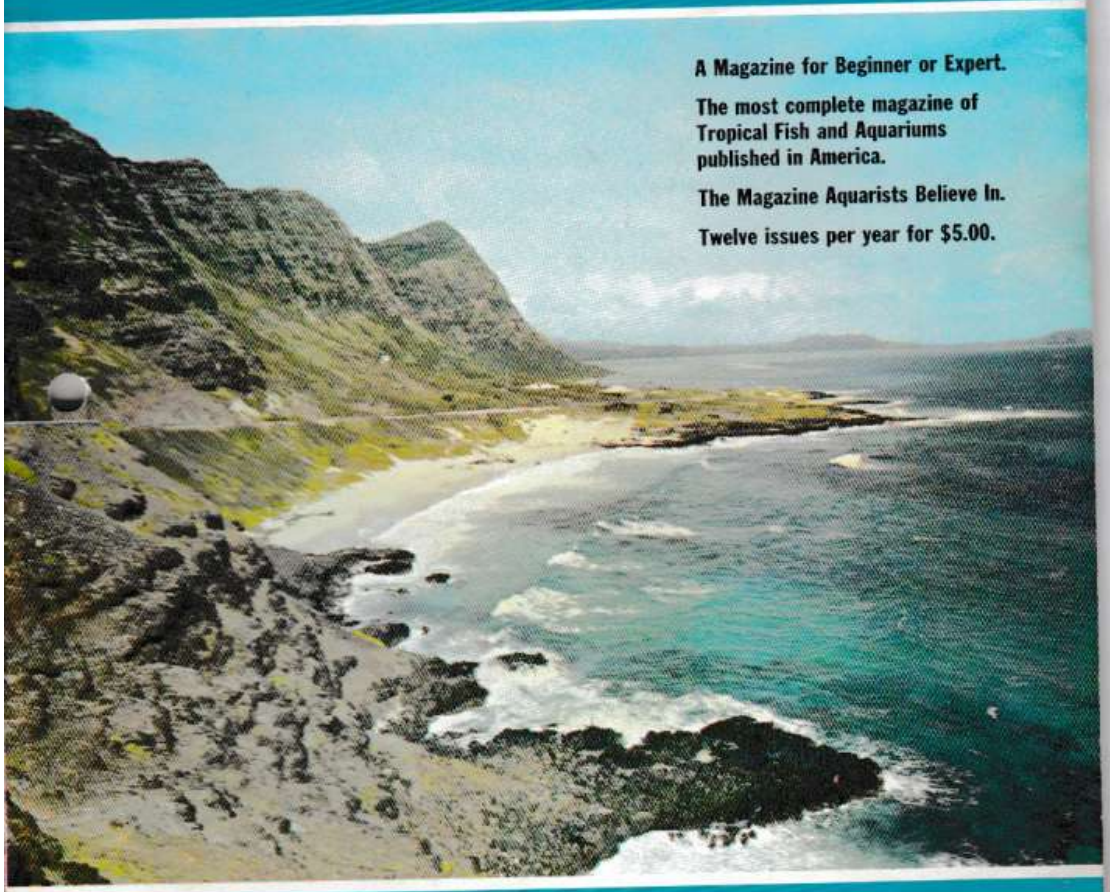
9 / 1964 • 50 CENTS

aquarium journal



A Magazine for Beginner or Expert.

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Volume XXXV
Number 9
September 1964

aquarium journal

The Magazine Aquarists Believe In

Published by the
San Francisco Aquarium
Society, Inc.

Published monthly by San Francisco Aquarium Society, Inc., Steinhart Aquarium, 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.

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

contents

cover photograph

Spectacular locale of the new "Sea Life" oceanarium in Hawaii. The photograph was submitted by Theodore D. Kurrus, a member of the editorial staff of the Honolulu Star-Bulletin. *It was taken by a staff photographer of that newspaper, Jack Titchen.*

Our author asked: "Can you tell me where the Humuhumunukunukuapuaas are located?"

"Sea Life" Hawaii

Diane Schofield
Burbank, California

A QUESTION like this in any other aquarium in the world might elicit a double take, a scowl and a terse angry reply, "What do you think ya are, a wise guy or somethin'?" But if the same question were asked in the new Sea Life Park in Hawaii, the courteous answer would be, "Why yes, just take that path to your right. You'll see them in the Coral Lagoon Building."

This structure is only part of a complex of yet another porpoise emporium of the world. Sometimes it seems as though in my travels that the country will, in short order, be completely populated by such establishments. 1964, alone, saw the opening of three new

Photo: Aerial shot of Makapuu Point, Waimanalo, Oahu, Hawaii, showing the beautiful setting of the Sea Life oceanarium in the foreground.

Photo: Model of the whaling ship **Essex**, out of Nantucket. Visitors view the spinning porpoises from the deck of the **Essex** in Whaler's Cove at Sea Life.

Photo: A section of Sea Life called "The Leeward Islands." This is where such winged animals as the goony bird dwell.

Photo: Shot across "The Leeward Islands" section showing the entrance buildings, gift shop and restaurant. All photos by author unless otherwise credited.

ones – Seaworld in San Diego, California; Aquatarium in St. Petersburg, Florida; and now Sea Life in Hawaii. Each has to have a new gimmick that is essentially its own and admittedly there are only a certain amount of things that you can do with performing porpoises and sealife in general.

Since I have been on the rounds of most of these types of "wet theatres," seeing them both from the public's eye view, as well as "backstage," I was most curious to see what Hawaii could do with an attraction of this kind. Like a fond parent, I was sure that my "pet" would come up with something completely magnificent, because, you see, I view Hawaii through prejudiced colored glasses. I've been there so often that it's like coming home when I go there and when people ask me, "Where would you like to settle down out of all the 70 odd countries that you've visited?", the only logical answer to that is, "Hawaii, of course!" Technically I'm a *malihini* (newcomer to the islands) but beneath my muu-muu beats the heart of a true *kamaaina* (old timer).

My prejudice was not mis-directed, Sea Life was everything that I had expected of it. To reach it from Honolulu and/or Waikiki Beach one has to go around a very famous landmark named in keeping with Hawaiian marine life. This is Leahi, which means, "forehead of the Ahi fish," the Ahi being the yellow-fin tuna. If this doesn't seem to be too familiar or too famous to you, update it a little and use its modern name – Diamond Head.

Drive around this volcanic crater to the windward side of Oahu. There, resting on a rugged curve of lush green velvet at the base of a 1,000 foot emerald upholstered cliff is Sea Life.

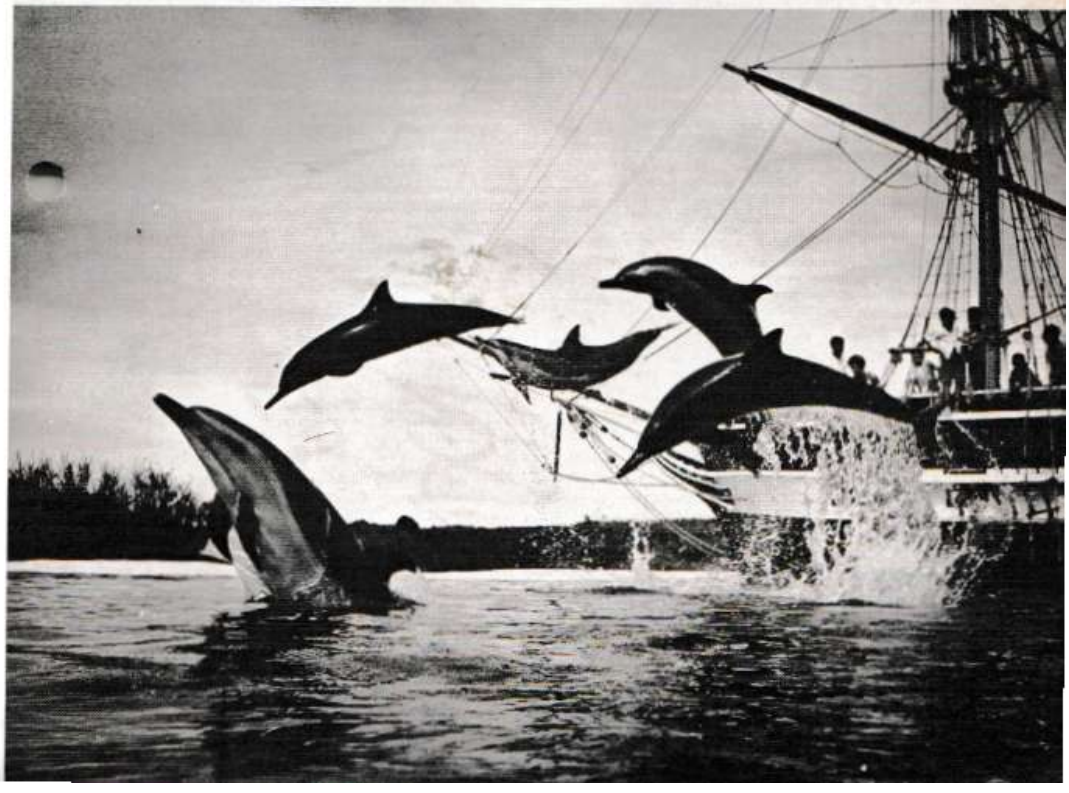
When I was in Hilo, Hawaii, a reporter from the Honolulu Star was kind

