Aquarium JOURNAL

MARCH 1958

THIRTY-FIVE CENTS

FOR BEGINNER OR EXPERT

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The AQUARIUM JOURNAL

Published by The San Francisco Aquarium Society, Inc.

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VOL. XXIX — MARCH 1958 — No. 3

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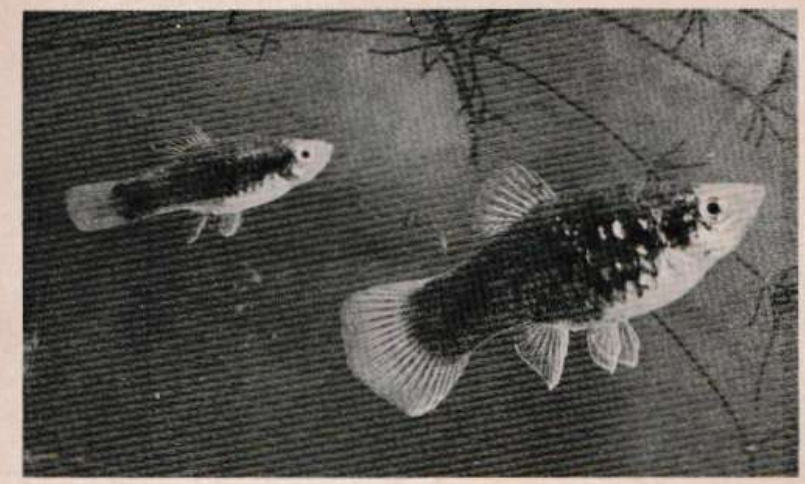
COVER PHOTOGRAPH

A closeup photo of the pencilfish,* Poecilobrycon harrisoni. *This two-inch long fish from British Guiana readily breeds in soft, acid water of pH 5.5 to 6.5. Photo by Stanley Weitzman

Published monthly by San Francisco Aquarium Society, Inc., Steinhart Aquarium, Golden Gate Park, San Francisco 18, California. Telephone BAyview 1-0054. If no answer, call BAyview 1-5100. **Subscription rates:** $3.00 yearly in U.S. and Latin America, elsewhere $3.50.

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



How to keep a home aquarium —

In A Nutshell

James W. Atz
Associate Curator
New York Aquarium

A PUBLIC AQUARIUM official gets all kinds of telephone calls, but one of the most exasperating is the request for everything there is to know about setting up and maintaining a home aquarium. Some people don't realize that whole books have been written on the subject and that even the largest ones don't cover the field exhaustively. Similarly, on more than one occasion I have been asked to write down complete instructions on home aquarium management — all in a few hundred words. This is, of course, just as impossible as doing it over the telephone. Nevertheless, I once did try to summarize what I thought was the most essential information for a beginning fish fancier. I tried to put it all in a nutshell, and while I know the article wasn't completely successful, I pass it along as one man's summarization of an un-summarizable subject:

The principles involved in keeping a home aquarium are not many, and by observing them practically anyone can own a successful tank with beautiful

Photo: Live-bearing black platys, a color variant of **Xiphophorus maculatus**, as photographed by the New York Zoological Society.

plants and fishes. A single article such as this one cannot hope to cover all exigencies, of course, but it may get the beginner started in the right direction and help him avoid the commonest errors of aquarium management.

The choice of a tank is one of the first problems that confronts the would-be fish fancier. The simple rule here is to purchase a rectangular tank and one in which the height is at the most two or three inches greater than the width. Tall, narrow tanks or globes give unsatisfactory results in the vast majority of cases. One reason for this is that they do not expose enough water surface to the atmosphere. It is through this air-water boundary that the essential exchange of vital oxygen and deleterious carbon dioxide takes place.

Unless you are an expert mechanic, it is much easier and cheaper to buy a ready made tank instead of trying to build one. If you insist on doing so, however, remember that the slightest bit of most metals in contact with the water will quickly kill your fish. For example, it takes but two parts of copper per hundred million of water to kill small fishes in one day. Much less will poison them over longer periods. In fact, it is of the utmost importance to keep all sorts of metals, paints, soaps, detergents, resinous woods, certain plastics and chemicals in general out of your fish tank. Insecticides are especially deadly to fish. For this reason, and others, a glass cover should be kept on the tank at all times. Do not worry about the fish getting sufficient air; no tank cover fits tight enough to exclude the necessary atmosphere.

Locating the tank properly is important. It should not stand in a drafty spot or near a radiator. Sudden changes in temperature are bad for fish. Natural light is not essential, since artificial lighting is just as satisfactory in most instances and is more easily controlled.

