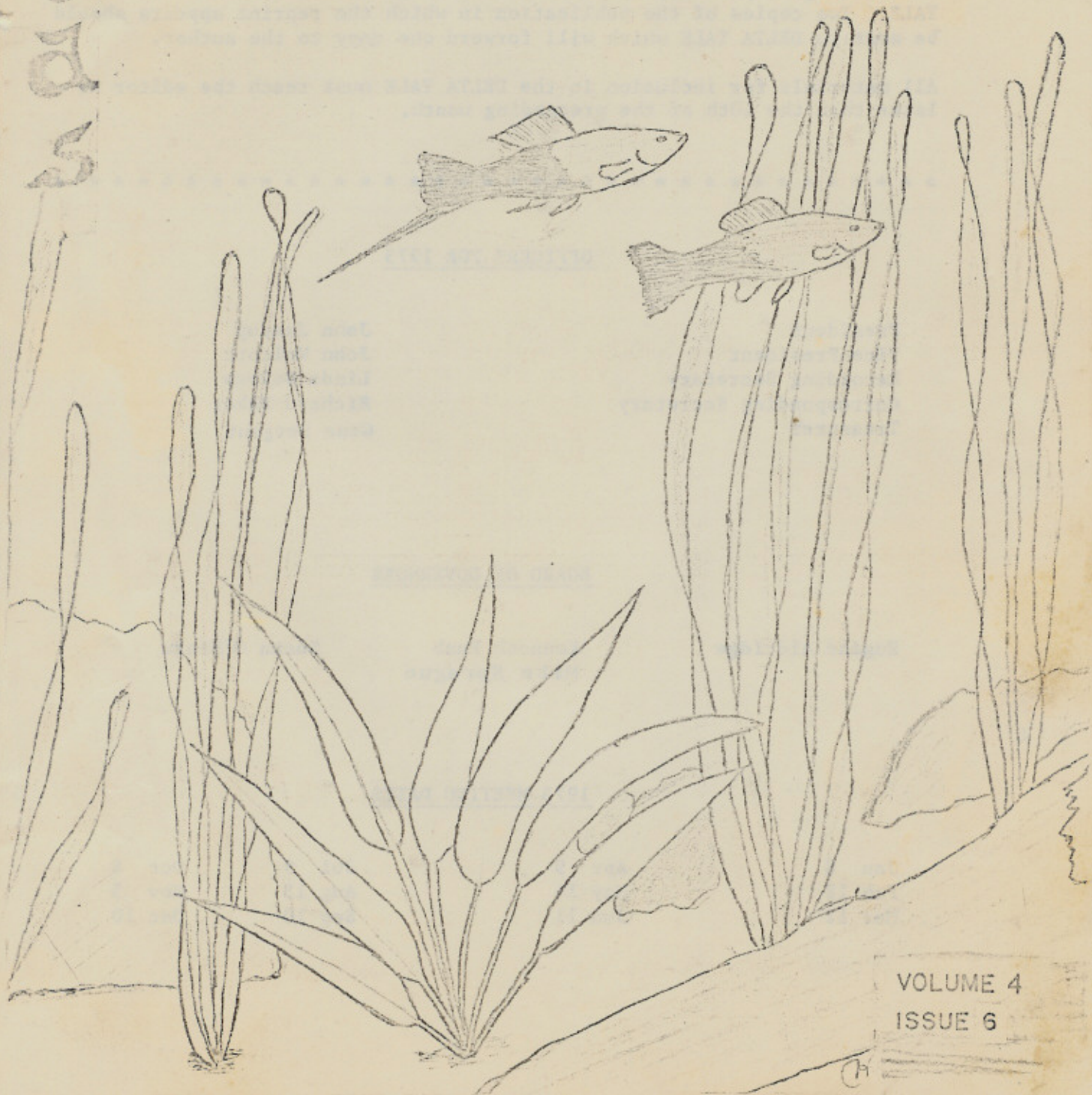


# DELTA TALK

OFFICIAL PUBLICATION OF P.V.A.S.

JUNE 1973

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VOLUME 4  
ISSUE 6

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DELTA TALE is published for the benefit of the Potomac Valley Aquarium Society (formerly the Potomac Valley Guppy Club), a non-profit organization, established in 1960 for the purpose of furthering the aquarium hobby by disseminating information, encouraging friendly competition, soliciting participation in its shows, and promoting good fellowship. Correspondence should be addressed to Secretary, P.V.A.S., P.O. Box 6067, Shirlington Station, Arlington, Virginia, 22206. Original articles and drawings may be reprinted if credit is given the author and DELTA TALE. Two copies of the publication in which the reprint appears should be sent to DELTA TALE which will forward one copy to the author.

All materials for inclusion in the DELTA TALE must reach the editor no later than the 10th of the preceeding month.

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1973 MEETING DATES

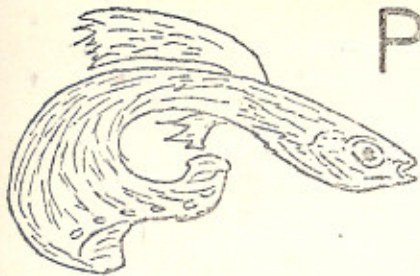
Jan 8	Apr 9	Jul 9	Oct 8
Feb 12	May 14	Aug 13	Nov 5
Mar 12	Jun 11	Sep 10	Dec 10

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COVER

A pair of swordtails drawn by Henry Pettingill.




# POTOMAC VALLEY AQUARIUM SOCIETY

From the President

The Spring Show is now a historical fact. About 5 PM on Sunday I know there were a lot of people happy that it was over. I say "a lot" in the true sense because there was a better turn-out of workers than ever before; they all deserve our thanks. More than anyone John Walcott merits the kudos for his fine organization of the various aspects of the show.

Some things became obvious during the show. We need more racks and more air. We need a little more in the way of restrictions on tank sizes (eg - one corydoras was shown in a two-gallon drum). These things we can easily put into the rules. What we can't administer, however, is what must be called sportsmanship. Again, in this show, as in the past, fish were brought in that either were purchased within days of the competition or come directly out of store tanks. There were at least four such entries this time and while there is no rules against it - why make rules you can't enforce - it tends to defeat the purpose of the show where people want to display their prize home grown fish. Let's hope that the future will see an end to this practice.

  
JOHN E. JESSUP, JR. Ph.D.

