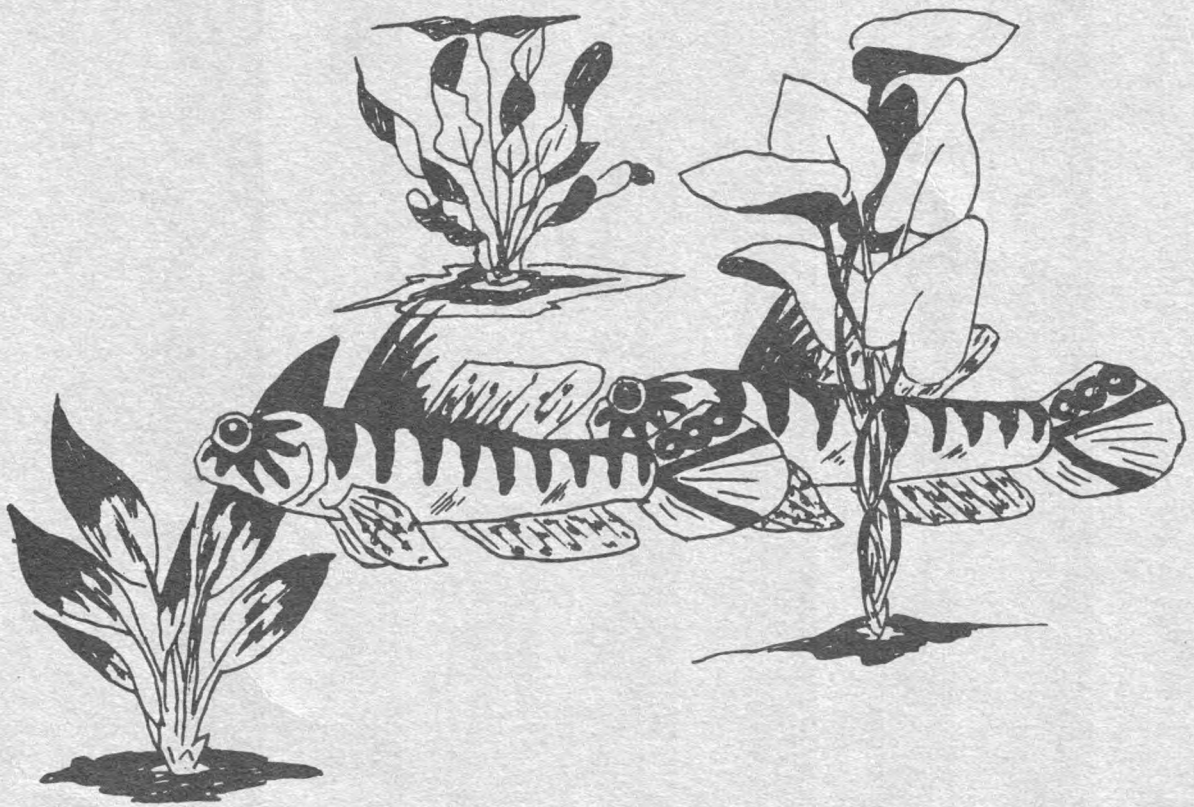


July 1917

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THE

DARTER



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** ** ** ** **

EXCHANGE PUBLICATIONS: The Darter will exchange with other club's publications. Please send exchange publications to;

THE DARTER - M.A.S.I.
9407 Tilles Drive
Brentwood, Missouri 63144

Failure to receive three consecutive issues of a club's publication will be considered as a termination of our exchange with that club, unless advised to the contrary.

Permission is granted to reprint any article appearing herein. Please send two copies of any publication in which a reprint appears, one of which is to be provided to the author of the reprinted article.

** ** ** ** **

Monthly issues of The Darter are part of membership consideration.

** ** ** ** **

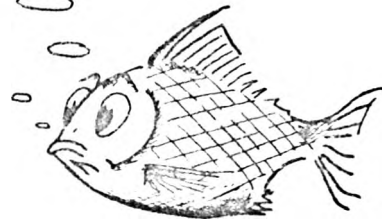
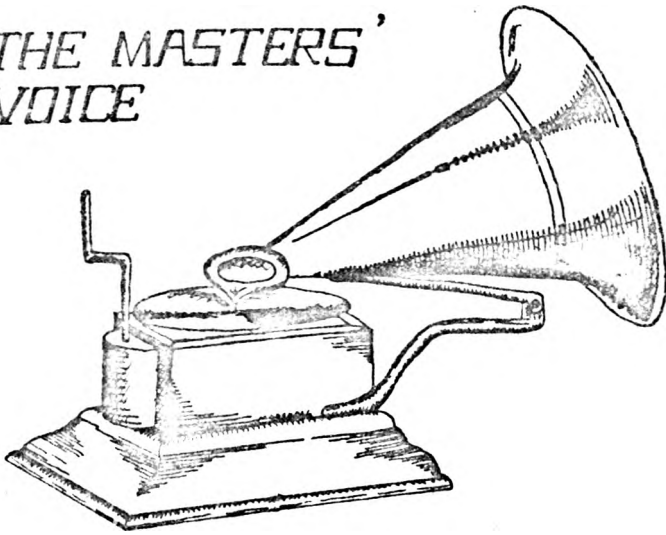
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** ** ** ** **

Opinions expressed by the contributors are their own and do not necessarily reflect the opinions of the Missouri Aquarium Society, Inc.

THE MASTERS'
VOICE



PRESIDENT'S MESSAGE

I would like to start out by thanking all of last year's Officers and Executive Council Members for a job well done. I know that this year's Officers and Executive Council Members will try to live up to their example.

I have been a member of M.A.S.I. for 10 years now, and I have watched this society grow from just a few people meeting in the attic of the Museum of Science and Natural History, to our present membership meeting in the spacious and modern Community Room at Prudential Savings and Loan. I know we can continue this upward movement throughout the coming year.

I hope everyone has noted the coming major activities that were published in last month's Darter; the M.A.S.I. Auction on December 4th, 1977, and the M.A.S.I. Annual Show and Workshop on April 21, 22, and 23, 1978. In addition to these major activities, we will have our annual Super Bowl Show at the October meeting, our new fish raising contest starting at this month's meeting, and our monthly bowl shows. I hope everyone will participate in these activities, because your involvement keeps M.A.S.I. moving and growing.

Dave Masters

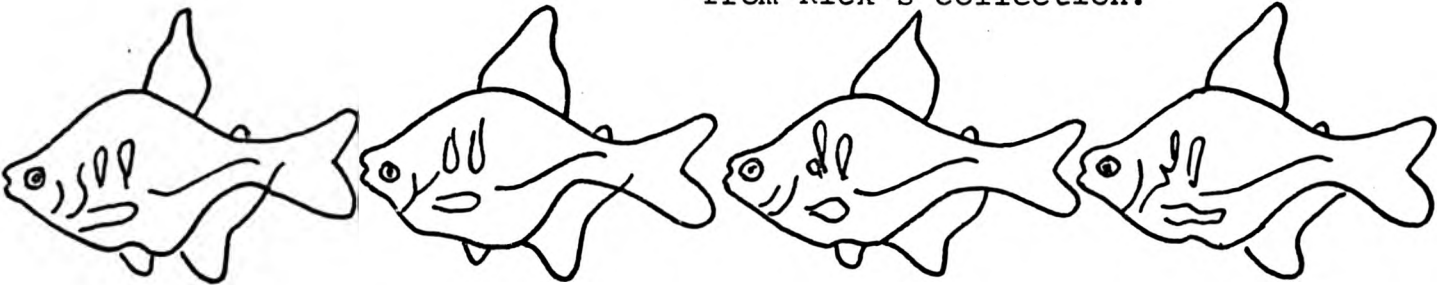
JULY MEETING NOTICE

Time and Date: 8:15 P.M. Wednesday, July 13th

Place: Prudential Savings & Loan Community Room, 6th Floor, 8020 Forsyth, Clayton, Missouri. Park in garage-lower level

Bowl Show: Angelfish - all varieties
Goldfish - all varieties
Open

Program: NATIVE FISH, presented by Rick Smith. Slides of recent field collecting trip, and display of various native species from Rick's collection.



