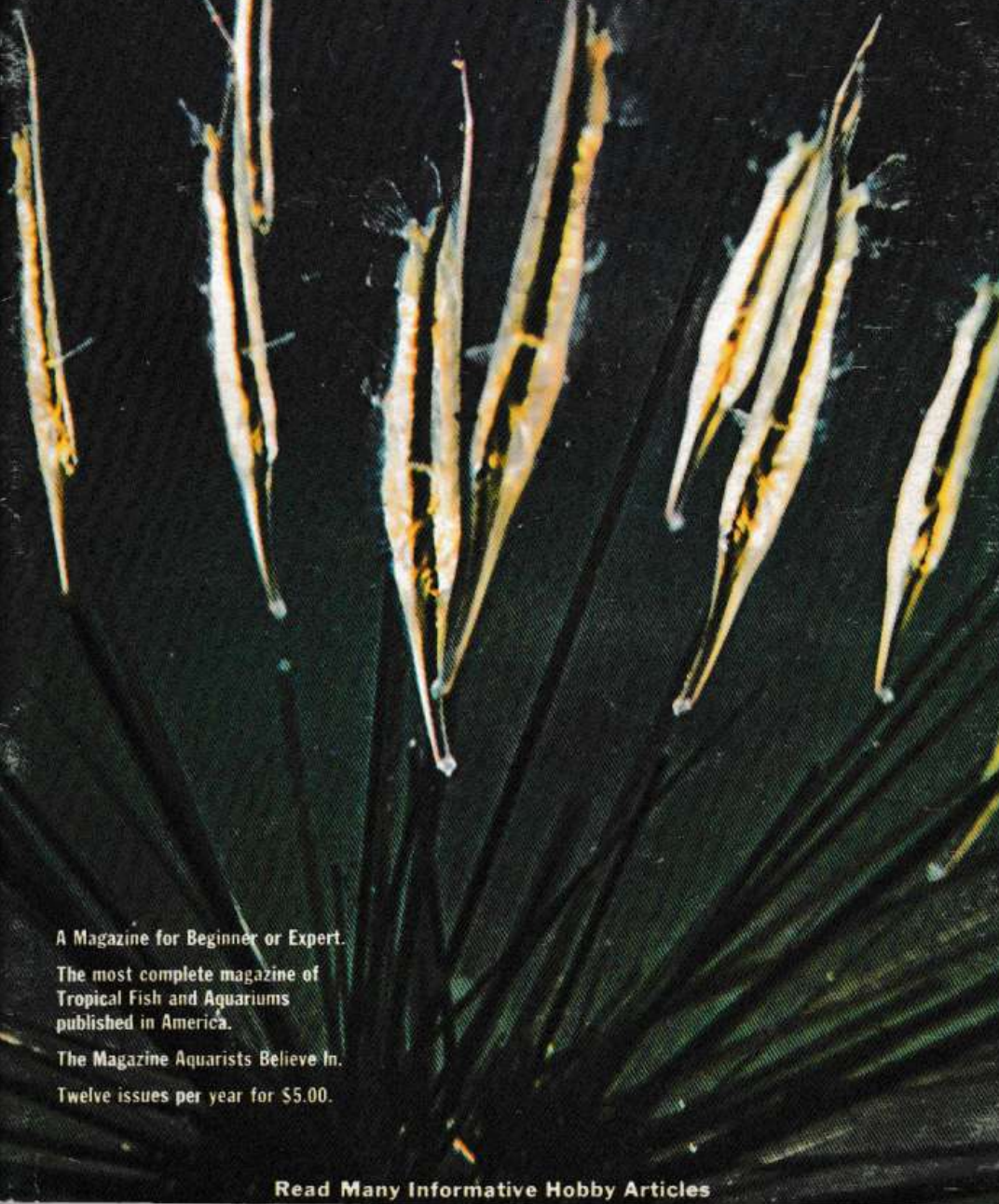


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aquarium journal



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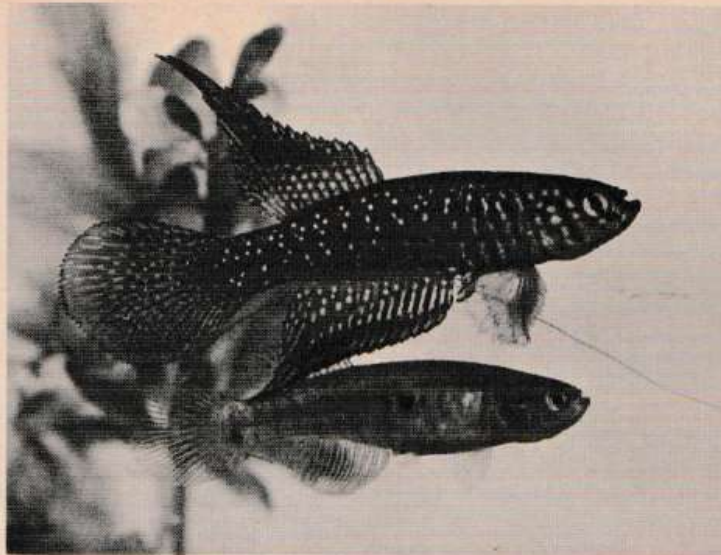
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cover photograph

Shrimpfish, Acoliscus strigatus, with their heads down among the long slender spines of a sea urchin. For more information regarding headstanders, see the article by Dr. James W. Atz beginning on Page 436. Cover photography by Douglas Faulkner.





Inside story of a national craze
involving the tropical fish hobby

Instant-type Fish Kits

PART I

THE FAD is about over. But last year at this time, with the saturation point at its peak, there came many denunciations, both verbal and written, about the instant fish kits. Some were by persons of no less authority than publishers, ichthyologists, curators of public aquaria and even spokesmen for specialized aquarium organizations. This is understandable, since their particular field was being invaded by a promotional plan using certain fishes to sell a gimmick-like toy.

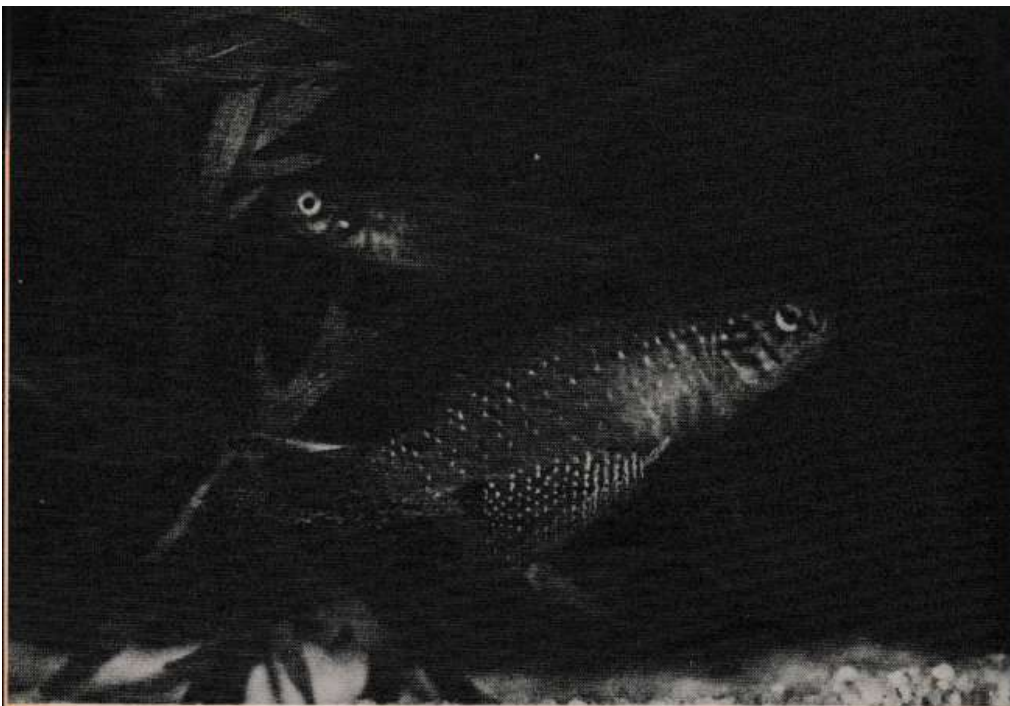
In a final analysis of the thousands of

Gene Wolfsheimer, F.A.I.

Sherman Oaks, California

words written about the fish kits, one point seems clear. Few were for them. They were either ridiculed or disparaged. Of course it must be realized that these stories were written by persons very much interested in the tradition of keeping fishes for the sake of

Photo: Adult pair of *Cynolebias whitei*. Male, the upper fish. One of the species of annuals bred by the WHAM-O Corporation to produce their Instant Fish kits.



the fishes. So far, there haven't been any rebuttals. Why should there be? It was obvious that most of those persons behind the fish kits were not interested in fish, *per se*, but in producing and successfully distributing an item for the toy industry.

The various instant fish kits all based their selling feature upon a peculiar quirk in Nature that allows certain species of fishes to maintain their existence under the most difficult of circumstances. The water in the areas in which these species are found frequently dries up. Naturally, the fishes in these areas die, but their eggs, which have been buried in mud, continue to develop. After reaching a stage of development where the embryonic fry is ready to burst forth, the egg becomes dormant, awaiting their "hatching trigger," water. With its coming, usually in the form of rain or flooding, the eggs burst open in a matter of minutes and the progeny of the deceased inhabitants of the pool hatch, grow and again start producing the

next generation before they, themselves, become the victims of Nature's annual periodicity. Because of this extraordinary life cycle, these fishes are sometimes referred to as annual fishes.

Some of the genera that base their lives on this believe-it-or-not existence include the African *Nothobranchius* and certain species of the genus *Aphyosemion* and the South American *Cynolebias*.

The history behind these fish kits is known to but a few persons and apparently not to all the writers who reviewed the spread of fish kits across the nation. It had its beginning when a local professor here in Los Angeles, a friend who prefers to remain anonymous, started maintaining and breeding some of the annual fishes. On a lark, he packaged some eggs of *Nothobranchius guentheri*, the species that became destined

Photo: Adult pair of albino *Cynolebias whitei* bred by WHAM-O. It appeared from their normally-colored stock (see previous picture). They have creamy-white bodies, spangles of greenish gold and specks of brown and the usual red eyes.

to play a major role in big business. The *guentheri* eggs, with a small amount of peat moss, (the breeding medium) were put in little plastic bags and sold at a modest price to a local aquarium shop. The proprietress of the store set them on the counter with a little sign . . . "Instant Fish - Just Add Water." Not too surprisingly, in this day of fads and gimmicks, the item caught on.