### EDITOR'S NOTE

Thanks to Vivian Poulsen's helpful article on water and Ken Raab's informative coverage of killies, we are still battling over .500 on native articles. Ken leaves for military reassignment in June. He has done a lot for our society and we all will miss him. We need more articles by our members. Surely you have a favorite fish, pet theory, or experience in the hobby which would interest or help others! Also let us know if there is a particular subject you would like to learn more about and we will see what we can find.

### SECRETARY'S LETTER

The May 14 meeting was primarily devoted to the final assignation of duties for the weekend show. John Wolcott and his volunteers have spent many long hours organizing this show. Our many thanks of appreciation go to them.

The other topic of interest to all of us in the hobby was the discussion of the merits of our joining SEFAS (the organization of aquarium societies in the southeastern United States) and FAAS (the national federation of aquarium societies). The members present voted to join both and Dick Baker as corresponding secretary will keep us in touch with these two new groups.

Also read at the meeting was "A Warning to All Fish Hobbyists", a report prepared by the South Jersey clubs on HR 6397 which calls for the prohibition of interstate transportation of hobby fish, fish by-products, and food fishes.

A brief question and answer period followed the business meeting. An interesting discussion was centered around the merits of all-glass versus metal frame tanks.

Linda DeRoze  
Recording Secretary

# MEMBERSHIP AND THINGS

I have been thinking about cleaning some tanks and so I decided that it was a good time to write this column. It will be a short one as most of the club activities have centered around the Spring Show. I hope that you were able to attend our show.

The following members are due for renewal of their memberships during June.

Don & Linda DeRoze  
Stephen Ganslen  
Terrance Norman

Henry Pettingill  
Stephen Stomper

As I mentioned before we have a small library of exchange magazines which the club receives each month. I encourage all members to borrow from the library. These publications contain many good articles that are very informative. May I suggest that the guppy fans take a look at the GUPPY ROUNDTABLE and the GUPPY POND. For the cichlidites you will want to review the BUNTBARSCHE BULLETIN. Also worth your time are the TANKQUILIZER and AQUA ANTICS. Everyone will find something interesting, so sign out a couple magazines at the next meeting.

Next month I will try to publish a revised membership list. If you found errors on the last list or your address has changed please let me know before June 15, 1973.

That's it for this month. See you at the June meeting.

Dick Baker

PS: Are you looking for something to do on the weekend? Why not take a trip into Washington, D.C. and visit the National Aquarium. I visited last month and found the exhibits extremely interesting. The National Aquarium is located in the Commerce Building at 14th Street between Constitution Ave. and E Street, N.W. and is open daily from 9 A.M. to 5 P.M.

# kordon

## AQUARIUM CLEANING WONDER MAGNETS.®

Clean the inside of  
the aquarium from  
the outside

A BOON TO  
FISH HOBBYISTS!  
MADE WITH EXTRA-POWER CERAMIC  
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Pads are bonded to magnets. Magnets are fully protected in sturdy plastic case, will never wear out. Use them to hold kitchen reminders on stove, refrigerator, etc. A double use!

WIPES  
AWAY ALGAE  
FAST!



# What's in a Name?

## ΤέτραMin

What's in a name? In TetraMin, a great deal. Many people ask what it means. Contrary to popular belief, it doesn't mean the Tetra fish family, which is widely known among aquarists. The fact is, the name is compounded from two words. "Tetra" is the Greek word for four. It stands for TetraMin's original recipe of four types of flakes. "Min" comes from vitamin, which in Latin means "a substance necessary for life." So you have TetraMin. In any language it stands for good fish nutrition — the key to being a successful fish hobbyist.



For your fish - a long healthy life





POTOMAC VALLEY AQUARIUM SOCIETY

TABLE SHOW RESULTS & STANDINGS

MAY 1973

▷ <u>FANCY GUPPY</u>	<u>1st</u>	<u>2nd</u>	<u>3rd</u>
a. Multi	HIRSCHMAN, E.	HIRSCHMAN, E.	HIRSCHMAN, E.
b. 2 Matched Males	POULSEN	SERGEANT	POULSEN
c. AOC	POULSEN	MELNICK	POULSEN
▷ <u>CICHLIDS</u>			
a. Riftlake	HARDY, CARL	O'MEARA	O'MEARA
b. Breeding Pairs (Dwarf)	JESSUP	JESSUP	JESSUP
c. Other	HARDY, CARL	SHIFLETTE, A.	JESSUP
▷ <u>EGGLAYER/LIVEBEARERS</u>			
a. Tetra	HIRSCHMAN, E.	SHIFLETTE, A.	HIRSCHMAN, A.
b. Characin	HIRSCHMAN, A.	HIRSCHMAN, A.	-
c. Other	HARDY, B.	SMITH, R.	SMITH, R.

POINT COUNT

<u>GUPPY</u> (24)	<u>MAY</u>	<u>QTR</u>	<u>ANN'L</u>	<u>EGGLAYER/ LIVEBEARER</u> (12)	<u>MAY</u>	<u>QTR</u>	<u>ANN'L</u>
Sergent, P&G	7	18	47	Hirschman, A.	11	22	56
Poulsen, W.	12	17	38	Smith, R.	5	14	22
Walsh		10	33	Shiflette, A.	4	4	17
Melnick	7	15	28	DeRoze, D.		8	16
Wolcott	5	12	27	Shiflette, D.			14
Shiflette, N.	-	-	12	Pettingill	1	1	10
Hirschman, E.	10	11	12	Jessup, June			8
Raab	-	-	9	Hardy, Don		3	7
Cunningham		3	7	Goodman			4
Lenzen	-	-	4	Raab			4
				Hardy, B.	4	4	4

WILSON & RUSHTON 1

CICHLIDS (19)

Jessup, In	12	25	62
Hardy, Carl	11	19	40
DeRoze	-	2	22
O'Meara	8	17	17
Sprague	-	5	13
Hirschman, E.	-	1	12
Shiflette, J.			11
Aldridge	3	3	9
Goodman			7
Baker		3	3
Shiflette, A.	3	3	3

STORY, 2; HARDY, B; MELNICK, S;  
HAYES & LENZEN 1 Each

Poulsen, Rushton, Story, DeLucien 2;  
Hardy, Dan & Whittman 1 Each

◇◇◇◇◇◇ JUNE 11, 1973 ☆

GUPPY - Green, H/B Red, AOC

CICHLIDS - Cent & So Am (Large), Non  
Riftlake African, Other

EGGLAYER/LIVEBEARER - Betta, Corydoras  
Catfish, Other

POTOMAC VALLEY AQUARIUM SOCIETY

SPRING TROPICAL FISH SHOW

TOTAL ENTRIES 247

RESULTS

MAY 19-20, 1973



FANCY GUPPY CLASS

78 Entries

RED  
1st POULSEN  
2nd POULSEN  
3rd SERGENT

BLUE  
MATHIAS  
MATHIAS  
MELNICK

GREEN  
SERGENT  
SERGENT  
SERGENT

MULTI  
1st HIRSCHMAN, E.  
2nd HIRSCHMAN, E.  
3rd HIRSCHMAN, E.