JUNE BOWL SHOW RESULTS

	<u>Hobbyist</u>	<u>Novice</u>
Catfish (Corydoras only)	(4 entries) 1. Ralph Wilhelm 2. Bill Little 3. Dave Koran	(No entries)
Danios (all varieties)	(No entries)	(No entries)
Open	(5 entries) 1. Rich Crabtree 2. Marilyn Waterston 3. Scott Schramm	
August:	Bettas - female only Cichlids - dwarf, 4 inches or less at maturity Open	
September:	Swordtails (low fins only, excluding Hi-fin or Lyretails) Mollies - all varieties Open	

GENERAL MEETING MINUTES

The regular monthly meeting of the Missouri Aquarium Society, Inc. was called to order by the President, Ralph Wilhelm on June 8, 1977 at The Prudential Savings and Loan.

New members were introduced.

Paul Powell announced the Gateway Guppy will sponsor an international Show on June 25 and 26 with an auction on the 26th at Holiday Inn North.

Bayway on Gravois is going out of business, everything is for sale except the racks.

Executive Council will be held at the Crabtrees on June 18.

The minutes of the May general meeting were approved as printed.

The Treasurer's report was received and filed subject to audit.

Dave Masters reported that we will have Black lyretail swords for the Fish Raising Contest at \$1.75 each, limit 2 per member. Please see Dave to sign up. The fish will be available at the next meeting.

The Breeder's Award Auction was held.

Door prizes were awarded.

Bowl Show results were announced.

Ballots were passed out to members for the annual election of officers. Results as follows:

President - Dave Masters

Vice President - Carol Willemin

Secretary - Sharon Masters

Treasurer - Ken Keim

Executive Council -

Carl Berry

Frank Simmons

Ken Cope

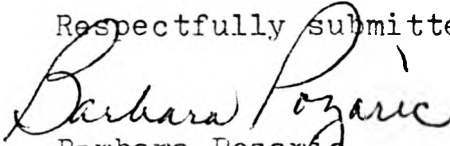
Tom Hopfinger

Rich Crabtree

Ralph Wilhelm

Meeting adjourned.

Respectfully submitted,


Barbara Pozaric
Secretary

EXECUTIVE COUNCIL MEETING

June 18, 1977

The June Executive Council meeting was held at the home of Rich and Louise Crabtree's. Council members present were Rich Crabtree, Dave Masters, Paul Powell, Klaus Bertich, Kenny Cope, Ralph Wilhelm, Carl Berry, Tom Hopfinger. Guest Present were Louise Crabtree, Sharon Masters, Barb Powell, Joe and Carol Willemin, Ken Keim, Anna Marie Bettich, Mike and Barb Heinemier, Thelma Cope and Jim and Joy Bogacki.

The meeting was called to order at 8:30 P.M., and the minutes of the last council meeting were approved.

The Treasurer's report was read and approved as read subject to an audit.

There was no Breeders Award report as the Chariman was not present.

Old Business consisted of talk about buying a stapler for the use of the bulletin.

It was approved to buy address labels and a rubber stamp for Carol for the Darter.

Tom and Ralph thanked all the council members for all of the work they had done during the year.

Ken Keim brought up how he thought the visitors seem to leave just after the meeting as was wondering how we could go about keeping their interest.

The meeting was adjourned at 8:50 P.M.

Respectfully submitted,
Sharon Masters

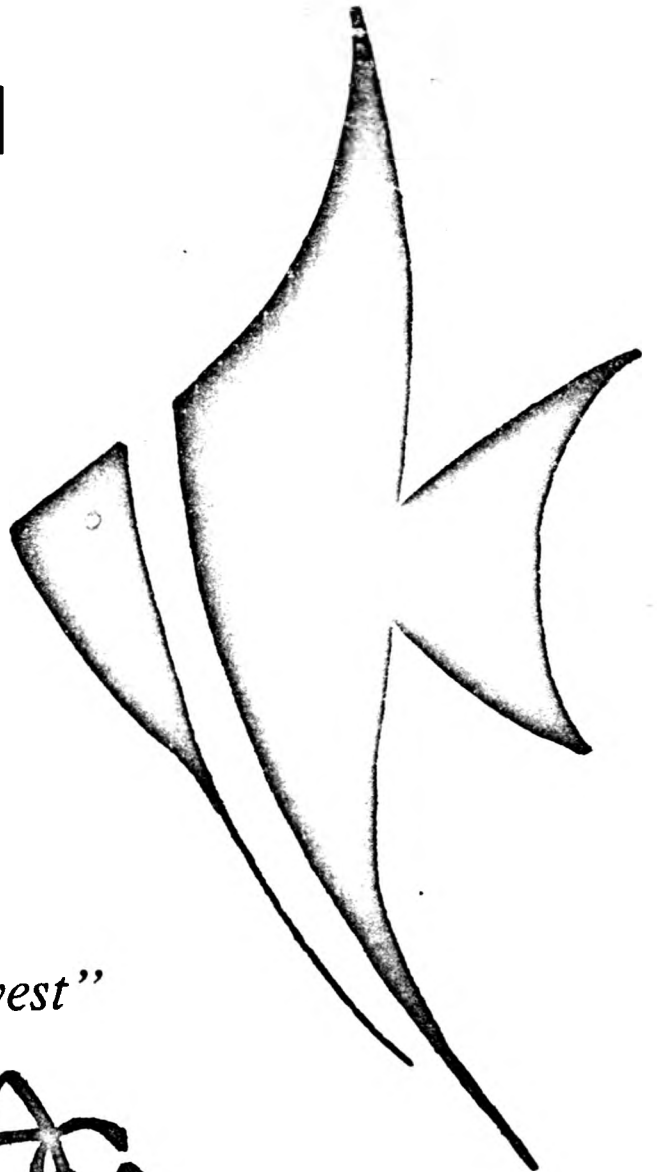
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Paul Loiselle, James Thomerson . . .

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EDITOR'S MESSAGE



We've all heard the old Indian proverb "Do not judge your brother until you have walked in his moccasins for many moons." I've now walked in the moccasins of the Darter Editor for only a single "moon", and our former Editor has left me a pretty big pair of moccasins to fill! During the past few weeks, I've had a chance to pour over most of the current exchange magazines, and I'm proud to say that ours is among the very best. I'm sure every member of M.A.S.I. joins me in offering Charlotte a resounding "THANKS" for the excellent job she has done.

