membranous shell, which remains anchored in the soil.

As soon as the postlarva is free of the egg membrane it moves backwards by lateral undulations of the tail and in this way pushes aside the soil for the rest of the postlarva to pass through. The orientation of the backward "swimming" movements tend to be vertical with the tail up head down. The pectoral fins hang down, passively and are carried upward with the rest of the body by the tail.

The vertical pathway of escape from the soil is not strictly vertical but sinuous or zig-zag. In addition, vertical direction often changes when the postlarval young finds areas of soil too hard to penetrate. The young first will attempt to pass through the hard area several times, but on repeated failure it will take a new direction. To do this it turns its tail around the body, rotates 180° and moves backward in the burrow already made, always tail first.

Progress is not continuous. Alternate periods of activity and rest apparently being normal. At 20° Centigrade, newly hatched postlarvae of *Cynolebias bellottii* alternately were active for 15 seconds and rested for 10 seconds in a peat media. Speed of progress under the conditions mentioned above is about one centimeter per minute measured in a linear projection.

Once the postlarva arrives at the water-soil surface, it rests with its tail

CLUB NEWS

American Killifish Association

The Labor Day weekend in Cleveland, Ohio, was the occasion for a combined show, auction and meeting for members



of the AKA. Local AKA members and members of the Cleveland Aquarium Society hosted the affair. Shown at the meeting are (left to right): Barry Franz, Albert J. Klee and Bruce Turner. ◀

in the water and the head and body inside the soil. After a few seconds rest it begins to swim in the water. Swimming in the water is done head first as would be normal to expect; however, during the next several hours, very short periods of less than a second, of underground-like locomotion may occur.

If larvae are reburied under the soil, the tail-first type of locomotion is resumed. ◀

Schofield

(Continued from Page 500)

to various light colored fishes, she has finally developed a strain of bettas with

a light yellow body and butter yellow fins.

Not being content with these, she has currently developed an off-shoot that not only have this coloration, but in addition, they have black eyes and black lips.

Another of her projects, which is already underway, is a fish with a yellow body and orchid colored fins. In the back of her head, she is carrying around yet another idea—that of a fish with a yellow body and black fins. She also raises black bettas. Rose has no knowledge of genetics—she is only putting into practice her judgment and common sense. ◀

WANT ADS - \$2

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

FOR SALE

Hong Kong Breeder—looking for importers to handle our common and rarest goldfish/tropicals. Box 8295, Shamshuipo Post Office, Hong Kong.

Fancy Veiltail Guppies—Six strains usually available. Wholesale and retail. Write for details. Thedens, 3714 Urbandale, Des Moines 10, Iowa.

Fancy Guppies—Let us quote on your needs—Sause, 433 Castleton Avenue, Staten Island 1, N. Y., or 8159 Gray Haven Rd., Baltimore 22, Maryland.

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

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

Rare Bettas, available only at the R. & G. Betta Farm, 160 N.W. 51st St., Miami, Florida. Yellow, fairy fins, blue-black fire fins. Limited supply. Also all popular colors. Wholesale only.

Low Cost Food—for really healthy fish, grow your own LIVE food. Wingless fruit-flies, \$1.75; whiteworms, \$1.50; Microworms, \$1.25. Initial cultures, directions, airmail postpaid! Howard, Box #1, Ortonville, Michigan.

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

Live Mealworms—large 200—\$1.00; 450—\$2.00; 1000—\$4.00. Mixed sizes 1000—\$3.00. Keeping instructions free. Breeder's books "Mealworms"—\$1.00. "Redworms"—\$1.00. Postpaid. Dix-Dock, Box 427, West Palm Beach, Florida 33402.

Marines and Far East Imports—carps; dealers write for price list, enclosing stamped self-addressed envelope for prompt reply. Mei Lan's, 6625 Foothill Blvd., Oakland 5, California.

Aquarium Supplies postpaid, means savings up to 50% for you! Send 10 cents for catalog. Dennis' Tropicals, 254 Courtland St., Elyria, Ohio.