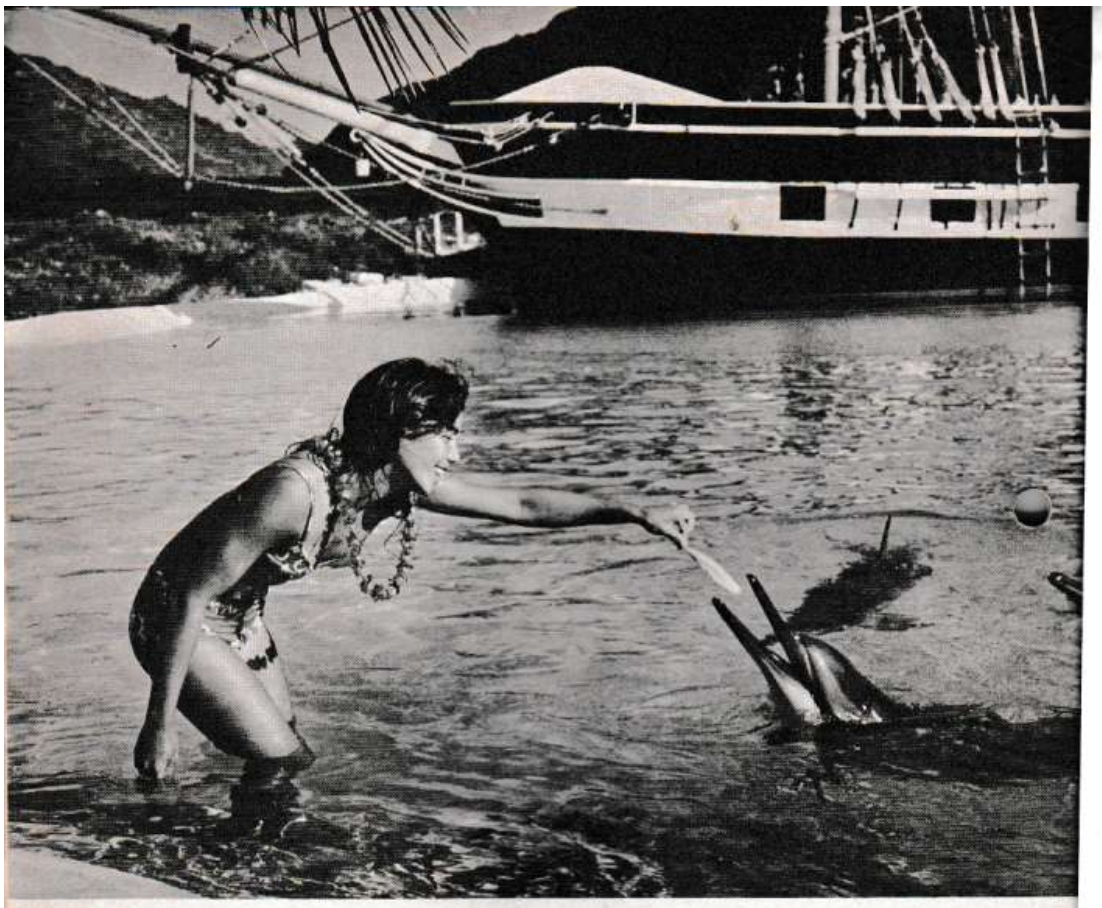
enough to think that my views on the subject of Sea Life would be worth printing. After chatting about it for a while, I compared it to an art museum in New York and the results came out quoting me as calling the Coral Lagoon Building, "The Guggenheim Museum of the water." This is quite descriptive – confusingly so, however, to Hawaiians or anybody for that matter, who has never visited the Guggenheim Museum, where one takes an elevator to the top and then walks down a spiral ramp, viewing the treasures on display as one slowly descends.

Barring an elevator, the Coral Lagoon building is very similar to the Guggenheim in its exhibit of marine "treasures." One enters at the top of the building, since it is on a hill, and walks with deliberate and fascinated slowness down a ramp that spirals around the tank. With each step one can see life in a typical tropical reef at different levels – from the top feeders that like a shallower depth down 16 feet to the various vertebrates and invertebrates that prefer bottom living. Yes, it is to this 300,000 gallon Coral Lagoon building that you would be directed if you expressed a desire to see the Humuhumunukunukuapuaas. There they are, two species of them – *Balistapus aculeatus* and *Balistapus rectangulus*. In either case their name is roughly translated to mean "a fish which carries a needle and has a snout or grunts like a pig." The "needle," of course, is their dorsal spine. Needless to say, Hawaiian is a very descriptive language.

Taylor Pryor, director and president of Sea Life, says that in the future there is going to be an underwater television network, which will monitor the lives and activities of the inhabitants that live offshore Makapuu. This is just offshore from Sea Life. Obviously there is soon

Photo: Spinning porpoises doing their bit in front of the model whaling ship **Essex** at Whaler's Cove. Photo by Thomas Moorish.





going to be nothing left that is sacred to these damp little neighbors of this porpoise emporium. All of their lives are going to be, if not an open book, at least an open T.V. screen.

Tourists and old-timers are going to soon jump right in and join the fishes with a sheet of steel between, of course, a sheet of steel belonging to a small submarine. This will have portholes to give passengers a diver's eye view of the sea beneath.

But what's different with porpoises? Seaquarium in Florida has its albino, Seaworld in San Diego has them swimming through a three-act play, never muffing a "line." Marineland of the Pacific in Palos Verdes, California has basketball playing porpoises, which also sing "How Dry I Am," plus leaping through flaming hoops with nary a hot flipper. How do they come by all of these fascinating endeavors? When they are caught in the open sea their talents are limited mainly to being able to eat fish and swimming. So the powers that be in Sea Life had an idea. Why not show the people just how porpoises are trained to do their human-like endeavors in the first place?

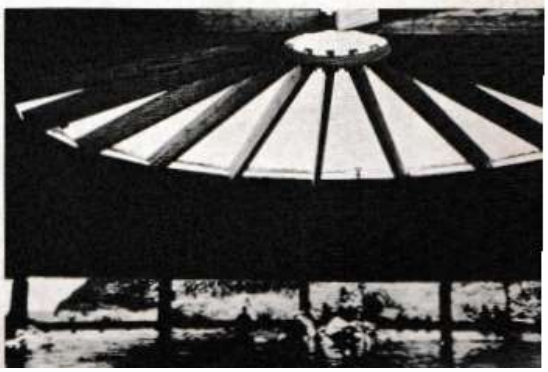
And this is what the show in the Glass Porpoise Theater is – a first-hand opportunity to observe just how porpoises

Photo: Puanani, the mermaid, who swims with the porpoises and the false killer whale in Whaler's Cove. Photo by Thomas Moorish.

are trained. In the center of the theater is the 12-foot deep 50-foot wide all-glass wall tank which permits viewing from both below and above the water at the same time. One sits on the step-like seats that surround it. There is a large strange-looking box filled with electronic apparatus at the far side. From this device there are microphones both above and underneath the surface of the water. Soon the porpoises learn that at a certain sound they are to do a specific thing. If this act is accomplished they are awarded a fish. No trick, no fish.

Occasionally a porpoise will figure that it "did too do the trick" well enough and when there is no fish forthcoming, they do a peculiar motion called "lob-tailing." This might be comparable to a "boo" of annoyance in a human. The porpoise comes to the surface and smacks its tail sharply several times on the surface of the water.

Occasionally a porpoise will be allowed to get away with something and be similar to a "teacher's pet." A pair of porpoises, male and female, were being trained to go in and out of a series of hoops. One, thinking that he had it made and nobody would notice him, just followed his mate like a reflection in a mirror, but *below* the hoops. The other went in and out like a good girl should. He could not seem to understand how anyone caught onto his devious device and would lob-tail madly when the female was given the fish and he was given none. However, it seemed to be a better trick than the way he was supposed to do it in the first place, so now he is allowed to wiggle in and out of non-existent hoops, while his girl friend does it the correct way just above him.



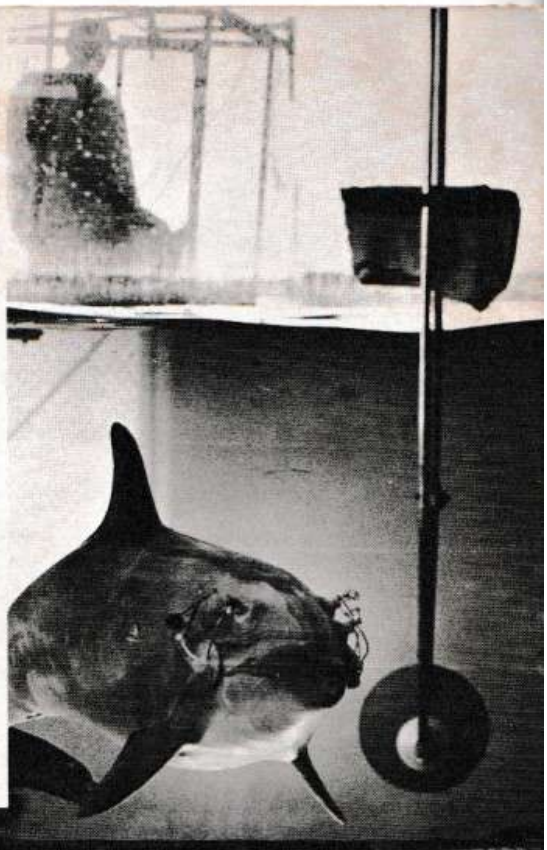
Photos: **(Top)** Entrance buildings and restaurant. **(2nd)** Coral Lagoon building. **(3rd)** Glass porpoise theater from the outside. **(Bottom)** Coral Lagoon building inside, showing how natural light is used without allowing too much tropical sun to creep in. Shots by the author.

Photos: (Above) The interior of the Coral Lagoon building, showing a part of the windows on the spiral ramp outside the tank. **(Top, next page):** Porpoise with suction cups over its eyes. It can determine the exact position and even the size of a fish thrown into the tank, even while "blindfolded." **(Bottom, next page):** The interior of the glass Porpoise Theater, showing training exercises of the porpoises using electronic equipment.

Currently Sea Life is working with three kinds of porpoises – the Pacific Bottlenose, the small spotted porpoises that only weigh 150 pounds and the unusual Hawaiian Spinning Porpoises. These are so-called because they breech (leap) out of the water and twirl before coming down once again. This is only the second place in the world that one will find them in captivity. The other place is also in Hawaii – the Waikiki Aquarium.

The Pacific Bottlenoses and the Spotted Porpoises are trained in the Glass Porpoise Theater and the "twirlers" work outside in Whaler's Cove. This is an artificial cove that contains an authentically scaled 5/8 model of the old whaling ship, the "Essex." This is the ship that was sunk off Hawaiian reefs by a sperm whale and was thought to be the original inspiration for "Moby Dick."

(Continued on Page 429)



"Sea Life"

(Continued from Page 427)

There are glass portholes cut into this ship beneath the surface and from its deck a trainer puts the spinners through their paces. These porpoises whirl away. This consists of standing up on their tails in the water and wiggling – to steel guitars.

There is another animal that shares this Whaler's Cove with the spinning porpoises and that is an animal that thinks he is a porpoise. Nobody has told him differently as yet. That is Kaena, the False Killer Whale *(Pseudorca crassidens.)* His name doesn't mean that he is flying under false colors, but to differentiate him from the true killer whale *(Orcinus orca)*, which is rather an unpleasant mammal and is not given to trying to do the hula along with spinning porpoises as Kaena does. Nobody taught him to do this. ◄

Sometimes these molds can't wait before their hosts are deceased before taking over!

Water Mold

PART I

Charles O. Masters
Walhonding, Ohio

IF YOU were to drop a dead housefly on the surface of the water in an aquarium and it was not torn to bits and devoured by the fish, it's quite likely that within a few days the insect would be completely covered with a white or light gray fuzzy material very closely resembling cotton. It's a safe bet too that the covering would be mold and probably of the genus, *Saprolegnia*. An expert with proper texts, a microscope, and some stains could probably verify this.

Water molds, or aquatic Phycomycetes, as they are known collectively, represent a rather primitive group of the world's fungi. Actually though out of a considerably large number of fungi, only a relatively few are found in aquatic environments. However, those which are found in fresh waters come from many different types of habitats both flowing and static. Here they are known to feed on most any sort of organic substance whether it be living or dead.

The bodies of insects and fishes and even some of the plants which are found in water are sometimes completely covered with this living material. It seems

that as saprophytes they apparently find it rather difficult to wait until a plant or animal dies before they begin their work which is the reduction and transformation of dead animals and plants to the basic constituents of which they are composed and at the same time, utilizing the organic matter they are decomposing for their own growth. In this process they work in a manner similar to that of the bacteria.