A special thanks for the contents of this month's issue goes to our regular contributors, Marilyn Waterston, Ken Keim and Rick Smith. Each of them has agreed to continue writing their feature articles for The Darter. We all look forward to reading their consistantly fine, informative columns each month. A special thanks too, to New Member, Larry Marshall, for his cartoon on Page 25 and the new logo for the President's Message. Larry is very skillful with pen and ink, and we all look forward to seeing more of his handiwork in future issues.

There isn't a single member of our society who doesn't enjoy sharing this hobby with others. After all, that's why we're all here! We all benefit from shared experiences, and one of the best ways to contribute is by writing an article for our magazine. No one expects you to write The Great American Fish Novel! You might simply write about your favorite fish, and why you like it better than other species; or how about hearing from some of you new members on how you got started in the hobby?

EVERYONE, from the new member with just a few fish, to the old timer who's done it all, has something worthwhile to contribute, so let's hear from ALL of you!

Quoth the Raven "Nevermore"? Say it isn't so, Raven. We'd love to hear from you again, too!

Carol

2nd ANNUAL
Greater Chicago Cichlid Association

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LABOR DAY WEEKEND

FRIDAY, SATURDAY, SUNDAY
SEPT. 2 3 4

FEATURING SPEAKERS:

SAM DeFAZIO – Rochester, Michigan – Collecting Cichlids in South America
JOE MENSİ – Memphis, Tenn. – Mbuna Genetics
PAT AUSTIN – Memphis, Tenn. – South American Cichlids
JACK CONNERY – Columbia, MO – Fish Photography
STU WHEELER – Columbus, Ohio – Live Food Cultures
BILL McCURUM – Beldt's Aquarium – Hazelwood, Mo – Discus
HOMER ARMENT – St. Charles, Mo – African Cichlids
SANDY McLAIN – Chicago, Il – Cichlid Tank Decorations
RON REID – Carol Stream, Il – Medications
BOB DuBOIS – Valparaiso, In – Filtration
PAT and PATTY KEITH – Pontiac, Il – For Editors

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THE INSANITY OF IT ALL

By "Crazy Ken" Keim

First, you have to admit that we're all a little zingy. Spending hours lugging water, first to empty, then to fill; taking fish from one tank and putting them into another, only to put more fish in the one we just emptied, and on, and on. It's pure insanity....honest it is! "Yeah" you might say, "Not me. I'm not nuts!" Well, listen fishy friend, take this simple test to determine your sanity:

THE INSANITY-OF-IT-ALL CRAZY TEST

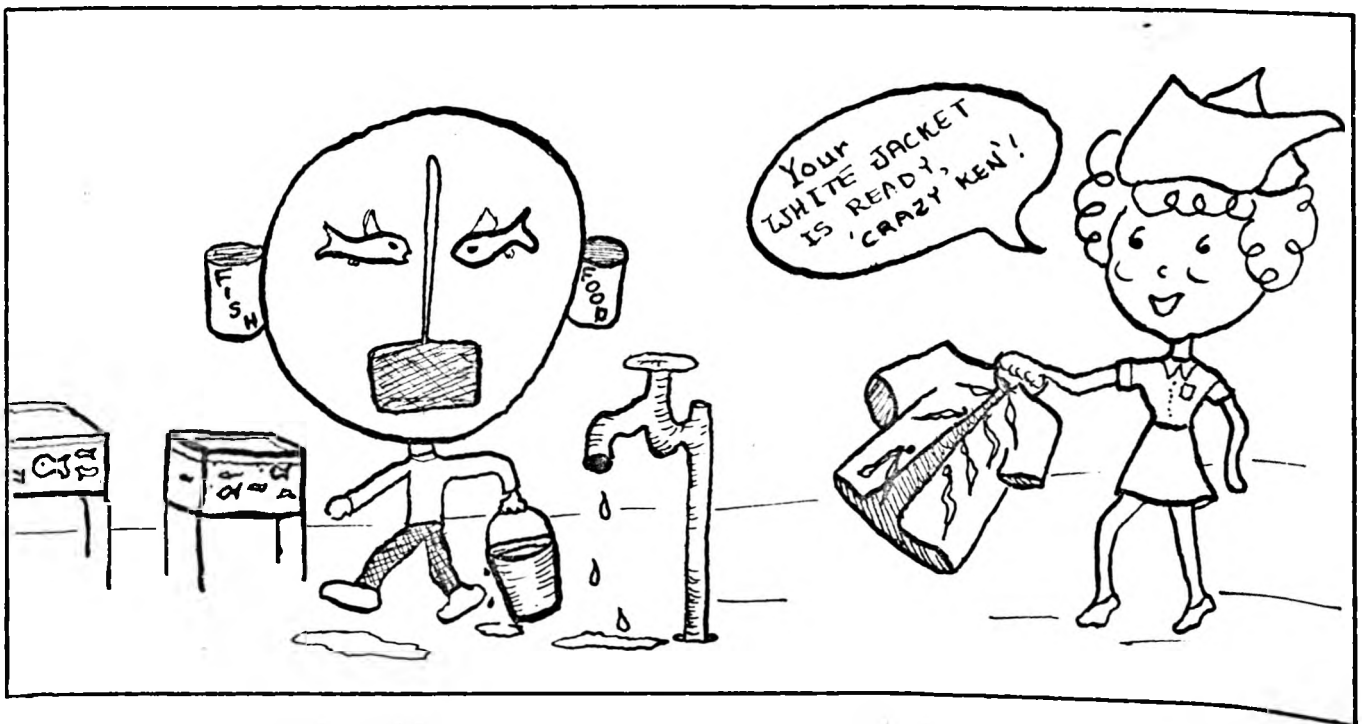
- 1/4 of the behaviorisms - you're only going fish-crazy.
 - 1/2 of the behaviorisms - you're crazy alright, but still curable. (quit the hobby now!)
 - 3/4 of the behaviorisms - you'll probably never be cured, (see a fish shrink, or accept the fact that you're fish-crazy).
 - 4/4 of the behaviorisms - you've lost your marbles all the way (and have replaced them with gravel).
1. Paying ten times more for fish food per ounce than steak, then explaining it to your wife as "reasonable".
 2. Going to the Zoo and spending four hours in the Aquatic House, and 30 minutes seeing the rest of the animals.
 3. Going to a fish auction, and then trying to explain to your friends what a fish auction is.
 4. Telling all your friends about the new batch of fry, and not understanding why they aren't impressed.
 5. Getting upset with your wife for her window shopping, and then spending all day Sunday going from one fish shop to another.
 6. Trying to explain to a non-crazy that you have 600 gallons of water in your basement.....and it's not flooded.
 7. Spending \$20 for a fish, and then telling people it's only 2" long, and "No, you can't eat it."
 8. Refusing an invitation to a barbeque that weekend because you'll be at a fish workshop, and then watching the blank look on the host's face.
 9. Justifying your 10th tank for a pair of fish, while your wife explains to you that the other 9 still have plenty of room.

The Insanity of It All - Continued

10. Trying to explain to a neighborhood child why you can't pump up his bicycle tire, when he heard that you have five air pumps in your basement.

So, that's it, folks! I'd explain further, but if you understand what I've written already, you're crazy, and, after all, why write for crazy people?

Besides, the nurse is here to help put my white jacket back on.



FISH RAISING CONTEST

The Black Lyretail Swords for this year's Fish Raising Contest will be distributed at the July General Meeting, to those members who signed up to receive them. The cost will be \$1.75 each; limit 2 fish per member.

Good luck to all the members participating in this event, and HAPPY FISH RAISING!