Direct sunlight, except for short periods, is to be avoided. Too much light encourages the growth of minute plants (algae) which turn the water green, obscuring the fish and killing the larger, decorative aquatic vegetation. A strong,

Photo: A small school of neon tetras. Photo by New York Zoological Society.

firm resting place for the tank is essential. Water weighs eight and one-third pounds per gallon; a fifteen-gallon tank weighs 125 pounds or more when filled. Incidentally, this is the reason why a tank containing water should never be moved. It is practically impossible to do so without cracking the glass or springing the frame.

Gravel or sand is not essential in an aquarium, but makes for a more natural appearance and *is* necessary if rooted plants are to be used. Material about the size of bird gravel, or a little larger, is best. Too fine a sand packs tightly and impedes the growth of plants. Pebbles and marbles provide crevices into which uneaten food falls, there to rot and spoil the water. Limestone products – such as marble, sea shells, coral and coral sand – should be avoided since they dissolve and tend to make the water too hard. All metallic ores are forbidden, of course. Quartz, sandstone and granite are the best known minerals suitable for aquaria. They are found in attractive shapes and forms and make ideal tank decorations.

The most important single constituent of an aquarium is the water, and unless this is kept in good condition, neither fishes nor plants will thrive. The best water for fish is what aquarists call "conditioned" water, which is water in which fishes have lived – and have improved by living in it. This is an unusual state of affairs, for the health of most domestic animals requires their living quarters to be cleaned regularly. Not so with most of the fishes that live in standing aquaria. Their waste products actually make the water more suitable for them to live in. Aquarists thus distinguish between clean dirt and dirty dirt, the former being the waste products of the fish themselves, the latter consisting of uneaten food, the bodies of dead fish and the like. Clean dirt need only be removed for aesthetic reasons, whereas dirty dirt should be avoided at all cost.

The beginner, of necessity, must start with raw tap water, but if this is treated correctly and the hardier types of fishes are subjected to it, no harm will result, and the fishes will soon chemically alter it to suit themselves. Water can be drawn directly from the tap, put into the tank and allowed to come to room temperature. This will disperse any chlorine that may be present. Unless the water is kept with living plants in it, there is little, if any benefit from aging it, that is, letting it stand for several days or weeks. Fish may be placed in the new water as soon as it has reached the proper temperature. For the first two weeks they should be fed most sparingly. The development of a slightly cloudy or milky appearance is characteristic of new aquaria, but once

Photo: Two catfishes of the genus **Corydoras.** Photographed by Sam Dunton of the New York Aquarium.

this clears up – and it will do so within two weeks if fish are underfed – the water should be crystal clear and should remain so indefinitely.

This is a good time to mention the greatest source of trouble in home aquaria: overfeeding. It is overfeeding that most frequenty spoils the water in tanks and is responsible for the death of more pet fish than any other cause. Fanciers frequently apply the necessary daily feeding of cat, canary or child to their fishes – with disastrous results. Uneaten food then accumulates in the tank, blackening the sand and producing noxious gases and other poisons. Fish are cold-blooded creatures, and most of them can go a week without food without showing any discomfort. Moreover, an aquarium is also the living place of numerous tiny plants and animals on which the fish may frequently be seen to feed, picking and pecking on leaves, glass and gravel. That fish gather at the place where they are habitually fed, "begging" for food, is no indication that they are really hungry. Like most domesticated animals, they have learned to react to their keeper's footsteps or behavior, and will act hungry in his presence even if they have been fed but a few hours before. To prevent overfeeding, we recommend that fishes be fed only three times a week and that no more be given them at any single feeding than they will completely consume within ten minutes. The correct amount of food can be determined by feeding with the flat end of a toothpick, standing by to see that each bit is totally consumed before giving the fish another. After a little practice, however, such extreme care is not necessary. Some fanciers believe that keeping a few so-called scavengers, like snails or catfishes, reduces the danger, but there are no "scavengers" alive that can cope with chronic overfeeding.

Plants play a vital role in home aquaria, but not the one usually assigned to them. All tradition notwithstanding, plants do not "balance" an aquarium, providing the fishes with all their oxygen and using up all the carbon dioxide produced by them. For one thing, plants do not increase the oxygen content of an aquarium or reduce the carbon dioxide except when they are actively producing food (photosynthesizing), which takes place only in the presence of bright light. So far as respiration is concerned, fishes

Photo: Zebra Danios as portrayed by Sam Dunton of the New York Aquarium.

in the usual aquarium do as well without plants as with them. Nevertheless, for both utilitarian and aesthetic reasons, aquatic plants should be included in the home aquarium. More than anything else, they are responsible for whatever beauty the tank exhibits. Few, if any, aquaria that lack a generous growth of underwater vegetation are really attractive. On the more practical side, aquatic plants provide a more natural environment for the fish, including places to hide and to lay eggs, and they are feeding grounds where microscopic and near-microscopic plant and animal life abound. In addition, well planted tanks are less likely to develop green water.