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

PART II

WILLEY was not the only one who found the shrimpfish so agile it was hard to catch. Dr. Fowler and Smith have also commented on the difficulty they had in capturing the fish. Undoubtedly this is one reason why the Aquarium

spotted the shrimpfish, along with some other rarities, and purchased the lot, to be delivered to the Aquarium at the conclusion of the show.

The opportunity to see a live shrimpfish was something for which I had been waiting 25 years. But for all my antici-

The Odd Shrimpfish

had to wait until this year to obtain its first examples. Although shrimpfish occur in warm, shallow, marine water all the way from the Red Sea and east coast of Africa to China and northern Australia, they do not appear to be common anywhere. On the other hand, they do not seem to be excessively rare either. The New York Aquarium's two fish came to us quite prosaically from a local pet trade show — for which commercial fish dealers often import a tankful of unusual and colorful marine fishes in order to attract customers to their booths. Director Christopher W. Coates

James W. Atz, Ph.D.

Malverne, New York

pation, I was unprepared for the fish's tremendous mobility. Of course, the first thing I noted was that the fish maintained a vertical, head-down position and that their backs cleaved the water as they moved horizontally. This was just as expected. But when they were disturbed, the fish displayed a surprising ability to make rapid changes in direction, turning about their long axes

THE AQUA AQUARIUM AIR PUMP



- FREE OF RADIO AND TELEVISION INTERFERENCE
- PRECISION MADE IN WESTERN GERMANY
- RUBBER BASE
- DURABLE PLASTIC CASING
- 110 VOLT
- EXPERT CRAFTSMANSHIP
- CAN OPERATE HORIZONTALLY OR HANG VERTICALLY
- ATTRACTIVELY PACKAGED
- PRINTED IN 4 LANGUAGES - SOLD THE WORLD OVER



Have you tried this outstanding vibrator pump? If you have, then you know that it is the best pump value on the market today! If you have not...then order from your Jobber...if not available in your area write direct to:

Richard Hanau

G. P. O. BOX 514

NEW YORK 1, N. Y.

so quickly and precisely that they reminded me of soldiers on the parade ground executing *Right face* or *By the right flank, march*, or their mirror-image counterparts as the case might be. The two fish also moved straight up and down with the greatest ease and occasionally performed a sort of vibratory dance, looking as if they were suspended on rubber bands. It was not until Staff Photographer Sam Dunton and I placed one of the fish in a tank to photograph it, however, that I fully realized how amazingly varied the movements of a shrimpfish could be. The water in the small aquarium was only five inches deep, and the fish evidently requires a certain minimum depth in order to take a vertical position, because as long as it remained in this confined space, it never oriented itself vertically, which was the position we wanted to photograph. When we gently tried to maneuver it into the desired position, it swam horizontally backward and for-

ward and at all angles except the vertical. It rotated about, swimming on its back, side or belly with equal facility. In fact, it assumed just about every possible position except the vertical head-up or head-down ones. As soon as we returned it to the much larger exhibition tank, it once more took up its usual vertical stance.

While watching our shrimpfish, I noticed that they frequently rested just beneath the surface of the water with the movable tip of the spine of the first dorsal fin, which projects straight out behind the body, bent more or less horizontally, apparently deflected by the high surface tension of the liquid. Of the three species of shrimpfish generally recognized by the experts in fish classification, only *Centriscus strigatus* has such a jointed, movable spine. Since this appendage is not only attached by a fine joint, but is equipped with muscles and tendons and nerves, I assume that it can be moved and could

TOJOVE enterprises (The Clown King)

Cable "TOJOVE"
225 W. Montecito St.
SANTA BARBARA, CALIF.
Phone 805-965-4869

★ Exclusive Importers of Indo-Pacific Marines

New Fall shipments now arriving. Colorful Bali fish, unusual yellow-barred seahorses. See them all at our new showroom at . . .

225 WEST MONTECITO STREET, SANTA BARBARA

New 30-gallon marine tank for dealers and aquarists:

1. Heavy gauge stainless steel frames for strength and beauty.
2. ¼" polished plate glass on all faces, bottom, and cover.
3. Wide cement and supporting surfaces for lifetime dependability.
4. No chance for metallic contamination of water.
5. Negligible evaporation. Add one pint tap water once a month.
6. Tanks have been in operation from 6 months to one year with no water change necessary and the only cleaning has been to wipe off algae from interior surfaces.