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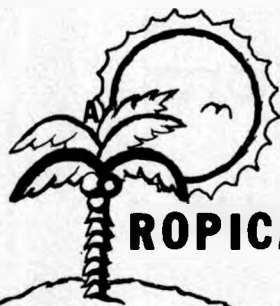
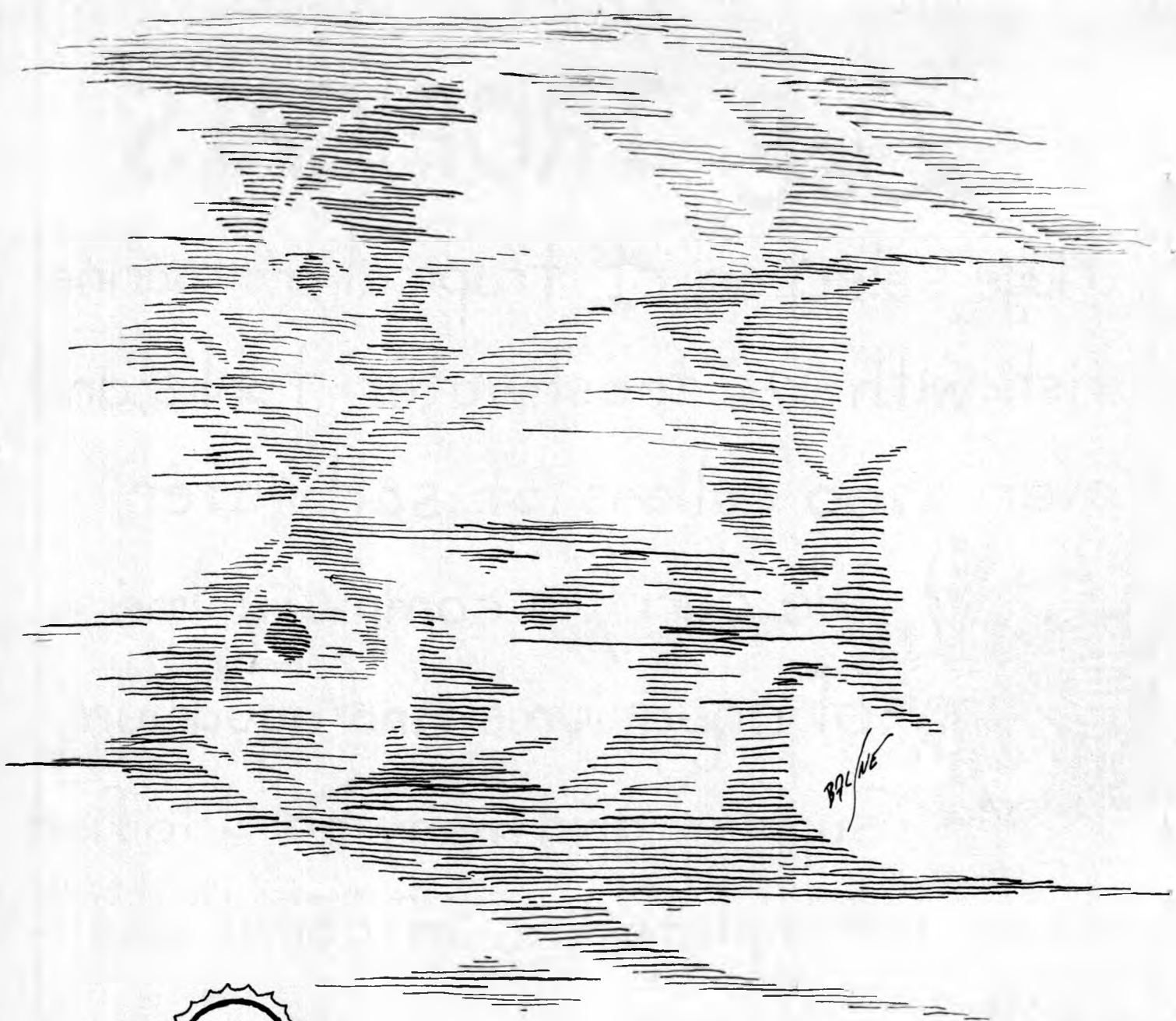
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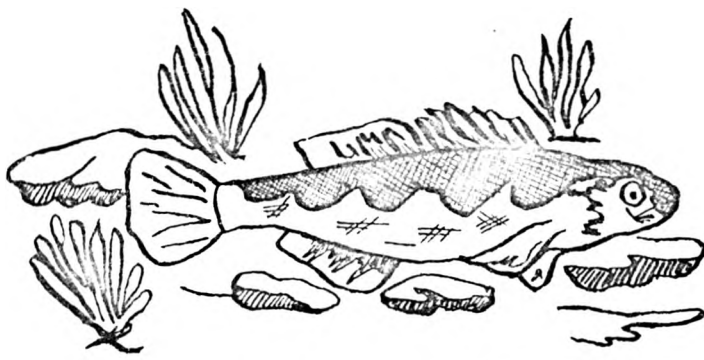


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FRESH WATER ECOLOGY - PART 2

By Rick Smith

CLASSIFYING FRESH-WATER ORGANISMS

In the field of Ecology, organisms are classified in the following ways, rather than anatomically.

First, organisms are classified into major niches which are based upon the position of the organism in it's food chain or energy chain. There are three groups in this class:

The Autotroph - a producing organism, such as green plants or micro-organisms which are chemosynthetic.

The Phagatroph - a macro-consumer, such as herbivores, carnivores and parasites.

The Saprotroph - micro-consumer; these are the decomposers, such as fungi and bacteria.

The second classification is by the life form or life habits of the organism. There are five groups in this classification:

Benthos organisms - animals which are attached to, or rest on, the bottom, or which live on the bottom. These organisms either filter feed or they posit feed.

Periphyton - plants and animals which are attached in some way to stems and leaves of rooted plants or other extending surfaces, such as rocks, logs, etc.

Plankton - free floating organisms which can only rely on the current for motion.

Nekton - organisms which can move about on their own, such as fish;

Neuston - organisms which rest or swim on the surface.

The third classification is split into two parts, one dealing with ponds and lakes, and the other dealing with rivers and streams. This classification has to do with region or sub-habitat.

Lakes and ponds are divided by depth into three zones.

Continued.....

FRESH WATER ECOLOGY, PART 2, continued

The littoral zone is a shallow area which sunlight can penetrate down to the bottom. This area is usually high in productivity.

The limnetic zone is the area usually referred to as "open water". In this zone photosynthesis and respiration are balanced equally. This zone is deeper than the littoral zone.

The profundal zone is very low in productivity, and, of course, receives the least amount of light.

Rivers and streams have zones that are divided according to the depth and flow of the current. There are only two divisions.

Rapids are fast moving water in silt-free shallow areas. Benthos and periphytic organisms are found in these areas. Strong swimming fish also can be observed here.

The second zone is the pool. The pool is a pond-like section which has a silt bottom, and may be very deep. Many pond type organisms can be found in these areas.

One point that should be mentioned is that in this type of ecological classification, the class into which an organism falls may vary in an organism's different stages of life.

Next month we'll take a deeper look into lakes and ponds.

WELCOME NEW MEMBERS

Larry and Judi Marshall
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Ralph Wilhelm

NAMES IN THE NEWS

CONGRATULATIONS TO OUR MEMBERS WHO HAD THEIR ARTICLES

R E V I E W E D ! ! !