AOC  
POULSEN  
POULSEN  
MATHIAS

H/BLK RED  
WALSH  
WOLCOTT  
McCORKLE

H/BLK AOC  
1st WOLCOTT  
2nd MELNICK  
3rd SERGENT

SNAKESKIN  
McCORKLE  
HIRSCHMAN, E.  
HARVEY

BLACK  
McCORKLE  
SERGENT  
McCORKLE

FEMALE  
1st MELNICK  
2nd WOLCOTT  
3rd WALSH

2 MATCHED MALES  
SERGENT  
POULSEN  
SERGENT

3 MATCHED FEMALES  
WOLCOTT  
WALSH  
-

5 MATCHED MALES  
1st POULSEN  
2nd POULSEN  
3rd McCORKLE

BEST OF SHOW

★ WALSH ★

2nd WOLCOTT  
3rd SERGENT



LIVEBEARER CLASS

27 Entries

SWORDTAILS  
1st FISHER  
2nd McCORKLE  
3rd HARVEY

PLATYS  
HIRSCHMAN  
McCORKLE  
FISHER

MOLLIES  
SMITH  
HARDY  
HIRSCHMAN

OTHER  
1st HIRSCHMAN

BEST OF SHOW

★ FISHER ★

2nd HIRSCHMAN  
3rd HIRSCHMAN



6  
SET TANKS 3 Entries

1st HIRSCHMAN, A&E

2nd BAKER

3rd PETTINGILL

SPRING TROPICAL FISH SHOW

TOTAL ENTRIES (247)

RESULTS

MAY 19-20, 1973



CICHLIDS

(68) Entries

CENTRAL & SOUTH AMERICAN

LARGE

- ★ 1st BRENSIKI
- 2nd SHUTT
- 3rd SHIFLETTE

MEDIUM

- HIRSCHMAN, E.
- ALDRIDGE
- ALDRIDGE

DWARF

- KOLLING
- GLASCOCK
- JESSUP

RIFTLAKE

- 1st STORY
- 2nd HARDY
- 3rd O'MEARA

AFRICAN

TILAPIA

- O'MEARA
- JESSUP
- O'MEARA

NON RIFTLAKE

- JESSUP
- STORY
- JESSUP

BREEDING PAIRS

RIFTLAKE

- ALDRIDGE
- O'MEARA
- O'MEARA

DWARF

- JESSUP
- JESSUP

CENT & SO AM

- 1st JESSUP
- 2nd -
- 3rd -

ANGELFISH

- 1st HARDY
- 2nd HARDY
- 3rd SPRAGUE

BEST OF SHOW

★ LINDA BRENSIKEI ★

- 2nd O'MEARA
- 3rd STORY

Smallest Mature Adult Fish - JESSUP ★

Largest Entry By Size - SCHUTT ★



EGGLAYERS

(71) Entries

CATFISH CORYDORAS

- 1st HIRSCHMAN, A.
- 2nd HIRSCHMAN, A.
- 3rd ALDRIDGE

CATFISH ALL OTHER

- PISHVANOV
- KELLY
- BECKWITH

ANABANTIDS

- KOLLING
- HIRSCHMAN, A.
- HIRSCHMAN, A.

BETTA

- 1st BLACKMAN
- 2nd KOLLING
- 3rd DeLUCIEN

SHARKS & LOACHES

- DeROZE
- BRENSIKI
- DeROZE

CARACINS - BARBS - TETRAS

- DAMON
- HIRSCHMAN, E.
- SHIFLETTE

KILLIFISH (AFRICAN)

- 1st GLASCOCK
- 2nd GLASCOCK
- 3rd GLASCOCK

NATIVE AMERICAN

- KELLY
- STORY

OPEN

- ★ DAMON
- MATHIAS
- BECKWITH

BEST OF SHOW

★ DAMON ★

- 2nd GLASCOCK
- 3rd DeROZE

## WAYS AND MEANS

By Mike Sprague

Well, the May Fish Show is over! If that statement sounds like a sigh of relief, you're partially right. The May show was the first one I have been involved in directly. It was a lot of work and a lot of fun, but most of all it was an education. I will be well prepared next time.

We could not have had such a successful show without the help, cooperation and participation of many many people. I would like to thank all the people who helped me with the raffle. Without their help, I would have been lost.

We owe a very sincere thanks to the following local retail shops for their generous donation of items to the show's raffle. In alphabetical order, "Thanks" to:

<u>Donors</u>	<u>Items</u>
Aqua Pets	Dynaflo
Aquarium Supply	30 gal. O'Dell tank with stand
Aquatic World	\$5.00 gift certificate
Fish Limited	2 Dial-A-pH
Glenmont Tropicals	pH and Hardness test kit
Hollywood Tropical	
Fish Center	Book
Larry's Little Critters	Book
National Petland-Arl.	\$10.00 gift certificate
Pet Mart-Rockville	\$10.00 gift certificate
Sea View	8oz. TetraMin
South Seas-Alex.	3 books

We owe a special "Thanks" to the Poulsens for their numerous donations which included Teeta Frogs, food, Betta Barracks, Supreme heater and Metaframe undergravel filter.

Finally, we owe a very special "Thanks" to Silverman's for the loan of their truck which was used for moving the saw horses and racks to and from the show.

## KEY TO SUCCESSFUL AQUARIUM MANAGEMENT

By Vivian R. Poulsen

The most important thing to remember is how to control water quality. To achieve this, four principal canons of aquarium management must be observed:

1. Use chemically inert materials.
2. Have a suitable source of water.
3. Avoid overcrowding and overfeeding.
4. Control waste products by dilution and, sometimes, by aeration and filtration.