One corporation well-known for their "Hula-hoops" and many other nationally-distributed toys, heard of the idea. They bought the rights from the professor and quietly set about making plans to put the item out as a toy for the national market. Some of the top toy-minded men in the country got to work and came out with a box-like kit that contained a small plastic aquarium, a little packet guaranteed to contain no less than six living fish eggs, a magnifying glass to search out and observe the newly-hatched fry and even brine shrimp eggs and salt to hatch the eggs into a living food for the newly-hatched fry's first food. General directions completed this fantastic "miracle enacted before

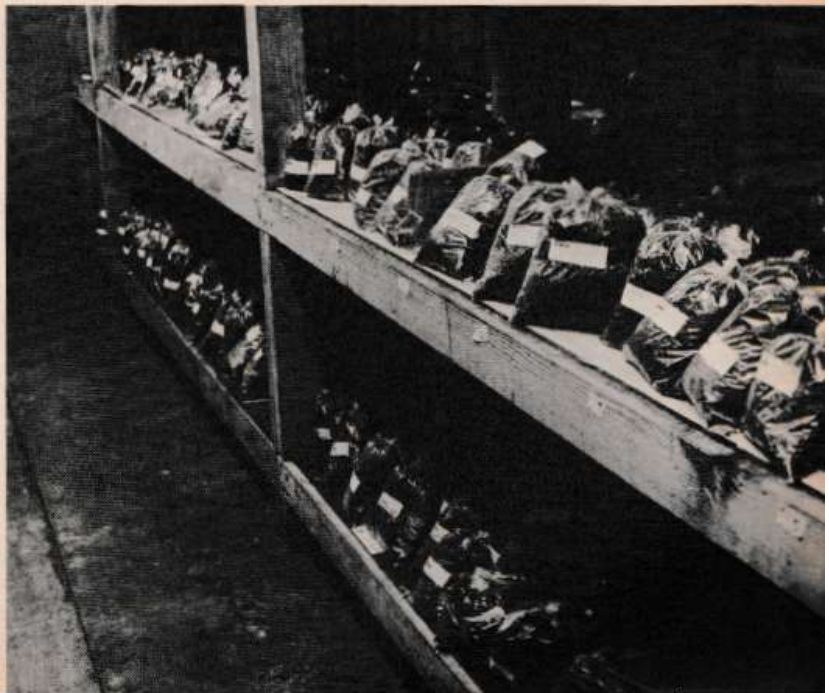
your eyes" and all to sell for under \$3.00.

The kit was first shown at a toy trade show in Florida and Instant Fish became an instant success. Given the right promotion, orders soon came in totaling well over the six figure mark. With the success of the original idea, imitators began springing up in surprising numbers. It's unfortunate that some of these wild-

Photo: A view of one side of the many aisles in the two WHAM-O fish rooms. Tanks are tiered at a level for easiest working and viewing. Bagged eggs are stored on top level and equipment storage beneath.



Photo: There are many rows of these stored plastic bags containing peat moss with eggs taken from the breeding tanks. Several species of fishes are represented in these bags.



catters were working on a get-rich-quick scheme and quality control in their product was the last thing on their minds. It was obvious this product wouldn't last too long. Its primary ingredient, the fish eggs, created the major bottleneck. Orders for these kits came in faster than the fishes could produce the eggs. And even worse, the fishes produced eggs faster than they could be properly collected and packaged.

Those persons who had given public disapproval of the egg kits were, for the most part, of authority and backed their statements with well-founded facts. Having bred killifishes (of which the annuals are one variety) for the past eighteen years and having in production at the time all of the species used by the fish-kit companies, my own doubts of this new enterprise were often voiced, both verbally and in personal correspondence. Some of the reasons for the head-shaking were these:

How could one be sure the eggs were fertile and had the inherent capability of hatching as demanded of them? The eggs packaged could be infertile. Bad

eggs looked like good ones to the untrained eye. Only microscopic examination can determine the quality of a newly-laid egg.³ It was doubtful that this could be done to the hundreds of thousands of eggs that went into all the kits.

Then there were the storage problems. These kits, in finished form, would be subject to such extremes of temperature as the almost freezing cold in a winter warehouse to the very high temperatures of the insides of delivery trucks during the summer. Could the embryos remain alive under such conditions?

The water used to wet the eggs for hatching was given little thought by the toy manufacturers. Breeders of the annual killifishes can tell you that this is one of their basic concerns. The kits were sold in every part of the nation. Give thought to the variety of water that would be used to hatch the eggs. It would range from extremely soft to extremely hard and from very acid to very alkaline. And in spite of the included

Photos: After the egg-laden peat moss is siphoned out, the water is replaced by gravity flow from the large plastic storage drums seen in the upper right. These drums are about emptied and the water replaced every day to allow some aging.





directions with each kit, every type of water temperature would be used.

Timing plays a considerable importance for proper egg hatching. Although there is a surprising tolerance by many of the eggs in regards to their correct hatching time, they cannot normally be coaxed into hatching before a minimum time, usually over 45 days. On the other hand, their maximum time is greater than one might imagine. Attempts to hatch eggs after an initial trial occasionally results in failure. The novice fish breeder not realizing the eggs can be re-dried and stored again to be hatched out at a future date, winds up throwing out the eggs of a species that resisted his first hatching attempt. Just why certain eggs will delay their hatching time is not yet fully understood. However, the fish kit companies took advantage of the extended length of egg viability by suggesting that this increases the shelf life of their product, and it does.

These are just a few reasons why the kit purchased could be buying a pig in

a poke. The American credo appears to be, "Ours not to reason why, ours but to buy and buy." And buy they did, to the tune of millions of dollars worth.

The final questions now arise. Has the coming of these kits aided the hobby? Has it caused the buyers to go further into the realm of fishkeeping? Or have the purchasers met with failure and disappointment and not only condemned the product but swear against fishkeeping in general and the kit-makers in particular.

What few fail to understand is that the kit-makers couldn't care less either way. They created a toy, not an aquarium product, that catered to the gimmick-minded trade. If a million could be sold, only one to a customer, they would be more than recompensed for their investment. It wasn't necessary to answer the charges put forth by the hobby-minded individuals. Such an

Photo: The siphoned peat moss is allowed to partially dry on muslin-covered racks and then, as seen here, is hand-packed in plastic bags for storage. Each bag is carefully labeled for an accurate record of what it contains.

action would compare with an elephant trying to swat the flies buzzing its rear!

One complaint loomed out ahead of all others and aided in the downfall of these kits. Many of the eggs in the various brands of kits failed to hatch. Some of the more reliable companies included a guarantee coupon in each kit that promised, upon return of the coupon with money to cover handling and mailing, another packet of eggs would be sent. There was the distinct possibility that even the eggs in the second packet wouldn't hatch and there was no other coupon to try, if by this time you weren't fed up with the whole thing.

The first producers of the commercial fish kit as a toy, the WHAM-O Corp., limited the disappointment of non-hatching eggs by a special quality control set-up. It cost them time, money and loss of sales from all the bad eggs that were discarded instead of included in the egg packets. Their conscientiousness in pro-

ducing a quality item seems to have been overlooked. The research and development program carried on by the makers of Instant Fish was made possible by adequate big money, beyond the scope of private killie fanciers. The WHAM-O people have learned and forgotten more than the average killie-man ever knew existed. Until last summer, I too was one of the ignorant.



Last year, during the height of the instant fish craze, I was contacted by the WHAM-O people and asked if I was available for consultation work. Somewhat reticent at first, having just previously talked a mail-order firm out of starting up another fish kit, I agreed to go in and talk things over. It was made quite clear to the general manager at WHAM-O that although I'd help iron out whatever problems I could for the better maintenance of their breeding stock, I held no high regard for their product. On this basis I was hired for a short duration, primarily to clear up a disease problem and help solve their one major bottleneck . . . the separation of the eggs from the peat moss breeding medium. The disease was held in check by the discriminate use of a malachite green solution. The separation of eggs is still something of a problem but

Photo: Each aquarium is hand-fed its twice-daily ration of tubifex worms, squirted in with the use of a basting-type syringe. Young fish receive chopped tubifex. Newly-hatched and very young fry feed on freshly-hatched brine shrimp.

Salt Water Fishes

By Robert P. L. Straughan

Q: Can sea anemones be kept in the aquarium with fish other than the clownfish?

A: Yes, anemones usually do not bother any of the fish and their exotic color will enhance the aquarium.

• • •

Q: Will salt water plants live in artificial sea water?

A: Yes, if the water is properly aged, salt water plants will do quite well in man-made ocean water. One university in Miami used our Reef Salts in growing salt water plants through several generations. Strong light is needed and the plants should be set upright with the roots or "Holdfasts" firmly anchored in an inch and a half of silica sand. The under gravel filter should be used to filter and aerate the water.

WHAM-O has devised a technique that clears away about 75% of the peat moss from the eggs before the egg-handling stage of production.

My impressions of the WHAM-O fish-breeding set-up will be a lasting one. Consider first that these persons started this program as toy manufacturers, not fish-breeders. Starting from scratch, they built up two separate self-contained air-conditioned fish rooms within their large toy factory. At peak operation, they maintained over one thousand aquariums, all of a ten-gallon capacity. Certain of the managerial crew at WHAM-O learned the basics of breeding the annual fishes in a matter of days and passed their knowledge on until a smooth-running routine had been established. One girl, Aiko Lopez, called "Tommy" by everyone, acted as forewoman from the start and still maintains this position. The hatcheries were always worked by crews of women.

(To Be Continued)

CLUB NEWS

Tri-City Aquarium Society

This Riverside, California, group will hold their second annual tropical fish show in conjunction with the Riverside Hobby Show. The dates are October 26 and 27, the entry fee is \$1. For more information, contact Mr. George Donner, Show Chairman, 4065 Dall Ave., Riverside, Calif.