Elvis & Marie Bryant	"Swim Bladder Syndrome"	<u>Pisces Press</u> - May Nassau County Aquarium Soc.
Rick Smith	"The Native Corner"	<u>Gill Watchers Review</u> - Apr. Valley Gill Watchers Club
Marilyn Waterston	"Book Reviews"	<u>Northwest Aquaria</u> - Apr. Greater Seattle Aq. Soc.
Ralph Wilhelm	"From Ralph at the Wil-Helm"	<u>Tank Topics</u> - May Graeter Akron Aquarium Soc.
Carol Willemin	"Spawning Carrasius Auratus"	<u>Bits & Pisces</u> - May Mid-South Aquarium Soc.

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* * * * *

M.A.S.I. MID-YEAR POINTS STANDINGS

Following is a list of the top 25 members who have earned points towards the award for Hobbyist of the Year. At the time this list was made, points for Annual Show workers had not yet been turned in. Also, some members on the list may not be eligible for the award due to the fact that they did not enter the Annual Show. Listings are in alphabetical order.

Larry Allbright-----	51	Ken Keim-----	27
Carl Berry-----	48	Bill Miskelly-----	42
Jim Bogacki-----	38	Paul Powell-----	24
Joy Bogacki-----	102	Barbara Pozaric-----	38
Ken Cope-----	39	Steve Pozaric-----	28
Thelma Cope-----	24	Frank Simmons-----	56
Rich Crabtree-----	60	Rick Smith-----	38
Don Epple-----	31	Ken Sommerhauser-----	88
Mike Heinemeier-----	33	Marilyn Waterston-----	45
Charlotte Hopfinger---	104	Donald Weinzerl-----	39
Tom Hopfinger-----	62	Ralph Wilhelm-----	100
Mike Jinkerson-----	29	Carol Willemin-----	115
Aldon Joice-----	64		

Following is a list of points earned towards Novice of the Year. Only one of these Novices, Bernie Macri, entered the Annual Show:

Bill Little-----	9	Mary Rhomberg-----	8
Bernie Macri-----	12	Erma Yanko-----	4

BOWL SHOW POINTS STANDINGS

H O B B Y I S T

Louise Crabtree-----	4	Bill Miskelly-----	7
Rich Crabtree-----	12	Rick Smith-----	11
Don Epple-----	4	Ken Sommerhauser-----	16
Everett Gold-----	4	Ola Sommerhauser-----	1
Mike Heinemeier-----	13	Jim Truesdale-----	3
Pat Jones-----	1	Marilyn Waterston-----	3
Aldon Joice-----	4	Ralph Wilhelm-----	5
Dave Koran-----	10	Carol Willemin-----	18
Mike Meisinger-----	1		

N O V I C E

Bill Little-----	3	Roy Maechler-----	4
Scott Schramm-----	2	Mary Rhomberg-----	4
Peggy Maechler-----	4		

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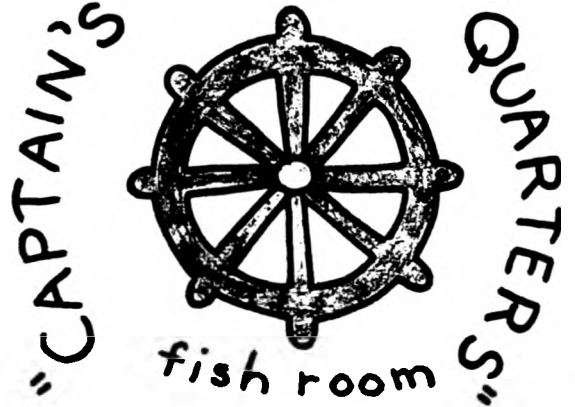
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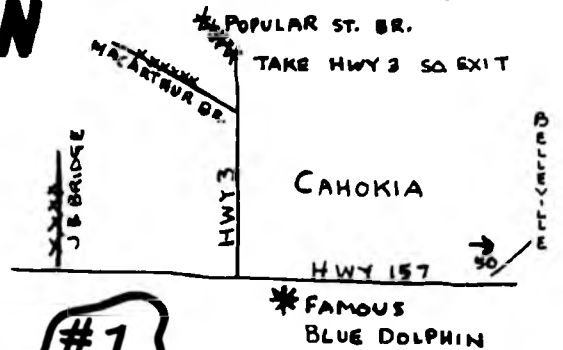
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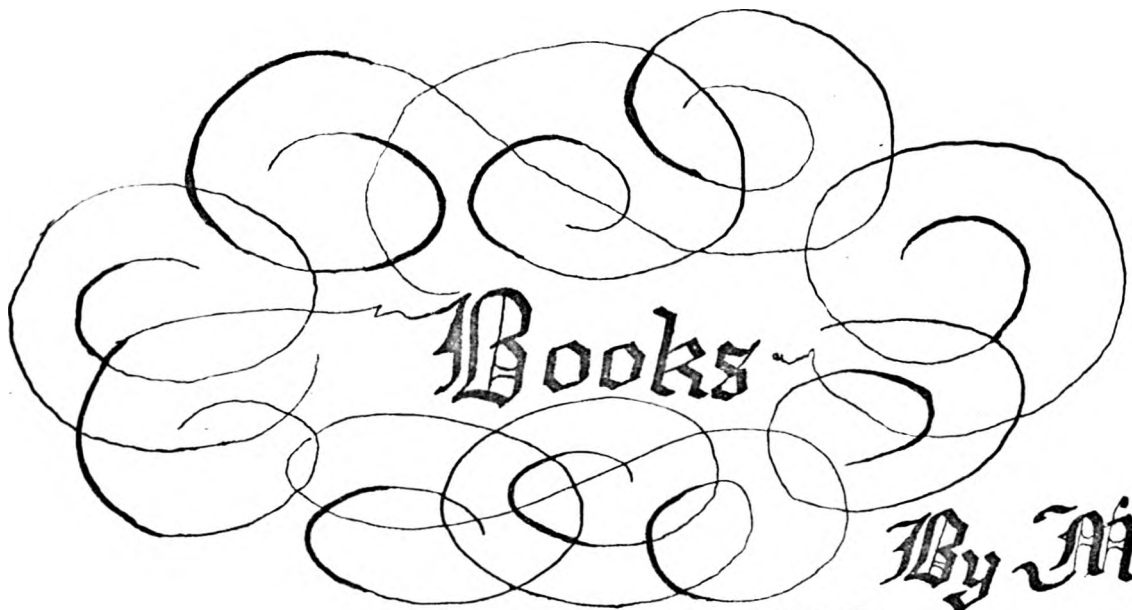


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Books

By M.
Waterston

The Complete Home Aquarium is basically a run-of-the-mill book on the hobby; but it does have some redeeming features. (The Complete Home Aquarium, by Hans J. Mayland, trans. by G. Wevers and M. Oliver. Grosset and Dunlap, 1976. \$14.95)

One of these features is the fact that the book has attractive color photographs-- which always dresses up a book. Even though this is a beginner's book, it has information on fish that even an advanced hobbyist can use. For example, where would you go for information on the *Synodontis angelicus* or *Synodontis flavenaeniatus*?