Always use chemically inert materials. Aquatic animals live very intimately within their environment. Through their gills, they come in extremely close contact with anything suspended or dissolved in the water. This means there is very little they can do to keep harmful substances from entering their bloodstream or body. In order to keep these sensitive animals alive, always make certain that everything that comes in contact with the tank water is fabricated of absolutely inert material.

Glass is always safe.

Natural decorations such as quartz, sandstone, and granite are also safe.

Wood and various other questionable materials are only safe when you give them several coats of a good grade black asphaltum varnish. This covering is only temporary, therefore, be sure to check for pinholes or cracks.

Even though the great majority of plastic aquarium appliances are safe, some are not. This is why I do not recommend decorating your aquarium with plastic caves, shipwrecks, mermaids, etc. which are sold in many pet stores.

Soaps, detergents, disinfectants, tobacco, insect sprays, powders and paints (including fumes) are all deadly to fishes.

One drop to 16,000 gallons of water of pesticides like Endrin is similarly lethal.

Coal and metallic ores are not safe either.

Marble, seashells, coral and coral sand tend to dissolve in freshwater tanks, also making the water too hard and alkaline.

Only the highest grade of stainless steel should be allowed in the water. The tank itself should be made so that none of its metal comes into contact with the water.

I think it is a good idea to invest in some type of standard aquarium hood. This will prevent dangerous things from getting into your tank.

Water fit to drink would seem to be suitable for fishes to swim in, but occasionally this is not so. As far as their water supply is concerned, fishes are much more delicate than man. Municipal tap water creates a problem because of its chlorine content. It also has a tendency to be excessively hard. The chlorine can be gotten rid of by allowing your water to sit in an open container for at least 24 hours. However, if this is your first tank, I suggest that you let your water stand perhaps a week. Something living such as aquatic plants should be kept in your water as a good conditioner. Even under the best conditions, water that comes from the tap is "tough" on fishes. Therefore, after fishes or plants have lived in it for a while, it becomes conditioned--losing its harmful qualities. No one knows exactly what conditioned water is. It is possible that the presence of waste products, which add various salts and organic materials to the water, creates this conditioning. We do know that small amounts of salts (not the same ones that make water hard) will make tap water easier for fishes to live in. Various experiments have also shown that organic substances (including fishes' slime and bacteria that start to multiply as soon as any tank is set up) interact with the copper or other metals in the water and render them chemically inactive and harmless.

Ask your neighborhood pet dealers for information concerning troublesome local water conditions. Other local aquarists are another good source. Water softeners are sometimes used to make hard water more suitable for fishes, but not all waters are amenable to such treatment. In extreme cases hobbyists have sometimes found it necessary to buy bottled water to fill their tanks. No fish fancier would ever put rare or expensive specimens into raw tap water. When setting up a new tank, new and old (conditioned) water are mixed--perhaps two parts to one.

In conclusion, I feel it is very important for you to plan your tank ahead of time. This makes the critical job of bringing the new fishes home and introducing them to their new aquarium much easier.

## WHY KILLIFISH?

By Ken Raab

The answer to the question in the title can range from a simple statement to a complex thesis. There are many interesting and appealing reasons for an aquarist choosing to raise killies. My introduction came as a result of a gift of a trio of APHYOSEMION GARDNERI from a friend. The gift of fish has probably started more people into the aquarium hobby or caused an aquarist to specialize in a new species than any other act. There are many other reasons and the purpose of this article is to attempt to provide a general coverage of all aspects of raising killies in the hope that there might be some unique feature which would entice you to try killies.

Perhaps the greatest advantage, from my point of view, is the fact that killies do well in small aquaria. Most will breed nicely in a 3 to 5 gallon aquarium. There are a few larger or more aggressive species which will do better in a 10 or 15 gallon aquarium but I doubt that it would ever be necessary to invest in anything larger than that. Actually most of the species breed better in a 2 or 3 gallon container and a large number of fry can be reared in a 10 gallon tank. My space has always been limited and with killies I find that I can handle more species in a given space than any other type of fish. Even under extremely limited space conditions, there has always been room for one ten gallon tank and several small plastic containers.

Landscaping or aquascaping if you prefer is reduced by the smaller aquaria. In breeding tanks, sand or gravel generally creates more problems because it traps organic wastes and decaying foods so the tank is left bare.

Lighting a killie aquarium can be a difficult problem--not because it can't be done, but because it involves a compromise. Most of the killies I have tried shy away from the fluorescent or incandescent light in the tank cover. When the lights are turned on, the fish panic and glue themselves into a corner and under a rock or filter. On the other hand when the lights are off, so are the fish. Their beautiful coloration cannot be seen or appreciated. Two solutions which I use are a dense cover of floating water sprite plants with the over tank lights or placement of the aquaria so that natural sunlight falls on the tank. Either solution is effective although the latter limits my viewing to a few hours on those days when the sun shines.

Filtration and aeration are easily accomplished. Either a small box filter or a sponge filter will do an adequate job.

Many of the smaller containers can even function for a short period without filters or aeration especially if there is a large surface area to volume ratio. Very rarely is there a need for an outside filter, although I do admit that I use a Diatom periodically to provide a thorough cleaning of the water. Perhaps the best reason for not using outside filtration is that killies are outstanding jumpers and can accurately leap through small openings in aquarium covers. Without a strong requirement for outside filtration, there are fewer escape holes and therefore the risk of loss is reduced.

One other opening in the cover can be eliminated and that is the opening for the heater. Killies do not require the high tropical water temperatures of other fish. They are quite comfortable below 78°F with an optimum range around 70° - 74° F. In other words the average room temperature is ideal. My fish are in the basement and I have noticed temperature as low as 62° F without any loss of killies.

Water conditions do not appear to be critical although I must hasten to say that certain species of killies do have special requirements. The best advice here is that if the fish are obtained from a local breeder the water conditions are probably similar. Always check to insure that there will be no pH, DH or temperature shock when introducing new fish. I normally change 25% of the water weekly. When available, I use rainwater to soften the tanks. The use of peat moss in the box filters also seems to keep the water from becoming hard.

There are many "experts" writing about killiefish either as a chapter in a general aquarium book or in a book just devoted to killifish. The concensus seems to indicate that around 200 species of killies have been identified. With this many species there is bound to be a great variety of fish. An enormous choice of color, size, and shape is available. Rather than discuss individual species, I will mention the different breeding habits available with killies. Killies are egg layers and when trying to divide the fish into spawning types, they are usually divided into three basic groups: Peat Divers, Gravel Spawners and Plant Spawners.