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Destroying Red Snails

Perhaps at some time or another, the aquarist has had trouble with too many red snails. One sure way of destroying most of them is this: Go to your tank or tanks before they are illuminated and no doubt most of the snails will be near the surface. Then proceed to remove them or crush them for food. — *Terry Walther, Sheboygan, Wisconsin.*

Netting Girls' Formals

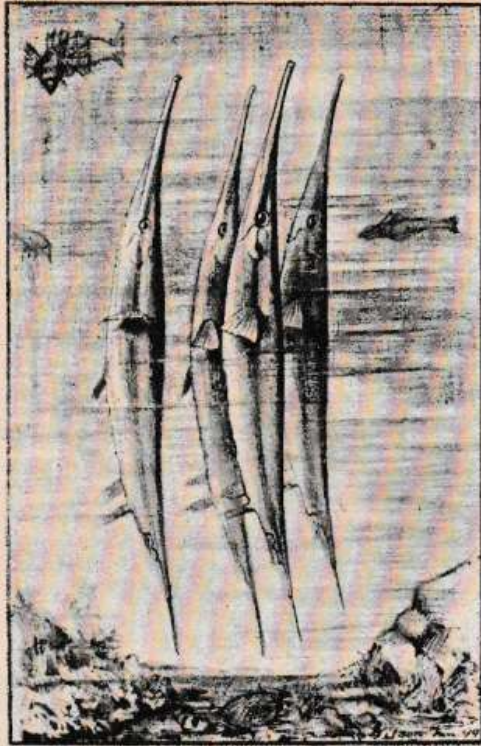
The nylon net used in making girls' formals makes a very inexpensive trap for the eggs of fish such as zebras and other egg scatterers, and also to separate the fry of livebearers from the parent. The net is available in many colors and costs about 30 cents for two square yards. — *James D. Walker, Amarillo, Texas.*

White Worm Separator

In order to separate white worms from their culture, I take a piece of the culture and place it in my net. Then I place the net over a jar filled half way with water and place a light bulb over the net for about 10 to 15 minutes. The heat forces the worms to fall into the jar where I can easily remove them. — *Benny Beiler, Madison, Wisconsin.*

Napa Valley Aquarium Society

This new group recently named as president Mrs. Marie Swatts, with Albert DiMassino as vice president; Dallas Imboden, secretary and Hugh Hottel, treasurer. The N.V.A.S. meets the first Monday of each month at the House of Pets, 1600 Main St., Napa, Calif.



Long thought to swim with its head down,
in truth it can swim with head up OR down

The Odd Shrimpfish

PART I
(See Cover Photo)

THE LOCOMOTION OF FISHES has always fascinated naturalists, and with the ever increasing importance of man's underwater activities, the scientific study of how fish move about has taken a decided practical turn. After millions of years of evolution in lakes, rivers and seas, fish can move through water with an efficiency that baffles our best engineers. The acme of piscine locomotion might seem to be a tuna or spearfish streaking through the water, but speed

James W. Atz, Ph.D.

Malverne, New York

is not the only measure of proficiency. For example, the slow-moving but precisely oriented seahorse is, in its way, as efficient — and awe-inspiring — as the fastest fish. Moreover, although the hydrodynamics of its methods of propul-

Sketch: This drawing of four shrimpfish swimming head up was published in 1922. Since then most observers have indicated that the fish swims only with its head down. The truth is it actually can do both.

sion may not teach us how to streamline torpedoes or design record-breaking submarines, there is much to be learned from a systematic study of seahorse locomotion. We found this out in the old New York Aquarium down at the Battery in New York when Director Charles M. Breder, Jr. analyzed the movements of the common seahorse with the help of Dr. Harold E. Edgerton, pioneer in ultra-highspeed photography. With the aid of a motion picture camera that took 300 photographs each second and a still camera that snapped photographs in one ten-thousandth of a second, Drs. Breder and Edgerton found, among other things, that the rays of the dorsal fin of the seahorse beat back and forth 35 times per second—a speed that compares favorably with that of a hovering hummingbird's wings.

Last autumn the New York Aquarium exhibited its first shrimpfish, whose locomotion closely resembles that of the

seahorse, even though the fish itself is strikingly different in appearance. Not having a stroboscopic motion picture camera at our beck and call, we could obtain only a general idea of how this fish propels itself, but we were able, at least to our own satisfaction, to settle a long standing question concerning its swimming behavior, namely: Does the shrimpfish swim head up or head down? Offhand, this would seem to be a question that could be answered about any fish by a mere glance. The fact that the shrimpfish has been observed off and on by scientists for more than 60 years and still they cannot agree which way the fish's head points when it swims either speaks poorly for the capabilities of ichthyologists or indicates something very strange about shrimpfish.

About the strangeness of the shrimpfish there can be no doubt, and this in-

Photo: The typical shrimpfish stance is head down. Starting from the bottom, the fins on its belly are the small, paired ventrals; the anal fin; the caudal fin and the second dorsal fin. The fish's belly is toward the upper right.



cludes its swimming behavior, so the ichthyologists have an "out" if they need one. About the worst they can be accused of is poor communication. Perhaps if they had paid more attention to one another's reports, the whole matter would have been settled by now. On the other hand, perhaps Arthur Willey's observations became too well known. At the turn of the century, Dr. Willey was collecting and observing marine life in the south Pacific when he made the acquaintance of the shrimpfish. He described this in his journal, which was published in 1902: "This species lives

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Toothpaste Does the Trick

To remove scratches on a plexiglass marine or freshwater tank, simply rub the scratches with toothpaste and a soft cloth. This has been very effective in cleaning up my tank. — *Stan L. Ladwig, Minneapolis 18, Minnesota.*

Homemade Pump Diaphragm

This may be of interest to someone who was in the same predicament as I. Several days ago I was in need of an air pump. I dug out of a drawer an old foreign-made pump of the diaphragm type that needed a replacement diaphragm. I spent almost a whole afternoon going to several pet shops that carry supplies. No one had a kit for it. Coming home somewhat disgusted I thought of cutting a diaphragm as big as a round silver dollar from an old rubber glove. It worked wonderfully. Hope someone can benefit by my experience. — *Mrs. Margaret Motta, San Leandro, Calif.*

in small shoals of about half-a-dozen individuals and swims about with rapidity in a vertical position, cleaving the water with its razor-shaped body. I was greatly astonished when I saw these spectral fishes flitting about and I pursued them with much perseverance in my dinghy, but although I came up with them several times they doubled back with such deftness that they completely baffled my attempts to catch them with a pole-net." Subsequently Willey was able to obtain specimens and identify them. He wrote nothing more about the locomotion of the shrimpfish, but accompanying his text is an illustration that shows a group of four swimming vertically with the head up. The artist, a Mr. Edwin Wilson, must have made the drawing under Willey's direction, and we have no choice but to assume that this is the way the fish looked in nature to the Cambridge zoologist.

Illustrations based on this drawing have appeared in several of the leading ichthyological texts of our times, including Weber and Beaufort's *Indo-Australian Fishes*, J. R. Norman's *A History of Fishes*, and the latest edition of the *Traité de Zoologie*. Several ichthyologists and collectors, however, have reported that although the shrimpfish does indeed swim with its body held in a vertical position, it swims with its head *down*, not up. The number of men who have done so is impressive, and in

CLUB NEWS

Hudson-Bergen Aquarium Society, Inc.

The H-B A.S. will hold their Annual Tropical Fish Exhibition on Saturday and Sunday, November 16 and 17, at the Palisade Masonic Temple, 34th St. and New York Ave., Union City, N. J. For further information regarding the show, contact the Chairman, Mr. Arnold Sweeney.

each instance the authors themselves actually saw the fish under natural conditions or in aquaria:

Gustave Schneider, 1897
F. W. Townsend, 1905
A. W. Herre, 1934
Delsman & Hardenberg, 1934
Georg Duncker, 1937
H. W. Fowler, 1956
E. S. Herald, 1961.

The observations of Albert W. Herre, an American biologist who spent many years studying fishes in the Philippines, and southeast Asia, are typical: "Large numbers of living specimens were observed. I have watched them drifting in and out with the tide, floating with a current, in tide pools, and have kept them in aquaria, yet have never seen them in any position except vertical,

Anatomically, the head-down position also seems more plausible. Shrimpfish are long, slender and very thin, with a belly that appears knife-sharp and a back that is scarcely wider. (Our two specimens, which were about three and one-half inches long, measured not quite an eighth of an inch across the eyes, their widest point.) This characteristic is responsible for one of their popular names, razor fish. The name shrimpfish arises from the light armored plates that cover most of the body. These do not make the fish look like a shrimp while in the water, but when held in the hand, the impression is strong that one is handling a crustacean and not a fish. The fish's cuirass, as it is technically known, seems to have just the same degree of flexibility and toughness as the exo-



with the head down." When all these personal accounts are stacked against Willey's and those of I. S. R. Munro and J. L. B. Smith, who agree with Willey but give no details about their reason for doing so, the weight of the evidence appears to be definitely in favor of the head-down position. Moreover, a striking photograph, taken not long ago in one of the tanks of the aquarium at Nouméa, shows a group of 18 shrimpfish all with heads down.

skeleton of a market shrimp. Although the body of the shrimpfish is slightly flexible, the fish is immobile except for its fins, mouth, gill-covers and eyes—the latter being reported as capable of movement independent of each other, like those of the seahorse. The shrimpfish is, in fact, distantly related to the seahorses. One of the strongest indica-

Photo: In a photographic tank, the shrimpfish swam on its back and many other ways. The jointed spine of its first dorsal fin and its tiny mouth are also apparent. The fish here has its belly down.

tions of this affinity is its tiny, toothless mouth located at the end of a snout so long that it accounts for nearly a quarter of the fish's total length. Like the seahorse, the shrimpfish has to depend on the rapid motions of its small fins to get about, since it cannot flex its tail and the rear part of its body from side to side in order to drive it forward through the water, as conventionally constructed fishes do. The unique arrangement of its fins, more than any other feature, indicates that the fish's head must point down when it swims in a vertical position.

Although the two sets of paired fins of the shrimpfish are located where they are in practically all fishes (that is, the pectoral fins behind the gill-covers and the ventral fins on the belly), the location of the single, unpaired fins can only be called weird. In effect, the two dorsal fins have been pushed off the fish's back into the spot where the caudal or tail fin ought to be, and the displaced caudal fin has taken a position at the rear of the fish's belly. To accomplish this, the posterior quarter of the spinal column bends downward at about a 30-degree angle so that although the caudal fin retains its normal attachment to the end of the spine, it looks, at first glance, like the anal or belly fin, which fin actually lies immediately in front of it. The shrimpfish thus has three small, unpaired fins attached to the lower rear part of its body; reading from front to rear, they are the anal fin, the caudal fin and

the second dorsal fin. (The first dorsal fin is stiff and immobile). These fins are located most advantageously to move a vertically oriented shrimpfish in a horizontal direction when the fish's head points down, not up. As German ichthyologist, Georg Duncker, pointed out, the fish moves with its back first.