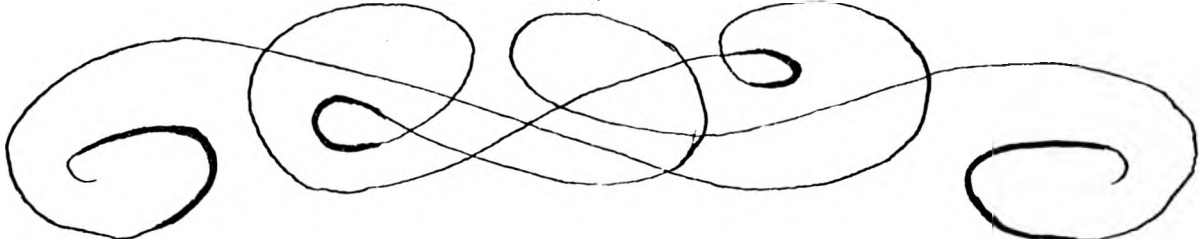
In fact, I found pictures in this book of fish that are absolutely striking--fish that I have never seen before. Examples are; *Juli. dickfeldi*, *Aplocheilus lineatus*, and *Haplochromis ahli*.

The second half of this book deals with saltwater. Sections include: feeding; diseases; what PH, salinity, and density mean; and what kind of equipment one should use in a marine tank. The main section of the saltwater part of the book deals with fish commonly found in the trade. Some examples are Cardinal fish, batfish, Butterflyfish, angelfish, etc.

At the end of the book there is a final section on invertebrates. The section is not particularly lengthy, but I feel it covers the more common types of invertebrates.

Goldfish Varieties and Water Gardens (William Innes, Innes Pub. Co. Philadelphia, 1947) is a very good book that omits tropical fish all together. Much of the information has been covered in other books, but it still has some original information, too.

There is a rather thorough section on the enemies of fish.



The drawings of creatures such as the Diving Beetle and Dragonfly larva, are particularly helpful in identifying outdoor pests. Among the enemies of outdoor goldfish are "the cat, rat, muskrat, snake, heron, kingfisher, and small boy." (P. 123) From my experience, I have found the last to be the biggest nuisance of all.



One section I found to be somewhat unique in aquarium books was the section on photographing fish. It gives suggestions on how to set up a tank for photography and how to arrange lights, etc.

Water lilies are also covered with some depth in the latter section of the book. As with the fish, it gives a type by type description of the plants, along with color photos of the flowers.

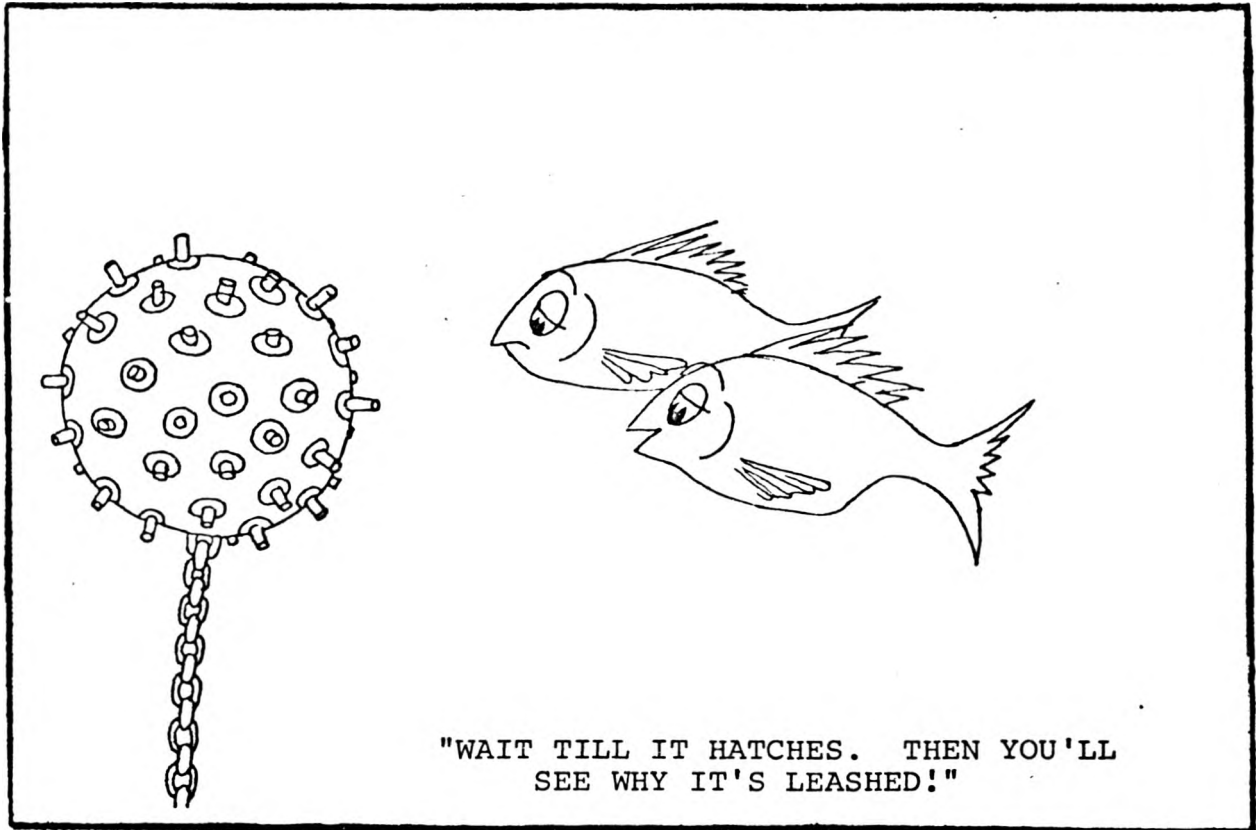
The last section is concerned with how to build a pond. It emphasises the fact that building a pond is no small task, but the rewards are great.

Both books, The Complete Home Aquarium and Goldfish Varieties and Water Gardens are available from the County Library.

Till next month, Keep Reading!



Caption this Cartoon!



Thanks to Larry Marshall for contributing the above cartoon. It offers endless possibilities for different captions, and all members are invited to submit their own captions to the Editor for publication in future issues. What's YOUR caption?

*** ** ** ** **

COMING EVENTS

- July 13th - M.A.S.I. General Meeting - Prudential - 8:15 P.M.
23rd - M.A.S.I. Executive Council Meeting-Masters' - 8:00 P.M.
29, 30, 31 - ACA Convention - Cincinnati, Ohio
- August 10th - M.A.S.I. General Meeting - Prudential - 8:15 P.M.
- September 2, 3, 4 - GCCA Workshop - Rosemont, Illinois
14th - M.A.S.I. General Meeting - Prudential - 8:15 P.M.

AQUA TIPS

Dan McMonigle

Two Finger Microworms --- You know a microworm culture is good when it takes two fingers to scrape out the worms. If it is easy to prepare, and smells OK, so much the better.

To make a "two finger" microworm culture, get some margarine containers. Punch about ten holes in the top. A cheap ballpoint pen makes a good hole puncher.

For each container mix 1/4 ounce of activated yeast and just over one tablespoon of water (90° - 120° F, 110° is ideal). Let the yeast soak for 3 - 4 minutes. Stir it until it is smooth and like thin pudding. Pour about 1/4 inch thick in each container. Add worms from another culture. Be careful not to add any of the old culture medium. Cover and put in a warm spot. I put mine under a fluorescent light.

Use fresh yeast. I tried using some past the date on the package. It didn't do anything. If it works right, in about 15 minutes, the yeast will have risen in the containers and it will be semi-solid. Be sure you keep the cultures warm.