Strangely enough the water molds are often found growing rather extensively on surface soils which are moist. In this sense, they live an amphibious life. The white filaments of the various water molds are commonly found radiating from the bodies of insects or fish at all times of the year both during the cold weather and the warm weather. The dead bodies or fragments of aquatic organisms are quickly utilized by these fungi as they grow saprophytically which, incidentally, is a word taken from the Greek meaning "rotten."

Under certain conditions *Saprolegnia* which is one of the more common water molds, is found living secondarily parasitically upon fish. The relationship is a rather complicated one. *Saprolegnia* is certainly capable of surviving under a very wide range of chemical and physical conditions. For example, various conditions of light seem to have no effect upon the ability of the mold to thrive. It can be found growing in an extremely well-lighted environment and also in one in which there is total darkness. Temperatures seem to be of minor importance. It seems to show a remarkable tolerance for variations in water pH and the molds are found equally abundant at depths of fifty feet or more as they are in the surface waters.

Water molds are very diverse in kinds representing many genera and species but the two genera which are mostly responsible for infections of common aquarium fishes are the *Saprolegnia* and *Achlya*. Both are of the family Saprolegniaceae, phylum Mycophyta which are made up of the plants lacking chlorophyll, the characteristic green substance.

The free-living water molds all produce swimming flagellated spores or zoospores and on the basis of the flagellations which are the whip-like structures of locomotion, the various kinds of molds are distinguished. These spores are successively produced on the tips of the projecting filaments of mold and at regular intervals when they are mature they

(Continued on Page 446)

★ IDEAS ★
BY HOBBYISTS

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

Filtering Material

One evening while cleaning outside filters I found myself out of filtering wool. Not wanting to leave the filter off overnight I substituted unused, fine textured, artificial sponges cut to fit the filter box. They have proved much more efficient than ordinary filtering material because their extra fine and solid texture allows them to catch very fine particles and they retain their shape. They can be thoroughly washed and used over and over again. After several months of continued use they still show no signs of deterioration. — *Mrs. Kitten Correa, Pacifica, Calif.*

Sterilization of Aquarium Water via Ultra Violet Light

THE AQUARIST is interested in the sterilization of water primarily for two reasons:

1. the prevention of diseases
2. the protection of fish eggs.

To this end, hobbyists have utilized copper or silver salts for the first, and sundry dyes (e.g., acriflavine) for the second. Recently, ozone has been used also. All of these substances are actively bactericidal but they are toxic to most living organisms to a varying degree and can weaken or even kill fishes (or eggs) when present in concentrations greater than the minimum necessary for sterilizing water. Much skill and care is needed when using these materials.

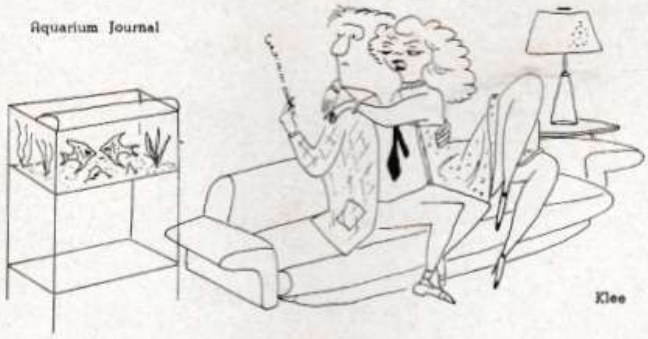
It therefore was thought advisable to look for a sterilizing agent which would be more acceptable and ultraviolet light appeared to offer many advantages. Since the ultraviolet light would not come into direct contact with either fish or eggs, it could do no damage whatsoever. Ultraviolet light is defined as electromagnetic radiations of wavelength between 40 and 4000 Å (an Å is an angstrom, a measurement of wavelength) but only those in the region of 2500 Å are strongly bactericidal. Radiations of less than 2000 Å (particularly those around 1850 Å) can cause the formation of ozone and for aquarium purposes, are not suitable.

Ultraviolet light is readily absorbed by most common materials, ordinary glass and clear plastics, for example, are very opaque to light of this wavelength. Absorption of radiations by air is insignificant. Organic material is highly absorbent but hot water transmits a large proportion of the radiations, the amount falling off with an increase in concentration of suspended materials. Since the average aquarium contains a relatively large quantity of suspended

Albert J. Klee

looks

• Under the Cover Glass



"It's a cinch that there's more action going on in that tank than there is here!"

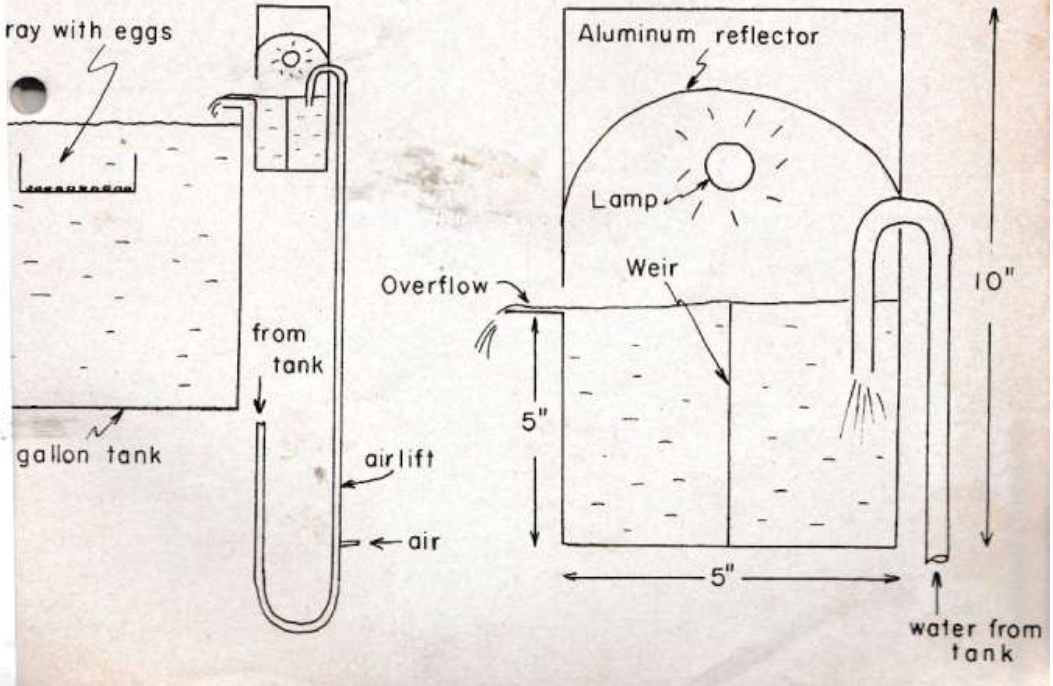
organic material, it was thought that the best preliminary application of ultraviolet light to aquarium water would be in the hatching of fish eggs since clear water could be used with little difficulty.

Although hobbyists are quite familiar with the incandescent-type of ultraviolet bulb found in many refrigerators (used for sterilization of food), this type of bulb is not very satisfactory for use by the aquarist. Fortunately, a strip lamp type of ultraviolet light is available, similar to the ordinary fluorescent type. The lamps used in these investigations were of General Electric manufacture (these had to be ordered through an electrical supplier) numbers G-15, T-8 and G-8 T-5. The former is a medium bipin, 18 inches long, 15 watt lamp; the latter is a miniature bipin, 12 inches long, 8 watt lamp. Both of these lamps are simply mounted into the standard socket, ballast, starter, etc. setup for ordinary 15 or 8 watt fluorescent lamps. The output of both lamps is in the desired 2500 A range. It must be mentioned that certain commercial "blacklight" units emit rays nearer to the 4000 A range and thus, are not suitable for use in sterilization of aquarium water. There is available also a 30 watt GE lamp but this was not used in this investigation. If one has never seen ultraviolet lamps before, they are like fluorescent lamps but the glass (a special kind) is clear. The costs for my lamps ranged for $4 to $7 (depending upon wattage), the standard ballast, starter, etc. setup costing a few dollars more.

The effectiveness of ultraviolet light is dependent mainly upon three factors, viz., the absorption coefficient of the water type itself, the depth of the water and the length of time the water has been exposed to the light. The first two factors are nicely illustrated in Table I.

TABLE I
ABSORPTION AND DEPTH FACTORS

Source of Water	Absorp. coeffi-cient	Percent Transmission at Given Depth		
		3 in.	6 in.	12 in.
distilled	0.24	92	88	78
swimming pool	0.94	78	62	39
Cleveland tap water	1.52	67	46	22
well water	1.72	64	42	18
aquarium water	2.14	58	34	12
Lake Erie	2.53	52	28	8
cistern water	9.05	10	1	0



The depth effect is not linear, i.e., the transmission of ultraviolet light is a losing proposition as we go deeper and deeper (the transmission is actually exponential in nature). Furthermore, Table I shows the effect of increasing amounts of organic materials in the water. In a dirty aquarium, ultraviolet light is stopped very near the surface of the water. There is no great decrease in the transmission factor when common minute impurities of water (e.g., calcium chloride, calcium carbonate, calcium sulfate, magnesium chloride, magnesium carbonate, magnesium sulfate, sodium chloride, sodium carbonate, sodium sulfate, aluminum oxide) are added to distilled water in reasonable quantities, say 1 to 100 ppm. Thus, hardness or softness of the water is not important. A significant exception, however, is iron oxide. Even 1 ppm iron oxide added to distilled water, decreased the transmission faster from a previous 92% to 27% at a depth of five inches. Another example illustrates this dramatically. A steel tack was placed in a pint of water drawn from a cold water tap. After 72 hours, the transmission factor at a five inch depth decreased from 53 to 19%!

The flow of water needed to effect a given percentage kill of common aquarium water bacteria is given in Table II

TABLE II

RATES IN GALLONS PER HOUR FOR INDICATED KILL.. 15-WATT LAMP (8-WATT IN PARENTHESES)

Depth of Water	90% Kill	99% Kill	99.99% Kill
1/4 inch	48 (144)	24 (72)	12 (36)
1/8	24 (72)	12 (36)	6 (18)
1/16 inch	12 (36)	6 (18)	3 (9)

These rates are not unreasonable, especially for the smaller water depths. Therefore, a design was selected to minimize this depth (see figure). A box was constructed, 5" x 10" x 14", housing the ultraviolet lamp (8 watts) and its

Tubifex Worms

I have found the perfect solution for the person who does not want to keep tubifex worms in the refrigerator. Simply put your worms in an inside bottom filter and set it in a bucket of water. Then allow a small stream of air to run through the filter. I have kept worms up to three weeks in this manner with no losses. — *J. Griffin, Russelville, Arkansas.*

CLUB NEWS

Los Angeles County Fair

Bettas and guppies will constitute separate shows and will compete independently this year at the Los Angeles County Fair, according to Jim Lutz, superintendent of the aquarium department. One betta per bowl with a maximum of two bowls per entrant will be allowed in the Betta Show for hobbyists and juniors. Guppies will be entered and shown as a "Guppy Bowl" consisting of one female and one male guppy.