Take the guesswork out of marine fishkeeping. Write for particulars.

also act as a sensory device to inform the fish when it was at the surface. This might prevent the fish from exposing itself to attacks by birds and other above-water predators during its rapid up and down movements. Several times I saw one shrimpfish move upward while in the vertical position, until the end of its movable spine became bent. The fish then quickly stopped, leveled its body, and swam off horizontally, just under the surface. I also noted that our shrimpfish sometimes fed on extraordinary small bits of food—items so small that the seahorses, which shared their tank and were of about the same length, ignored them completely.

I never did see either of our shrimpfish swim with its head up. Nevertheless, what I observed of them, in both the photographic and exhibition tank, convinced me that they were capable of

★ IDEAS ★
BY HOBBYISTS

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

Boats and the Aquarist

Recently I discovered an entirely new area in the field of keeping and raising tropical fishes. This was done by combining two apparently unrelated hobbies, namely, tropical fishes and boating. Remember the hours you spent hunting for live food, carrying pails, nets, and what have you through swamps, weeds and tall grass, only to return home tired and mosquito bitten? Well, why not throw these implements into a small boat or canoe and do away with this problem? You will find, I am sure, that this is a very enjoyable way to catch live food. And while you are at it, why not take home a few native fish? —*Dave Birge, Sheboygan, Wisconsin.*

NOVEMBER, 1963

PLEASE PRINT YOUR NAME AND ADDRESS IN BLOCK LETTERS

Tell your friends about this

IMPORTANT FREE OFFER!



- You and your hobbyist friends (and even if they are not hobbyists) will want a free sample copy of the *Aquarium Journal*. Simply fill in the blank below and your free copy will be sent by return mail.
- Use extra blanks to acquaint your friends with the *Aquarium Journal*. Fill in their names and addresses and a free sample copy will be sent immediately.
- 12 issues per year for only \$5.00 (Subscription saves \$1.00 over regular 50c single copy price).

Write for 12 back issues (our selection, all different) for \$1.75, or 24 issues (all different) for \$2.95.

Aquarium Journal
Steinhart Aquarium, San Francisco 18, Calif.

- Please send me a free sample copy of the *Aquarium Journal*.
- Enclosed find check or money order for \$5.00 (\$5.50 for foreign). Please begin my year's subscription with the _____ issue.

Name _____
Address _____
City _____ Zone _____ State _____

Please send **free sample copies** to my friends:

Friend's Name _____
Address _____
City & State _____

Friend's Name _____
Address _____
City & State _____

PLEASE PRINT YOUR NAME AND ADDRESS IN BLOCK LETTERS

513

doing so. Each pectoral fin moved, as a unit, alternately back and forth and at the same time vibrated so rapidly that its edge was practically invisible. The three fins at the rear part of the body also vibrated; occasionally trails of waves could be seen passing up or down them. It will require the help of a slow-motion camera to find out what these fins are actually doing. Their actions must be complex, for the shrimpfish is able to move in almost

PRODUCT NEWS

A new WISA Model 200 Air Pump with high capacity and low current consumption has been announced by Scattergood Filters Co.

The new pump employs the same unique, patented WISA electromagnetic



principles as its big brother, the famous WISA Model 300, which has been on the market for the past 6 years enjoying an unparalleled reputation in the air pump field. The new Model 200 while similar in appearance to the Model 300, is smaller, more compact, and lower in price.

The new pump will deliver over 200 c.i.p.m. backed by powerful pressure, ample for approximately 20 to 30 aquariums.

Precision workmanship and the revolutionary design assure maintenance-free service. The unit is fully guaranteed by Scattergood Filters Co., Miller, Mo. ◀

every direction by beating them in different ways and combinations. The seahorse uses its fins in a similar way, but no seahorse can stand on its head, spin like a top or perform many of the other feats that are part of any shrimpfish's routine repertoire. Someday we want to study the locomotion of the shrimpfish, just as Dr. Breder did with the seahorse twenty years ago.