The proper amount of vegetation for a given tank depends more on decorative than biological. What kind of plants will thrive depends mostly upon the quality and quantity of light they receive. It is best to experiment with several different types in order to discover just which ones will do best. *Cabomba* and *Anacharis* require strong light; *Vallisneria*, *Sagittaria* and *Ceraptopteris* (water sprite) need somewhat less; while the Cryptocorynes thrive under relatively subdued light. In any event, if your tank depends largely upon artificial illumination you will need to keep the light on eight or nine hours each day. Either incandescent or fluorescent lights may be used. For more natural effects with fluorescents, those known as Warm White, Warm Tint or the like are the most satisfactory.

Local fishes like certain darters and minnows, sunfishes, catfishes, suckers, sticklebacks, gar, mudminnow and goldfish – all of which will do well in relatively small tanks of standing water – do not require any temperature control. Nevertheless they must not be subjected to sudden changes in temperature and should not be kept in rooms where the temperature drops more than ten degrees at night. On the other hand, the great majority of the so-called tropical fishes require controlled heat, ranging from 72° to 80° Fahrenheit. This is most efficiently and safely accomplished with one of the better grades of electric heater-plus-thermostat available at stores or through mail-order establishments.

Feeding the usual run of tropical or temperate fresh-water fishes is seldom difficult, providing that overfeeding is avoided. As wide a variety of foodstuffs as possible should be used. Besides the several kinds of commercial dried foods available, raw lean meat, liver, raw fish, shrimp and clams, yoke of hard boiled egg, cooked oatmeal, parboiled spinach and fresh lettuce are all relished by most tropicals and by many temperate water species. Usually the food is chopped up finely before being fed. A blendor of some sort is wonderful for this, but the amount needed is usually so small that chopping by hand is not onerous. A little living food once a week is excellent but not absolutely essential. Live daphnia (water fleas), enchytraeids (whiteworms) and tubifex (redworms) are generally sold in pet stores, at least during certain seasons. Raw, frozen daphnia is a pretty good substitute for the living creatures. Earthworms, chopped up if the fish are small, are excellent.

When purchasing fish for the first time, it is best to stick to the less expensive kinds. The hardier a fish, the more available it is likely to be and the cheaper it is. In fact, the ubiquitous guppy – a livebearing species that is hard to beat for color, hardiness and prolificness and which exhibits lively yet peaceful behavior – is probably the best of all beginners' fish. Other hardy species less "tough" are the tetras, platyfishes, swordtails, mollies, Corydoras catfishes, the Siamese fightingfish and the angelfish or scalare.

Next to overfeeding, overcrowding kills most pet fish, and when your fish come to the top gasping, it is usually a sign that this serious condition exists.

(Continued on page 114)

Guppy specialist tells how to

Breed the Fancy Show Guppy

Donald Dewey
Los Angeles, California

SINCE THE FOUNDING of the American Guppy Association, an abundance of material has been published concerning the fancy show guppy. It is not the purpose of this article to present an *only* method for the selection, care, and breeding of the guppy, but to consolidate this information into a practical and working method that will serve as a yardstick for those interested in the propagation of this beautiful fish. The breeding techniques described herein are those used by the author and as recommended by Larry Konig, one of the eastern seaboard's leading guppy breeders.

It is urged that the guppy fancier obtain the best trio of guppies available to him. Fifteen to twenty dollars is not an uncommon retail price for a male and two females having desirable show characteristics.

Photo: The author with a pair of his fancy show guppies. Photograph by Pettown, Pasadena.

To maintain a single strain, the author uses a total of ten aquaria, varying from 3 to 15 gallons in size. In addition, a dozen one-gallon, wide mouthed mayonnaise jars are used. These can be obtained through the courtesy of a local restaurant owner.

All aquaria, with the exception of the hatchery tanks are prepared similarly. A 1½" plexiglass strip is installed in a semi-circle from one front corner of the aquarium to the other, to act as a gravel retainer. Pre-washed gravel, number 2 or number 3 grade, is thoroughly washed again and added behind this strip. The tank is then filled 2/3 full with tap water. ½ teaspoon of *sea salt* is added per each gallon of water used, stirring slowly until dissolved. The water is then allowed to stand for two days with constant aeration. After this de-chlorinating process, the tank is planted.

With the exception of a sprig of *Nitella* in each tank as an indicator of balance, watersprite is the only plant used in the author's aquaria. Smaller plants are set quite profusely throughout the tank, with one or two larger plants in each rear corner. A commercial aquarium fertilizer is added as an *initial* aid to plant development.