Dates of the County Fair: September 18 to October 4, 1964, at the Fair grounds in Pomona, Calif.

auxiliaries, plus a weir and an overflow lip. This device was hung on a 3-gallon tank using stainless steel straps. The box (especially the lower portion) was made watertight by the use of fiberglass resin. An aluminum reflector was used and the box itself was fitted with a single airlift of the Halvin Filterfast type (rate about 20 gallons per hour) to bring water from the tank to the box. Thus, the water passed over the weir in a thin sheet to get to the overflow lip and out into the aquarium again. No filter was used with this setup. The tank contained a nylon basket (fine mesh) in which killifish eggs *(Pachypanchax playfairii, Aphyosemion multicolor and Aplocheilus panchax)* were placed.

A problem was encountered in that ultraviolet light "leaked" from the box (via the overflow) to the eggs in the tray. This was solved by using a dark cover (plastic) over the 3-gallon tank with a slot for the overflow from the box. However, a later model baffled the overflow so that little light leaked onto the eggs. Another problem was in ventilating the box since the lamp gave off some heat. This was difficult to do without letting some of the light out but again, baffling solved the problem. It is important that neither eggs, fish nor the aquarist himself be exposed to ultraviolet light for any length of time. I do not dwell too much on my designs as to date, they have been quite crude and it is certain that readers will be able to improve upon them considerably.

The results were excellent. Very few eggs fungused. Furthermore, unlike with the use of dyes, the hatching of the eggs when fully developed was not impeded. When the embryo was adjudged dark enough, the egg was removed with an eye dropper to a shallow container holding some old aquarium water. Not being dyed, the eggs hatched nicely. In some cases, "forced hatching" via addition of powdered dry food was necessary. The point is, however, that the ultraviolet radiation kept bacterial damage to a minimum. If an egg fungused, however, the radiation did not kill the fungus although it was noted that it retarded its growth markedly. So that it is not thought that experiments were done with killifishes only (the eggs of

CLUB NEWS

Broward County Aquarium Society

The Aquarium Society of Broward County, Florida, held its first annual installation banquet at the Sunrise Country Club in Fort Lauderdale on July 18, 1964. Officers elected for the coming year include: Tina Mann, president; Dean Younger, vice president; Shirley Link, corresponding secretary; Dorothea Ogden, recording secretary. Following dinner, Frank Roberts of Miami spoke to 50 members present. ◄

which I happened to have on hand in quantity), the basket was removed and a pair of zebra danios *(Danio rerio)* was spawned in the tank. None of the eggs fungused.

A very similar unit was constructed, this time using the 15 watt lamp plus two airlifts. This unit (rather bulky) was hung on an 8-gallon aquarium in which dwarf cichlids *(Apistogramma agassizi)* were spawning. Actually, the unit was "on stream" two weeks before the eggs were laid. After the eggs were deposited (on slate), the parents were removed. Unlike the 3-gallon tank, this aquarium had independent filtration which was left on until the tails of the fry were out, at which time also the lamp was turned off. Again, bacterial damage was minor.

It remains to be seen how effective the use of ultraviolet light would be in preventing diseases and I rather imagine that this would be difficult to prove anyway. However, its efficacy and usefulness in the hatching of fish eggs is amply demonstrated and should prove an interesting project for aquarists who like to experiment. ◄

★ IDEAS ★
BY HOBBYISTS

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

Vat for Brine Shrimp

I have plans for a vat in which to hatch brine shrimp. In order to make it you need: Marine Plywood, 1 pint Weldwood Resorcinal glue and any good epoxy paint with which to paint the inside. The amount of plywood depends upon the size you wish to make the vat. I made mine twenty-four inches long, eighteen inches wide and seven inches deep. This gives about a thirteen gallon capacity. Yours, however, can be any size you wish. Don't make it too deep. To assemble, first glue sides together following instructions on glue can. The next day glue bottom on and after bottom dries paint the inside using the epoxy paint. Let cure five to seven days. Then test to see if it is watertight. I find this vat very good for my purposes and I hope it may help some other hobbyists too. — *Leo Penta, Brooklyn, New York* ◄

CLUB NEWS

San Francisco Aquarium Society, Inc.

The next regular meeting of the S.F.A.S. will be Thursday September 3, 1964, Steinhart Aquarium, California Academy of Sciences at 8:00 p.m., according to Robert P. Dempster, president.

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

Fish of the Month for the September meeting: (1) Anabantids, other than gouramies and *Betta splendens*, (2) catfish, except *Corydoras*, (3) pencil fish *(Nannostomus, Anostomus, Poecilobrycon)*, according to Charles P. Bange, Chairman.

Members are urged to make use of the Society library, open one-half hour before meetings, Ray Cabrera, Librarian, announced.

• • •

Exotic Fish Society of Hartford

The E. F. S. of H. will be hosts to the Northeast Council meeting on Sept. 27, 1964, at the Shuttle Inn, Kensington, Conn., according to Dorothea J. Alberti, Assistant Secretary.

FINNY FOLKS

By Diane Schofield

IF THE Suncoast Aquarium Society of St. Petersburg, Florida had a coat of arms, their motto could be the "original" saying, "Where there's a will, there's a way." This society, with not much in their kitty, wished to have some

posters made for display in their local pet shops. They needed to inform the populace of their existence. A school teacher member volunteered to get the children in her class to make some posters for them, as a drawing lesson. The children were furnished with the covers of the various aquarium society exchange bulletins to use as models. The results were surprisingly good for the efforts of 11 year old children and furnished the club with more interesting posters than they could perhaps have had made professionally. In an appropriate spot on each one, the society affixed one of their printed cards which gives the place and time of their meetings and extends an invitation to all to attend.

When Doug Bliss, the co-chairman of their bulletin, "Aqua Notes," sent representative copies of these posters to me, I was delighted to see a "take off" from the current cover of my own baby, "Fin Fun." Any of the aquarium societies who might find themselves poor in pocket and in need of advertising media, could well take a leaf out of the notebook of the Suncoast Aquarium Society.

• • •

When I write the name of Douglas Bliss I should feel some pangs of guilt because I have hoarded a secret through all of these years that perhaps I provided the last feather that broke the dromedary's back where Doug was concerned. He was the Executive Editor of a wonderful tropical fish magazine, ten years or more ago, that was called, "The Tropical Fish Magazine," published by the Pioneer Valley Aquarium Society in Springfield, Mass. It was no mere aquarium society bulletin, but more of a real magazine of 60 plus pages into which all of the societies were welcome to put their contributions. I wrote my first column for that magazine and after it had run only a few times, the whole magazine folded. No offense, Doug, I didn't mean it. Honest! [*Editor's note: We're getting scared!*]

In the intervening years, Doug and his wife have followed the sun down south to Florida and his peppery com-

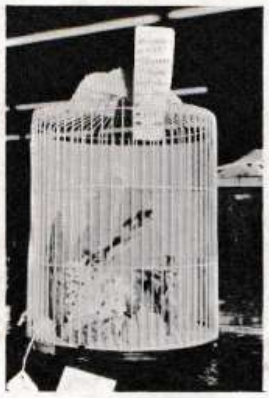
Photos: (Top) Imposing display of trophies at the Modesto show. **(Below)** Jim Porter, member of the Modesto show committee. All photos by author.

ments in the Suncoast Aquarium Society's "Aqua Notes" delight the soul. Any clubs wishing to exchange with them will find them at P.O. Box 12879, St. Petersburg 33, Florida.

Incidentally, Douglas Bliss and Col. Harry MacDougall, whose write-up appeared in this column in the July issue, have recently started another club in Orlando, Florida. The first meeting alone brought out 40 people interested in learning more about fishes.

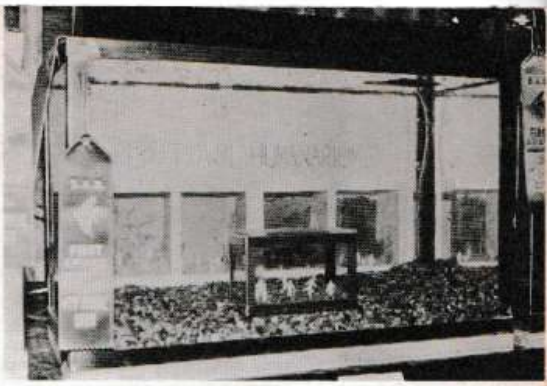
• • •

Reluctantly leaving the balmy warmth of Florida and moving up north, we find yet another dedicated editor of aquarium literature. I hesitate to call a man "sweet" and yet what other tag could I possibly hang onto such a one as Thomas Kelly of the Southwest Aquarists Club of Chicago, Illinois? Tom is truly one of the gentle men of the



hobby, using this term in its old-fashioned separated original version. This, I discovered when I met him during the advent of the 1963 TIFAS convention in Milwaukee.

For 14 years, Tom has been pursuing the hobby in various ways after his oldest daughter won a goldfish at a carnival. Breathes there an aquarist who lives in ignorance of what a thing like this can lead to? It took him three years



before either aquarium clubs discovered him or he discovered aquarium clubs. He ended up not only joining three but also being on the board of all of them! He was Recording Secretary for the Southwest Aquarists' Club, Vice-president of the Midwest Aquarist and a Board Member of the Chicago Aquarium Society.

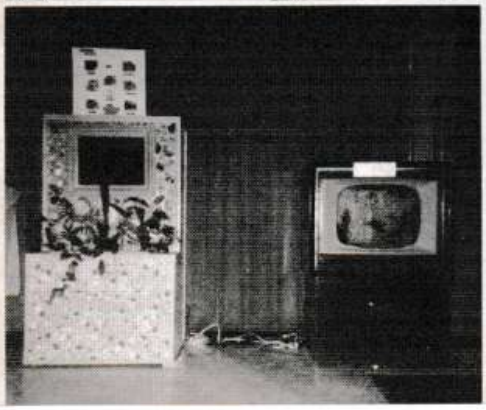
Unfortunately a heart attack in 1958 put up a "Go Slow" sign on his activities and now he has "slowed down" to where he is "only" the editor of "The Southwest Bulletin," the organ of the Southwest Aquarists Club, as well as being in his fourth term as their president! Due to his efforts with this bulletin, Tom was awarded the TIFAS Author of the Year for 1963 for articles that he wrote therein.

• • •

Some states seem to be literally bulging their boundaries with an assortment of aquarium societies and others give the impression that they are suffering from a definite paucity of them. Along with other states in this fix as Nevada, Arizona, New Mexico, North Dakota, etc. is Montana. When a state isn't literally crawling with fish clubs, the ones that are in existence seem to try to make up for the lack by being more enthusiastic and each member appears to shine out with the radiance of ten ordinary members.

(Continued on Page 444)

Photos: (Top) First prize in the novelty tank division at the Modesto show, as described in the column. **(Left)** The "ideal" tank for all disgusted aquarists, also described in text.



Finny Folks

(Continued from Page 441)

Two years ago, the Helena Tropical Fish Society was just a gleam – a gleam in the eyes of two women, a fact which should put a damper on everyone who mutters, "The tropical fish hobby is more for men than women." Mrs. Water LaSalle and Mrs. George Lundgren gathered into their midst 12 members at the launching of this club. Today the membership boasts 50 and Mr. Lundgren ended up being president. This is a warning to all men whose wives get a "let's - start - an - aquarium - club - honey" twinkle in their eyes.

