DELTA TALE

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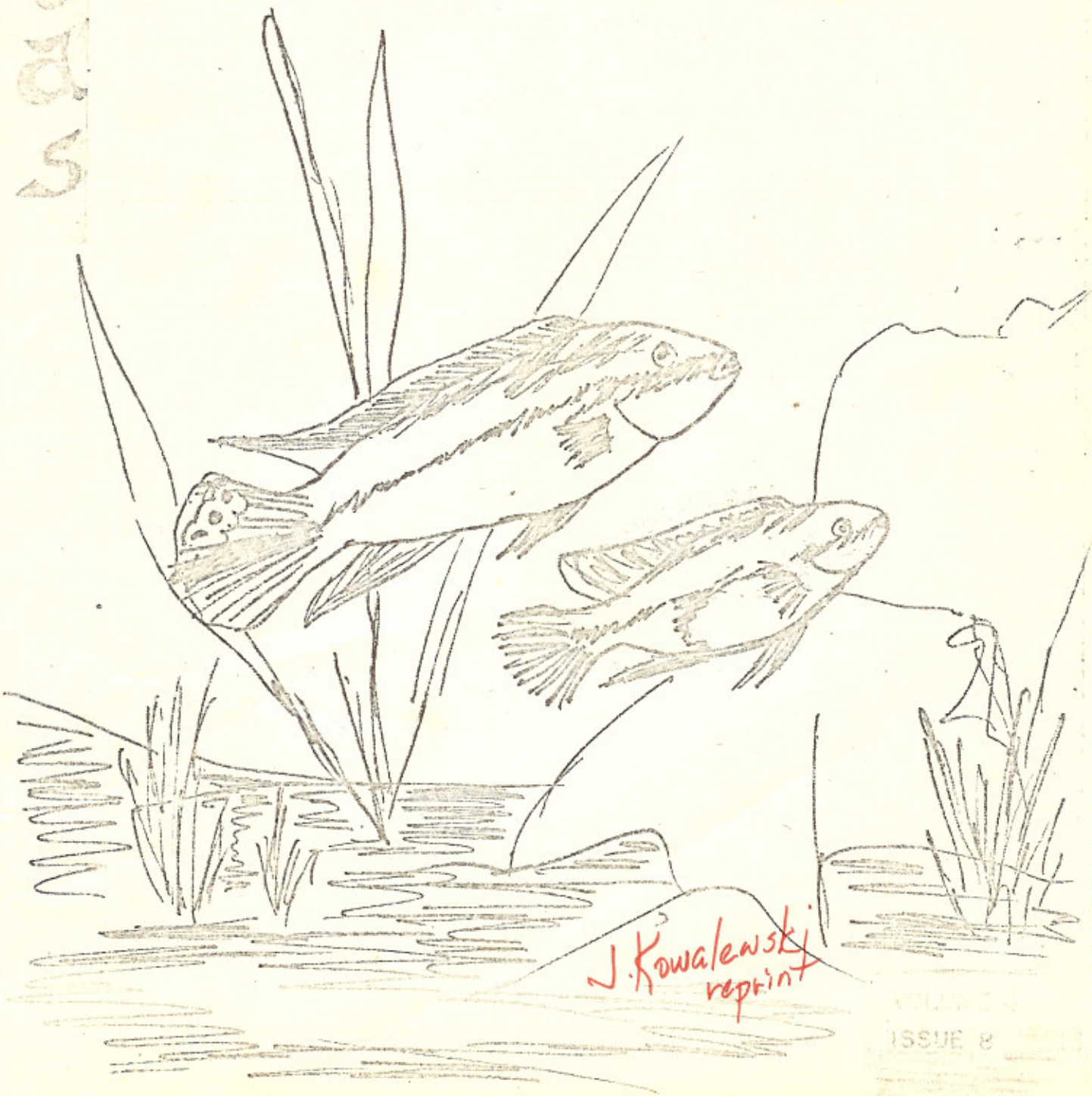

J. Kowalewski reprint

ISSUE 8

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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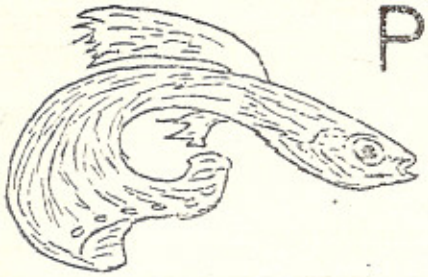
COVER

This month's cover shows a pair of kribensis, *Pelvicachromis pulcher*, male above, female below.



POTOMAC VALLEY AQUARIUM SOCIETY

FROM THE PRESIDENT

I managed another trip to New York last week and picked up some good fish including a pair of Teleogramma brichardi which are hardly ever seen. They in themselves were enough to make the trip worthwhile but I also found a new red strain of Jewels, a new strain of Kribs, and several other relatively scarce Africans.

The people I talked to in New York place more of the blame for the present lack of imports on the local African governments than on any legislation in this country. Many of the European settlers around the lakes and elsewhere are apparently being run off leaving a void in the collection process that has not yet been picked up by native entrepreneurs. This problem will take some time to straighten out and the New York people think the situation will get worse before it gets better. I guess this means a period of making do with what we have and hopefully being able to establish either an independent trading system with other area societies or of getting the most out of established "trading posts" in the ACA, AKA, etc.

JOHN E. JESSUP, JR., Ph.D.

EDITORS' NOTE

We express thanks to John Jessup for his article on charting fish and plant conditions. John's duties as president have never stopped his extra efforts on behalf of scientific advancement of the hobby.

The Editors

SECRETARY'S LETTER

Following the introduction of new members and guests, the July 9th general meeting was opened with a financial statement of the May Show which gave the club a profit of $225. The idea of the fall judging seminar was presented with Sue O'Meara, Gene Aldridge, and Don DeRoze on the planning committee.

The program consisted of a slide-tape program from the American Killifish Association showing the many, varied and beautifully-colored killies which are primarily from Africa.

The participation in the monthly bowl show has been disappointing. Your club needs your support. Show your fish August 13.

Linda DeRoze
Recording Secretary

MEMBERSHIP AND THINGS

The new membership list was published in last months Delta Tale and some omissions and changes have already been brought to my attention. Some time in the near future I will compile a revision sheet that you can add to the present list. If you had a change in phone number or address please let me know and I'll put it in the revision.

I would like to correct a mistake I made in last month's issue. Neal Harrington, a new member, should have been shown as having three tanks of fish, non guppy. Sorry Neal.