The tanks are allowed to stand for five days with continuous lighting before occupancy. At the end of this period, the remainder of the water is added. After six hours of filtering the tank with a water-softening preparation, the pH is adjusted to between 7. and 7.3. [Editor's note: In my experience soft or softened water is not necessary for plain or fancy guppies. At one time I raised thousands of high quality guppies in concrete aquaria and the water in concrete aquaria becomes very hard]. A plastic feeding ring of the stationary, combination type is affixed to the front glass above the bare area provided by the plastic gravel stop. The tank is then covered with a hinged, two-part cover glass. Air space for the exhaustion of released gases is provided by neoprene tubing, split lengthwise, and installed across the front and back rims of the tank, upon which the cover glass rests. The rear and sides of the tank are painted with black asphaltum varnish to provide effective control of algae caused by unwanted light.

Preparation of the 5-gallon hatchery tanks (2) and the 1-gallon jars is similar to the above method, with the exception that no gravel is used. Enough watersprite is floated in the hatchery tanks so that the female will have only an inch or two of free space in which to move, thus affording a greater degree of safety for the young fry. One or two floating plants is sufficient for each of the jars.

The number and size of tanks set up as described should be as follows:

(1) 3-gallon breeding tank; (2) 5-gallon hatchery tanks; (4) 15-gallon male and female separation tanks; (1) 10-gallon mutation tank; (1) 5-gallon isolation tank; (1) 15-gallon "dog tank"; and (12) 1-gallon jars for virgin young. All tanks and jars are labeled for record-keeping purposes. The method of marking the tanks will be discussed in greater detail.

Temperature in all tanks is maintained at 80°, with a 5° reduction at night, with the exception of the isolation tank. Temperature in the latter is kept at 85°. [Editor's note: Dr. Myron Gordon, the famous fish geneticist, has had a great deal of experience with guppies and he finds that the optimum temperatures for guppies is between 70 and 78° F.].

Lighting for the 10 and 15-gallon aquaria is provided by 35-watt incandescent bulbs suspended a few inches above the tanks in circular reflectors. A 15-watt bulb is used for the breeding tank and a 25-watt for the 5-gallon hatchery tanks. Lighting is maintained for 10 hours daily with a 30% increase in duration for the hatchery tanks. The latter is to promote rapid development in the young guppies. Continuous lighting is definitely *not* recommended.

The practice of providing a constant food supply as has been sometimes recommended is ridiculous and also an invitation to bacteria or putrification. It is suggested that guppies be fed four or five times daily with as much food as they can consume in 3 to 5 minutes. If this is not possible, select a high-quality dry food and feed once daily. Tubifex worms have been rated the finest live food for guppies and should also be fed daily when available. Brine shrimp may be used to vary the diet if so desired. The latter should be well-rinsed and fed infrequently. Insofar as scavengers are concerned, both pond snails *(Physa)* and several varieties of *Corydoras* catfish are used.

Once the tanks are properly conditioned, two females [one to henceforth have the label B and another to have the label C in your records] are introduced to a male [to be recorded as A] in the 3-gallon breeding aquarium. After allowing a few days mating time, the females are removed to the 5-gallon hatchery tanks which are correspondingly labeled B and C. As soon as the young are dropped, the females are transferred to two 15-gallon separation tanks marked Females-AB and Females-AC.

Six of the young from both females B and C are removed from the hatchery tanks and each of the twelve is placed in an individual gallon jar. (Six of these jars are marked B, and six C). This will assure you of virgin female stock to inbreed back to Male A. The balance of the young is allowed to remain in the hatchery tank until the youngsters can be sexed. By keeping the young of each female separate, you can determine whether line B or line C throws the most desirable characteristics.

At the time of sexing, the best males are removed to separation tanks marked Male-AB and Male-AC, according to their parentage. The corresponding female separation tanks are stocked from the virgin young in jars. The remaining young can then be placed in the 15-gallon "dog tank" for further disposition. *Remember:* one female may produce several dozen young, but it is possible that only one or two of the males and females will be worth saving. Consign only the *very best* to the separation tanks for further working, and don't save a slow-growing specimen just because it has good fins or color. Select the best colored and "finned" fish from your most vigorous youngsters.

From the separation tanks, select the two best females for mating back to Male A. This generation will then be AD and AE, and the process just described is repeated. If the desired finnage does not appear by the third generation, outbreed Male A to two virgin females from an un-related line. If there are good characteristics in the third generation, continue inbreeding to the fifth. Hold some females back for the tanks that show good male stock and put them together in the 10-gallon "mutation" tank.

It is possible that some degeneration may be produced as the result of continued inbreeding. It should not happen if you select carefully but if it should happen, revert to some of the best fishes in the separation tanks and experiment with brother-sister crosses between offspring of the B and C females.