In the meantime, we believe that we have the answer to the heads-up, heads-down question. Although shrimpfish seldom swim with the body held vertically and the head up, they certainly are capable of doing so. Dr. Robert Rofen recently made an observation that we believe clinches the matter. While under water, he watched some shrimpfish that were swimming head down along the bottom of a small, submerged cave. When the fish came to

CLUB NEWS

1963 S.F.A.S. Banquet Real Hawaiian Luau

It was a beachcombing good time on Saturday evening, November 2nd at the Forest Lodge in San Francisco when the S.F.A.S. staged their 1963 banquet as a genuine Hawaiian Luau — complete with flowers from the tropics, hula dancers, knife dancers, Tahitian drum dancers and the famed *uli uli* routines.

Dinner consisted of delicious goodies like roast Tahitian pork marinated in teriyaki sauce; coconut cream chicken, chestnut fried Hawaiian rice with baked whipped native yams in orange cups, and marshmallow cream tropical fruit salads.

Authentic Polynesian music was provided by natives, while the exotic buffet table (bedecked in tapa cloth and flowers) was presided over by native girls serving hors d'oeuvres and entrees for dinner. ◀

the vertical side of the cave, they simply continued to swim along the surface, snout down; that is, they swam upward with their bodies horizontal but still oriented vertically with relation to the surface of the cave. When the fish reached the roof of the cave, they continued to explore the surface with their snouts. Now their bodies were vertical and their heads were pointing up. For these fish, gravity is apparently not the all-important orienting force that it is to the vast majority of terrestrial animals. Illumination and solid surfaces may be equally important to them. These factors could be experimentally controlled, and such experiments might tell us under what environmental conditions a shrimpfish will swim head up or head down.

Arthur Willey was evidently not "seeing things" after all. Shrimpfish can and do swim with the body held in a vertical position and the head up. But that famous illustration of his raises still another question! Its caption declares that the fish in it are swimming from right to left, that is, belly first. Yet everything we have read or observed indicates that shrimpfish in the vertical, head-up position would swim with the back first, the belly trailing. We are not even going to try to answer this question until we get a chance to study some more live shrimpfish. ◀

Northeast Council of Aquarium Societies, Inc.

Man of the Year Award was made to William Heeley, according to Edgar LeVasseur, vice-president and William Cannon, president.

• • •

Delaware County Aquarium Society

At a recent meeting Robert W. Britton was elected president; Henry Fair, vice-president and John Festa, secretary-treasurer. All communications should be addressed to the secretary at 160 W. Plumstead Ave., Lansdown, Penna.

Salt Water Fishes

By Robert P. L. Straughan

Q. Is it possible to keep live coral and sea urchins and all the wonders of the reef in a small aquarium? Will they live in artificial sea water? How long will they live?

A. Practically anything that lives in the sea can be kept alive in a small home type aquarium, depending upon the skill of the aquarists. In general, the hard corals and gorgonias are not too difficult to keep but they should be obtained in small size so there is sufficient volume of water. Sponges are more difficult to keep than the corals. Sea urchins are quite hardy. It is easier to keep all of them in natural sea water but the more hardy species will live in

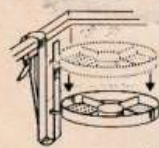
PROGRAMS

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

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

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

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



New molded, unbreakable plastic feeder ring rides up and down with the water level. Food can't flow over or be left high and dry.

29c

Divided into four sections: 2 open for dry foods and 2 perforated for small or large live foods. Slotted collar lets ring ride with water level . . . from a fixed position on the aquarium.

Send 50c for 64 page Tropical Fish HANDBOOK CATALOG

At your local dealer or order direct from:



AQUARIUM STOCK COMPANY INC.
31 WARREN STREET, NEW YORK 7, N.Y.
8070 BEVERLY BLVD., L.A. 48, CALIF.

1963 — 13th 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 20, L.I., N.Y.

the artificial mix. Life span of these creatures will vary from a month to a year or more in the confines of the aquarium. Give them good aeration, filtration and strong light. The new edition of my aquarium book covers this fascinating subject at great length. ◀

CLUB NEWS

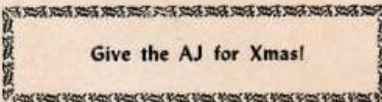
San Francisco Aquarium Society, Inc.