I was pleased to see more people taking advantage of the P. V. A. S. library at the last meeting. Through the efforts of my wife each of the exchange bulletins in the library contain a card on the front describing the subjects covered so that you can scan the file and pick out articles in which you have an interest.

I would like to welcome Lincoln and Yvonne Hay to P. V. A. S. The Hays have a wide variety of fish in the 8 tanks they maintain but their special interest is in Killifish. Lincoln is a mechanical designer and resides in Alexandria.

Three memberships expire this month.

Dick and Etta Baker
Richard Starr
Terry and Barbara Wasylink

Please fill out the membership application and mail according to the instructions at the bottom of the application.

The American Cichlid Association's 2nd annual convention will be held August 24, 25 and 26 at the San Jose Hyatt House in San Jose, California. For Cichlid lovers the list of speakers reads like a list of Who's Who in the field. Contact me for further details if you are interested in attending and don't receive the ACA bulletin.

Chuck Story

POTOMAC VALLEY AQUARIUM SOCIETY
TABLE SHOW RESULTS & STANDINGS
JULY 1973

	1st	2nd	3rd
FANCY GUPPY			
a. H/B AOC	SERGENT	WOLCOTT	SERGENT
b. Female	POULSEN	MELNICK	MELNICK
c. AOC	WOLCOTT	POULSEN	POULSEN
CICHLIDS			
a. Cent & So Am (Medium)	JESSUP	HARDY,C.	STORY
b. Riftlake Breeding Pairs	JESSUP	JESSUP	-
c. Other	SPRAGUE	HARDY	JESSUP
EGGLAYER/LIVEBEARERS			
a. Barbs	HIRSCHMAN,A.	HIRSCHMAN,A.	HIRSCHMAN,A.
b. Anabantids	STORY	PETTINGILL	DUA
c. Other	SMITH	HIRSCHMAN,A.	SPRAGUE

☆ ☆ ☆ AUGUST 13, 1973 ☆ ☆ ☆

GUPPY — Red, 5 Matched Males, AOC

CICHLIDS — Cent & So Am (Dwarf) Tilapia, Other

EGGLAYER/LIVEBEARERS — Livebearers (Non Guppy) Killifish, Other

POINT COUNT

GUPPY 30	JULY	QTR	ANN'L
Poulsen,W.	11	11	49
Wolcott	10	10	48
Sergent, P&G	9	9	67
Melnick	8	8	41
Hirschman,E.	5	5	24
Shiflette,N.			12
Cunningham	5	5	14
Walsh			33
Wilson			4

CICHLIDS 13	JULY	QTR	ANN'L
Jessup,Jn	14	14	89
Hardy,Carl	9	9	60
DéRoze			22
Hirschman,E.			19
O'Meara			17
Sprague	4	4	17
Shiflette,J.			11
Aldridge			9
Goodman			7
Story	3	3	6
Shiflette,A.		3	3

EGGLAYER/ LIVEBEARER 17	JULY	QTR	ANN'L
Hirschman,A.	13	13	83
Smith,R.	4	4	29
Shiflette,A.		4	17
DeRoze,D.		8	16
Shiflette,D.			14
Pettingill	7	7	17
Hardy,B.			9
Jessup,June			8
Hardy,Don		3	7
Goodman			4
Story	5	5	5

DUA, KELLY, SPRAGUE 2 Each

COME ON AND SHOW YOUR FISH!

KEEP THE COMPETITION GOING

POTOMAC VALLEY AQUARIUM SOCIETY

I wish to extend many thanks to our club members for their time and dollars.

CREDIT DEPARTMENT

BILL CUNNINGHAM
For your Trailer and Station Wagon - Helped save $50.00 (Along with Steve Silverman's Truck)

TED WALSH
3 Trophies - We all hope EDNA is well again

GENE ALDRIDGE
A Trophy - (Last Year Also) From Logging in Entries to Fish Sitting to furnishing the workers a cold beer

VIV & WENDEL POULSEN
A Trophy - Filters, Food (A Frog Too) and a big helping hand

THE CARL HARDY'S
A Trophy - along with alot of lifting to Fish Sitting.

KEN FISHER
Logging in fish and whatever else

PAULINE & GENE SERGENT
2 Trophies - A heck of alot of help from loading to auction

DON & LINDA DEROZE
A Trophy - and delivering alot of Posters

BOB & DEE SMITH
For delivering posters - Handing out Drum Bowls, to alot of lifting

CHUCK STORY (GENNY TOO)
From lifting to Fish Sitting

SUE & PAT O'MEARA
A Trophy - From Logging in Fish to Auction

DICK & ETTA BAKER
A Trophy - along with delivering posters to lifting benches

JOHN JESSUP
A Trophy - along with finding judges - Lifting - Fish Sitting And Auctioneering

MIKE SPRAGUE & SUSAN
From posters to Raffle to Lifting & Fish Sitting

FOR LIFTING - JUDGING - PLACING FISH - MANY OTHER ODD JOBS

CHET WILSON

JACK SHIFLETTE

BILL VOSS

MORRIS MAC GREGOR

HENRY PETTINGILL

TED KUTZLO

BUTCH MELNICK

BOB WAKEFIELD

HOPE I DIDN'T FORGET ANYONE

ME TOO

THANKS JOHN WOLCOTT

PRODUCTION '73

PRODUCE	-	to bring forward; to exhibit; Show
TROPICAL FISH	-	any of various small, often brightly marked or bizarrely formed fishes of tropical origin which are kept in aquariums as pets
SHOW	-	enabling another to see or look at
HOW	-	a lot of hard work

To stage a show that results in a reasonable amount of enjoyment for the maximum number of people, the supporting cast is very important.

The turnout to help on the Spring Show, from delivering posters, picking up raffle prizes, lifting racks, benching fish to mopping floors, was . . . just wonderful.

My personal thanks to all for their fine support to a successful show.

Although successful in total accomplishment, there are areas we must improve. The principal one is air supply. We experienced times when fish needed air, this meant taking from one to sustain another.

We should consider building new benches and more benches than we currently have in our inventory.

1. Four benches should be designed to accommodate up to 10 gallon tanks.

2. Two benches for 5 gallon tanks and gallon drum bowls.

3. Three benches for 2 gallon tanks and 2 quart drum bowls.

The benches designed to hold larger than 2 gallon tanks should be outfitted with adequate tubing, valves and suitable pump to supply air to a maximum number of tanks.