The Peat Divers are the most interesting to watch, I believe. The breeding tank is a large drum bowl or a 5 gallon aquarium with boiled peat moss either covering the bottom or placed in a container within the breeding tank. The peat should be three or four inches deep. A trio of one male and two females seems to work better than pairs and it is always a good idea to have extra females available because of the aggressive nature of most males. The



usual behavior is for a pair to burrow deeply into the peat, spawn and then emerge. After a while if a second female is present, the procedure is repeated. If there is only a pair, keep a careful watch on the female and remove her to a resting tank when required. The peat is usually removed after 5-7 days, allowed to damp dry and the eggs allowed to develop and hatch as covered later in this article.

The second group are the Gravel Spawners. For this group the tank bottom is covered with fine gravel (glass beads). The male and female seem to hover near the bottom surface and the male appears to push the female aside as his caudal fin buries the egg slightly into the surface. A word of caution--decaying food will cause eggs to fungus and I have better results when the fish are fed to breeding condition in another tank and placed without food into a spawning tank. Spawning seems to end after two days so the eggs can be removed at that time and a new pair or trio introduced.

The Plant Spawners spawn on floating or bottom plants in their natural water. In the aquarium they are best spawned using artificial nylon spawning mops. The only nylon yarn available is baby yarn. Do not use orlon as it contains a substance toxic to fish. The nylon is attached to a cork float and boiled to remove any harmful chemicals. When placed in the tank, it will float or it can be attached to the bottom to resemble a submerged plant. Periodically it may be removed and inspected for eggs. Eggs are best removed by gently squeezing the spawning mop in a towel and then removing them with the fingers or some stamp tweezers. Eggs which are cloudy should be rejected. A transparent or translucent appearance is normal. I store them in a baby food jar containing a weak solution of acriflavine.

Eggs spawned in gravel, sand or peat are best stored in peat. The peat should be allowed to dry until it has the consistency of damp tobacco. Then the cloudy eggs are removed and the remainder left in the peat, placed in a plastic bag, sealed and periodically checked for fungus and consistency.

All eggs stored should be marked with a hatching date. This date must be determined from a description of the species. It usually varies from 14 days to 8-9 months but can be longer for some killies.

When the big day arrives, place the eggs, peat and all, in a shallow tray--a plastic shoe or shirt box is fine. The water should be clean, aged and as close as possible to normal living conditions. Aeration and a pinch of dried food seems to stimulate hatching. The eggs should hatch in about 8 hours. Most fry can immediately take baby brine shrimp and their rate of growth is phenomenal. Within two or three

months they will reach maturity. I haven't found any food that they turn down. Live brine shrimp and tubifex are relished.

All is not as simple as this article may lead you to believe. I would suggest that the beginner start with an "easy-to-spawn" species before attempting the more difficult ones. (The difficulty is usually related to the aggressive male killing the female). I would strongly suggest a membership in the American Killifish Association as a means of obtaining more detailed information on killies as well as a means of obtaining, exchanging and selling killies with other aquarists. In any event, I hope this article causes someone to take up the challenge and try a new and interesting species.



A pair of  
*Aphyosemion gardneri*  
female above,  
male below



/Although originally written for guppy hobbyists, the following article contains information any beginner would find helpful. This is Part IV of a series of six. --ed.

#### BEGINNERS MANUAL

By Cathy Wolf  
Guppy Gossip, June, 1970

There are many aids--some necessary and some helpful--to make our fish keeping a little easier.

The basic item to start with would be the tanks. Most of my tanks have slate bottoms but I do have a few of the all-glass tanks and I find that the all-glass tanks are much easier to clean and keep clean. Slate bottoms seem more receptive to algae growth and slime accumulation. Most slate bottoms are somewhat rough, some even have little ridges or cracks in them. These are ideal places for future trouble to develop. When setting up a new slate bottom tank it is best to completely reseal all seams in the tank with silicon rubber cement and also cover ridges or cracks with a film of this cement so you have as smooth a surface as possible.

If you have an inexpensive source of supply for glass you would be wise to make your own tanks. Many breeders in the area have done this and are well pleased with the results. The only actual expense involved is the double strength glass, masking tape and silicone rubber cement. One thing advisable would be to practice cutting glass first on some old, expendable glass. It might be well to mention that the low and longer tank is better for guppies than the high tank. Their need is more surface area rather than depth.

There are two items which work well for cleaning the sides and bottoms of tanks--the long plastic razor blade type scraper which is available at pet supply shops or Scotch Brite scouring pads (no soap) available at all super markets. The Scotch Brite pad does a more thorough job because with a few quick swishes you get all the algae and slime off the glass and bottom and can also use it to clean the glass heater tube which is often forgotten. Then with a rinse in hot water it is ready to be used on the next tank.

One indispensable item is the siphon hose. The most convenient type is the one with the self starter bulb in the center but if you like to work fast you can use any size plastic hose to do the same thing. Dip tubes can be used to pick out small items from the tank but I find them cumbersome and limited in operation.

Heaters are not always a necessity. If you can maintain a rather steady tank temperature of between 72° and 76° you would not need a heater. However, if you have a tank of babies you would like to get off to a better start, use a 25 watt thermostatically controlled heater set to keep the water at 78° to 80° and of course at this temperature, feed the babies often.

In determining the wattage of heater to use, the sizes usually recommended are a 25 watt heater for a 2 gallon to 10 gallon size, a 50 watt heater for a 10, 15, or 20 gallon size. You can use a 75 watt heater for the 20 gallon tank but if something should go wrong with it (and it sometimes does) the water would overheat before you had a chance to notice it and then cooked fish. There are various types of heaters available, submersible, etc. but for raising guppies in tanks from 2 gallon to 20 gallon size, the 8 inch thermostat heater is adequate. This is one item where it is not a good idea to look for a bargain. Get a well known, reliable brand.

Nets are another necessity. If at all possible, have a net for each tank. The size of the net should depend on the size of tank in which it will be used and of course on the size of fish. Usually a supply of the 2", 3", and 4" nets will be sufficient. Many pet supply stores do not carry the fine mesh nylon nets but it is well worth it to shop around to find them. Most important, they do not have the holes in which a ray of a fish's tail could get caught and split. Another function of the net which I find useful is to use it to clean up any debris or dirt on the bottom of the tanks before each feeding and before lights are turned out and to do this you must have the fine mesh nets. The "shrimp nets" are too closely woven and are not suitable for this. When removing the large tailed show fish from a tank, it is better not to lift him out of the tank with a net. Use a small glass jar or better yet, a plastic cottage cheese container.