Harvest your worms about every 3 days from a particular container. If you feed fry 4 times a day, you should have $3 \times 4 = 12$ containers. Cultures peak and then taper off. You can leave the old cultures around if you want to, and collect a few worms from each for a while. When the cultures darken or smell, get rid of them. When in doubt, dump. It's easy enough to start a new culture.

Most people try to keep the same culture going for months on end. It's a fair guess that mold, fungus, or creeping crud will eventually win out. Meanwhile the worms are probably contaminated. For this reason, don't add food to an old culture.

If you buy yeast in foil packs, each culture will cost about 8¢. You can save money buying the two pound cans of yeast used by bakeries and pizzerias. Always store yeast in a cool dry place. A sealed container in the refrigerator is good.

Try this method - and get your fingers ready.

Reprinted from the November 1976 issue
of THE WET THUMB, The Cleveland
Aquarium Society, Cleveland, Ohio

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Just Down the Street

By M. Waterston

Update on Siebert Pet Shop

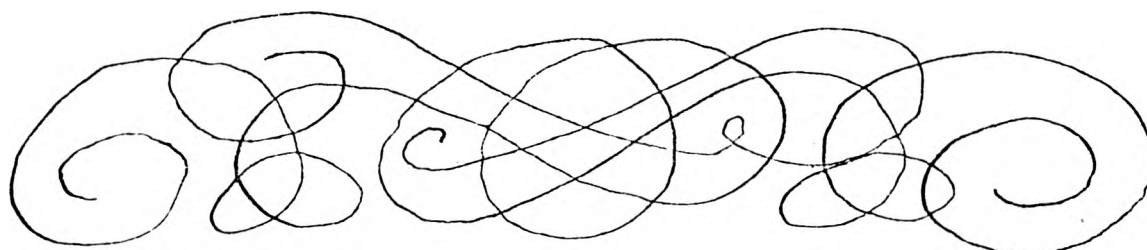
Siebert Petshop--12348 Old Tesson Rd. (At Mattis Rd. one block South of I-270). Phone 843-4755. Hours--Thurs.-Fri. 9:00-8:30, Tues., Wed., and Sat. 9:00-6:00, Closed Sun. and Mon.

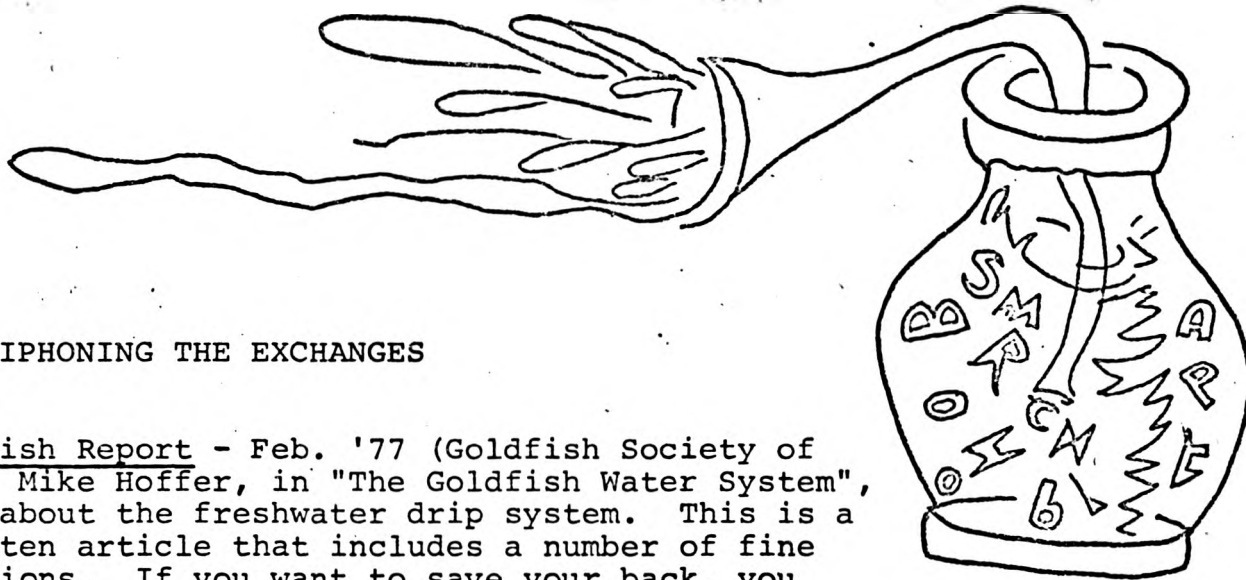
Way back in Feb. of 1976, I wrote my first pet shop article, with Siebert Pet Shop as my first subject. I wrote that the shop was spotless and well-kept, with fish in excellent condition. I feel I can still stand behind that statement, because you will find Siebert Pet Shop in that same excellent condition today.

The main theme of this article is the new "Captain's Quarters" fish room. It houses some saltwater tanks and some tanks full of African cichlids. The new fish room greatly expands their aquatic section of the store. It is as spotless as the older section of the store containing fish. There are now over 150 tanks of fresh water fish, and some saltwater. They also carry garden pools, and everything you'll need to go with them.

Remember, also, that Siebert has birds, usually a number of different kinds. Mainly they handle the smaller birds such as parakeets, etc. Along with the birds, Siebert's also carries a complete line of supplies for all your pet's needs.

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SIPHONING THE EXCHANGES

The Goldfish Report - Feb. '77 (Goldfish Society of America) Mike Hoffer, in "The Goldfish Water System", tells us about the freshwater drip system. This is a well-written article that includes a number of fine illustrations. If you want to save your back, you might want to try this system.

L. C. FISH & TIPS - Jan. '77 (Lewis & Clark Aquarium Society) "Let's Raise Some Cardinals" by Bryce Taller is about a beautiful species (bird or fish). Of course, Bryce is writing about our finny friends, and he covers the subject very thoroughly.

SOUNDINGS - Mar. '77 (Narrows Aquarist Association) Jane Converse writes about "Green Fin Gardening", and she does an excellent job on floating plants. Now, if Jane would only write about how to raise tomatoes in my aquarium, my life would be complete! Also, for Saltwater Freaks there is an excellent article on Terry Bartelme's favorites in "Salt Water Facts and Fallacies".

YOUNGSTOWN AQUARIST - Mar. '77 (Youngstown Area Tropical Fish Society) Since I'm always ready to, "Let's Talk Cichlids" is a welcome sight. "Bud" Welty covers the topic, *Julidochromis regani*, very nicely.

WET PET GAZETTE - Mar. '77 (Davis Aquarium Society) "Cultivating Microworms" by Jim Hirsch is, of course, about raising these little snacks for your young fry.

TIER TANK TALK - Mar. '77 (Southern Tier Aquarium Club) "The Cichlidist Says: The Lake Malawi Peacock" by Jim Mortensen is about a fish that rivals salt water swimmers in beauty. If you keep, or are thinking about keeping, this gem, take a look at this well-written article.

THE CICHLIDOPHILE - Jan.-Feb. '77 (Rocky Mountain Cichlid Assoc.) Stu Herman sends you a whale of an article in "The State of the Art (1) The Bloat". It is an outstanding essay on the disease and should be read by all.