The next regular meeting of the S.F. A.S. is Thursday, November 7, 1963, Steinhart Aquarium, California Academy of Sciences, San Francisco, Calif., according to Robert P. Dempster, president.

Program for the evening will feature a talk by Charles Bange on "How To Raise White Worms" for winter food for fishes, according to Frank Tufo, program chairman. Also unusual experiences in keeping tropicals will be told by members of the group. Pairs of live fish will be given for door prizes.

Fish of the Month for the November meeting: (1) Native American fish; (2) Albino fish and (3) Cichlids (except angels) and dwarf cichlids. Members are urged to bring their best specimens for competition. Ribbons will be awarded the winners.

More nominations for the 1964 Board of Directors will be accepted at this meeting, according to Fred Jenne, chairman of the Nominating Committee.



Give the AJ for Xmas!

FOUR COLOR POSTCARDS *aquatic life*
THE AQUATIC WORLD
with Subscription
\$1.25 YEARLY — 6 ISSUES
Trial Copy 10c. Free Copies and Rates to Dealers
6125 Kenwood Ave. • BALTIMORE 6, MD.

LETTERS

From: J. W. Bristow
Marillo, Texas

I had a very pleasant surprise this morning. I say pleasant, yet the words do not seem apropos. Let me tell the story and "you'll" (as we say in Texas) decide. Last weekend I felt ambitious and decided to clean house. I had one tank I had been using as a holding tank. It had about one inch of algae mass growing on three sides and mulm one-half inch on the bottom. It contained an odd assortment of fishes as: black tetras, local minnows left over from fishing trips (I have odd types and colors but no live bearers this time), white clouds, and *Hypphessobrycon rosas*. I pumped all the water out, scraped the sides and rinsed and scraped the sand without removing my filters and Miracle filter. I filled the tank with local water, added a bottle of tonic, let stand 3 days and placed four males and one female (red horse minnows) and one fish with bright red tail and fins, metallic blue body suffused light yellow similar to *Astyanax fasciatus mexicanus* and floated hornwort on the surface. This morning I turned on the light and started to study the fish. Lo and behold I spotted a darting sliver of light another and another. Quickly, I lifted the net and transferred the minnows to another tank. So far, we have 12 (by this time the whole family was excited) we counted over two dozen but what are they? How did they survive? I doubt that the minnows have time to spawn and hatch and with very active adult fish in the tank, did they miss eating them all? I have the TV mysteries all to pieces. I just have to raise them and wait and see how they turn out.

AQUATIC PLANTS 100 Varieties TROPICAL FISH



White Worms, \$2.50 postpaid
Beldt's Famous Wildlife Brand Fish
Foods and Remedies.
We grow many rare and hard-to-get aquatic plants. We have sword plants by the thousands.
Distributors of national advertised merchandise for the pet dealer.

FREE CATALOG

BELDT'S AQUARIUM, Inc.
Box 146, Hazelwood, Mo.

new . . . plastic

**ADJUSTABLE
"SAUCER
STONE"
AERATOR**

non-clogging
never needs
cleaning

**USE-TESTED
Aqua-Stock
IN OUR OWN AQUARIUMS**

Completely new departure in aquarium aerating. Outperforms and outlasts air-stones. May be used with weak pumps . . . excellent for salt water fish. **59c**

Adjust for fine bubble or mist
Adjust for large bubble or heavy aeration

Send 50c for 64 page Tropical Fish HANDBOOK CATALOG
At your local dealer or order direct from:

AQUARIUM STOCK COMPANY INC.
31 WARREN STREET, NEW YORK 7, N.Y.
8070 BEVERLY BLVD., L.A. 48, CALIF.