Filters are a necessity. Here again, size depends on the size of tank used. For our purpose (breeding of show guppies) the inside box filter seems to work best. The small ones you get in pet supply stores for the 2 or 5 gallon tanks are fine but the ones sold for the larger tanks leave much to be desired. They are usually too high and do not have enough surface area to do a good job. An excellent large filter box can be made from the plastic food storage containers found in all discount stores. These are low enough to catch more of the dirt and have a good surface area. In tanks up to and including a 15 gallon size, one filter should be enough. In a low 20 gallon tank I use two filters, one near each end.

There are a number of power filters available but so far I haven't found many of them to any advantage. The usual weekly partial change of water and clean filter should keep a tank clean but once in a while something happens wherein the water starts to look cloudy or dirty. The best thing for this that I have found is the Diatom power filter which uses diatomaceous earth as a filtering medium. After using this for 15 or 20 minutes the water is left crystal clear. It will even clean out algae. The only drawback to this filter is that it is rather cumbersome and I would not recommend it for the impatient type person. The filter does a beautiful job but needs a few refinements for ease in operating it.

In conjunction with the box filters, the source of air supply should be large enough to furnish a good steady stream of air through the filters. Most of the small vibrator types of pumps will produce enough air for one or two tanks. When I first started raising fish I used the piston type air pumps. These produce plenty of air but are noisy and have a small leather belt which has to be replaced periodically. I gradually switched over to using the Silent Giant pumps. One pump will handle four 15 gallon tanks or ten 5 gallon tanks. The deeper the tank the more pressure required to furnish a good flow of air. It is always better to have a large air supply than you actually need. At times you may want to use an airstone in a tank and this uses more air pressure than a box filter. If you have a pump that supplies more air than you can use, add an extra valve for the air line and use this as a relief valve to release the extra air. This will lengthen the life of the pump.

There should be a thermometer for each tank in which you use a heater and it is a good practice to check it at least once every day. There are floating glass thermometers, plastic ones and stainless steel ones which are hooked over the edge of the tank. The most convenient ones but most expensive are the stainless steel which stay in one place for easy reading. Regardless of which kind you buy, set a number of thermometers side by side and only buy those which show the same temperature. Quite often there is a discrepancy in the thermometer readings.

One item a breeder should always have on hand is one or two small tanks for use as a hospital tank or for new fish. I find the plastic  $1\frac{1}{2}$  gallon terrariums excellent for this. They are light, easy to handle and sterilize and are large enough for 3 or 4 fish for a week or two.

And of course everyone accumulates a collection of plastic pails for replacing water in tanks, a plastic pail for siphoning, container for rinsing charcoal or gravel

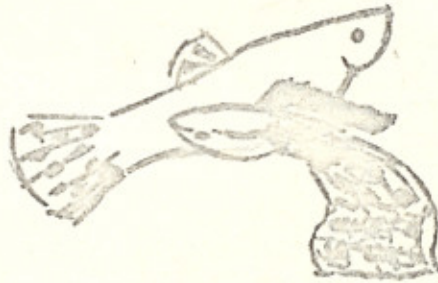
from filters, brushes for cleaning inside filter tubing, a gallon of Clorox bleach for sterilizing tanks, nets, filter boxes and hoses and the indispensable roll of paper towels for the do-everything jobs.

WHAT'S

HAPPENING

AT

THE



NATIONAL AQUARIUM - April 1973

By Alan Levitt

Last month was one of the most exciting in the National Aquarium's history. A number of changes took place which make the aquarium appear the nicest ever.

On April 9, eleven fancy koi were presented to President Nixon on behalf of former Prime Minister Nobusuke Kishi by Japanese Ambassador Nobuhiko Ushiba. Ambassador Marion H. Smoak, Acting Chief of Protocol for the State Department, accepted the gift for the President. Also present for the ceremony were Deputy Assistant Secretary of the Interior Curtis Bohlen and a number of other federal and local officials. Two Cherry Blossom Princesses assisted Mr. Yosaku Hirasawa, noted Koi breeder and representative of Mr. Kishi, in transfer of the fish.

We believe these Koi are the most beautiful ever exhibited in the United States. One of the fish, a tri-colored (black, white and red) Taisho Sanshoku, is valued at \$20,000. Koi are the most popular ornamental fish in the world with more sold each year than even goldfish or guppies. However, Koi are not very popular on the East Coast. The fish are also among the oldest living of all fishes. One is still living that is 222 years old. In addition to being long-lived, Koi are the most valuable and highly prized fish. Last year a breeder in Japan turned down 3,000,000 yen (\$111,000) for one of his specimens.

Our new Japanese Koi Garden is an exhibit that we are quite proud of. The waterfall in the 1,000 gallon pool was landscaped by aquarist Tom Opilla and the plumbing and fil-

tration system designed by Ron Lloyd. Since the tank (built by a local firm) arrived two weeks late, both Tom and Ron worked well into the night on many occasions the week before the ceremony.

The Koi will all be hand fed at 10:30 AM every day when possible. A fiberglass shield has been constructed to protect the fish from the public.

A number of other changes took place in the aquarium last month. A new sign and information system is replacing our old type written and hand-lettered signs. Each triangle that separates the 1,000 and 2,500 gallon tanks will now have a 20" x 30" plexiglas sign with silkscreened information, color pictures, drawings, etc. These new signs, all of which are far more readable than anything the aquarium has ever had, are the same type that is seen in the Smithsonian and other local museums. The lighted sign boxes above all displays now contain only pictures and identifications of specimens in the exhibits. They are also color coded: green for freshwater organisms and blue for saltwater.

Other new additions last month were two baby Leopard Sharks (collected for us by the Steinhart Aquarium of San Francisco), a small Pacific coldwater octopus, beautiful Pacific coral reef fish, spiny boxfish, a 10" hogfish and a scrawled filefish. Spawnings included Tomato Clownfish, Oscars, assorted Rift Lake cichlids (including cobalt blue zebra and orange auratus) and fish in the Parental Care display.