Another area of concern is the fish auction. There should be a definite cut-off time for registering fish, allowing ample time for the public to view the fish to be auctioned.

Again many thanks for all the help!

JOHN WOLCOTT

A N N O U N C E M E N T S

The August meeting of the Guppy Club and the Cichlid Club will be at the following homes:

Guppy Club

August 24 at 8:00pm
The Poulsen's
6644 Ridgeway Drive
Springfield, Va.
451-7294

Cichlid Club

August 15 at 8:00pm
Joel Goodman's
4112 Wakefield Chapel Rd.
Annandale, Va.
280-1751

T R A D I N G P O S T

WANTED 2 female bettas, and 1 adult
Pearl Gourami, 3-4 inches long, female

Call Henry Pettingill
273-4824

WINDOWS ON MY WORLD

by John E. Jessup, Jr., Ph.D.

The name of this article sounds more like a movie or song title than one for a series on fish and their environment. It is, however, apropos of the way I look at my hobby; the philosophy I use in handling problems, and a few techniques for determining the most productive environment for various species of fish and plants. None of the methods used in the latter will satisfy the scientists among us but that must be accepted, as the means of running proper controls is beyond my capabilities. This notwithstanding, the necessity for the type of studies I have attempted and which can be carried out by anyone have helped fill some very obvious voids in the literature available.

Obviously, no single document can encompass all the information necessary for dealing with a particular variety of fish. Quite often the fish is a relatively new import and little is known about it. At the same time, there are glaring omissions and fundemental errors in the publications that militate against a hobbyist having real success. To answer some of my own questions I undertook some very basic experiments to determine how better to handle my fish and plants.

As to the plants I wanted to determine under what conditions the particular species would best survive and multiply. With the fish it is a little more complex in that other elements come into play. In this article I would like to outline the type of research that has been carried out to date so as to allow the reader the opportunity of using the same or similar systems. In later articles specific variety studies--both of plants and fish--can be discussed. Hopefully, my philosophy will come through as we deal with the techniques involved.

First, a little background appears to be in order and will serve as a basis for later comments. All living things survive within what I have euphemistically called a "window." Simply stated, it is the environmental parameters within which a plant or fish has a better than 90% chance of survival. The 90% is arbitrary and is used to offset the loss of specimens under even ideal conditions. Inside the survival parameter is another usually smaller window in which the species will flourish and most likely reproduce.

Using a particular plant as an example there appear to be four main varients to be considered: pH, DH, temperature, and light. In many cases the literature will be vague in one, several or all of these

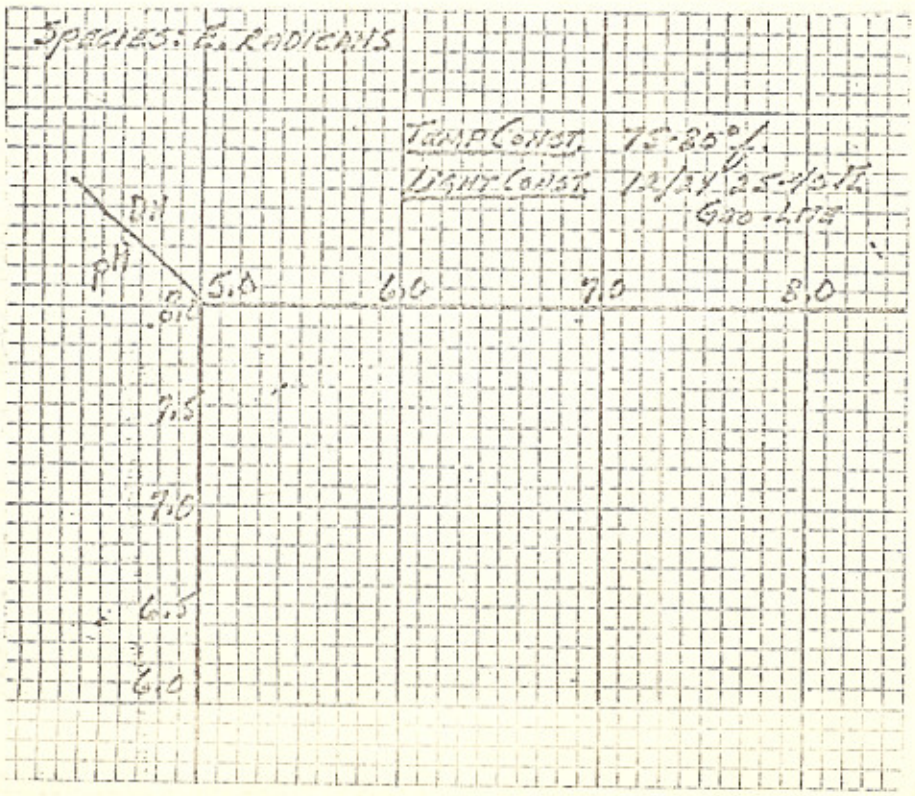
areas. Designing a system for testing two of the factors is easy. Three or more tends to complicate the problem of charting but is not statistically impossible. There are, of course, other factors that can affect the results. Soil, aeration, and additives are but three additional points which can serve as refinements.

One method of solving this is as follows:

a. Consider all but two factors as constants by assigning working ranges to them. For example, 12 hrs in each 24 of light from x-number of specific wattage bulbs of either incandescent or flourescent type with added notations on "gro-lite" or whatever. Many of the so-called cool flourescents are devoid of light spectrum ranges necessary for plants.

b. Temperature can be noted by the optimum range for the fish in the tank.

c. Using graph paper make a simple chart for pH/DH values. acidity/alkalinity index can be from 6.0 - 8.0 pH or can be measured acid-neutral-alkaline. The latter will be sufficient for most needs but will not be as accurate. The hardness index can be from 5.0 - 9.0 or the equivalent ppm or can be measured soft-hard. If you know that you are going to work outside these ranges (e.g., with the Madagascar Lace Plant) then adjust your scales accordingly. What you end up with is a chart looking like this:



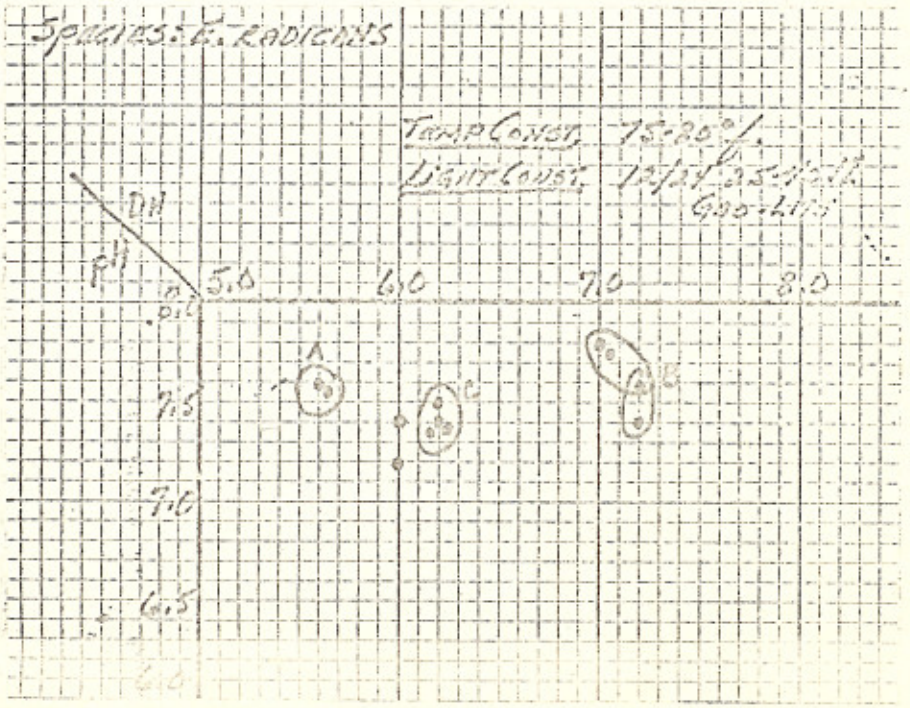
I generally make the chart twice this size for easier handling although there is not much need for more gradation within the ranges. More space will help, however, in plotting clusters.

d. The next step is to develop a system for recording the readings for your tests. The reason for this is a single tank can be used for several simultaneous experiments on different plants and fish. In such a case a series of graphs as shown above would be made up, one for each test. The record sheet could look like this:

	JULY								MEDICATIONS & ADDITIVES			
	1ST WEEK		2D		3D		4TH					
TANK No.	pH	DH	pH	DH	pH	DH	pH	DH	1	2	3	4
1	7.4	6.0	7.6	6.2	7.4	6.2	7.4	6.2	Acriflavine			
2	7.6	5.6	7.6	5.6	7.2	6.0	7.4	6.2		Binoc	Salt 1 tbs/gal	
3	7.8	7.0	7.8	7.0	7.4	7.2	7.6	7.2			Salt 1 tsp/gal	

Note that the medication show no dosages indicating the standard dosage prescribed is used.

e. The data are then transposed to the graph as shown below. Note that the figures from all three tanks is transposed to the single graph.



(Note again that this is strictly an example and does not reflect too accurately the window for E. radicans.) The data plotted for one month for three tanks holding the plant shows four relatively distinct groupings. I believe at least 6 months to one year's plottings are necessary to make anything but the most tentative evaluations. To simplify the data for this example I have indicated the following:

Those readings in "A" might show plants suffering root damage. Those in "B" might show plants that develop leaf burn or dwarfed foliage. Those in "C" might show healthy plants sending off shoots. The two other indices might show healthy plants with no indication of reproduction. In this example, it becomes obvious that E. radicans kept in alkaline water (Remember I keep African cichlids.) do not do well in water below about DH 5.8 or by extrapolation above about DH 6.6. If this were an actual experiment you would have at least a beginning. The more data you add the more exact and encompassing the results.

The number of possible variations of this system appears infinite. Use the forms as best suit your particular needs and remember that anything you do along this line will add to the body of knowledge associated with the hobby.

SOMETHING'S

F
L
U
K
E
Y

By Tony Terceira
(Reprinted from Tankquilizer,
Tropical Fish Society of
Rhode Island)

fig. 1
(Gyrodactylus elegans)

When one hears talk of skin parasites and infections, the most often mentioned diseases deal with the visible parasites such as leeches, anchor worms of different types or some type of grub. Most of these parasites may be studied with a simple hand magnifying glass and a book with simple pictures of the various types of diseases in any particular family.

Let us now turn our attention to diseases of microscopical dimensions, where diagnosis is possible by observation of the patterns of behavior or by examination of the slime of the infected fish using a microscope. Since many of us do not have available an accurate microscope, we must rely heavily on learned observations to diagnose most of our problems in our aquariums. Let us turn our attention to skin flukes.

There are closely related types of flukes that often attack aquarium fishes, namely, different species of the family Gyrodactylidae. In a great many cases both types of this parasite may be found on the same fish. The most obvious symptoms of conditions caused by these flukes are at first the colors of the infected fish grow very pale; then the fins droop and fold and gradually become torn, while the skin becomes more slimy than normal and shows small blood spots. Small blood spots may also be seen at the base of the fins. Breathing generally is increased in frequency, even in cases where the gills are not affected. If all these signs and symptons are present, it is advisable to treat the diseased fishes as having gill flukes even if you have had no opportunity of confirming diagnosis by microscopic examination."[1]

[1] C. van Duij Diseases of Fishes, London Life Books (1971), pp. 28-29.

Fishes whose gills are infected by flukes gape for breath, their gill coverings being stretched open widely, while the gills are expanded and very pale. Parts of the gills often become protuberant and show as a small fleece outside the covering.

For curing this disease many different chemicals may be used, but the most important point to remember is that treatment MUST be started as soon as possible, for if the fish are weakened, the chances of survival are minimal. Some people have recommended the use of methylene blue (1½ times the dosage stated on the bottle); still others report success with the use of potassium permanganate 0.4 grams per gallon; from time to time other chemicals have been tried with some limited success i.e. chloramine or potassium antimonyl tartrate (TartaEmetic) at the rate of 100 mg. per gallon. In my opinion the most effective cure is the use of FORMALIN. Prepare a stock solution by adding one cubic centimeter of pharmaceutical grade formaldehyde solution to 99 cubic centimeters of water. Use 7 cubic centimeters of this solution to each gallon of water in treating the infected fish and tank. Be sure to employ good aeration during treatment, and after three days half the water must be removed and replaced. Repeat this same procedure again to be sure all traces of the parasite are eliminated. It is essential that this procedure be followed, otherwise strains resistant to this medication may be prodced, and the infection will be almost impossible to eliminate.