After the fifth generation of inbreeding it will be necessary to outbreed to virgin females from another strain. [Editor's note: I do not agree that it will be necessary. Proper selection of young stock can usually prevent the necessity of outbreeding. One must select young for fecundity and vigor as well as color and fins and size]. From this point, another cycle can be started to the third or fifth generation as described. The author subscribes to the practice of outbreeding his two best females to a male of another line, in lieu of further inbreeding, should a male with more desirable characteristics be found.

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Although the selective breeding of guppies is in part accomplished by a knowledge of the scientific principles of inheritance, the "perfect" guppy will not, and cannot be bred by the charts alone, nor by reliance upon chemicals and drugs. The end results of any breeding pattern will only be as good as the ability of the individual breeder to practice patience, selectivity, and a mutual interchange of ideas and techniques with his fellow hobbyists.

★ ★ ★

A.G.A. News

THE Fraternal Greetings sent by our fellow Guppy Breeders in England is another forward step in the building of the A.G.A. We are justly proud of the American type Guppy, but our friends in England can well be proud of their proven ability in maintaining their various strains true, to the standards set up by the British Federation. I am sure that in the future exchanges of experiences we shall learn many things to help us in working out our own standards and association.

It is hoped that the April release will carry the names of the people who will be the Standards Committee for the A.G.A. Many of our Groups have written in and asked for literature on Guppies, until now none has been available. Don Dewey has volunteered to gather all available published material, English and American, etc., to be set up as an A.G.A. Library. This material would be loaned to any group requesting research material. We certainly must give Don credit for tackling this big and helpful project. Postage would be paid by the group using this material.

We have received many requests from members living in areas where there are no Aquarium Societies who want to get in touch with other breeders. Perhaps it will be a good idea to put their names in our column and help them make contact. Leonard Winter, 418 5th St., S.E., Minot, North Dakota, would like to hear from breeders in his area. Again it should be stressed that the A.G.A. does not seek to set up separate A.G.A. Societies. The Guppy is a part of any Society activity as any other fish we can mention. The exceptions

would be where a club does not choose to form an A.G.A. Group. Then we have Guppy Breeders from these Societies who then form a separate Guppy Club, this could lead to a loss of membership for the original mixed fish club. This is to be deplored. We are trying to keep the fish breeders together, not apart. Since the A.G.A. is basically an organization to help further the development of our American Guppy. We then have no choice, but to recognize the separate Groups formed to date (and there are quite a few.) Many of the people in areas where there are no Societies write in to ask information on how to start an A.G.A. Club. To them we say, form a Tropical Fish Club, and try to have an A.G.A. Group in it. Where there are groups anywhere interested write to the A.G.A. Secretary, who will see to it that your group will receive free a very fine

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A hardy and peaceful fish

Red Tetra from Rio

Robert J. Wyndham
Los Angeles, California

It is an understatement to say that the red tetra is popular. It is found in nearly all community tanks and for good reasons. Soon after it was imported from the Province of Rio de Janeiro, Brazil under the wrong name of *Hyphessobrycon bifasciatus*, it conquered the hearts of aquarium owners. As its weapons it used beautiful coloring and winning manners.

These lively beauties grow to about 1½". The general color of both sexes is a light greyish brown to olive green. The belly has a silvery sheen. The posterior part of the body and back show off in a shiny wine red. In these parts the female shows an almost yellowish undertone.If illuminated at right angles the red tetra's sides have a violet hue. A vertical dark brown, but irregular, band runs over the shoulder; the head shows a similar band, which runs over the eyes. Another bar runs about the center of the body. Often just back of the gill covers a less pronounced band can be seen.

The dorsal fin is reddish. The little adi-

Photo: Hyphessobrycon flammeus, the red tetra, male above, female below. Photo by G. J. M. Timmerman.

pose dorsal fin is colorless in the male, but has a slight reddish hue in the female. The tailfin of the male has a light reddish yellow hue, while that of the female is reddish at its base, tapering off to colorless around its rim. The anal fin of the male is blood red, especially around its base. The rim of this fin sports a black band. The female does not have this little black band on the anal fin and its red tends slightly to yellow. The pelvic fins of the male are blood red with black tips. The female's pelvic fins are yellow red. The pectoral fins of both sexes are colorless. The male is of a slightly lighter build than the female.

The red tetra is very peaceful and gets along nicely with other species. However it has been observed that young males occasionally chase bigger males of other species. This seems to be more a show of exuberance than intention to harm. Given reasonable care they are hardy and they will last long in the tank. Like many other species they show to their best advantage and natural behavior when kept in schools. They need a temperature range from 72° to 79°. They are not fussy about their diet and they will thrive on any food suitable for their size. A water level of ten to twelve inches is ideal.