Three weeks ago, another local hobbyist was stung by a Lionfish and rushed to Holy Cross Hospital. We again remind all marine aquarists that should a poisonous fish sting you, place injured part in the hottest water tolerable and go to the nearest emergency room. We have made arrangements with the GW University Hospital emergency room for distribution of information and antivenin (stonefish) to physicians on an emergency basis.

The aquarium now has a new brochure - its first in 14 years. The new leaflet provides data and information about the aquarium, discusses our facilities, behind the scenes, etc. If you would like a copy please write or phone us.

The National Aquarium is participating in a project with the National Geographic Society and the University of Maryland. Under the direction of Dr. Eugenie Clark, a team from the University attached a prototype sonic tag on the head of our four foot nurse shark. Dr. Clark is testing this device so that it might be used for tracking larger sharks in the field. The initial test will be to determine how long the tag will remain on the shark before coming off.

This was the first time the nurse shark had been touched in over three years; he behaved quite calmly during the entire process.

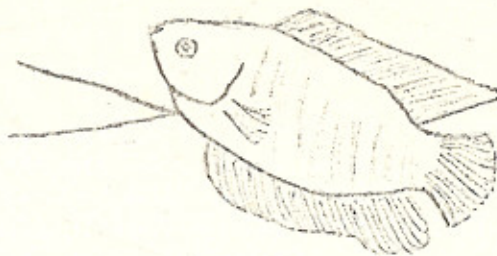
WHAT'S

HAPPENING

AT

THE

NATIONAL AQUARIUM - May 1973



Dwarf Gourami

By Alan Levitt

It was quite a prolific month at the National Aquarium. Spawnings included Largemouth Bass (the parents were spawned at the aquarium many years ago), Bluegills, Bowfins, Angel-fish, Oscars, Tomato Clowns, assorted Rift Lake cichlids, and fish in the parental care display.

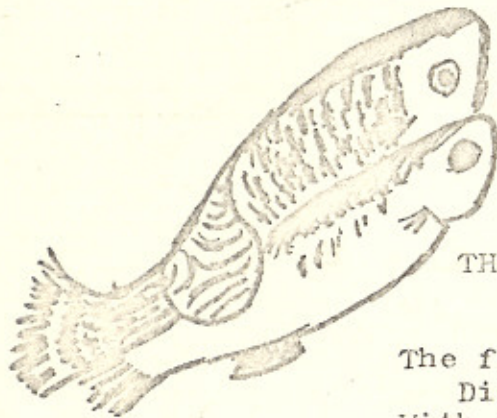
Aquarium Director David Allen attended a regional conference of the American Association of Zoological Parks and Aquariums at Strasberg, Pennsylvania. On the way there, Dave visited aquariums in Cleveland, Pittsburgh, Akron and Columbus. A few weeks before, Supervising Biological Technician Ray Robinson went to the Cleveland and Pittsburgh Aquariums to look at special filtration systems. We are planning a number of renovations in the smaller tanks here in the next few months. Since many of the tanks were installed in 1930 (limestone variety), this will involve much work. Visitors may find the smaller tanks down for long periods of time, but the new, larger fiberglass tanks being planned will increase viewing area and will be well worth the wait.

Last month the 20" eight year old Walking Catfish died. It was replaced with two smaller specimens of *Clarius batrachus*. The Robber Crab, recently acquired from the zoo, also died. The zoo had previously lost three Robber Crabs because it was difficult to get them to eat. We had the same problem.

The only acquisitions last month were some Pacific warmwater invertebrates including some very large feather duster worms and small snails.



This month aquarium staff members will accompany the Lightship Chesapeake (run by National Park Service) on a cruise down the Potomac River to study its ecology. The Lightship - a big, red, converted Coast Guard ship docked in front of Hogates - has been converted into an ecology center for area students. Twenty-five high school students will be along and will participate in seminars and collecting specimens with our staff and members of the American University Biology Department, Environmental Protection Agency people, and representatives from other groups concerned with pollution of the Potomac River Basin. On the way, the students will see slides and films and be shown living proof of what is happening to the river.



#### THE FISH STORY

The fish are all dying,  
Disease in the Tank,  
With Germs multiplying,  
The Water is dank.  
Tra La, Tra La, Tra La.

I went to the Fish Store  
To ask what to do:  
He said watch for more  
As his were sick too.  
Tra La, Tra La, Tra La.

So now I have problems  
Worries and pains,  
And for my next hobby,  
I'll get model trains!  
Tra La, Tra La, Tra La.

The trains are all dying....

By Bob Gottesman  
(Submitted by Sue O'Meara)



# ECO-LYTE™

brand of chemical filtering medium

## YOUR AQUARIUM and FILTRATION

Three types of filtration are needed in order to provide a healthy, pollutant-free environment for your aquarium fish. These are MECHANICAL, BIOLOGICAL, and CHEMICAL filtration.

Mechanical filtration is achieved by using filter floss, sand, gravel, or diatomaceous earth. Mechanical filtration removes suspended and solid particle waste from the aquarium.

Biological filtration is best achieved with an undergravel filter. It is necessary for denitrifying bacteria to be present to convert harmful ammonium ions (fishes' wastes) to nitrites and then to nitrates. The gravel provides a bed for these bacteria.

Chemical filtration is needed in the aquarium to remove organic pollutants, such as organic acids, oils, dyes, antibiotics, harmful hormones which prevent normal growth, colors that accumulate as a result of decaying plant material and uneaten food, etc. A chemical filter maintains the aquarium's population capacity by removing the organics, which when left in the aquarium react with the dissolved oxygen that is needed by the animals.

Adsorption of these organics is considered the most effective way of removing them from the aquarium environment. Ozone and foam fractionation (protein skimmers) can be used, but they are less efficient because they are to a great extent selective as to what they will remove. Ozone will only remove oxidizable organics, foam fractionation removes only surface active organics.

Until the introduction of ECO-LYTE™, the best medium for adsorption of organics was activated carbon. ECO-LYTE™ has two distinct advantages over carbon: 1.) ECO-LYTE™ is more efficient than activated carbon and 2.) ECO-LYTE™ is fully and easily regenerable to its original capacity.

ECO-LYTE™, as a chemical filter, removes all organic pollutants from the aquarium. These include detergent components, greases, oils, antibiotics, dyes, organic acids (such as uric acid), suspended and dissolved foods, all organic pollutants. ECO-LYTE™ removes the organic fish, bacteria, and plant wastes that would normally cause brown discoloration of the aquarium water. With ECO-LYTE™ your aquarium will remain crystal clear.