Many clubs wait years before they feel that they have sufficient strength to put on a show of their own, but not the Helena Tropical Fish Society! Last year they went in with the Garden Club and this year their show was in conjunction with the Helena Mineral Society. The combination of fish and minerals provided a most fascinating and unusual exhibition. As a part of this show, they were kind enough to utilize some of my slides. These slides were mounted on a wheel arrangement which turned slowly before a projecting device for constant viewing by the show visitors.

The Helena Tropical Fish Society incidentally isn't left behind when it comes to bulletins either. It puts out an excellent one, as every society that wants to exchange with them at Box 1135, Helena, Montana, will find out.

• • •

A club that is older in years (being 10 years old), but no less active is the Stanislaus Aquarium Society of Modesto, California. As a proof of its exuberance, you have to admit that any club with

Photos: (Top) A fish-hating cat belonging to one of the founders of the Helena Tropical Fish Society, at the home of the Lungrens. Note old treadle sewing machine used as tank base. **(2nd)** Shot of the Helena fish show. **(3rd)** The Helena show was held along with the local mineral society. **(Bottom)** Two novelty tanks from this show.

37 members who put 144 entries into a show is remarkable.

Not only did these entries contain some of the finest fishes of all kinds that I have ever judged, but their show had some of the cleverest tanks I have seen in the "novelty" division. For instance, the one which was the trophy winner was a cleverly set-up entry by Jack Ford. Over a number of small "aquariums" inside the tank that each contained an assortment of miniature plastic human beings was a sign, "Fishtown Humanium." A moonlight (or silver?)

gourami slowly swam by, peering interestedly at these "exhibits." Another was a tank that any discouraged hobbyist could well appreciate – this was a tank filled with "dry" water and over this "ideal tank" display that contained plastic fish and plants was the sign, "No leaks, no algae, no disease, no filters, no heaters, no air."

They also publish a bulletin, "The SAS News," edited by Bud Coe. Mr. Coe also is their president. Their exchange address is 1108 College Ave., Modesto, California.

This show was probably one of the ones which have been the most fun for me to judge. Not a little of this was due to a member of their Show Committee, Jim Porter; their Publicity Chairman, also Alice Porter and their very good friend who loathes and detests everything that swims, Dorothy Mortenson. All board members should have such a fish-hating friend. Dorothy is associated with a publicity firm and through her knowledge in the field does a bangup job with the publicity of the club. I really hated to take the money for judging this show, but if it is any consolation, fellas, would it help to know that I chuckled the whole time I was spending the money?

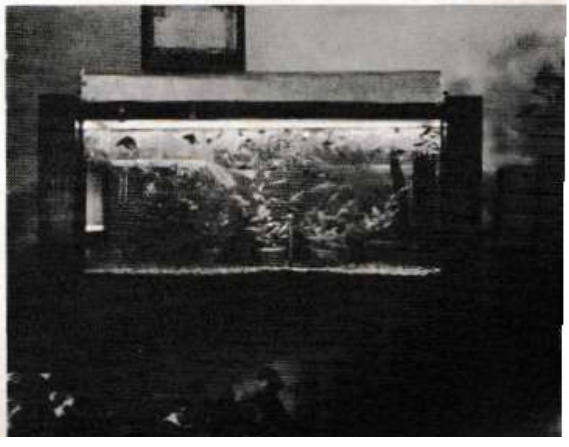
• • •

In the May edition of "Finny Folks," a write-up of Andy Bell of Scotland appeared, together with his picture. When I returned from Hawaii recently a letter was waiting for me at home. A letter from Andy's daughter, Mrs. Helen Cunningham. She informed me of his death on the 11th of June from lung cancer.

Even though he had been incapacitated to a great extent by other illness, Andy was a chipper sort and gave of himself unstintingly for the hobby. He lived on a meager pension which would have long ago discouraged many a less hearty soul from participating in any hobby at all.

I shall miss his letters in which he often called me "lassie" or "luv." Rest well, Andrew Bell, and may God forever hold you in the palm of His hand. ◄

Photos: (Above) Tom Kelly, as photographed by Tom Kelly; **(Below)** Another of the Lungren's tanks, this one a real home-made antique circa 1925.



Water Mold

(Continued from Page 430)

leave the tip and swim about in the water until they come in contact with a good source of food at which time they come to rest, withdraw their flagella, and develop into another typical mold growth. As it is in so many of the plants, long roots are developed and extend in all directions into the material upon which the fungus is growing.

Since man has always utilized fish as an item of food and these molds are so common on fishes, reference has been made to water molds over a good many years. American Indian records often refer to the mold growing on fishes in the streams and it is of interest to note that the Indians realized that there was some relationship existing between the growth of the mold and the condition of the fish. Usually it seemed to slow the fish down or else the mold appeared only after a fish was injured in some way. Historians tell us too that mold on fish had been observed in the rivers of Canada and Siberia by some of the very early explorers.

And, so it is that aquarium fishes are also infected by these growths of mold, which are probably one of the worst pests with which the aquarist has to contend. The slimy covering of a fish's body seems to be able to protect the skin from the initial infection of the mold. It seems that only after some wound occurs to open a passage-way into the flesh does the mold get a hold and immediately starts to grow. After a rather short time conspicuous patches of diseased flesh and mold appear on various parts of the fish's body. The patch gradually increases in area usually keeping a circular shape. After it has grown rather extensively, the inner part sometimes

★ IDEAS ★

BY HOBBYISTS

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

Tubing and Cotton

I have found a way to clean the tubing of an undergravel filter. When the filter tubing gets dirty I take a piece of cotton ball and put it into one end of the tubing. Then I take the smaller piece of tubing and push the cotton through. This I find collects all the dirt. If the tubing has been sitting around for a while soak it in hot water first. — *John Slater, Oakland, California* ◄

rubs off exposing a bare and very sore-looking area. Particles of sand or grit from the tank seem to cause great irritations and pain to the fish which responds by rubbing itself violently against stones or plants or anything to rid itself of whatever is causing such distress. In the very worst cases, bone and gristle are sometimes exposed. Certainly the last stages of this affliction are followed by death.

(To be Continued)

PRODUCT NEWS

U.S.E. Tropical Fish Dept.

Low, low-discount, down - to - earth prices are available at the U.S.E. Tropical Fish Dept. at 2850 Alemany Boulevard, San Francisco, Calif., according to Ernie O'Gaffney, Manager. The U.S.E. Tropical Fish Dept. specializes in both fishes and aquarium supplies, with over 60 varieties of tropical fishes and all types of pumps, filters, tanks and equipment. Samples of the savings include 5-gallon tanks priced at $5.00; 10-gallon at $10.00; 15-gallon at $15.00 and 20-gallon tanks at $18.95. American-made piston pumps priced from $18.00; heaters from $3.00; charcoal, .30c, glass wool, .20c, and colored gravel at .19c lb. Prices apply only to readers of the *Aquarium Journal*, O'Gaffney said. Store hours and telephone numbers are listed in the Dealer's Directory in the *Journal*.

Fungi-Mycin by Lambert-Kay, Inc.

Fungi-Mycin now contains an antibiotic, terramycin, which is fast dissolving and more stable in ordinary tap water. Each package contains 12-20mg tablets of terramycin (240mg per package). Each tablet is sealed in its own plastic envelope. Each envelope is printed with the name of the product, expiration date and batch number. They come as a modern "book-package" design – and when viewed from the side look like books on a shelf, lending themselves to bulk storage and salability. Still .75 cents per package.

• • •

Rila Fresh Water Hardness Test Kit

A new product from Rila Products for the fresh water aquarium . . . a Water Hardness Test Kit which carries the manufacturer's written lifetime guarantee on the stability of all reagents. Packaged completely in plastic for durability and eye-appeal. This test measures total water hardness (calcium and magnesium) accurately and easily and gives a sharp, clear color change at test end point. Also available . . . Rila Watersoft Powder . . . to soften aquarium water to any desired level with accuracy and complete control. For additional information write: Rila Products, Box 114, Teaneck, N.J. 07666. ◄

In many cases it is no more difficult spawning egglayers than it is livebearers

Breeding Egglayers

Michael Pifko
Bronx, New York

MANY NEW-COMERS to the hobby seem to think that it is much more difficult to breed egglayers than it is to breed livebearers. This is true in some cases, but there are several egglayers which will spawn quite readily, even for a beginner. Most beginners keep members of the minnow (including barbs and danios), tetra and anabantid families. In each of these families there is at least one and often more species which the beginner would find relatively easy to spawn. Too often, however, he tries a fish that presents problems, either in getting them to spawn, for example *Hyphessobrycon innesi*, the neon tetra, or in raising the fry, for example *Hyphessobrycon pulchripinnis*, the lemon tetra.

If you would like to try your hand with barbs, I would recommend the Sumatran or tiger barb, *Barbus tetrazona*. It is colorful (basically yellow with four wide black stripes), hardy, and easy to breed. Selecting a pair is quite easy. Males have a slimmer body, a bit more red in the fins, and a red snout. Females are less colorful and the body much more plump. This species has a great appetite and comes into breeding condition easily. To condition a pair, place them in a small tank with a glass divider and feed them heavily on dry and wet foods. I have found that some specimens will not eat heavily if placed in a bare tank, so I add some plants. This gives the fish a feeling of security and they will reach breeding condition much faster.

It is important to separate the pair when conditioning for two reasons. First, if left together they may spawn before you are ready to receive the eggs and raise the fry, and second, fish which can see each other but cannot get to one another will, it seems to me, spawn quicker when placed in the breeding tank. The same day you begin conditioning the fish you should set up the breeding tank. I use a ten-gallon aquarium which has been thoroughly washed with salt. I fill three-quarters of the tank with fresh tap water which has been allowed to stand for at least three days. For a spawning medium I use nylon yarn which has been boiled before being placed into the breeding tank. The yarn is placed at the end of the tank which receives the greatest amount of light. I do not recommend the use of aquatic plants, as these may bring harmful organisms into the tank.

When the fish are ready to breed, that is, when the male is in good color, and the female is very heavy with eggs, they should be placed in the breeding tank. I prefer to place them together late in the evening. This usually results in a spawning the next morning. Sometimes three days may go by before the fish begin to spawn. So if they don't spawn right away, wait a few days, but don't feed the breeders in the meantime, as this will raise the bacteria count.

When spawning, the male chases the female, trying to coax her into the yarn. Usually the female seems reluctant, how-

Photo: (Right) A brace of **Barbus tetrazona** posing for the camera.

ever, she soon responds and follows the male into the yarn. The fish take a side by side position and tremble. At first nothing happens but after a few such efforts the female will release a few eggs which are immediately fertilized by the male. Spawning continues for about three hours after which time about 600 eggs (from a large female) have been released and fertilized.