As if all their good qualities were not enough of a recommendation, they are also easy to breed and rather prolific. Ten gallon breeding tanks promise the best results when supplied with fresh soil, sand and water, water level about six inches.

At a temperature of about 75° F. the male, though often a little timid, takes courage and starts chasing his mate fiercely, excitedly dancing around her. He tries to drive her into dense plant growth. For this reason they like a breeding tank which is in spots thickly planted with fine-leaved plants *(Myriophyllum* or *Nitella)*. After the chase has gone on long enough to bring their excitement to a climax, the couple will be suddenly seen side by side releasing up to twenty transparent eggs. The act is repeated several times, resulting in the spawning of a hundred eggs or more. One should remove the parents to prevent cannibalism. After five days of further conditioning the female is ready and willing for another session. Some hobbyists use one female with two males and they feel they get better results by this trio method.

The eggs usually hatch in 36 to 48 hours and the tiny, translucent, comma-like fry can be seen hanging from plants or the glass of the tank. Infusoria, dust-fine prepared food, a drop of milk or blood or a drop of eggyolk emulsion should be supplied now with moderation. After two weeks, somewhat larger food, such as screened daphnia or newly hatched brine shrimp should be fed. Now the fry grow rapidly and if conditions are right they may measure one inch when five months old. It is an unforgettable sight to watch a school of these young fish, whose red coloring would seem even more lively than in the mature specimens.

* * *

Ode to a Turtle with a Poor Credit Rating

Hail, oh Hail, little trutle
Whether you be a Myron or a Myrtle.
Though for non-payment you may be convicted
From your house, you'll never be evicted.

— Diane Schofield

* * *

Free Sample Back Issues of The Aquarium Journal

What a pleasant way to acquaint your fellow hobbyists and friends with *The Aquarium Journal*, at no cost to anyone! Simply send names and addresses of your acquaintances who would enjoy a sample back issue of *The Journal* and we'll mail one immediately. Send your requests to *The Aquarium Journal*, Steinhart Aquarium, San Francisco 18, Calif.

Finale of Don Simpson's
Seahorse Opera —

Mustangs in the Corral

ACT II

SCENE I

The time: 1 month later

(The Tropical Room at Steinhart. As the scene opens Pop is busily engaged removing a dead seahorse from one of the five tanks. A frown of concentration is on his handsome (whoops) face as the door opens and Junior slouches into the room.)

"What 'cha got, Pop? What're you trying to hide?"

"Oh, its you. I might have known. Did you by any chance notice the sign on the door which says 'PRIVATE'?"

"Knock it off, Pop. I'm no stranger. What are you hiding, I asked?"

"I'm not *hiding* anything, Junior, this is a dead seahorse to be examined under the microscope."

"Pop, did you say *dead?*"

"Yes, Junior, I said 'dead.' Things have happened on the Mustang Range."

"Now that you mention it Daddy-O, those five tanks don't look quite so densely populated as they did a month ago. What hoppen, Pops, lose your touch? I thought you were bragging last time about what a whizeroo you are at raising sea colts."

"Don't be obnoxious, Twerp. If you can keep a civil tongue in your head for a few minutes I'll give you the scoop."

"Okay, Pop, give."

"Very well, here it is. You recall about a month ago there were 140 colts about 3 weeks old all frisking around the range and —"

"Yep. Saw them with my two little peepers."

"Don't interrupt, Hopeless, if you want the story."

"My lip is buttoned, Pop."

"Good. Keep it buttoned until I finish. Shortly after that some of the mustangs started to kick the bucket, until by now about half of them have gone to mustang heaven."

"Got tired of looking at you, Pop, and just gave up maybe?"

"The lip, Junior, the lip. As a matter of fact the colts were pediculous."

"How's that again, Pop?"

"If you'd read the dictionary once in a while instead of comics you'd know it meant 'covered with lice.' Louzy, to you, Squirt."

"Louzy, Pop?"

"Yes, Junior, I'm sorry to say. They are infected with bacteria and protozoans, both externally and, much worse, *internally.*"

"So what do you do in a case like that, Pop? Bust out in tears?"

"No, Rollo, no time for tears. I have become a sea colt pediatrician, and you can look that one up yourself."

"Wow, Pops, your mouth's full of nine dollar words. You related to Mr. Webster or Mr. Funk?"

"Listen, Buster, you want the rest of this story or —"

"Give, Pop, I'm all ears."

"Use them then instead of the lip."

"It's a deal. I'm waiting with bated breath."

"Keep it bated for awhile then."

"Okay, Pop, get it off the chest."

"Very well. So we tried several treatments, some of which killed some of the bugs, but evidently not enough of them, for the colts kept popping off."