For those of you who have never used formaldehyde, a few good points to remember:

1. Always mix fresh stock solution as needed, store in a warm dark place.

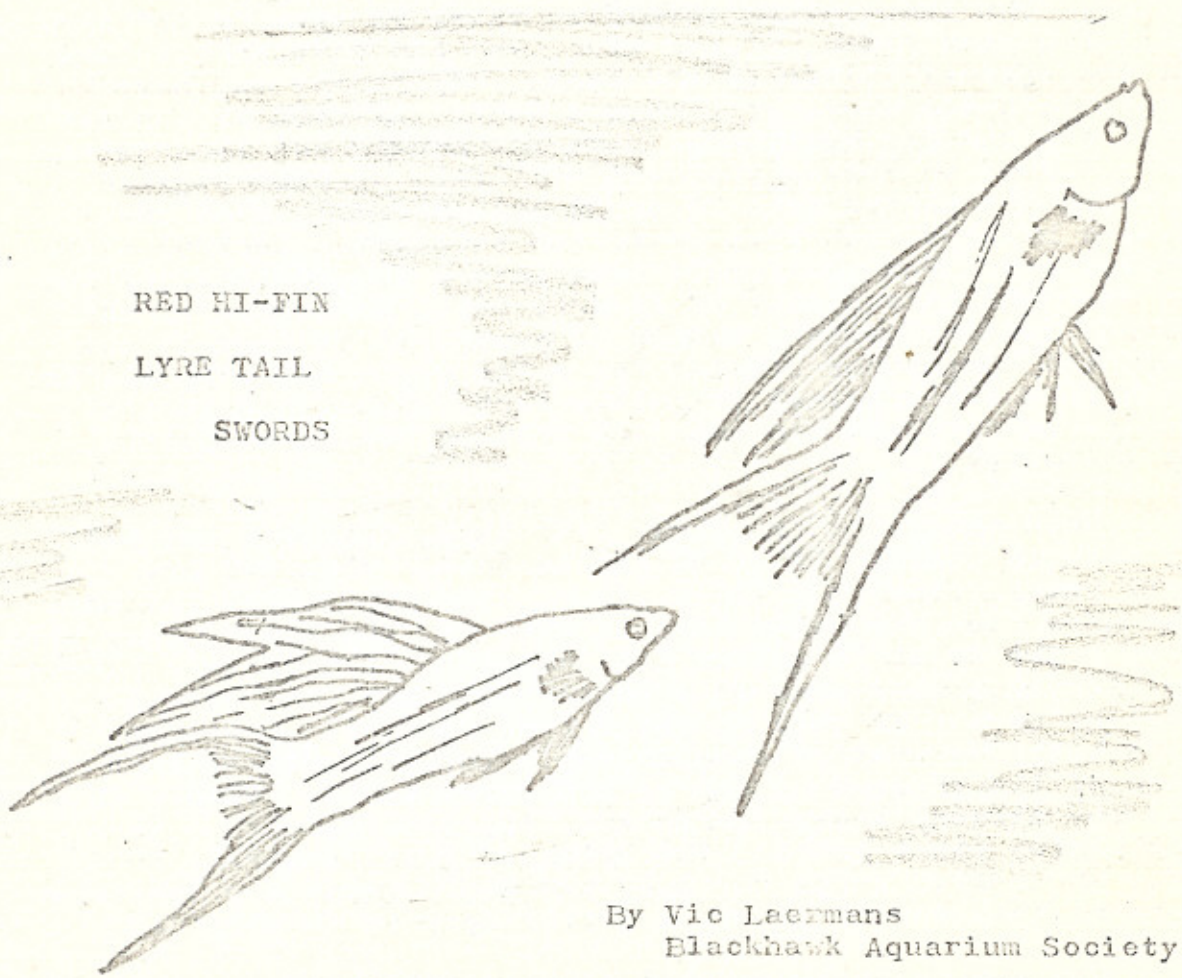
2. If any percipitate should be present in your solution, filter the solution over a fine grade filter paper before using to insure correct and exact dosage.

3. NEVER use formaldehyde in conjunction with any dye such as methylene blue as the combination of formaldehyde with many dyes produces a deadly chemical which is toxic to many fishes.

4. There is always the danger of the development of a fungus infection using this medication since it weakens the mucous coat on the skin of fish. If this occurs, treat the fungus infection as you normally would.

5. ALWAYS keep formaldehyde out of the reach of children. It is a very effective fish medication when used properly, but is also a deadly poison.

Gill-flukes will most often occur on fish that you buy which have originated in the wild. Although the original specimen may have built up a natural resistance to mild attacks of flukes, your fish will likely be very vulnerable to these parasites, so be especially careful in observing your fish immediately after any new additions to your tanks. Remember, inspite of diseases tropical fish keeping is still a beautiful hobby...don't give up.



By Vic Laermans
Blackhawk Aquarium Society

In breeding these swords the most important step is in how you feed them. I feed mine Tetra'Min in the morning and brine adult brine shrimp in the evening. I keep my adult swords in a ten gallon tank. I usually have one lyretail

male that is very young or a male that has a short gonopodium. I have about three good looking females. That is all the fish I have in the tank except a scavenger and maybe an algae eater. Keep the temperature as close to 80 as possible. Any temperature from 70 to 85 will work, but for best results, 78-82 is best. Add a few plants to the tank to give it a natural effect. If your females don't get heavy I suggest trying another male because he might be sterile or the gonopodium fin may be too long and therefore unusable. If you have more swords than I suggest in a ten gallon tank, it will sometimes cause them to stop reproducing. You should not let the swords see swords in another tank sitting next to it because this will distract them from reproducing.

When you see that the female is getting real heavy or ready to burst, transfer her into a five gallon tank. The tank should be heavily planted to provide refuge for the young. The temperature should be close to that of the tank that she came from. If you wish, you can have an airstone or undergravel filter in the tank. The female may have her young in a few hours or within a week. As soon as you see that she has had her young, take the female out immediately to cut down on losses that she will eat. I then suggest putting the babies in a 20 or 30 gallon tank. Feed the babies heavily with live or frozen baby brine shrimp, microworms, etc. Put the female back into a ten gallon tank and be sure she gets plenty of food to eat. Sometimes if the female has had quite a number of young, it is good to put her with some other females for a few days, and then put her back into the original 10 gallon tank. Sometimes if the female is put back too soon she will be chased to death by the males.