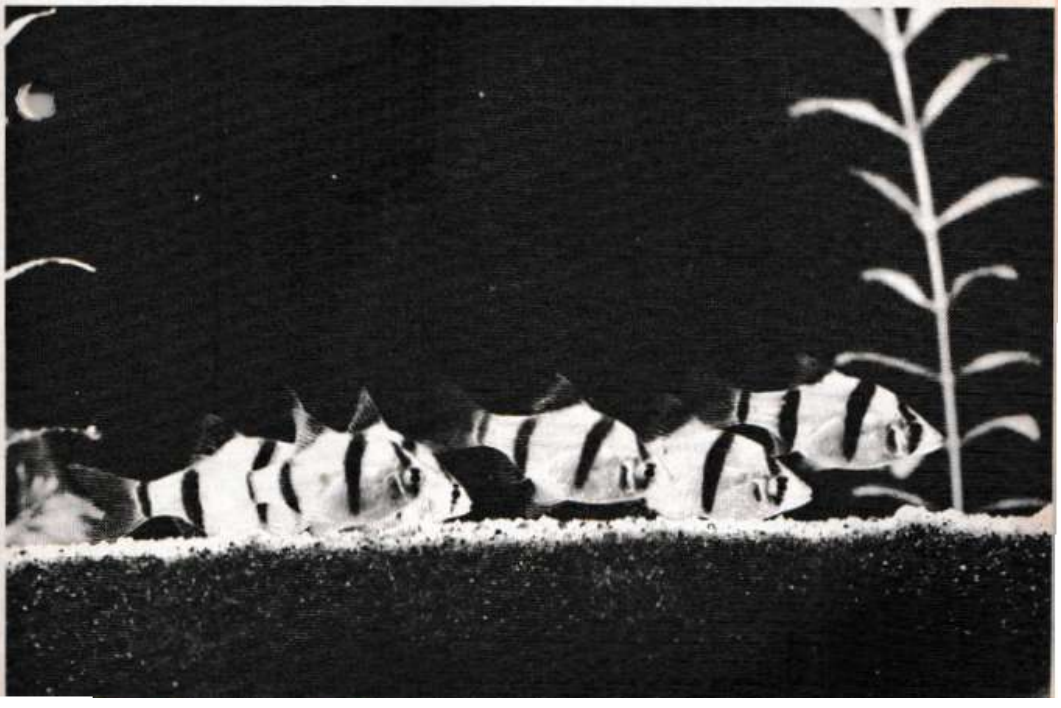
After spawning has been completed the fish lose interest in one another and an egg hunt begins. They may even do a little egg hunting while spawning. Therefore, it is important that you be there when the fish are through, or else the fish will eat all the eggs they can find and a lot of time will have been wasted.

The eggs are opaque and moderately large. They hatch in about 36 hours and the young may be seen clinging to the yarn or sides of the aquarium. In another 36 hours, they will be free swimming, and feeding must begin.

I would like to point out at this time that one reason why I feel that this is a good fish for the beginner to breed is that the fry are quite large compared to most other egg scatterers and therefore are immediately able to handle larger size food than the others. Most egg scatterers require large amounts of infusoria at first. But the Sumatran barb is able to take very fine dry food in place of infusoria. This is good because beginners and even more experienced aquarists often run into trouble when feeding infusoria. You always run the risk of either fouling the water or not feeding enough. However, when feeding fine dry food you must first pre-soak it so it will sink to the bottom of the tank where the young barbs are feeding otherwise it will float where it will only foul the water.

After two days on fine dry food, I begin feeding newly hatched brine shrimp. I also continue feeding the fine dry food, because not all the fry will be able to handle the shrimp that soon. Once all the fry are able to take brine shrimp along with the dry food growth will be rapid. Diet is the key to raising strong, healthy fish.

Many characins (more commonly called tetras) are also far from difficult to breed. However, unlike the barbs, most are a bit more choosy in their water require-



ments. Most prefer a *soft*, light brown water with a pH of 6.2 to 6.8. Brown water is water which has been filtered through peat moss. This is simply done by placing a layer of peat moss over the glass wool in an outside filter. Filtration is stopped when the water is a light brown in color. This will result in water of 6.2 to 6.8 pH, depending upon the length of time the water is allowed to filter and whether the water used is soft or not. Really hard water cannot be made acid this way.

There is one tetra which I believe is considerably easier to spawn than most. This is the red tetra or Von Rio tetra, *Hyphessobrycon flammeus*. This fish is conditioned and bred in the same manner as the previously mentioned Sumatran barb. It does not seem to be necessary to use brown water to induce this little beauty to spawn. [Editor's note: Soft, fresh, and well aerated water is more important for breeding most characins than peat or pH. A pH range of 5.5 to 7.0 is acceptable to most characins.] The eggs of the red tetra are small and you would be amazed at the amount of eggs which such a small fish can produce. Being small the fry must be fed on very fine dry food for a week before they will be able to handle newly hatched brine shrimp. Remember, if you can do it, a good infusoria culture is superior to dry food, but you can raise young fish to brine shrimp eating size with dry food. This is a good fish for an aquarist with limited tank space, as they

are small and large numbers can be raised in a comparatively small tank.

One fish which is usually bred by a beginning aquarist is *Betta splendens*, the Siamese fighting fish and most commonly referred to as the betta. It is easy to breed, as all that is required is a mature male, a well rounded female, a small tank and a temperature of 80° F. The fry are moderately hardy, provided they receive copious quantities of infusoria. Water hardness or pH have little effect. But seldom does the beginning aquarist think ahead. As these fish grow the young males will begin fighting each other and they must be separated. Each fish will require his own quart jar which must be kept warm, 80° F. The problem is how do you keep as many as two hundred jars this warm? Many experienced aquarists have a room set aside just for fish, and they are able to keep the room temperature at 80°. But a beginner does not have the facilities to do this.

If you are interested in breeding one of the other anabantids I would suggest you try the dwarf gourami, *Colisa lalia*. This is a small fish which never exceeds 2½ inches in length, is very peaceful, even a bit shy, and absolutely beautiful. Males have alternating blue and red diagonal stripes on the body, have orange colored ventral fins, and at breeding time the throat takes on a beautiful indigo color. Females have lighter bodies and fins. [Editor's note: I will agree that dwarf gouramis are peaceful, towards other fishes. However, they will often pick on each other. In a tank with many specimens, a regular pecking order is set up. Lowman (fish) gets picked on by all the other specimens, gets no food or rest and finally starves. Then goes the next lowest and so on until only one fish is left. I have had this happen several times.]

Spawning is accomplished in a tank of about ten gallons capacity. The larger the tank the better. A large tank houses

more infusorians and the risk of fouling the tank is reduced. The tank should be bare except for some floating plants such as water sprite and riccia. The female is introduced first and fed for about a week on a variety of foods including such live foods as tubifex worms and daphnia. The temperature should be raised to 80° F. After the female is nice and plump, the male may be introduced.

Soon the male will begin building the bubblenest. The dwarf gourami is unusual among the bubble-nest builders in that it includes bits of plants into its nest. This makes it one of the strongest nests built by a labyrinth fish.

After the nest is completed the male will coax the female under the nest. If she responds, and she usually does, spawning will begin. The female will take a head up position under the nest and the male will then wrap his body around hers. The eggs are forced out and at the same time the male fertilizes them. The eggs are lighter than water and will float up into the nest. Spawning continues for about two hours after which time about three hundred and fifty eggs will have been released and fertilized.

After spawning is completed the male will begin repairing the nest which has been broken up when the fish were spawning. He will also keep the female as far away from the nest as possible. While not quite as rough towards his mate as other anabantids, nothing is gained by leaving her there. The male will continue building the nest until the fry hatch which is in about two days. In another two days the fry will be free swimming and the male's job is over. It is best to remove him at this time for many times they loose interest and devour the whole of spawning.

Feeding should now begin with *large amounts* of infusoria. I have found it safer to use infusoria tablets or Liquefry rather than make my own culture. These home-made cultures might bring harmful

organisms into the nursery tank. To a ten-gallon tank I add two infusoria tablets a day for four days after which time the fry are ready for newly hatched brine shrimp.

When the fry are about three weeks of age the tank must be kept tightly covered. The fish will now begin to surface for air. The air they breathe should not be any colder than the water they swim in; so be sure to keep the tank covered.

Once through this stage of development the fry should grow quickly and few problems remain. One is to sort the fry as they grow because the larger fry will not allow the smaller ones to get their fare share of food. All anabantid fry grow unequally.

I am sure you will find as I did that raising a successful spawn of egglayers is the greatest joy of the hobby. ◄

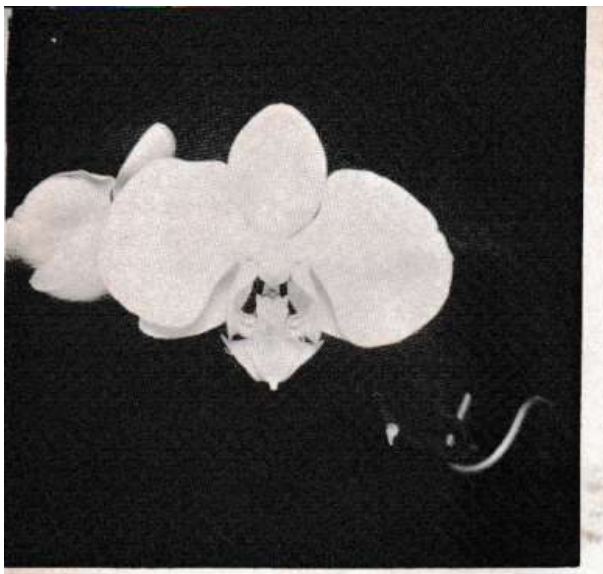
★ IDEAS ★

BY HOBBYISTS

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

Too Many Snails

I am sure that many aquarists are troubled by tremendous numbers of snails. One or two soon multiply into tens and twenties, and before long a tank is overrun with them. A good way to dispose of these snails and also to provide wholesome food for your fish is to pick the snails off the plants, and crush them either between your fingers, or, if they are larger, against the tank glass. As the crushed snails fall to the bottom, the fish will dash, intercept them, and pick out the snail itself and proceed to eat it. I have found my fish enjoy these snails as much, if not better than the other live foods. This is not an original idea but I present it as a useful reminder. — *David Wood, Brooklyn, New York.* ◄



Your fishroom affords a fine opportunity to cultivate unusual and

Exotic Plants

Sylvan Cohen, M.D.
Los Angeles, California

AQUARISTS who are also interested in raising various types of plants may be overlooking an opportunity to take advantage of a favorable situation in their fish room. If enough tanks, especially "topless" ones, are kept in a small area which is fairly well confined without too many open windows or doors, the humidity may be raised sufficiently to permit the cultivation of many varieties of exotic plants in the area around the fish tanks. If enough windows are present in the room, the natural light may be sufficient also, without the necessity of supplementary artificial light.

About a year and a half ago I decided to take advantage of the favorable conditions in my fish room and started to gather a small collection of plants, mainly orchids and a few bromeliads. The collection has now grown to include about forty orchids of various species and hybrids, six bromeliads, and an *Anthurium*. My fish room has a northern exposure with only a single window and the natural light is not sufficient alone to raise most of the plants. I have been supplementing the window light with the new special fluorescent bulbs designed for plant-raising and have been pleased with the results. In the darkest corner of the room, behind a rack of fish tanks, an insignificant amount of natural light reaches the plants, and yet a "Cypripedium" orchid purchased a year ago is in bloom now and is bigger and in better condition than when purchased – and without any daylight at all. The only light the plant receives is from two fluorescent bulbs mounted just above it and timed with a timeclock to correspond to the natural day length. Of course, this means that the time-clock must be readjusted frequently throughout the year because of the changing seasons. This is necessary because the blooming time of some orchids depends on the day length, some blooming when days are short, and others in the summer when days are long. Incidentally, using fluorescent light, the blooming time can be artificially altered, but this also can create complications, and I find it easier to simply time the lights with daylight.