"Where did the bugs come from, Pop?"

"Possibly from our system water, Junior, which is probably loaded, though it doesn't seem to hurt the fish in the big tanks which are constantly circulat-

ing. But in confined tanks such as these, with heavy feeding, and even with frequent siphoning, the bugs just multiply and thrive; acts like an incubator for them."

"How about filters, Pop?"

"Tried them, kiddo. No soap. They help a little but not enough."

"So now what happens to the old Mustang Veterinarian? You ready to give up?"

"Not quite, Junior. A few days ago I was paid a visit by Hal Wolfe, a pathologist for the California Fish and Game. He recommended a treatment which I am now trying."

"What is it, Pop, if I'm allowed to unbutton the lip long enough to ask?"

"One of the sulfas, Pest, sulfaguanidine to be exact. Some of them I'm treating by putting the drug in solution. Another tank I'm trying by feeding brine shrimp that had been in a solution of the drug, hoping that the shrimp will absorb enough of it so that when the horses eat them they will get the drug internally to attack their internal parasites. Now, that's enough for now, Junior, take a powder and get lost for a while. Come back in a couple of weeks and we'll see what cooks."

– Curtain –

(Soft music, VERY soft.)

ACT II

SCENE II

The time: Later than you think.

The scene opens with Pop in the Mustang Corral at Steinhart gazing sadly out over the North 40 pasture. The door opens and Junior skips into the room grinning from ear to ear.

"Hi, Pops. How's the old Hoss Vet?"

"You again, Linthead?"

"Yep. You told me to come back. What gives? You look pretty sad sack."

"To tell you the truth, Junior, I feel pretty tough, too."

"Too much New Year's Eve, Pops?"

"Skip the snappers, Squirt, or I'll bounce you out of here. It's the Mustangs, Junior, have given me a bad time."

"How about the wonder drug you were giving 'em, Pop?"

"I wonder too, Junior. But the tough part of it is that for a time I thought I had it licked. Then after about ten days of it they started popping off again. Bugs probably liked the stuff after a while and thrived on it."

"So what's next? Or are you finally ready to give up?"

"With this batch, Junior, I'm through. About 25 left, half grown, and apparently healthy. I'm about ready to turn them loose on the range."

"You think the treatment cured 'em, Pop?"

"If you want my opinion, I think they made it in *spite* of the treatment, or else they were just tough customers. Furthermore I don't think more than that out of a batch would cut it in their natural habitat. Who am I to try and better Mother Nature? She's been at it a lot longer that I have."

"Maybe you got something there, Pop. What are you going to do next time?"

"Glad you asked that, Junior. I have a plan for the next batch of colts. Going to irradiate the water before it goes into the tank with ultra violet light. Kills the bacteria, I hope."

"Gotta hand it to you, Pop. You may be down but I never seem to hear the count of ten."

"A good example for you to emulate, Junior."

"Thanks, Pop, I guess I'll stick to guppies."

As Pop gazes sadly out over the range, the curtain slowly

FALLS

(But, unfortunately it didn't hit Junior on the head.)

NEXT WEEK: "EAST LYNNE."

Your aquarium needs Myriophyllum —

Plant of Delicate Beauty

Walter Bertholdt
Flensburg-Murwik, Germany

HERE we have an aquatic whose long, tender and featherly strands of rich dark green color have won many an outsider for our hobby. It is only a pity that we see it so seldom in its aristocratic beauty in the tanks of the fanciers. Generally it looks poor and even ugly. Overgrown with algae, especially the fine and bristle horsehair alga, its feathery leaves pasted over with dirt particles. In such a state it is no credit to the aquarist.

But you should see it in crystal clear water and in tanks which are not overpopulated by fishes. Its long, vigorous branches flood the surface of the water, thick bunches with their rich tufty crowns extending from the lower levels of the water towards the light source above. In the shaded area under the dome of the overhanging plants dozens of *Cynobelias nigripinnis* and *Cynobelias splendens* dart to and fro in the overwhelming joy of life, glittering like little goblins with their velvet black bodies richly sprinkled with blue-green emerald. It is a 60 gallon tank of 25 inches in height, in which the long stems of the *Myriophyllum* show off to best possible advantage.

In the center of the *Myriophyllum* group, a majestic Amazon sword plant unfolds her vigorous shafts. The fascinating underwaterscape is enhanced further by a bordering hedge of lovely lightgreen moneywort, which contrasts so charmingly with the darkgreen of the *Myriophylum*. The center of the

show tank is planted by three magnificent giant *Hygrophila* plants, whose 5 inch long leaves gleam with a bright and thrilling green. The right side of the tank is scaped most attractively by a forest of sturdy giant *Vallisneria*. Both the overhanging *Vallisneria* and the *Myriophyllum* meet at the surface in the center. A picturesque rock scenery marks off the single groups of aquatics in a most natural way.