When the young are about 3/4" long, transfer one half of them to another 20 or 30 gallon tank. When fry are very young, feed them three, four, even five times per day. The more room the young have to swim in, the faster they will grow. The 20 or 30 gallon tank should be fairly well planted so the young that grow at a faster rate will not eat the smaller ones. If they do get a few, they will probably have been the weakest ones anyway. There should be some kind of lid or hood on top of all sword tanks, because as you may already know, swords are very good jumpers. When the babies start getting the extended fins, separate them from the rest. Watch the ones you don't think are lyretails because they sometimes are a little late in developing.

The chance that you will receive 100% red velvet hi-fin lyretail swords is very slim. I usually receive about 1/2 to 2/3 that breed true. If you use common males with hi fin lyretail females, the number will be even less.

THE KRIBENSIS

Pelvicachromis pulcher

By John Kowalewski
(Reprinted from B-AANCA
Oct. 72)

Since most hobbyists are "cichlid nuts" and most bulletins and exchange magazines are filled with cichlid articles, I felt it only proper to hop on the bandwagon and relate some of my cichlid experiences.

The common krib's Latin name has varied from Pelmatochromis kribensis to Pelmatochromis pulcher and presently to Pelvicachromis pulcher. It is most commonly and popularly called "kribensis" or "krib."

Male and female are easily distinguishable. The female is the shorter, attaining anywhere from 1/2 to 3/4 the length of the male. Males usually approach 4 inches when fully mature.

In body color, they are hard to compete with. The male generally has a creamy tan hue which covers the upper part of his body from his snout to the base of his tail. Where his dorsal fin begins, there is a tinge of golden-green which runs into a black base on the fins. The dorsal, which is longer and much more pointed than that of the female, has an orange-red border starting a quarter of the way back. He usually displays one or more black spots or smudges on his dorsal. The tail may have 2 or 3 black spots with occasionally a trace of a fourth. The overall color of his tail is yellowish with a reddish background in the upper half where the spots are. The lower part of the face (chin area), extending back to the forepart of the belly, is a faint aqua-blue. In spawning condition, this has an eye-catching brilliance. The belly is a brandy-red. His ventral fins are a culmination of the blending between the aqua-blue and the brandy-red.

The female is the more brightly colored of the pair. Over half of her dorsal fin displays a lustrous golden yellow hue outlined with an orange-red border. At the rear and near the base of the fin, there are usually several black spots which may blend into each other. From the lower lip to about halfway down to the ventral fins, she displays a greenish-yellow color. The area from the snout to the beginning of the dorsal fin is a greenish-black. Her tail has a transparent yellow tint with traces of black spots. The rest of the female follows the same color patterns as the male.

My first kribensis were purchased as adult breeders. They were placed by themselves in a 15 gallon tank having an undergravel filter. The temperature was set at 76° but fluctuated between 64° at night and 82° during the day. I took no precautions in checking or regulating pH or DH factors. Rocks were arranged to form a cave, into which the pair disappeared. Even feeding could not entice them to come out of their cave.

On about the fifth evening I noticed the male at the entrance apparently guarding it. Upon closer inspection the female could be seen fanning about 50 to 60 flesh-colored eggs near the rear, where they apparently had dug out an additional entrance. The male and female rotated in the fanning and seemed quite compatible. The same scene prevaled the following day, but the number of eggs had declined. Later that day I saw the female eating the eggs so I immediately separated the parents from the eggs by use of a tank divider. An airstone was substituted for the fanning process. Of the 13 remaining eggs, 11 hatched and 10 free-swimming fry resulted.

Having read that a flower pot is ideal for spawning, I replaced the rocks with two flower pots. One was placed upside down with an entrance cut out and the other was laid on its side with the bottom knocked out. They preferred the one on its side and used it only as a retreat, since they still fought to stay out of view.

Two months passed and no repeat spawning. I then replaced the inverted flower pot with my original rock formation. Within two days they spawned again. This too was unwitnessed. As with the first spawn, they were compatible and took turns fanning the eggs. Roughtly 24 hours after I first noticed the eggs, I removed the rock with the eggs and artificially hatched them. The results were 68 free-swimmers. Their first food was frozen baby brine shrimp.

Since the original pair were still shy and constantly hiding, they were placed in a 115 gallon community tank. From then on, the kribensis were constantly in open spaces. They even began to come to the surface to be hand-fed frozen brine shrimp.

The tank had a few rock caves and a few flower pots. Within a couple of weeks they chose a flower pot for their spawning site. The pre-spawning activities lasted but a few hours and were not very intense. The female approached the male and enticed him by displaying her spawning colors. She would quiver her body for a few seconds and then return to her chosen spawning site. She repeated this no more than 15 times when the male finally followed her to the flower pot. Within a few minutes some 70 eggs were laid. When

spawning was completed, I removed the eggs. The pair kept spawning every 3 to 4 weeks.

Now for my most interesting pair of kribensis. These I had observed in a tank of young kribensis in a local pet shop. There were approximately 30 males and only one female. The female, however, had already chosen her male.

I purchased the pair and placed them in a 30 gallon community tank. They immediately staked out their territory and claimed a cave for themselves.

The courtship of these two fish was most interesting. The pre-spawning activities began a good 3 or 4 days prior to the actual spawning. The female was again the initiator. She would don her spawning colors and begin to clean out her cave. Her actual spawning territory was now definitely outlined. No other fish entered it. Periodically she would leave her cave and venture in search for her mate. For a two-day period she would sidle alongside the male, showing off her iridescent hues. The male kept ignorning her and continued with what he was doing. By the third day, the male began to take notice of her and then began to change into spawning colors himself. He was now the aggressor and was in constant pursuit of the female. Once he began showing a strong interest in her, she began to ignore him. I assume from this behavior that this was the method by which the female increased the male's interest in her. This teasing lasted all day.

The following day they began their actual spawning ritual. The female would swim up alongside the male, flare her fins, and begin to quiver for a few seconds. She would then dash out in front of him, get in a face-to-face position, again flare out her fins, and begin quivering while arching her body from side to side. She would then make short dashes in the direction of the cave trying to have the male follow her. He would go part-way and then retreat. This entire performance was repeated approximately 20 to 25 times. Finally the male began to quiver together with the female whenever she came alongside. They followed this by going to a side-by-side position, but facing in opposite directions. They then appeared to be making quick jerks with their tails as if slapping each other in the face. After a few seconds of this, one of them would dash off to another area in the tank and abruptly come to a standstill. A moment later the other was alongside it, ready to repeat their previous ritual. This continued for about 20 minutes. Meanwhile, all other tank residents stayed clear of them.