Most people have a false idea of the

(Continued on Page 459)

Photo: Phalaenopsis Benito x Barbara Kirch, is the author's notation on slide of this exotic flower. Photo by Dr. Cohen.

Centromochlus has an appropriate name — as black as midnight — on top, that is!

Midnight Catfish

Braz Walker
Waco, Texas

ALTHOUGH popular names are not always appropriate they sometimes sell fishes which otherwise might be slow to move if listed only by their scientific names. Several years ago I received a list which included a "black midnight catfish from Peru." My love for catfishes and my hope for something new overcame my skepticism and some midnight catfishes were ordered. It turned out that the midnight catfish could hardly have been more appropriately named.

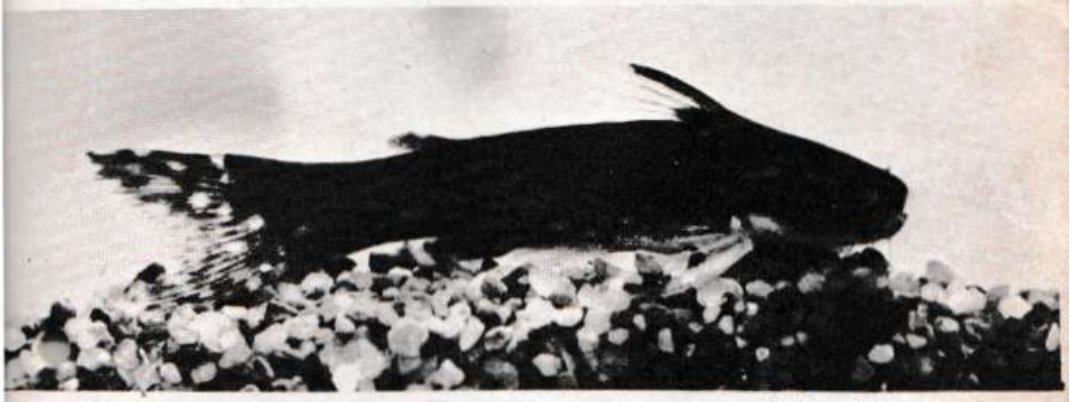


Photo by author

Centromochlus (identification of species is problematical in this genus) is a strikingly black catfish with a white belly. A few pale blotches appear on the black part of the body and the forked caudal fin, which also is black, is adorned with a number of white polka dots. The dorsal fin is forward, near the head, and the adipose fin is small but prominent. There are three pairs of barbels, one maxilary and two mental (on the chin) which are fine and rather difficult to see. When laid back, the maxilary barbels reach midway along the pectoral fin. Both pairs of mental barbels are much shorter.

Fishermen know that being stuck by a catfish spine is often more painful than being pierced by the fin spines of a sunfish or perch. Part of the reason for this is that many catfishes have dorsal and pectoral fin spines with serrated edges, somewhat like the teeth of a saw. When these fin spines penetrate the flesh and are withdrawn the flesh is torn more than if the fin spine had relatively smooth edges as in many other fishes. Foreign matter such as the slime of the fish is often left in the wound causing an infection .There is also a possibility that a gland near the pectoral fin may produce a poison carried into the wound by the spine. The little midnight catfish has fin

PROGRAMS

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

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

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

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

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

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

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

spines which, although short, are sharp and stout and since one edge of the dorsal and both edges of the pectoral spines are serrated this fish should be handled very carefully. When netted these fish will erect their spines and must sometimes be shaken loose because their spines snag on the net.

Centromochlus will thrive on frozen brine shrimp, beef heart, pellet fish food and various types of live foods. As with most catfishes, some form of meat or fish should be supplied at least periodically in order for them to stay in the best of health.

This mild mannered, beautiful little catfish whose length seldom exceeds 2½ or three inches will never become a popular aquarium fish. The midnight catfish is a retiring cave dweller who dislikes light and if he is provided with hiding places, which he should be, will seldom be seen except for a few minutes at feeding time. This is unfortunate for he is one of the more handsome members of the catfish clan and his small size and mild temperament are compatible with most of the tropicals which are readily available. This fish is to be highly recommended, however, for the "odd-ball fancier" who enjoys his fishes over a period of years and who gets as much pleasure from a fish which he has not seen in several days as from one which meets him at the glass each time he walks by. ◄

Salt Water Fishes

By Robert P. L. Straughan

Q. — ***Will lionfish eat chopped shrimp or must they always have life food?***

A. — Lionfish can be trained to eat chopped shrimp or fish by dropping a small chunk right in front of them when they are hungry. They will snap it up at first, thinking it is the usual fish. Eventually they will eat it as normal food, even picking it up off the

bottom. I have a movie about salt water aquariums and in this you can see lionfish competing for chopped shrimp. ◄

Plants

(Continued from Page 456)

temperature requirements of orchids. Actually most orchids do best at temperatures somewhat lower than those of the usual fish room. The orchids which seem to do best in warm fish room surroundings are those in the genera *Phalaenopsis*, and *Paphiopedilum*, the latter usually called *Cypripedium*. These plants will flourish in warm, humid climates and do not require as much light as most of the other orchid genera. (There is also a cool-growing group of true Cypripediums not suitable for the fish room. These are native to the woods in North America). The flowers of both of these groups are remarkably long-lasting and will usually stay on the plant in good condition for up to two months.

The group of plants known as bromeliads are all native to the western hemisphere, in contrast to the orchids which are found in many places on the earth. The bromeliad familiar to most of us is the pineapple. The others are not commercial food plants but have exotic brilliantly colored flowers and frequently will grow alongside orchids, even in their native habitats.

The most recent addition to my fish room is an *Anthurium*, the plant with "heavy," waxy flowers that look like artificial plastic blooms. This is a large plant with stems two feet or more in length and foot-long leaves. The warm, humid, moderately lighted surroundings of the orchids and bromeliads, suit it nicely. There are also many other kinds of *Anthuriums*, most require heat and humidity.

Another group of plants with which I have had no significant personal ex-

perience is the African violets. Two people I know are raising these very successfully under conditions already duplicated in many fish rooms. [*Editor's note: It has been my experience that fish rooms can be too hot and humid for the African violet.*]

No attempt has been made here to present a comprehensive discussion of any of these plants or to give detailed instructions for their care. My intention is to stimulate some interest on the part of fish-keepers, many of whom have a fascination with biology in general. ◄

There's nothing like playing "Ben Casey" to your pet fish — no license required!

"Operation Oscar"

Marguerite Knepper
Englewood, Ohio

FIVE MINUTES TO NINE the wall clock showed, as I settled down in the chair with my unusual pet on my lap. The office girls, looking very humoring at me, said that the doctor had gone out for a few minutes.

To bring everyone up to date on the reason for being in the doctor's office, is a long story which must begin, like always, at the very beginning.

My husband, Norm, and I are the proud owners of two large Oscars, to which, over the period of years, we have become quite attached. One day we noticed that the youngest of the two, had what looked to us as a sort of cyst growing right in behind the pelvic fins at the anus. A couple of days later it had grown quite large and looked more like a part of intestine. He continued

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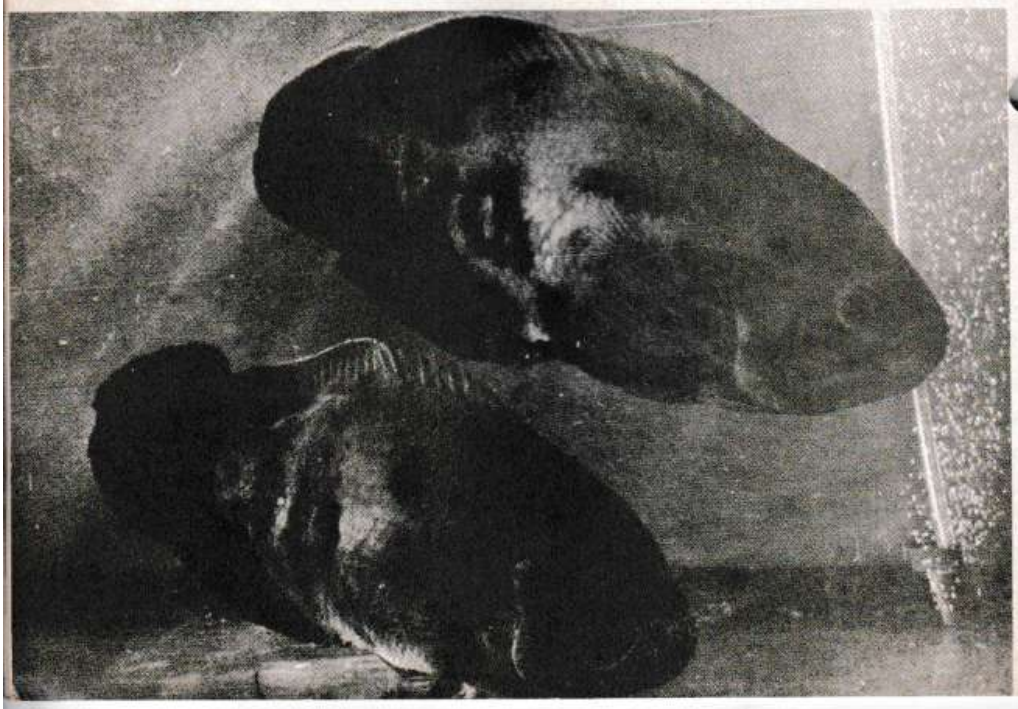

Photo: A couple of Oscars belonging to Gene Wolfsheimer, photographed in a moment of quiet repose by Mr. Wolfsheimer.

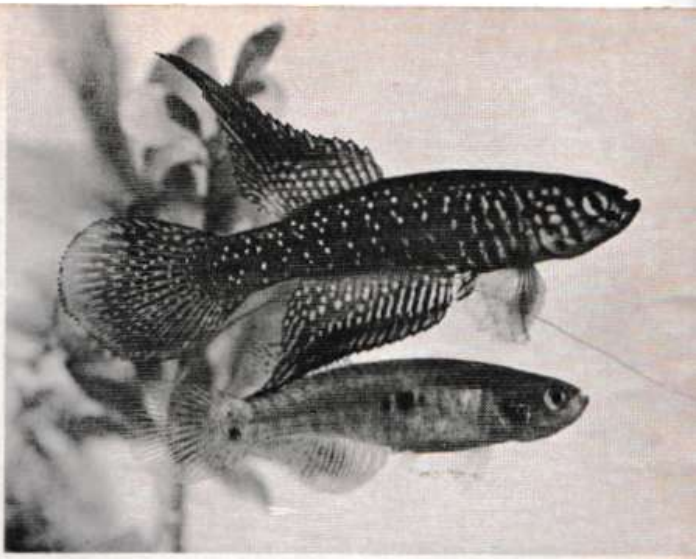

Photo: An adult pair of **Cynolebias whitei.** The upper fish is a male. Photographed by Gene Wolfsheimer.