**GREATER
MIAMI
FISHERIES**

3475 N.W. 187th St.
Opa-Locka, Florida

- ★ LIVE BEARERS
- ★ EGG LAYERS
- ★ IMPORTS

Open 24 Hrs. — Phone NA 1-8508

SATISFACTION GUARANTEED

Wholesale Only

Write for Price List

**MIAMI'S LARGEST
TROPICAL FISH
BREEDERS**

now you can keep
**TURTLES
IN
YOUR
AQUARIUM**
FLOATING TURTLE RAFT
"EVER-FLOAT" ACTION FROM A FIXED POSITION



Now, you can keep turtles in the same tank as your fish . . . and simultaneously clean up tanks over-ridden with snails.

89c

New plastic Turtle Raft permits turtles to get on and off easily. Special food pocket on raft.

Slotted collar lets raft ride with water level . . . from a fixed position on the aquarium. Enables turtles to sit near light to keep their shells hard and healthy.

The Aquarist's Cyclopedic: send 30c for our 64-page **TROPICAL FISH HANDBOOK-CATALOG**
At your local dealer or order direct from:



AQUARIUM STOCK COMPANY INC.
31 WARREN STREET, NEW YORK 7, N.Y.
8070 BEVERLY BLVD., L.A. 48, CALIF.



REPLY: We will wait too.

• • •

From: J. E. Riley

Buena Park, California

I have some questions I would like to ask. First: Should you keep fishes in pairs? Can you breed a molly with a guppy? I have been told you can. Second: How many fish can you have in a 5-gallon tank? What kind goes best together? How much planting should you have in a tank? What kinds are easy to grow, or are they all about the same? Third: Could you tell me a book that has all the fish names, breeding habits, etc.? Also cost and where to find one. Fourth: I have a filter that has a built in air stone I am having trouble with, fine bubbles on the top of the water. Right now the bubbles are about one-half inch thick. It makes the tank look so messy all the time. I have it turned down as low as you could have it. Can you think of something I could do? Also with so many bubbles on top does that cut down the oxygen, etc.? Do you have to have both air stone and filters in one tank? Fifth: Can you keep seahorses in a round glass fish bowl? Can you get the eggs and watch them grow? Do you have to have a filter for them and what do they eat? Are they hard to keep? Sixth: What kind of fish are best for a beginner to start with? Also easy to breed besides guppies? I would like to build a show tank in a wall between two rooms. Could you tell me about how to go about it? How long and high and wide it should be? I would like it if you could see on both sides of the tank. What kind of fish would be nice, that would show the tank off, also plants, etc.? Seventh: I am having trouble trying to get my one tank clean. It stays clean until I clean the bottom, then it gets all foggy and messy looking. The filters are changed about every two weeks or as needed. If I put fresh water back in the tank I have no trouble until

I go to clean it again. It stays real clear until them. I know you cannot change the water all the time so what do you do? I cut down on the amount of food and watch how much and what I give them. Also how can I clean the filters, tubes and air hoses? Also the glass under the feeding ring? Also could you tell me some way to clean the tank and not spend a lot of time doing the planting, etc. all over again?

That is when you have very little time to spend on them, but still give them clean filters, etc. I have tried cleaning the bottom once a week but it still gets all foggy. I feed my fish worms, shrimps and dry food. Eight: How warm should you keep the water? Nine: Could you tell me the name of some good books (on fish, plants, etc.) at the library I could get? Tenth: If you put the guppies in a big bowl would you have to have a filter and how often would you have to change the water? Sorry I had so many questions to ask. Hope I did not take too much of your time. As you can tell I know nothing about fish, but I sure am trying to learn as much as I can about them. I did not think fish were that much fun until I got my own. Now I never go by any place with fish without stopping to look at them. Thank you very much for all your time.

REPLY: It is not necessary to keep fishes in pairs unless breeding is being attempted and then sometimes community breeding, that is several pairs of one species is most successful. Yes, occasionally guppies and mollies have been crossed but the resulting young are likely to be sickly and die early. 2. This depends on the size of the fish and its temperament and other factors. A five-gallon tank should have only one male betta because you don't want other fish picking on his long fins, nor him fighting with another male. Only during breeding attempts should you put a pair of bettas together and then in a larger (at least 10 gallons) tank. A five-gallon

THE NEW... ALL-PLASTIC 4 VALVE GANG



**EASIER,
BETTER,
LONGER LASTING**

Put an end to messy tangled tubing. Ideal for any size salt or fresh water aquarium... easy-to-reach adjustment knobs, with fingertip controls. **179**



- HOLDS AIR STEADY
- NO CORROSION ... EVER



At your local dealer or order direct from
AQUARIUM STOCK COMPANY INC.
31 WARREN STREET, NEW YORK 7, N.Y.
8070 BEVERLY BLVD., L.A. 48, CALIF.