When a shrimpfish is hatched from its egg, its backbone is straight and all its fins are in the ordinary position but by the time the baby fish has reached a length of one inch, its spine has started to bend downward and its fins to take up their strange final locations. At the same time, the fish begins to assume a vertical stance in the water.

Despite the anatomical and behavioral evidence, the matter is not to be settled without further considerations. Under most conditions, shrimpfish undoubtedly swim head down, but do they *always* do so? Statements by zoologists with as much field experience as Willey, Munro and Smith cannot be discounted without very good reason. Nor can those of Max Weber and Robert Rofen, who have reported that they have seen shrimpfish swimming in normal fashion — that is, with the body held horizontally. Even Dr. Herre, who declared that he had watched shrimpfish for hours, day after day, on the reefs of the Sulu Archipelago and had never seen them assume any position other than the vertical, head-down one, admitted that experienced Philippine fishermen told him they had seen the fish swimming head up a few times.

(To Be Continued)

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CLUB NEWS

Stanislaus Aquarium Society

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.

THIS ARTICLE is dedicated to the fish fancier who finds himself in the predicament of having gone to his favorite daphnia pond on a blustery day in January and found a thick layer of ice between him and the water.

Mark Schneider

Birmingham, Michigan

Don't be frustrated next winter —
simply dip your net under the ice!

Collecting Live Food

We'll refuse to be daunted so we apply an ax to the ice until we have procured a hole six or seven inches in diameter. I have found that after a few swipes with the net through the hole all the little delicacies disperse. Naturally, with any live catch made one is bound to come up with a water boatman or a back swimmer. These small insects can easily be removed with the fingers or a stick if the fish fancier is squeamish. More frequently found are damsel fly larva. They are only about a quarter or half inch long, but they can kill young fry. We now come to more pleasant items; daphnia and glassworms. Both are subjects of much controversy. Some say that the daphnia may bring disease to our fishes. Others say it is an excellent food for conditioning breeders and feeding fry. The glassworms have been accused of eating spawn and very small fry, but I have found them to be excellent food for anything the size of neons or larger.

Glassworms will keep for weeks in cool water, but I prefer to freeze all my fish food. There are several advantages to doing this. First, it saves space. From a gallon of glassworms and daphnia I freeze them into a patty three and one half inches in diameter and one quarter inch thick. Secondly, this avoids the danger of putting any harmful insects in with your fish. Once frozen, the damsel fly larva is quickly eaten by the

fish. Thirdly, freezing produces long shelf-life. Fourth, it helps to avoid the odor that sometimes accompanies the water in which the glassworms make their home.

The freezing process is very simple. Just take a plastic top from sour cream carton or some other plastic container. The top should be three and one half inches in diameter by one quarter inch thick. Work on a flat surface near the freezer. Fill the top with water and set down. Pour the fish food into a net over a sink to separate the fish food from the old water. Then from the net, put as many worms and daphnia as possible into the plastic top. Carefully put the top in the freezer. It will freeze in 20 to 30 minutes and will be ready for immediate use at any time. I prefer to just break off a chunk and place it in the fish tank. In this way the chunk slowly dissolves, freeing only a few of the worms and daphnia in the water at a time.

Incidentally, the glassworm is not a true worm at all, but the larva of a small midge-like fly. Although I've never had my adults emerge I always keep a screen over my catch once I'm home.

Many times I catch some hairlike algae in my net. This can make a mess out of any aquarium. It is very easily removed with a stick before the food is introduced into the aquarium. ◀

OFTEN I have been asked what I do when I become bored or "fed up" with the hobby. The answer is, "It never happens!" There are too many facets to this hobby of ours, and far too much breadth to let this occur perforce. When the "Lemma of Maximum Per-

and the catfish, *Corydoras agassizi*. These are just a few examples for many more could be cited. As aquarists know, the first two examples typify the manner in which the name of the person who first described and named the fish is appended to its name, while the last two

Albert J. Klee
looks

• Under the Cover Glass



The Aquarium Journal

"Discus or no discus, next year we leave the fish home!"

versity" (Beginner's Corner, pgs. 339-340, July 1961) strikes once too often, forget about the fish for the moment and strike out in a different direction. Just to show that I sometimes take my own advice, the following is the result of a brief sabbatical I took when fingers became waterlogged, eggs fungused and glass cracked.

The name Agassiz is not unknown to aquarists whether it be found after a fish name such as the mosquito fish (*Heterandria formosa* Agassiz) and the oscar (*Astronotus ocellatus* Agassiz), or as a part of a fish name such as the dwarf cichlid, *Apistogramma agassizi*,

examples show how a person is honored by having a fish named after him. This would be reason enough to review the life of this man but Louis Agassiz was more than an ichthyologist, and a brief biographical sketch would serve as a change of pace to the ordinary run of aquarium topics.

Jean Louis Rodolphe Agassiz (called "Louis" by his family and later on, "Agass" by his friends) was born in Switzerland in 1807. At an early age he determined to become a leader in the sciences, and a leader he became. Agassiz's family belonged to the professional class of teachers, clergy and physicians

but at first, they wished young Louis to prepare for a business occupation. A business career to a young man who as a child converted a stone catch basin behind his home into an aquarium, learned the Latin names of every animal he found and established a museum of natural history in miniature, was not palatable. A compromise was reached whereby Agassiz would study medicine . . . the University of Zurich was his first stop, Heidelberg his second. At Heidelberg he developed an interest in paleontology and geology but he never



Rust-Free Tank Frame

Hobbyists who use cork-free spawning mops by suspending them from rods (coat hangers, glass rods), etc., soon find that condensation water leaves rust marks on the tank frame. Here is a simple remedy to provide a rust-free apparatus.

Cut a length of coat-hanger wire that will overlap the tank width, at a slight diagonal, about two inches on each side. The slight diagonal length will prevent the rod from rolling side to side. Insert the wire into a piece of airline tubing. Place on top of the aquarium and bend the two overlap ends, of about two inches, down to provide a sort of C-clamp. Remember to allow the extra length for the slight diagonal. Leave enough tubing at the ends to either bend back and fasten with rubber bands or leave open without exposing the wire. This will keep the wire from scratching the glass. By bending the finished product slightly in the center, condensation water will then drip back into the tank. — Thomas Ciecka, Decatur, Ill.

outgrew the science which from the start, held a special fascination for him, i.e., ichthyology. At this time, he was attracted by the University of Munich and after many appeals, convinced his parents to let him go.

At Munich, Agassiz's nickname among his comrades-in-science was "Cyprinus," a portent of things to come. Of all the eminent naturalists at Munich, none was a specialist in ichthyology so Agassiz determined to fill the void. He started working on an account of European ichthyology and this attracted the attention of one of his professors, Von Martius. In 1817-1820, the expedition of Von Martius and Spix to Brazil had taken place but the task of describing the fishes collected from the Amazon River system in Brazil remained unfinished because Spix died in 1826. Von Martius, who was a botanist, asked Agassiz to take on the job and he gleefully agreed. In May of 1829, his "Brazilian Fishes" appeared in print. It was a moderately distinguished work by a 21 year old naturalist but it gave him a reputation in Europe.

This success gave Agassiz the courage to write to Baron George Cuvier, one of the greatest naturalists of that age. Cuvier's name is, of course, well-known to aquarists familiar with the Latin names of fishes. The Baron was quite impressed with Agassiz but more about that later. One result of Agassiz's book on Brazilian fishes was that it earned him a Ph.D. in natural history. This was not quite the goal he promised his parents although they were very proud of him and his accomplishments. However, he agreed to obtain his degree in medicine, a promise he kept with little trouble, thus winding up with two doctorates. He was, however, never to practice medicine. His love of natural history always came first.

Agassiz became a frequent visitor to the home of Cuvier. Another friend was the renowned scientist, Alexander von Humboldt. With Cuvier's encourage-

ment and with Humboldt's talent for securing funds, Agassiz's greatest work was published over a period of a decade . . . the five volumes of *Poissons fossiles* (Fossil Fishes). This fantastic work described over 1700 species of ancient fishes. It qualified him as a master of his time, and as the logical successor to Cuvier who had died a year before the first volume was published.

The study of fossil fishes quite naturally led him into geology and subsequently into a study of glaciers. His ideas on glaciers and the Ice Age really established Agassiz as a pioneering intellect. Unfortunately, his geological studies convinced him of the rigidity of species, thus involving him in some controversy. His concept of species was that they remained unchanged from the time of creation, that species disappeared as a consequence of catastrophe only. It is also a regrettable observation that Agassiz's marriage was not really much of a success. These were the burdens of a man devoted to science.

Agassiz's growing fame brought him to the attention of a group of American men of sciences. With the encouragement and assistance of his friend Humboldt, he set out on an American lecture tour in 1846, hoping also to study glaciation there. Agassiz was immediately taken with America and America with him. His lectures were received enthusiastically and a year later, Harvard offered him a professorship. Agassiz ac-

cepted the post of Professor of Geology and Zoology, and this launched his American career. His very first real expedition of his life took place in the area about Lakes Erie and Superior, resulting in the book, "Lake Superior." He compared fishes of Europe and America, discovering striking differences. The one cloud at this time was the death of his wife who had stayed behind in Europe.

Perhaps Agassiz's greatest American achievement was his founding of the Museum of Comparative Zoology at Harvard. His reputation as a teacher was phenomenal and his students hung

CLUB NEWS

San Francisco Aquarium Society, Inc.

The next regular meeting of the San Francisco Aquarium Society will be Thursday October 3, 1963, California Academy of Sciences, Golden Gate Park at 8:00 p.m., according to Robert P. Dempster, President.

Program for the evening will include the Society's own color film, "The Story of the Brine Shrimp," which also covers the tropical fish hobby from "A to Z." The film is narrated by Steinhart Aquarium Curator-Superintendent, Dr. Earl S. Herald. In addition to the film, Dick Law will show a selection of his very fine color slides of tropical fishes, according to Frank Tufo, program chairman.