An interesting fish worth your while —
can be bred without too much difficulty

Cynolebias whitei

PART I

Dorothy O'Quinn
East Point, Georgia

AS WE THINK of beautiful fishes, we are prone to think in terms of brilliant colors, but sometimes a fish comes along that has such a subtle beauty he can have you standing in front of his tank, holding your breath while he poses, broadside, letting his fins ripple in such a way that the light catches rainbow hues hitherto unnoticed. Such a one is *Cynolebias whitei*. This charming little killifish can reward any aquarist with many pleasant hours. (I say "little" with reservations, for the male of this species grows quite large—three inches or more, but it is while he is still young and has a length of only 1½ to 2 inches that he is most beautiful.)

The overall effect of the male of this species is brown with tiny dots sprinkled generously over the body and fins. These dots may look white at first glance, but on closer examination, especially when daylight strikes him from the front of the tank, they turn to green and shine like so many spangles. The dots are spaced down the sides of the body in a symmetrical pattern, but are crowded more closely together on the fins. The anal fin is delicately edged with yellows and blues that mix together and turn to green; often the yellow at the very bottom edge will deepen and become near orange. The caudal fin is also edged around with green. However, all of these beautiful colors will fade away unless the light is right, so correct lighting is important for the best effect.

But, aside from the elusive colors, it is the shape of the comparatively large fins when they are held "full blown" that is most striking. The dorsal and anal fins on the male run to sharp points at the back, while the pectoral and caudal fins are round and fan-shaped.

The pectoral fins are brown and very large, and as he poses for you in the center of the tank he will fan them, alternately, with graceful sweeping motions, as if he were doing a fan dance. The dorsal fin stands high, displaying its many dots, while the anal fin, with its edge of delicate colors, is equally well displayed at all times.

(To be Continued)

Knepper

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to eat but smaller amounts every time. Wednesday we looked again and it was hanging down about two and a half inches. In medical terms, it was similar to a prolapsed rectum and is quite serious in humans, so we supposed it could be, to fishes also. Several calls to different people accomplished nothing, as they had never heard of it.

Thursday came and I couldn't stand it any longer, seeing him in this condition with that piece of intestinal tract all red and swollen. I suggested to Norm that we call the veterinarian. Norm likes the fishes a lot, and often goes along with me in many crazy schemes but THIS was something he just couldn't comprehend. He thought that, by my being a registered nurse, I could do just as well, and it wouldn't cost so much. Well I hope to tell you that people are a lot different than fish to work on, but I thought we would give it a try.

Of course the ordinary person doesn't run around with sutures and needles so I had to call the local hospital supply company and see if they could help me out. Well, in order to get one vial we had to buy a whole jar and I couldn't imagine what I would do with the remaining 35 vials, unless we started up a clinic of our own.

My next call was to the hospital where I work once in awhile, when needed. They put me through to the pharmacy, emergency room and finally to surgery. Everytime explaining what and why I wanted suture material. Once someone misunderstood and thought that I wanted it for myself. (Try talking yourself out of that one!) Finally I was told to come on up to surgery and they would help me out.

On the way back from the hospital with the suture securely held (I sure didn't want to lose it and have to go through all that again), I stopped and bought some mercurochrome, cotton swabs, and some disinfectant. If you plan to do anything, do it in a big way.

At home, once more we prepared the table with several soaked towels, a tray of makeshift instruments, a shot glass with the mercurochrome and cotton swabs, and proceeded to catch our patient. We placed him in a five-gallon container with about a bottle of Metab-o-fix. In a few minutes our unsuspecting patient was out like a light and we were able to lift him out and onto the

wet towels without so much as a wiggle. The intestine was easy to manipulate into place, but holding it there while trying to get the needle through the tough scales was another matter. Another hindrance was my uncontrollable, shaking hands. I had always helped with operations, never done one! Norm wasn't much help either. He was holding the Oscar, in case he would wake up, and he was laughing at me for being nervous.

Once during the surgery Norm lifted the Oscar back into the water to give him a chance to breath. The fish was still out. Finally the last stitch was in place and not too soon for the suture was all gone.

Norm had changed the water in the five-gallon tank and had added a fungus cure remedy to the water for precaution. It didn't take long for the fish to come to but he only lay on the bottom without moving, just rolling his big eyes at us. It was then I really began to worry about whether we had done everything correctly, and what would happen if I had pushed the intestine up the wrong way so there would be no opening. This might sound silly to you, but think of the poor Oscar!

So now you are caught up and that is why I was sitting in the doctor's office with my fish.

The Vet came in and showed me and the fish into the operating room. His wife was there and looked quite bewildered at the idea of operating on a fish. Upon the doctor's examination of the Oscar, I had to tell him our experiences of the previous day. Minutes later, after his laughter had calmed down he asked, "Wouldn't it be cheaper to buy another fish?"

"Well sure it would," I said, "but what value do you give to a stray kitten or dog, which comes to you and later on you spend money to have it wormed, spade, or other medical bills?" This must have gotten to him, and he agreed to proceed. Again the poor Oscar was put to sleep and things were prepared.

It was decided that the sink would do for the operating table, so the doctor's wife caught the Oscar in a towel and operation number two was under way. About halfway through they decided to see if the fish was still alive, so opened the towel. I have never seen anyone or anything so funny. Old Oscar wasn't as much asleep as we had thought, for he gave a leap which sent him flipping into the air and sent the doctor and his wife aghast, about three feet back from the sink. After a frantic chase around the sink, they caught him and finished the surgery. I must say they did a good job too. Oscar looks quite normal again except for the sutures hanging down from the belly.

Today, months later, he is still swimming around and enjoying life in his 60 gallon home. Everyday he eats very

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Letters to The Journal

From: Charles Deutchman
Brooklyn, New York

I can't seem to find the answers to the following problem, so here's hoping you can. I have a 29 gal. tank fully stocked with fish and plastic plants. My filter runs continuously, and I have no losses or diseases. 1. My question is, the water in my tank has been soft and neutral 7.0, for about six months. That is when I started this hobby. But as soon as I changed my filtering material from glass wool and sand to glass wool and charcoal the water became extremely alkaline. I made further tests with my tap water which is soft and neutral 7.0 and the same condition resulted, so now I resorted back to my original filtering material. Why does the charcoal alter my aquarium and tap water to the alkaline? Is it at a disadvantage not to use charcoal? 2. I was advised to syphon a gallon of water a week and replace with aged tap water. Is this necessary?

REPLY: Are you using bone charcoal? If so there would be salts or calcium in it which would probably turn your water somewhat alkaline and hard. Also there may be impurities in it. 2. This is a good practice, if your tap water is suitable for fishes. Let that tap water sit for about 2 weeks before use.

• • •

From Bill Gilliam
Des Moines, Iowa

In my aquarium I have supplied the five basic necessities for tropicals, with the possible exception of live feeding because I have not fed "live" food except the frozen form. The reason for this is because I am confused and bewildered by the more than conflicting information and my own common sense. 1. I am mostly confused about "home hatched" brine shrimp. In the July 1963 issue of your Journal, there is an article titled "Operation Brine Shrimp." As I understood it, he fed immature brine shrimp to his tropicals. If I am wrong, how did he raise the shrimp into maturity? 2. In the 1953 edition of "Exotic Aquarium Fishes" by Innes it states on page 119 on the classification of fish that "all live-bearers do not belong to one family. Witness the live-bearing half-beak, *Dermogenys*." But, in the October 1963 issue of the Aqua Focus the article "fishology in a Nutshell" it states "The gambusinos, live-bearing tooth carps, are the live-bearers of the aquarium." Was this *Dermogenys* misidentified? Which is right? 3. I have in my aquarium *Cory-*

doras hastatus which is sometimes at best at the bottom or may move quickly using power from all but the anal fin. I understand that the type of life that fish leads is paralleled only by *Kryptopterus bicirrhus*. Which uses different fins for propulsion. My question is: does the glass catfish swim or move about more than the C. *hastatus*? 4. Also, is there any dorsal fin on the glass catfish? Is it just a "hair" or what? 5. How long does it take a fish to loose its color when frightened? 6. What conditions are necessary for the healthy existence of a banana plant? ph, DH, light?

REPLY: Newly hatched brine shrimp are excellent food for fishes with the proper sized mouths. This includes most young fishes and the adults of some species. For example I have fed the adults and 15 day old young of the following fishes on nothing but newly hatched brine shrimp for years on end without trouble. Neon and cardinal tetras, glowlight tetras, all species of Nannostomus *and* Poecilobrycon, Rasbora maculata, *white-cloud mountain fish, and several others. Adult shrimp may be purchased in pet stores in some areas and these are an excellent supplemental food; however, in some cases at least certain fishes, example tiger barbs, have become thin and failed when fed only on this food over a period of a year. They recovered under a more varied diet. 2. Innes is quite correct. There are several families of live bearing fishes, most of them not aquarium subjects. Gambusinos are the common aquarium live bearers, family Poeciludae and include guppies, mosquito fishes, platys and swordtails.* Dermogenys *is a halfbeak, some of this family, Hemirhamphidae, are live bearing. A couple of other occasional aquarium fish families are live bearing too but none are important. 3. Several kinds of fishes swim somewhat like* Corydoras hastatus *and in my estimation* Kryptopterus *is not one of them nor is the "type of life" led by* Kryptopterus *like that of* C. hastatus. *I believe that* C. hastatus *is more active, when off the bottom than the glass cat. 4. Yes, that is a dorsal fin that you see on the glass cat. No fish has true hair. Some members of the Siluridae have no dorsal fin. Some of these look much like the glass cat and have been imported. 5. This depends on the kind of fish. Some lose it immediately, some darken their color, some change the intensity of their color slowly. The question cannot be answered without reference to a specific species of fish. 6. The banana plant is a bog plant and will slowly die in the aquarium, at least I have never been able to maintain it very long in one. It needs good, bright light, damp or wet peaty soil and a warm, very humid atmosphere.*

Manufacturers' booths at 1964 Trade Shows

Top Row: Aqua Air Products; Aquariums, Inc.; Longlife Fishfood Products
Middle Row: General Developments Corp.; Sander Ozonizer; Framar Mfg. Co.
Bottom Row: Wawil Fishfoods; Supreme Pumps; Eureka Products Co.

Knepper

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well, and what goes in, comes out again in normal fashion.

In fact our patient is getting along so well, that he is continually picking on his partner who doesn't feel too well since his plunge through the end of his previous tank. This Oscar, we fear, has brain damage, and every once in awhile I can see Norm's worried look and fear that someday I will be wanting to take him to a psychiatrist.

If by now you are thinking that this is all a big joke and it didn't really happen, you may come to our house, and still see the stitches. Or talk to the poor veterinarian who did the job. His fellow associates won't believe him either. Anyway every word is completely true, believe me. It happened the last week of November, 1963. ◄