Please send me
 Plastic 4 Valve Gang # 8172 @ \$1.79 ea.
 The Aquarist's Cyclopaedia 64 page hand-book-catalog @ 50c ea.
 NAME _____
 STREET _____
 CITY _____ ZONE _____ STATE _____
 Check or money orders only. No C.O.D.

Fall Promotion Special

For
**AQUARIUM SHOPS, PET SHOPS
& WHOLESALERS**

If your name is not on our Mailing List... write for prices. We will then place your name on our Mailing List for future publications.



**FOR PROFIT'S SAKE —
FOR QUALITY — Use
"EVERGLADES" PLANTS
AND FISH**

**EVERGLADES AQUATIC
NURSERIES INC.**

P.O. Box 587

Tampa 1, Fla.

tank will safely hold 10 zebra fishes, or a pair of rosey barbs, or 10 neon tetras but not all these fishes together. Plants should be planted over about one-half of the bottom. Saggitaria are probably the easiest plants to grow, especially in bright light. 3. There is no booklet with all the fish names. There are about 30 to 40 thousand fishes, perhaps ten to fifteen thousand of these are fresh-water fishes. Of these well over a thousand different kinds have been kept by aquarists in recent years. One book, an edited translation of a German book is said to list over thirteen hundred fresh-water aquarium fishes. The book "Fresh-water Fishes" by Günther Sterba is available in larger aquarium shops but costs up to \$20. 4. If water is clear, the fish not overfed and no excessive bacterial action taking place, bubbles that come to the top will burst almost immediately and will certainly not collect, unless there are some detergents in your water supply. Your tank needs cleaning and you need to exercise more care in feeding. 5. Pygmy seahorses can be kept in a fish bowl. However make sure it is a large one, at least three gallons so that the "horses" will have a fair amount of room. The female seahorse lays her eggs in a pouch on the male. He incubates the eggs and they hatch out of this pouch. Pygmy seahorses are easy to keep if you have a moderate amount of experience. They do well on newly hatched brine shrimp. 6. Start with some nice tough paradise fish. These are not as easy to breed as guppies but they are easy to care for. Otherwise be content to start with cheap guppies. Your show tank project would require an article

and there is no room here to discuss it. Perhaps you should best discuss it with a carpenter. First, however, you should get considerable experience in keeping live fish so that you know what will be necessary to service such an aquarium. 7. If you are not feeding too much, your tank should not become cloudy. I would have to see your tank to be sure what is actually wrong. Does it smell foul? If it does you are still overfeeding. 8. The "average" (if there is such a thing) tropical fish does best between 72 and 78 degrees F. 9. There are many on the current market, I have mentioned one above. The best one on the care of fishes is "Keeping and Breeding Aquarium Fishes" by Dr. Emmens. 10. A few guppies, say four in a two-gallon tank or bowl should not have to have a filter or aerator as long as snails and plants are present. Their water should not have to be changed for at least a year. If it does you are overfeeding. Remove excess young as they appear. ◀

Give the AJ for Xmas!

NOW AVAILABLE

**Hard-to-get Back Issues of
The Aquarium Journal**

Back issues of the Journal are valuable and are in constant demand at 40c each. However, we are overstocked on some issues and to move them we offer 12 back issues (our selection, all different) for \$1.75, or 24 issues (all different) for \$2.95.

THE AQUARIUM JOURNAL
Steinhart Aquarium

San Francisco 18 California

FOR THE LIFE OF YOUR FISH

- PUMPS
- HEATERS
- FILTERS
- VALVES
- TANK CLEANERS
- etc.

USE



PRODUCTS
ONLY

AQUA PUMP & PRODUCTS COMPANY

• 98-02 218th Street, Queens Village 29, N.Y.