Fish-of-the-Month for October meeting: (1) Platies, (2) Top minnows (*Nothobranchius*, *Cynolebias*, *Pterolebias*, *Aphyosemion*, etc.) and (3) Nandids and electric fish. Members are urged to bring their best specimens for competition. Ribbons will be awarded the winners.

The Nominating Committee will present a roster of nominations for the 1964 Board of Directors, and nominations will also be taken from the floor at the October and November meetings, Mr. Dempster said.

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onto every word. As the leading man of American science, it was understandable that Agassiz should become embroiled in certain controversies, however. A major controversy arose over Darwin's "Origin of Species," a view which Agassiz vigorously opposed. He also maintained that negroes and whites were of distinct origins and probably even distinct species. His refusal to admit evolution plausible was a defect on his character since it was based upon a refusal to examine the scientific basis of his own views. In this fight, Agassiz was the leader of an older generation, doomed to defeat by succeeding generations. In later years, however, his views towards Darwin were somewhat moderated.

Agassiz's controversies with other ichthyologists are also of interest to aquarists. One of his most famous feuds was with Spencer F. Baird, the founder of the U.S. National Museum. Agassiz attempted to block his election to the National Academy of Sciences but was unsuccessful. Baird had no love for Agassiz since the latter had the unfortunate European habit of "borrowing" museum specimens and returning them years later if ever. A student of Agassiz who had followed him from Switzerland, Charles Girard, deserted Agassiz to work with Baird. Together or singly, Girard and Baird described many American fishes. When Baird and Girard published anything jointly, Agassiz was sure to give it a rough going over in review. With time, Agassiz's authoritative hold on the Museum he founded alienated others of his students as well. One of these, Frederick Ward Putnam, who had named a blind cave fish in Agassiz's honor (*Chologaster agassizi*), argued with him over Putnam's desire to publish his own research (Agassiz didn't think it was ready for publication) and also over certain financial matters. Putnam broke off his association.

Agassiz died in 1873 at the age of 66. In spite of these blemishes, the career of Agassiz is outstanding. As founder of the Museum of Comparative Zoology and the National Academy of Sciences, as a popularizer of natural history, author of the "Contributions to the Natural History of the United States," head of the Thayer Expedition to Brazil, and one of the founders of Cornell University, his accomplishments cannot be denied. To be a man of many sides was to count as many men. He made life richer by bestowing his wealth upon his own times. ◀

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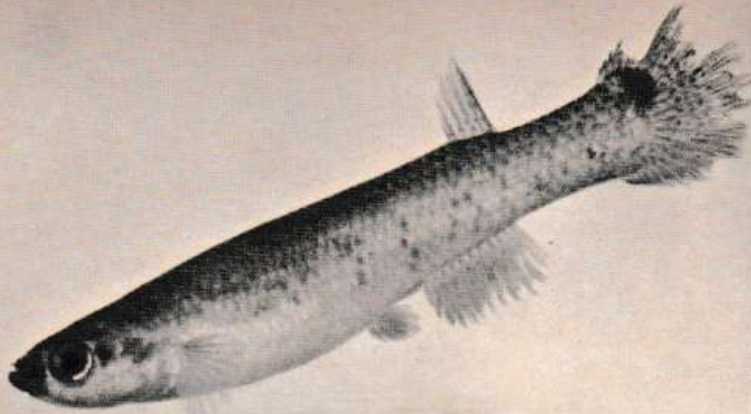
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Originally described by Dr. Myers in 1927 —
a delayed newcomer to the aquarium scene

Rivulus beniensis

WITHIN the genus *Rivulus* there is an assemblage of non-Guianan species that are poorly defined and apparently closely related to each other and to the Guianan forms. They are characterized by dark longitudinal markings on their sides and, to date, comprise the following species: *dibap-hus*, *ornatus*, *strigatus*, *beniensis*, *taeniatus*, *compactus*, *punctatus*, *obscurus* and *atratus*. Although from time to time several of these species have made an appearance on the aquarium scene, all such appearances have been brief and indeed, the only member of the group that will be recognized by even a small minority of aquarists is *Rivulus strigatus*, due chiefly to its inclusion by Dr. Innes in his classic work, "Exotic Aquarium Fishes". However, even this species

Albert J. Klee

Cincinnati, Ohio

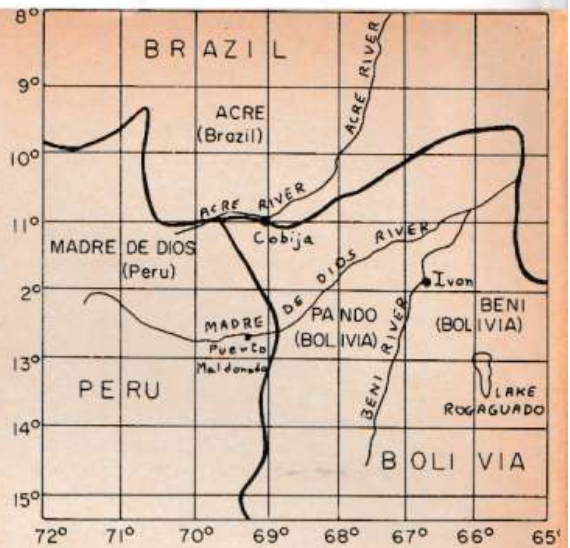
has not been in the hands of aquarists for many years. This article will introduce a member of the group which is destined to receive widespread attention as it already is known both here and in Europe, and is currently receiving considerable acclaim.

In 1927, Dr. George S. Meyers described a new *Rivulus* from Bolivia which he named, *Rivulus beniensis* (pronounced, BAY-NEE-EN-SIS). It received its name from the river near which it was found, a river which separates the Bolivian provinces of Pando

Photo: *Rivulus beniensis*, female. Note the torn fins on this specimen, received in the spawning act. Photo by the author.

and Beni (see map). This area is quite close to the contiguity of Peru, Bolivia and Brazil. The pertinent provinces here are (a), Madre de Dios in Peru, a province taking its name from a river which originates in Bolivia but which ends in Peru, (b), Acre in Brazil, a province taking its name from a river originating in that country but which ultimately flows along the Brazil-Bolivia border and the Brazil-Peru border, and (c), Pando in Bolivia which we have already mentioned. Dr. Meyers described two subspecies, the first being *R. beniensis beniensis*, originating in Ivon, a town on Beni River, and the second, *R. beniensis lacustris*, originating in lagoons along the shores of Lake Rogaguado, a lake located south of Ivon but still in Beni Province.

The original description was brief and lacked accompanying illustration. Males were described as having dark-brown, longitudinal lines between scale rows and no caudal ocellus. The light interspaces were reddish. Females, however, were described as having a very large, black caudal ocellus.



Earlier this year, Dr. Richard L. Stone and Mr. James Thomerson (both from Louisiana, the latter at Tulane University) very kindly sent the author numerous specimens of an unidentified fish, then commercially known as the "Peruvian longfin rivulus". This was a striking fish, embodying structural elements

Illustrations: (Chart above) Locality of *Rivulus beniensis*. (Photo below) *Rivulus beniensis* male. Photo by the author.



of both *Pterolebias* and *Rivulus* with the color of an *Aphyosemion*. It was impossible, however, to make a certain identification and the author enlisted the aid of Mr. Neal Foster, an ichthyologist at Cornell University. Fin and scale counts were done but the results were somewhat confusing. The fish was very close to the *strigatus* - *beniensis* - *taeniatus* group but it definitely could not be *strigatus* since this fish was known to us already, and the habitat of *taeniatus* (i.e., Columbia) was far from the reported location of the new fish. Later, the author learned that the fish came from the vicinity of the Acre River in Peru (rather than Iquitos as first reported) and with this information, plus counts on additional specimens, its determination as *Rivulus beniensis* was confirmed.

Since no description of live specimens exists in the literature, aquarium or otherwise, the following will be as detailed as possible. Reference will be to

adult specimens, with sexual differentiation made later. *Rivulus beniensis* is a very beautiful fish when adult (i.e., about 2½ inches standard length for males, 2 inches for females). It has numerous longitudinal rows of orange (almost cinnamon) spots on a greenish-yellow background, the spots being in nice straight lines and often running into one another. The dorsal area of the body is brownish-red, purplish in the ventral area. The caudal fin is edged top and bottom in a thin, orange line and each are submargined in a much wider band of bright yellow. The middle of their fin is light-violet but the rays are distinctly reddish-orange. The anal fin is colored very much like the caudal . . . a thin margin of orange and a broader submargin of orange-yellow. The dorsal is less intensely colored but it is light reddish-orange, tipped in light yellow nevertheless. Ventral fins are light yellow-orange bordered in bright red. The pectoral fins are

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almost devoid of any color whatsoever. It is quite important to note that juvenile specimens frequently do not present the vivid orange-yellow overall impression of the adults. They are much darker dorsally, in general. The author had the embarrassing experience while visiting in Chicago of misidentifying juveniles of this fish even though he had just made extensive observations on adults! To complete the description, it should be noted that there are yellow-green scales about the head, and that a large black ocellus is present on the upper base of the tailfin. This typical "arched back" position of a *Rivulus* at rest is frequently assumed.

Rivulus beniensis is not a particularly easy fish to sex, especially when juvenile. Both sexes have a familiar "rivulus spot" and frequently in identical intensity. However, in grown males the ocellus becomes fainter. Females in good condition are much more rotund, giving an impression sometimes of the fullness of

body exhibited by *Nannochromis nudi-ceps*. They may also sport numerous tiny black dots on their tailfins although this is a variable feature, also. An important sex indicator is the fact that in the caudal and anal fins, where yellow normally predominates, females tend to a deep orange. With experience then, aquarists can distinguish females by their darker ocellus, rotund body and deeper-orange markings. It should be noted that preserved males lose their ocellus, explaining why Dr. Meyers stated, "no caudal ocellus" in the males in his original description. In our specimens, the ocellus virtually disappeared in preservative within a month.

In its lack of clear-cut sexual dimorphism, *Rivulus beniensis* is somewhat atypical, although there are other species in this category as well. However, *R. beniensis* is even more atypical in that it is comparatively hard on members of its own species. Invariably, tailfins are ragged on both males and females as a

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consequence of constant rough and tumble fight among themselves. Females especially, have a hard time of it and the aquarist who does not provide abundant cover (mops, etc.) for these victims of oppression, is risking dead fish indeed. Consequently, it has been exceedingly difficult to photograph a female with undamaged finnage.