PISCES PRESS - Feb. '77 (Nassau County Aquarium Society) Henry Ruter has a 'new' twist in "No Mess-No Smell-No Bother, or A New Way to Keep Tropical Fish". It seems Mr. Ruter collects "fish" stamps to go along with his live collection. You might want to try this, but be prepared for "What? Another Hobby!" at home. Also, in the April '77 issue, Ellen Ruter gives us some hints on "Breeding Angelfish For Profit". If you have your Angelfish producing, take a look at this to help produce some bucks in your pcket.

SOME BASIC REQUIREMENTS WHEN BREEDING TETRAS

By Ted Dalglish

Characins must account for at least sixty percent of the fishes commonly kept in small aquaria and the Tetras in particular are almost indispensable to a well-balanced community aquarium. Their low replacement cost, especially in this day of mass importation from their native habitat by commercial dealers, has actually reduced the numbers of serious aquarists who consistently breed them even though our knowledge of breeding methods has become more extensive. The equipment required for the successful spawning of the smaller species is so basic that even the beginner can afford to try his luck at it. Water of the proper quality is the most important requirement and more will be said of this. Any small aquarium, preferably all-glass and from two to five gallons capacity is adequate. Privacy is also an important feature to the spawning pair and they will panic in a small aquarium. I paint both ends, the back, and even the bottom of the aquarium (on the outside, of course) with dark green paint, leaving only the front glass transparent. A dependable thermostatic heater, a relatively fine airstone, and a fistfull of Java Moss (*Vesicularia*), *Fontinalis*, or any fineleaved, densely-packed aquarium plant will complete the set-up. Even nylon yarn is acceptable as a plant substitute to most species. Incidental to painting the aquarium, the same thing can be achieved by fitting pieces of dark paper to the ends, back, and bottom with adhesive tape, but painting is, in the long run, less trouble if you intend to use the aquarium for many spawns.

Selection of the Breeding Pair is usually easily accomplished with Tetras, the ripe females being much more "full" in appearance. The best males, however, are nearly always the slimmest and most attractive. This is especially important, and I always look for a male that is flat under the belly and appears to be practically starving. They are the ones who have been flitting around females and trying to drive them into a quiet corner of your community aquarium for the obvious purpose of spawning and will quickly start their intense "driving" in the privacy of a breeding aquarium. Some literature refers to the "Characin hooks" on the anal fins of some South American tetras which tend to make the males "stick" briefly to a fine meshed net when you attempt to dump them out of it. This is a reliable guide all right, but if your female is that thin that you have to resort to this method of distinguishing them, then she obviously is not ready to spawn.

Water quality is a most important criterion to be established for the breeding of any fish and for Tetras I would say, as a generalization, the softer the better, BUT there are many other considerations that must be taken into account.

Soft and Acid - Continued

First of all, regardless of the pH and the hardness of your present set-up, you must get used to the fact that most Tetras spawn in nature shortly after the start of the rainy season in their natural habitat. That is the secret right there, my friends, and if you do not try to duplicate this ordinary state of affairs, you will not spawn Tetras!

The Tetra in nature has spent its life in a relatively stable environment and usually in a "SOFT an' ACID" pool or stream. During the "summer" the acidity may have increased slightly, but the hardness has not, due to the decaying plants and mulm, etc., and the lack of mineral substances washed into the pool. When the rains start, the hardness of the water is lowered and the pH tends toward neutral, but the singularly most important fact that most aquarists seem to ignore is that FRESH WATER floods the pool, it is virtually rain-water at zero to two degrees hardness and it is usually at a slightly LOWER temperature than the water in the pool!

The answer then, seems simple enough and in fact, it IS simple. Set up your breeding aquarium without gravel or bottom cover of any kind (remember, you painted the underside dark green or black). Place a handful of Java Moss, Fontinalis, or a bunch of Foxtail in the center and weigh it down with a glass rod, ordinary glass marbles (your boy probably has a bag of them) or a piece of quartz rock. Set your heater at 80° to 82° Fahrenheit (26-28 C.). Generally the water should be rainwater or water softened to about 2-3 DH. A very small amount of ordinary salt (Sodium Chloride) NOT iodized (about enough to sit on your thumbnail will do) should be dissolved into the aquarium water. A fine airstone is a good idea but not a necessity at the time of spawning. It will certainly be required during the incubation of the eggs and while rearing the fry.

If you want to spawn Cardinals, Neons, Emperor Tetras, and other fishes whose eggs tend to fungus or disintegrate you MUST take the following steps. Sterilize your plants or spawning medium! This is easy! Take a quart or two of water, add a heaping teaspoonful of Alum (easily obtained at drugstores) to each quart of water, soak the plants used for ten or twenty minutes in this solution and then rinse the plants in ordinary tap water. If you add too much or too little alum to the solution, do not be concerned. I have left Fontinalis, for instance, for twenty-four hours in the alum solution to rid it of water tigers, May-fly larvae, and other parasites; and when rinsed and installed in an aquarium it has commenced to grow without a sign that it was in any way affected! Many "chance spawnings" of Neons, Cardinals and Glowlights have taken place in an aquarium which suited their requirements, but I am speaking of a planned spawning where the optimum number of fry can be raised.

Some Tetras, notably the Black (*Gymnocorymbus ternetzi*) and "Hockey-sticks" (*Theyeria obliqua*) require no plants at all and will spawn in a perfectly bare aquarium over a plain glass bottom, providing that the water quality is right.

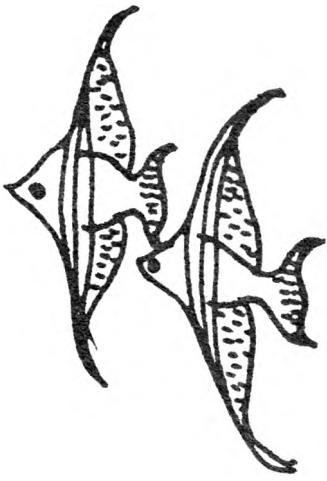
Soft and Acid - Continued

Many Tetras, in spite of generalizations to the contrary, are NOT egg-eaters normally and will ignore their eggs, even when laying in plain view for an hour or two after spawning. This seems to be a "rest period" when the parents are exhausted and if you have been observing the actual spawning, you should have enough common sense to fish the parents out.

LIGHTING is a factor which most aquarists don't bother to take into account, with the result that the parent fish often don't respond even when everything else seems to be just right. Dim or indirect lighting is best and you will have little success if you have their spawning quarters too bright. Once the spawning act has started, however, an apparent indifference settles over the pair and I have often substituted their dim 15 watt bulb with a bright photo-flood bulb in order to take pictures. Neons and Cardinals should NOT be subjected to bright lighting, however, as I have found their eggs to be quite "light sensitive" and they will be destroyed in a brightly lighted aquarium. If you are fortunate enough to have a spot where the morning light strikes the front glass of the spawning aquarium, you will soon notice that many fish spawn during this "first" light. This is especially true of Bleeding Hearts, Robertii, and Rosaceus, for instance, but as I will be discussing the individual species in later articles, I will cover the lighting requirements in more detail.

In conclusion, I will repeat that soft water is usually a requirement and with many species it must be acid as well, but in most cases, if the pair has not spawned within two days (during this time they must not be fed), an immediate reaction can be obtained by siphoning off half of the spawning water and replacing it with fresh rain water or aerated soft water, at a slightly lower temperature to that in which the spawning pair has become accustomed. There are many "tricks" to spawning individual species and they are too numerous to mention here. These will be covered in later articles.

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