# ECO-LYTE™ is more efficient and economical

Because of its higher adsorbancy, ECO-LYTE™ is up to 100 times more efficient at removing organic pollutants than the best "activated carbon." This means that 50 grams of ECO-LYTE™ will, on the average, remove more organic pollutants from the aquarium environment than 10 pounds of "activated carbon."

One of the main disadvantages of carbon is that, once carbon has adsorbed its capacity of organic material, carbon must be thrown away. Carbon is regenerable only by steam pressure. Baking or other forms of dry heat can not decompose and drive off the organics adsorbed on the carbon. So, the aquarist is forced to replace the exhausted carbon with new.

ECO-LYTE™, on the other hand, is fully regenerable. When ECO-LYTE™ is regenerated with its special REGENERATING SOLUTION, it returns to its full adsorbing capacity. ECO-LYTE™ can be regenerated over 300 times! A 50 gram portion of ECO-LYTE™, regenerated every two weeks, will effectively filter up to 55 gallons of water.

## how to use ECO-LYTE™

ECO-LYTE™ comes in a 50 gram foam filter bag. This bag can be placed in any outside filter, box filter, fastened to the return tubes of undergravel or power filters, or even floated in the aquarium. This 50 gram bag of ECO-LYTE™ will effectively filter any aquarium up to 55 gallons of water. If your aquarium is larger than 55 gallons, use an additional ECO-LYTE™ filter bag for each 55 gallons of water. With ECO-LYTE™ in your filter you can observe the adsorption process by the changing color of the ECO-LYTE™. Like carbon, ECO-LYTE™ should be pre-filtered with filter floss to prevent clogging with suspended materials.

The ECO-LYTE™ should not be allowed to dry out. While not in use, it should be stored in the container provided. However, if it is allowed to dry out, it should be rehydrated before using. To rehydrate, float the filter bag in 8 fluid ounces of REGENERATING SOLUTION for 48 hours. Rinse the bag under running tap water for 20 seconds, then let the filter bag soak in water for another 48 hours. The filter bag is then ready for use again.

## how to regenerate ECO-LYTE™

When ECO-LYTE™ will no longer remove methylene blue color from the aquarium it is time for regeneration. On the average, for a well-populated aquarium, regeneration should be done once every two weeks. Regeneration takes only 15 minutes. It is recommended that you have two filter bags for each aquarium. Regeneration can be done at your leisure, without depriving your aquarium of the needed chemical filtration.

To regenerate the ECO-LYTE™ filter bag, pour 1/2 cup (4 fluid ounces) of REGENERATING SOLUTION for each bag to be regenerated into a container with a tight fitting lid (the container that comes with the ECO-LYTE™ KIT is made expressly for this purpose). Add the filter bags and shake for 30 seconds, let set for 5 minutes, then discard the used solution. Add an additional 1/2 cup (4 fluid ounces) of REGENERATING SOLUTION to the container and repeat the procedure. Add warm tap water to cover the bags, close the container, and shake for 30 seconds, discard the water, and remove the filter bags. Rinse the filter bags under the tap, with squeezing, for 2 minutes. Your ECO-LYTE™ is ready again for another two weeks.

## medications and ECO-LYTE™

Because ECO-LYTE™ removes all organic substances, it will also remove medications. Therefore while medicating your aquarium remove the ECO-LYTE™ filter bag and store it in its container. Filtration can then be maintained during medication. Once a cure has been effected, replace the ECO-LYTE™ filter bag in the filter and all unwanted medications will be filtered out. ECO-LYTE™ is especially effective in removing the unsightly color and foam caused by some antibiotics.

## marine aquaria and ECO-LYTE™

ECO-LYTE™ can be used to filter both fresh water and marine aquariums. ECO-LYTE™ will not effect the ionic content of the aquarium environment. ECO-LYTE™ does not effect any inorganic elements, such as salt or the important trace elements in the marine aquarium. ECO-LYTE™ will help maintain a constant pH level in your aquarium. Because ECO-LYTE™ removes organic wastes so efficiently, it prevents bacterial blooms, which, especially in marine aquaria, cause the pH to go suddenly acid.

ECO-LYTE™ is available in a KIT (Suggested Retail \$5.19) containing a 50 gram filter bag and two 8 fluid ounce bottles of REGENERATING SOLUTION. The KIT is packed in a plastic container to be used for the regeneration process. Bags are also available separately (Suggested Retail \$2.98). REGENERATING SOLUTION is available in 8 fluid ounce (Suggested Retail \$.98), 16 fluid ounce (Suggested Retail \$1.49), 32 fluid ounce (Suggested Retail \$2.49), and 1/2 gallon (Suggested Retail \$4.49) sizes. ECO-LYTE™ is also available in bulk for extra large aquariums. Ask your dealer for prices.



Montserrat Educational and Scientific Company, Aquatic Sciences Division  
P.O. Box 7174 Kansas City, Missouri 64113  
816/ 363 - 1010 or 816/ 363 - 0038

Date \_\_\_\_\_ 1973

APPLICATION FOR MEMBERSHIP

NAME \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

PHONE \_\_\_\_\_ ZIP CODE \_\_\_\_\_

Number of tanks \_\_\_\_\_

Type of fish \_\_\_\_\_

Time in hobby \_\_\_\_\_

Fish you have spawned \_\_\_\_\_

What you would like  
to do in this Club? \_\_\_\_\_

Which sub-group interests  
you? (guppy, cichlid, other) \_\_\_\_\_

How long do you plan to be in this area? \_\_\_\_\_

Occupation \_\_\_\_\_

Membership dues for the P.V.A.S. are \$7.50 family; \$5.00 individual; \$3.00 corresponding and \$2.50 junior. Completed applications accompanied by your check or money order should be mailed to P.V.A.S., P.O. Box 6067, Arlington, Virginia, 22206. Please attend our meetings at the Coca-Cola Bottling Plant, 5401 Seminary Road, Alexandria, Virginia at 8:00 P.M.

1973 Meeting Dates

January 8	April 9	July 9	October 8
February 12	May 14	August 13	November 5
March 12	June 11	September 10	December 10

Potomac Valley Aquarium Society  
P.O. Box 6067  
Shirlington Station  
Arlington, Virginia 22206



THIRD CLASS

ADVANCED AQUARIST OF THE NATL.  
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