In spite of this, breeding is not at all difficult although results are always dependable. For my own part, a trio of fish (one male, two females) were placed into a 3-gallon, bare-bottom aquarium containing three or four floating nylon spawning mops. The fish were fed almost exclusively on frozen adult brine shrimp (they will eat a variety of foods such as white worms, beef heart, etc., indicating a carnivorous nature) and after a while, the first eggs were gathered. Surprisingly, the eggs (which are quite yellowish) average out at a diameter of 1.9 mm, a size which is quite small by *Rivulus* standards (being greatly exceeded by those of *R. cylindraceous*, *R. milesi* and *R. urophthalmus*). The usual sticky thread bundle is found on each egg. After a period of about two weeks, the fry hatched out and were raised with little difficulty, starting with newly-hatched brine shrimp.

Rivulus beniensis is an atypical *Rivulus* as aquarists know the genus. Perhaps future importations of other members of the assemblage described earlier in this article will show that what is typical is really atypical, and vice versa. We have a lot to learn about the members of this genus. ◀

Potomac Valley Guppy Club

The Fourth Fall Fish Fair will be held October 19 and 20, 1963, at the Holiday Room, Arva Motor Hotel, 2201 Arlington Blvd., Arlington, Virginia, according to Mrs. Julia Menges. For further information regarding the show, contact Mrs. Menges at 1014 Fowler St., Falls Church, Virginia.

Thousands Visit 1963 S.F.A.S. Fish Show

Several thousand San Franciscans and tourists viewed the 1963 S.F.A.S. Fish Show staged at the California Academy of Sciences September 7 through 9, according to Ray Cabrera, Show Chairman.

The fish were judged on Sunday morning, September 8, by a trio of tropical fish experts from Southern California: Gene Wolfsheimer, Dr. Sylvan Cohen and Richard Haas. The results of their judging:

Best in Show	Art Almquist
Voted Best	Mr. and Mrs. Ralph White
Class 2-A and 2-B	
Special Award Class	Tom Edwards
Tank 32 - 2-A	Tom Edwards
Tank 33 - 2-B	Tom Edwards
Class 3 Tank #	
First Place - 97	Art Almquist
Second Place - 94	Gary Meltzer
Third Place - 83	Art Almquist
Special Award - 6	Billie Helling
Special Award - 77	Larry Camarena
Special Award - 73	Ray Cabrera
Class 4-A	
First Place - 45	Dennis O'Rourke
Second Place - 34	Dennis O'Rourke
Third Place - 35	Dennis O'Rourke
Special Award - 87	Dennis O'Rourke
Special Award - 37	Dennis O'Rourke
Class 4-B	
First Place - 51	Dennis O'Rourke
Second Place - 50	Dennis O'Rourke
Third Place - 46	Dennis O'Rourke
Special Award - 48	Dennis O'Rourke
Special Award - 11	Mr. and Mrs. George Mitchell
Class 5	
First Place - 93	Karl Switak
Second Place - 96	George Silva
Third Place - 92	Karl Switak
Special Award - 95	George Silva
Class 6-A	
First Place - 71	John Gabri
Second Place - 69	John Gabri
Third Place - 70	John Gabri
Special Award - 72	John Gabri
Class 6-B	
First Place - 16	Mr. and Mrs. George Mitchell
Second Place - 20	Ed Hallenbarter
Third Place - 85	Wayne West
Class 7	
First Place - 27	Ron Deacon
Second Place - 84	Art Almquist
Third Place - 23	George Wong
Class 8-A	
First Place - 64	Dick Law
Second Place - 62	Ed Hallenbarter
Third Place - 78	Dick Law
Class 8-B	
First Place - 63	Ed Hallenbarter
Second Place - 24	George Wong
Third Place - 81	Ed Hallenbarter
Class 8-D	
Special Award - 31	Ed Gural
Class 9	
First Place - 82	Randall West
Second Place - 54	Rodger Shkin
Third Place - 53	Owen Kenny
Class 10	
First Place - 52	Dellbrook Tropicals
Second Place - 25	Sung Lee Aquarium
Class 11	
First Place - 55	Mr. and Mrs. Ralph White
Second Place - 3	Mr. and Mrs. George Mitchell
Third Place - 56	Mr. and Mrs. Ralph White
Special Award - 2	Mr. and Mrs. George Mitchell
Class 12	
First Place - 19	Ed Hallenbarter
Second Place - 5	Mr. and Mrs. George Mitchell
Third Place - 14	John Romero



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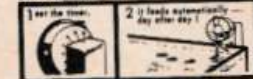
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FOR THE LIVEBEARER enthusiast, who would like a change from guppies, platies and swordtails, there is the interesting half-beak. Few fishes are named more descriptively: its lower jaw is about twice as long as the upper and forms a pointed beak. Its appearance is exotic, therefore it is not surprising that it hails from Indonesia, Malaya and Thailand, where it inhabits brooks, ditches and ponds in company among others of species of *Rasbora* and *Barbus*. *Dermogenys pusillus* is also found in brackish water. The temperature in its habitat is around 72° to 80° F. Most of its relatives are egglayers and live in saltwater. But the freshwater species are livebearers.

Robert J. Wyndham

Upland, California

Half-beaks are streamlined and graceful, but not conspicuously colored. The back is brownish. The silvery gray of its sides changes to opal blue on the belly. When the light is right, the body has a steel-blue to violet iridescence. A small black dot enlivens the dorsal. The back and the anal fin have little red spots. Colors may vary with the location. The males grow to about two inches, the females to a little over three

Photo: A pair of half-beaks, *Dermogenys pusillus*. Male and young specimens to right. Female to left. A Gene Woltsheimer Aquaphoto.

inches. The males are more slender and their coloration is more pronounced.

As the shape of their mouth indicates, they are surface feeders. There they lay in wait for insects and their larvae. Their fondness of mosquito larvae has been useful in the Orient. Whenever an area was plagued by a mosquito population explosion, a shipment of half-beaks was released in the ditches and pools. They leave the surface only in pursuit of food and then reluctantly. Lightening fast, they are hard to catch. They are pretty delicate and even insignificant injuries may become fatal to them.

The way they take food is unusual and quite a sight. The elongated lower jaw is not jointed and therefore not movable. It is used to scoop up the food, then the upper jaw, only half as

near the surface. Green algae and/or tender plants are an essential item in their diet. As they are very scary, a slammed door or anything that produces vibration, causes a panic. Therefore their tank should be roomy and densely planted in spots. Some floating plants add to their comfort. Addition of salt-water is not essential to their wellbeing. The males like to engage in frightening fights, reminiscent in style of betta fights. Beaks wide open and gill covers spread, they seem intent on tearing each other to pieces. Fortunately for all concerned, these are just sham fights. In Thailand these fishes are bred for fighting contests, same as bettas. As the fishes seldom injure each other, the winner is determined by points.

For successful breeding, heavy feeding with a variety of live food is the



long as the lower, does the snapping. They swim towards the food until it is next to their beak, then grab it with a sideways move. If it is too large to consume in one swallow, they keep it for a while between their jaws. They take any live food. Baby brine shrimp are a favorite of half-beaks of all ages. In a pinch they can be taught to take commercial food, preferably floating types. They appreciate the courtesy of having their meals served on a broad plant leaf

ticket. Temperatures should be kept within a range of 75° to 82° F. Higher temperatures should be avoided. This writer has seen half-beaks die within a matter of seconds at a temperature of 88° F. When you see the male excitedly cruising underneath his lady love, repeatedly touching her vent area with his beak, mating may take place any
(Continued on Page 464)

Photo: Female half-beak giving birth to young. R. Gene Wolfshelmer Aquaphoto.

American Guppy News

Editor:

I am forwarding to your attention a copy of a protest letter which I have on this date sent to Larry Konig regarding the proposed AGR constitution. Since in the past I have seen some comment regarding other matters pertaining to AGR in your columns, I thought you may like to print my commentary and the unusual document which apparently originated in the mid-west, by way of giving your readers a fair comparison.

The answer you will find is lengthy. This is only because I must first establish my right to speak against the proposed constitution, then criticize the provisions which would create a group controlled by a privileged few, and then recommend some plan to correct the abuses contained therein.

You have my permission to reprint the protest in part or total. I am sure that if you give it a fair appraisal you will decide it is worthy of consideration for publication in *The Journal*.

I respectfully request that any comment any of your readers may have should be directed to my attention at the address below so that I may photostat these comments for the enlightenment of all who are concerned.

Yours truly,
STEVE STEWART
 459 E. 52nd St.
 Brooklyn 3, N.Y.

Mr. Lawrence Konig
 Executive Secretary
 American Guppy Association
 824 Rebecca Place
 Elizabeth, New Jersey

Dear Larry:

It is with the fondest of regards and the sincerest concern that I am writing this lengthy protest to the

proposed constitution of the American Guppy Association. It is unfortunate that, but for the publication in the July-August issue of "Tropicals," I would not have been aware of this unusual document. I trust the lack of publicity has not in any way restricted the comments—good and bad—that you may have received. I personally feel so strongly about this subject, that in an effort to receive the largest possible reaction to this letter and my feeling of dismay over the undemocratic features of the proposed constitution, I am going to release this letter and its contents to all the national aquarium magazines, so that the membership of the American Guppy Association may have an opportunity of comparing my comments and recommendations with the proposed constitution. This will, I believe, give you and the constitutional committee a more reliable basis from which to gauge the individual AGR members' sentiments.

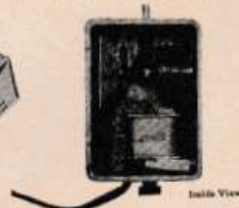
From the inception of the AGR, you know I have been personally concerned with the eventual formulation of our organization. At the first organizational meeting held some years ago, during the convention of a large international federation, we viewed a situation where some 40 odd proxy votes in the hands of one delegate, nominated, elected and controlled all officers and policy making decisions of that organization. We were quick in disassociating ourselves from any direct control by such an organization, and even spent some time fostering the impression that we would be essentially democratic in our future plans for the American Guppy Association.

The members of my AGR chapter (The Brooklyn Aquarium Society AGR) hold the distinction of being among the first fifty members enrolled in the AGR and our chapter is the oldest in continuous service to the cause of the AGR as I organized the parent society, so did I also organize the AGR chapter. We

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have supported all your aspirations throughout these early years of our national society. I do now so support you in your desire to formally organize the AGH.