The female then started darting over to the cave entrance. She entered the cave, turned upside down, deposited 10 to 15 eggs on the roof of the cave, and exited. The male immediately went in, fertilized the eggs, and came out.

The male followed her 6 times into the cave but did not enter after the female entered for her 7th time. His duty now was to protect their territory and this he did with extraordinary zeal. He patrolled the circumference of the cave. Even my Schillbe mystus, who easily doubled my male in size, was taught a lesson. From then on he too stayed away.

Since the parents were so protective, I decided to allow them to rear the brood. It was the female who tended the eggs and later the fry. The male was but a guardian.

The female confined the fry within the cave for a good two weeks, probably being overprotective because this was a community tank. I made no special feedings for the fry during these first two weeks, for they never came out in the open. Once the brood did emerge, I counted 27 fry. All of them seemed healthy and nowhere near starved.

It was then that I noticed something unusual, at least for these kribensis. These fry appeared to be feeding off the bodies of their parents, much like that of discus fry!

I maintained a constant vigil on the fry to see if I had been mistaken. They swarmed about one parent at a time and constantly 2 or 3 fry would be pecking at the body of the parent. The pecking was not done anywhere near the face, but everywhere else including all the fins and the tail. This was observed after frozen baby brine shrimp was given to them. They didn't neglect the food: they ate it. But they also continued to peck on the parents. This lasted for a few days.

Reflecting that the female did not allow the fry to emerge for the first two weeks, I can only surmise that there is a possibility that the fry were sustained solely from the secretions of the body of the female.

These fish spawned several times thereafter and always with similar courting rituals. The parents, however, were never given another chance to rear the fry, so I cannot say whether this pecking action would have recurred. At that time I was more interested in a profit-making arrangement and therefore utilized artificial methods to produce as many fry as possible.

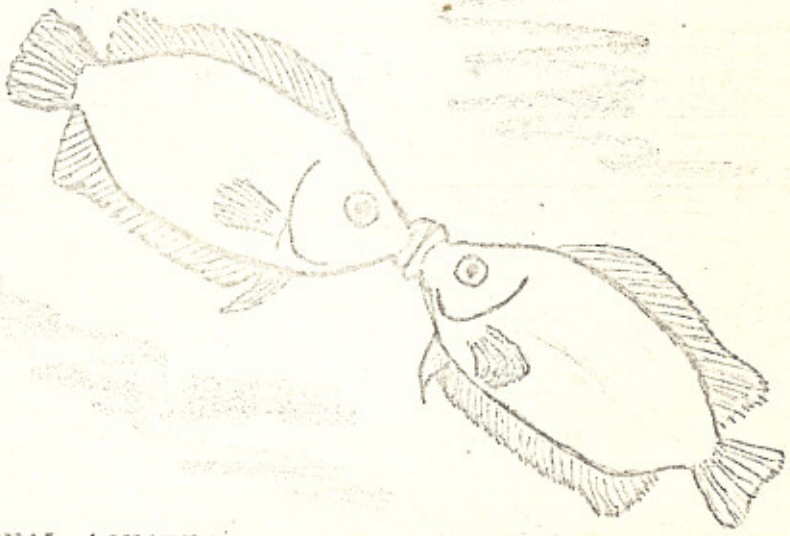
If anyone has any views or ideas concerning this behavior of the fry, I wuld like to hear them. My own conclusion is that the female knew that since it was unsafe for her to allow the fry to venture outside the cave, she must somehow furnish them with food. Though some physiological process, I feel that the female emitted a type of body secretion by which her fry were able to obtain nourishment

simply by eating off her body.

I have read that the broods are always in bad proportions; that is, one sex will outnumber the other 9 to 1 or even more. In addition, it has been stated that temperature determines whether males or females will be more numerous. High temperatures were said to yield more males, low, more females.

From all my spawns, I found all the broods of normal proportions. The most unbalanced ratio I experienced was 3 to 1; most spawnings were in a ratio of 2 to 1. None were exactly 1 to 1, but how many are?

In conclusion, I feel that the kribensis is an excellent addition to anyone's tank.



WHAT'S HAPPENING AT THE NATIONAL AQUARIUM

By Alan Levitt

Two very rare Pinecone Fish (Monocentrus sp.) went on display here last month. These beauties have thick bright yellow scales outlined in black with dozens of spines covering their bodies. This is the first time this fish

has ever been displayed on the East Coast and only the second time ever in the country. They were obtained from a wholesaler in California who bought them from a collector in Australia. The fish arrived in fair condition. One is not eating, but the other one is doing well on live brine shrimp.

A new Venomous Marine Animals exhibit was set up in a 200 gallon tank recently. The display includes cone shells, stonefish, scorpionfish, lionfish, coral catfish and rabbitfish.

Other new additions include mandarinfish, assorted Pacific invertebrates, a 10" gold severum, baby smallmouth bass, two 12" Clownknife fish, and a tankfull of Atlantic Salmon. A number of new specimens for our Chesapeake Bay displays were also collected last month by the aquarium staff. (The aquarium staff goes collecting about twice a month during the summer to supply specimens for its own displays, for trades with other aquariums and for supplying specimens for other facilities such as nature centers, Lightship, etc.)

Last month we lost two of our favorite specimens. The Russian Amur River Pike, which we had kept for over two years, jumped over a two foot barrier and was found dead on the floor. The African Lungfish (kept for four years) was also found dead one morning. It had injured itself a few days before.

Spawnings included angelfish, tomato clowns, assorted Rift Lake cichlids, cichlasoma managuense and fish in the parental care display.

BY LAVINIA VOSS

Clues Across

1. Type of Goldfish
7. A Cichlid eating Hot Food !
13. Newly Hatched Young
14. Mans Name (Abbrev.)
15. Therefor e
16. Wraps Worn by Women
18. To Add Air to Aquarium
20. Girls Name (Abbrev.)
22. Head & Tail Light Fish
23. North America (Inits.)
24. Yellow Color of Fish
26. Unhappy
27. Table used by Students
30. 14th Letter of Alphabet
31. Its Black with a Red Tail
32. The Highest Point
34. Siamese Fighting Fish
36. First Course At Dinner
38. Sounds like He is out of Breath !!!
41. Friend (French)
45. Break Suddenly
46. Girls Name
47. Gourami-Snow White had 7 ! ! ! !
50. Sounds like this fish Cuts
52. Rodents
53. To Exist
55. Perform
56. Women Marines (Init.)
58. Stop
60. Chatter (Colloq.)
61. Ocean
62. Declare to Speak the Truth
64. Exclamation of Suprise
66. Therefore
67. Polluted in Most Big Cities
69. ReTrucks
70. District Attorney (Init.)
73. Convict Fish is One
74. Example (Abbrev.)
75. Clowns are one of this family.