For many years I have personally asked you to sponsor a national formulation of a firm method of electing directors and officers representing the membership of the AGH. Your request for patience has always outweighed my impatience with the delay in taking this step. In the past you have asked me to serve as an honorary director of AGH, but I have always declined as I felt that a nationally recognized personality would be more impressive and aid in enlisting prospective membership.

Today, at this crucial point in the formulation of our organization, I feel it would be shirking my duty, and a great loss to see the fruition of all our efforts fail because I did not speak of my convictions. Someone must protest the flagrant flaws in this proposed constitution, and as you know I have a reputation of speaking my mind on such matters when they concern the rights of the individual.

First, let me state that, there is nothing personal or vindictive in my objections. As you know, I have no knowledge as to the names or reputations of the persons who formulated this document. I therefore cannot be accused of bias towards any individual or group.

Proposed Constitution

1. The proposed constitution calls for the election of 12 national directors; 4 to serve 5 years; 4 to serve 4 years; and 4 to serve 2 years **INITIALLY**. Thereafter each newly elected director will serve **6 years**.

My Objection

A term of office for four to six years is excessive and can only lead to perpetuating "a Mutual Admiration Group" within AGH. I have heard too many comments in the past years about the publicity that has been received by some individuals in our AGH, which has resulted in financial gain for them rather than further the aims of the society, to like this long tenure of office. I propose 3-year terms to be held nationally every three years.

Proposed Constitution

2. The directors are to select by a vote a nominating committee who will select from a list of nominees a panel of candidates to be elected by the member societies. These candidates shall be selected at a general business meeting each even year and shall consist of not more than twelve or less than six nominees. The first general election to be held in **1965**.

My Objection

I maintain that a nominating committee at a convention in one region of the country is not qualified to know all the prospective candidates available throughout the country. Furthermore, they will not be inclined to look with equal favor on a candidate from a remote region as opposed to a native son candidate. Let us not fall into the trap which is restricting the growth of all organizations in our hobby and which can be attributed to the concentration of control by a regional group to the detriment of fair representation for all areas of the country.

My Objection

Why wait until 1965 to elect permanent directors? The American Killifish Association has just completed their elections **after only one year of organization**. Certainly with the hundreds of members we have we can find sufficient talent to organize by early 1964.

Proposed Constitution

3. Each affiliated Guppy Society shall have the right to cast one vote for one or more candidates; but no more than one vote for each candidate. "Any group of five or more individuals may organize into a guppy society and vote."

My Objection

This is really making a joke of our national heritage of proportional representation. Any five individuals under this plan have a voice equal to a group of 30, 50 or 100 members in an organized society. Have we so little faith in our constitutional

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form of democracy under which we elect our state senators by **proportional representation BY REGION**, that we should give up this right in our organization by accepting an unfair proportionment. Since it is unfair to criticize a sincere effort on the part of others unless one has an alternate plan, here then is my sincere recommendations for organizing the American Guppy Association.

RECOMMENDATIONS

1. The American Guppy Association shall be organized into eight (8) regional districts. (A breakdown is attached of possible regions.)
2. Each region shall elect two (2) national directors to a national board of directors for a total of sixteen (16) to serve three years. The regions shall further elect a regional secretary to aid the national Executive Secretary to disseminate information and help run the regional elections every three years.
3. The Executive Director (for the present the Executive Secretary) and the national directors shall every three years select five members of each region to act as a nominating committee for that region.
 - A. All recognized societies of the region shall have the right to propose one or more members for the position of directors or regional secretary for that region. Each proposed recommendation shall be accompanied by a one-page resumé of the qualifications of the candidate. The information shall be forwarded to the current regional secretary.
 - B. The nominating committee of each region shall select six to twelve candidates for the election of directors and six candidates for the election of secretary of the region. Only those candidates who bear the certification of a recognized AGA group shall be eligible for consideration.
 - C. The nominating committee shall notify each candidate of his or her selection and shall give each candidate the opportunity of forwarding, **at their own expense**, as many copies of the one-page resumé of qualifications as is necessary to forward to every member in good standing in the region a copy of the resúmes of all candidates along with a printed ballot for each member of the region to **personally vote for their representative**.
 - D. The nominating committee shall tabulate the results and forward the number of votes each and every candidate received to the national secretary for publication. Any individual nominated shall have the right to survey the ballots under supervision of the nominating committee before the results are certified.
 - E. The executive director shall announce the two candidates having the largest number of votes as national directors representing their regions on the national board of directors. Should they for any reason be unable to fulfill their duties, the executive secretary shall be directed to offer the directorship for that region to the candidate next on the list from that region having the greatest number of votes. These certified lists shall be made available to all societies and candidates participating in the election upon written request from the regional secretaries.
 - F. The regional secretaries shall be elected and replaced in the same manner and all rules and methods established for the regional directors shall also apply to them.

ADVANTAGES OF THESE RECOMMENDATIONS

1. Direct proportional representation by the membership as a whole in selecting the best members in each region on the basis of merit rather than physical ability to travel to a convention. A known individual from each region will have a personal knowledge of the sentiments and conditions prevailing in their region. The individual member it is hoped will have a greater opportunity of visiting or meeting a national director and groups will have a greater confidence in airing their views to a local representative rather than someone thousands of miles away.

2. A reserve list of all candidates from each district will prevent any favoritism and fractionalism among directors. No one will be able to point the finger of accusation at a future national director or executive secretary.
3. Improved communications since the executive secretary and the national president will only contact eight regional secretaries to get dissemination of information to the directors of the member societies. This releases the executive secretary from the impossible task of trying to write every member or charter as all members and chapters will be expected to forward all suggestions and requests through these regional secretaries.
4. It will be easier to call regional conventions and more feasible to get large representations at regional conventions. Where a member has only to travel hundreds of miles instead of thousands of miles he can take a greater personal interest in the associations activities.
5. An organized regional operation will give the AGA an opportunity to hold a national convention in a different area of the country each year. This will result in stimulating interest in our national society.
6. This plan will place the control of the American Guppy Association in the hands of the membership. Directors will be expected to convey the wishes of the membership. It is hoped that this rule of the majority will infuse new interest in the association by the membership in the affairs of the national society rather than permit control by a minority of self-perpetuating officers.

This plan is put forward with the sincere desire to promote the welfare of our American Guppy Association and to assist in creating interest on the part of every member or group in furthering the aims and growth of our organization.

Yours truly,
Steve Stewart

REGIONAL RECOMMENDATIONS FOR THE AMERICAN GUPPY ASSOCIATION

- Northeast Region, Region 1—(5) States: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.
- Eastcentral Region, Region 2—(5) States: New York, New Jersey, Pennsylvania, Maryland, Delaware, West Virginia.
- Southeastern Region, Region 3—(7) States: Virginia, Tennessee, North Carolina, South Carolina, Georgia, Alabama, Florida.
- Southcentral Region, Region 4—(6) States: Louisiana, Mississippi, Arkansas, Oklahoma, Texas, New Mexico.
- Central U.S.A. Region, Region 5—(6) States: Missouri, Kansas, Colorado, Nebraska, Iowa, Wyoming.
- Northcentral Region, Region 6—(7) States: Minnesota, Wisconsin, Illinois, Indiana, Ohio, Kentucky, Michigan.
- Northwest Region, Region 7—(7) States: North Dakota, South Dakota, Montana, Idaho, Oregon, Washington, Alaska.
- Southwest Region, Region 8—(5) States: California, Nevada, Utah, Arizona, Hawaii.

(Ed. Note: Write for your free copy of the proposed constitution of the A.G.A. Address your request to: Lawrence Konig, Exec. Secretary, A.G.A., 824 Rebecca Place, Elizabeth, N.J.)

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IF ONLY the outside covering of the meal worm were considerably softer and the length of the "worm" were about one-half what it is, what a wonderful fish food it would make! But in spite of the fact that it is not ideal, perhaps we should be grateful for little things. It still is a pretty good food.

Among the tropical species, the strong-jawed fishes such as the cichlids seem to eat them with relish. In fact most of the larger fish seem to enjoy eating them. Small turtles, lizards, snakes, toads, frogs, and salamanders which are kept as pets can survive with nothing else in their dish for extremely long periods of time. One of the things that make the larvae so desirable for use as an animal food is the fact that they are reared so easily.

The author has used containers from the size of pint mason jars to those as large as fifty-five gallon drums. The size of the container is really determined by the number of larvae one wishes to breed. If one has use for many larvae, use a larger container. Commercially the larvae are reared in trays arranged with screens on top. All that is necessary is to fill these containers about half full with ordinary bran, the breakfast cereal is perfectly satisfactory, and in this a few pieces of fruit are added such as apples or a carrot. These additional items are replaced as they become thoroughly dried out or are eaten by the larvae. It seems that the higher the temperature the better the insects thrive. In fact eighty-five degrees Fahrenheit is about optimum.

Quite often cornmeal is substituted for the bran or in many cases the entire dried ear of corn is added to the culture. The larvae can be removed quite easily by means of a rather coarse screen. Crumpled newspapers or paper toweling can be added to the contain-

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Meal- Worms

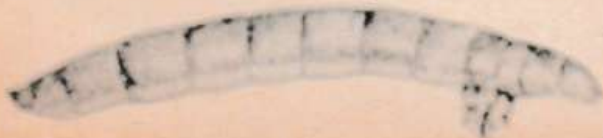
Charles O. Masters

Wahending, Ohio

ers in order to give the larvae a surface upon which to crawl. After the culture is set up all that is necessary is to add some of the larvae which can be secured from pet shops or laboratory supply houses. In some places where large-scale culturing is carried out, a chicken mash is used as a food and this is kept in wooden boxes with screens on top. Moist burlap bags are placed over the screens to supply the necessary moisture. It must be remembered, however, that the material cannot be allowed to become too moist or else mold or fermentation of the food may result which could wipe out the entire culture. The author has found it advantageous to substitute various other plant materials as they become abundant in the markets throughout the year. The larvae seem to do much better with a greater variety of food materials available.

Meal worms are rather well known all over the world for several reasons, probably mostly because they are a very serious pest of cereals and cereal products in granaries, mills, and storehouses everywhere and another reason is because the larvae are reared in such large numbers to serve as a food item for birds

AQUARIUM JOURNAL



and other confined animals. Strangely enough, the larvae have almost become one of the important commercial products and is considered as having quite some commercial value. Ships carrying various items of commerce have distributed the larvae to about every part of the world.