Clues Down

1. Lowest Male Singing Voice
2. Fish That has 2 Breathing Apparat
3. Tropical Nut Containing Caffein
4. From
5. Of the Goldfish Family
6. Hardy Cereal Grass

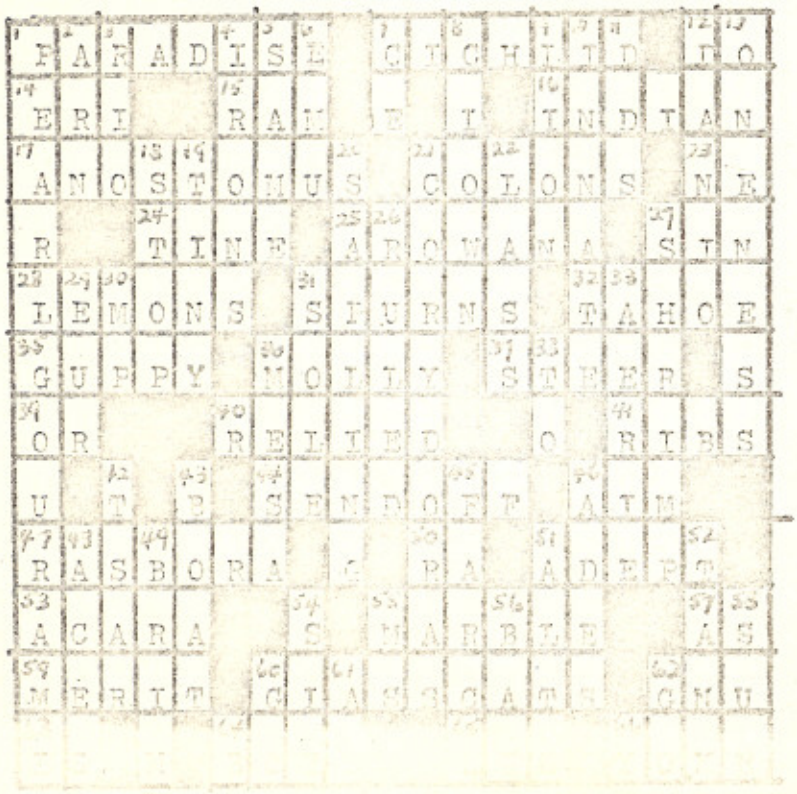
FISHWORD # 102

Clues Continued

7. The Side of Anything
8. A very small quantity
9. Regret
10. Singapore Angel !
11. Expended
12. Large Book
17. To Marry
18. Rasbora thats Sharp !
21. Insect
24. The Millions Fishes !
25. An Idler
26. Appear to be
28. God of Love
29. Lowdown Catfish or Botia !!
33. Types of Guppy
34. Rosy-Cherry- Tiger -Fish ?
35. At a Fast Pace
37. Part of Another Name for Killies
39. Patriotic Fish !
40. Red or Harlequin Fish
43. Whether
45. Apple: Cherry Or Pumpkin
48. Part of to be
49. Type of Fish Tail
51. Niagra for one !
54. Long Poem of Heroic Deeds
57. First Name of Famous Blonde
59. Sound Expressing Suprise
63. Definate Article
65. Fuss
68. Rhode Island (init.)
72. On: In: Near: By

* * * * * * * * * * * * * * *

Solution to FISHWORD # 101



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

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DIAGNOSTIC CHART AND MEDICATIONS

For all our finny friends from Oceans, Rivers, Lakes and Estuaries of the World

Diagnosis	Symptoms	Medications
Saprolegniasis (Fungus)	Cotton patches or thread-like growths on body and fins	Fungi-Aid or Sulfathiazole
Bacterial fin and tail rot	Decaying of fin and tail tissue	Ich-Aid or Glo-Brite (copper solution)
Acidosis	Scales raised – Red blotches appear	Raise pH – Use Skin-Aid
Alkalosis	Fraying of fin structure	Lower pH – Use Skin-Aid
Ulcer Disease	Holes in skin – Raising of scales	Salt-Aid or Skin-Aid
Kidney Disease	Tiny unruptured pimples	Proto-Aid or Sulfathiazole
Mouth Fungus	Cotton like growth inside mouth	Fungi-Aid
Eye bruises, Eye cap	Whitish coating on eyes	Bright-Eyes and Aquarium Salt
Discus Protozoa	Whitish looking pimples around eyes and head	Proto-Aid or Quad-Sulfa
General Anemia	Sluggish fish – Sunken belly	Change diet, use Vita-Aid, Feed high protein food
Black Molly discoloration	Mottled look – Whitish flecks	Glo-Brite (copper solution)
Swim Bladder Disease	Bloating of belly	Internal-Aid & Proto-Aid, Feed high protein food
Excessive Chlorine	Sudden movements – Gasping	Kil-Klor
Velvet Disease	Grey Yellow coat-like appearance over large areas	Raise temp to 30°C (80°F)–Add Velvet-Aid or Skin-Aid
Skin slime and abrasions on Catfish	White coating or abrasions on Catfish	Catfish-Aid
Internal disorders	Listlessness, won't eat – No other visible signs	Change diet, use Internal-Aid, Feed high protein food
Oodinium Pillularis (Fresh water)	White to grey yellow spots on skin and fins	Salt-Aid or Quad-Sulfa
Oodinium Ocellatum (Salt water)	White to grey yellow spots on skin and fins	Salt-Aid or Quad-Sulfa
Parasites (Salt water)	Sudden movements – Microscopic parasites on skin	Para-Salt or Quad-Sulfa
Parasites (Fresh water)	Sudden movements – Microscopic parasites on skin	Skin-Aid or Sulfathiazole
Ichthyophthirius (Ich.)	Small white flecks all over body and fins	Ich-Aid or Quad-Sulfa
Bacterially infected water	Cloudy, milky look to water	Clear-Water
Tumors	Large growths under skin	Skin-Aid or Quad-Sulfa
Gastritis	Swollen belly	Change diet, use Internal-Aid, Feed high protein food
Gasping at surface	Fish remain near top to get oxygen	Change filter, increase aeration – Use Clear-Water
Furunculosis	Boils or lumps under skin	Salt-Aid or Quad-Sulfa

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