Another interesting feature of the meal worm is that it is used so extensively in biological laboratories primarily for the study of insect physiology. Almost as much is known about the physiology of this insect as is known about the genetics of the ordinary fruit-fly. Such fields of study include that of insect blood-gases, digestive hormones, and responses to changes in humidity. This great amount of investigation which has been done



on the meal worm has resulted in a very increased knowledge of animal physiology which has been put to a very practical use.

Taxonomically the insect belongs to the order of beetles, Coleoptera, family, Tenebrionidae which is derived from the Latin meaning one who loves darkness which obviously refers to the nocturnal and secluded habits of the insect. The adults are either black or dark brown in color and rather flattened, varying in length from one-half inch to three-quarters inch. The larvae are inclined to be rather long, cylindrical, and quite slender. They closely resemble

the common wire worms though technically they are different inasmuch as the last segment of the abdomen is not quite as elaborately formed. The pupae are white and rather soft soon after forming but turn yellowish-brown as they become older.

Again it must be repeated that one of their good points, as far as possible use as a living fish-food is concerned, is their very high reproductive rate. As many as six hundred to a thousand eggs are laid at a time. From six-months to a year is required to complete the typical life cycle so in order to have a good crop of the larvae it is necessary to start well in advance of the time of their intended need.

Some of the other names given the beetle are the darkling ground beetle, tenebrionid beetle, and the pincate beetle.

The author remembers having a rather large number of fence lizards or pine lizards, *Sceloporus undulatus*, inhabiting his barn for several years in Coshocton County, Ohio which was rather unusual because the lizard is more commonly found in places considerably farther south of the county. However, in this particular case, the lizards were there feeding very heavily on the large number of meal worms which were in the cracks of the flooring. In turn, the larvae were feeding on the dried corn which was kept in the barn throughout the entire year.

In conclusion, even though the meal worm may not be ideal as a fish food, a culture or two should be kept on hand at all times in order to vary the diet of aquarium fish. ◀

Sketches: (On both pages) *Tenebrio molitor* Linnaeus, as drawn by J. K. Mullick, Calcutta, India.

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Half-Beak

(Continued from Page 457)

moment. Lightning fast they dash through the water, beaks wide open. Sometimes they lock jaws. At the crucial moment, the male sidles up to the female, his anal fin curved around her vent.

They give birth to up to forty babies at a time, usually at night. Unless the aquarist separates the brood early in the morning, the parents have them for

breakfast and I mean all of them. The needle-like babies are born without beaks and measure at birth three-eighths of an inch. This writer has seen a report, that a female produced three broods after being exposed to a male's company once only. The incubation period may vary from three to eight weeks. Half-beaks may give birth every three to four weeks.

The babies swim to the surface right after birth. They are easy to raise: baby brine shrimp, mashed tubifex, screened

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daphnia and microworms are relished. They will also take floating commercial food. The one difficulty in raising them is that they always stay at the surface, so that much of the food sinks before they can grab it. For their proper development it may be a good idea to keep them in a tank with a water level of only one-half inch. Of course, such a small amount of water pollutes rapidly, so every day at least part of it has to be replaced. Also, under these circumstances the temperature would fluctuate too much. Immersed heaters are of no use here. The best way to control the water temperature is to control the temperature of the air above it by installing

a bulb and reflector. To avoid temperatures that are too high during daytime, ventilation can be provided by pushing the tank cover a little aside as needed. Another and simpler method would be to transfer the babies to a large plastic food container and let it float in a tank.

The babies grow fast and the long snout starts to develop when four weeks old. When about eight weeks old, the boys can be told from the girls. They are fully developed at the age of two months. It has been reported that very young females and fishes that did not have access to algae, gave birth to premature and non-visible babies. ◀

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LETTERS

*From: Mr. Sam Hinton,
 Museum Curator
 Scripps Institution of Oceanography
 La Jolla, California*

Although Diane Schofield's article in the August 1963 issue of the *Aquarium Journal* ("Scripps Institution of Oceanography") was most enjoyable, it contains a rather important error. I am NOT the Curator of the Aquarium; that job is held by Mr. C. Carr Tuthill. There has been misunderstanding about our administrative set-up on a number of occasions, and I'd appreciate very much your publishing of the following:

The T. Wayland Vaughan Aquarium-Museum is a division of the Scripps Institution of Oceanography, which in turn is part of the University of California, San Diego, at La Jolla, California. Dr. Richard H. Rosenblatt, in addition to his major duties on the Institution's research staff, is Director of the Aquarium-Museum. (He has been at the University of British for the past year, and his place was taken by Dr. Garth I. Murphy.) Mr. C. Carr Tuthill is Curator of the Aquarium, while Sam Hinton is Curator of the Museum, Director of Educational Services, and Manager of the Aquarium Bookshop.

This dual curatorship does not, of course, indicate exclusive and independent operation; the total staff of eight people pitches in at whatever job arises. But my relations to the Aquarium (except for my being in charge of the labeling) is purely advisory and cooperative.

Another error (of far less magnitude) was the listing of my school as the University of Texas. It was, alas, Texas A. and M. College! Even in 1936 there was a great staff of folklore schol-

ars at the University of Texas, headed by Dr. J. Frank Dobie. — *Sam Hinton, Museum Curator, Scripps Institution of Oceanography, La Jolla, California.*

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*From: J. W. Bristow
Amarillo, Texas*

Must I separate egg layers (black tetras, white clouds) after each spawn and start all over conditioning etc. each time I want to breed them?

REPLY: For most egg layers one should separate adults according to sex, condition them for a week or two, place them together in a special spawning aquarium, remove them after egg laying, and rear the young without the presence of the adults which would eat the young (and eggs). However, well fed white clouds do not eat young or eggs to any great degree and I have raised thousands of these in the past by placing pairs in ten to thirty gallon tanks and removing most of the young, via a cup, to rearing tanks as the young appeared.

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*From: Karel L. Koke
Santa Clara, California*

About five years ago I decided to take up tropical fish as a hobby. I started by reading all kinds of books and publications on the subject. Finally, I bought a 15-gallon aquarium, some fish, some plants and a few of the recommended gadgets. At first, everything went well, but then the plants started dying. Cryptocoryne leaves started melting, all other plants seemed to disappear after a few weeks. Oddly enough, the fish were doing fine. Light exposure had been all-right too. I then started reading more on the subject, and asked practically every dealer in Northern California what my trouble might have been. I tried a different set-up in the aquarium, this time using garden soil underneath the sand. Several weeks later I was changing everything again and again and again. I tried aged water, fresh

water, filtration, no filtration, aeration, no aeration, softwater gadgets, more light, less light, green light, fluorescent light, more fish, less fish, you name it, I tried it, but always the same result: the plants dwindled away after a few weeks. Then one day, I read about aeration with carbon dioxide. I decided once more to be optimistic and start again. This time I used gravel with sand from a dry creek, along with several rocks from the same creek. I put it all in a new 50 gallon tank, after the gravel-sand mixture had been carefully washed. I let the water stand for about a week, because it was very dirty. The water was a mixture of very hard and very soft water. After a week I put in a new supply of plants and about five neons. Then I waited. Three weeks later the plants were showing the familiar signs again, they were dying. Needless to say, I was more than disgusted. I decided to do one more thing, which I had heard just once, but never read anywhere. I changed approximately 1/3 of the water and replaced it with a fresh mixture of

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.

hard and soft water. Three days later every single plant showed new leaves, and three weeks later, I could hardly believe my own eyes, because the plants looked great. I had discontinued carbon dioxide aeration before, because I had acquired another 30 neons, swordtails and zebras, and I figured that there would be more than enough carbon dioxide. Since that first day that I decided to change part of the water every two weeks, the plants have thrived like never before. The Amazon swordplant develops two new leaves every ten to seventeen days, and is now so huge that it dwarfs the aquarium. My five *Cryptocoryne Griffithii* are doing fine also, as are the *cordata*, of which I have four. I also have one *Echinodorus* with big leaves that gets bigger all the time. Every month I have to thin them out. I am careful not to allow any snails

Feeding Frozen Foods

When you feed your fish frozen foods, you probably cut a piece of your supply and throw it in your tank. However, this method has its faults. What usually happens is you either feed the fish too much or too little. What I do is take the whole thing and dip it in the tank, let some melt off, and wait till the fish finish it. Then I repeat this till I am sure my fish have had enough and re-freeze it. — *Benny Beiler, Madison, Wisconsin.*

How to Separate Plants From Plant-eating Fishes

As a separator between hungry plant-eating fishes, such as *Metynnis*, and delicate plants, place a few plants behind a plexiglass or glass divider. Put your fishes in front where they cannot get at the plants. In this way you will be able to have a planted tank and still keep *Metynnis*! — *Chris Kirwan, Springfield, Virginia.*

in the tank, because I don't like to see holes in the plant leaves. Three 25 watt incandescent bulbs burn daily for 12 hours, controlled by an automatic timer. I do apply aeration almost constantly. The outside filter is seldom used, yet the water is crystal clear. Temperature is kept at around 80 degree Fahrenheit, while the pH is always neutral, about 6.5, although I seldom check it. After all the years of frustrated experiments I must conclude that the water changes were responsible for the improvement in the plant growth. At least, I now have an aquarium which is a pleasure to look at. I personally do not care at all for aquaria with very expensive fishes and hardly any plant growth. With the right kind of background and scenery, inexpensive fish can look like high priced jewelry. I am presently installing my latest "baby" a tank, measuring 12 feet long 20 inches high, and 24 inches deep, approximately 275 gallons or close to 3000 pounds. It will be built into the wall of my living room, and will be serviced in the adjoining room. We are presently working on the special supports. If you ever hear of a frustrated aquarist who has problems with plants, not with fish, please tell them about my experience. ◀

CLUB NEWS

Florida Marine Aquarium Society

The F.M.A.S. in Miami is the oldest and largest aquarium society in south Florida. Membership stands at 85. Monthly meetings are held at Simpson Garden Center, 55 S.W. 17th Road. Programs slated towards marine interests. Activities include field collecting trips to the Bahamas and Florida Keys excursions. Their Eighth Annual Show was held Sept. 14 and 15, according to Joseph E. Turner, Jr.