In the foreground grow Australian water clover, *Cryptocoryne nevilii*, *Acorus (Calmus)* and clipped down water wistaria. The background is kept dark, creating the illusion of an infinite depth by a wooden box arranged outside. I have forgotten to mention that the compact jungle of giant *Vallisneria* is contrasted by a clump of tender hair grass in the right foreground.

My readers will pardon me this little digression into the sphere of aquascaping. Not every aquarist has the chance to visit aquarium shows or to see many beautifully scaped tanks of friends, etc., thus obtaining again and again new ideas and incentives. It is only too right that even the most beautiful aquatic plants give only a poor impression if the aquarist does not master the art of aquascaping. Only by the skilful arrangement of the single plant groups, assisted by the right combination of well contrasting aquatics, is it possible to build up an attractive underwater scenery.

And now back to our *Myriophyllum*. Many kinds of this large group are distributed almost over the whole world. It is even found in cold countries, for example in the south of Greenland. Some claim there are about 160 species! At least a dozen of them are cultivated by aquarists. Unfortunately it is in many cases almost impossible to identify a single species, because they have altered leaf form and the other characteristics due to altered environmental conditions in our aquaria.

All kinds require crystal clear water and much light. The members of this large group which I have been cultivating in my 35 years of aquarium practice grow best in soft water between 2-6° DH (about 40 to 110 ppm total hardness). But there are also some species which thrive well in harder water, ranging from 10-20 DH (about 170 to about 350 ppm). At any rate *Myriophyllum* is not a problem plant. If cultivated in clear water and bright light it generally grows well.

Those species which are found in countries with moderate climate thrive well in coldwater tanks. Many of them loose their leaves in winter. As winter buds they wait for the spring, when they develop again. These "cold" species can even stand temperatures as low as 37°, of course only during winter time.

Myriophyllum is found in its native habitat in standing or slowly moving waters. If the water evaporates it grows as a bog plant. In aquarium culture I have not seen it blooming. But in garden pools one can sometimes see its little white or yellowish blossoms.

It grows well in home tanks within a temperature range of 65-82° F. As the plant has an enormous surface volume owing to the feathery structure of its leaves, it seems likely that it is an excellent oxygenator and water purifier. Furthermore it is an ideal spawning plant and refuge for fish fry.

Propagation is easy by clipping and inserting the layers in the bottom gravel. I have kept *Myriophillum* free of algae in soft and slightly acid water, not oversaturated by fish droppings. But in hard and alkaline water the plant is quickly overgrown by algae. Ideal contrast aquatics for *Myriophyllum* are *Cardamine*, moneywort, *Hygrophila*, Amazon sword plants, water sprite and water wisteria.

Diane Schofield says:

Peat and Repeat!

While most aquarists are not interested in breeding the more difficult species of egg layers, many are interested, however, in keeping their egg layers in a healthy state and showing off their color to advantage. Many of the egg layers hale from rivers that contain soft acid water, sometimes called "Blackwater." Actually this is water that is stained brown by decaying vegetation. In the native habitat, for example in the Rio Negro of the Amazon basin, the water actually appears black when looking into it from a canoe. This is because where the brown water is deep, little light penetrates to the bottom and therefore no light is reflected from the bottom for the observer to see. The soft, acid, brown water can be obtained in the aquarium by the use of a peat filter and distilled or soft rain water. To obtain peat, buy the plain old common garden variety of peat moss sold at most nurseries. Don't try to explain to the salesman what you want it for. This starts the salesman backing away and in a nursery this can lead to some very squashed plants. Also don't buy the type that is sold under the name, "Georgia Peat." This is sold as a planter mix. In my experience it is not suitable. The planter mixes are usually combined with charcoal, vermiculite and fertilizer as well as the peat to make your Philodendrons grow better. There is nothing sloppier than a fish swimming around with Philodendrons trailing from its gills.

After you obtain the peat, and it will probably be a lifetime supply as it is only sold in a minimum of 25 lb. bags, boil it. *(Editor's note: I have seen for sale small bags of peat weighing as little as 2 lbs.)* This is to kill the bacteria and to waterlog the peat. For appetite appeal, there is nothing to compare with the odor of boiling peat. On that night, you can be sure no ones will invite himself for dinner. Of course when people see what you are cooking on your stove, it won't add to your reputation, but then you shouldn't be sensitive after what they've said about anyone who would keep pans of worms in their refrigerator. After the peat seems to be done, pack it loosely into either an outside or an inside filter. Don't use either charcoal or glass wool. The peat filter only works with soft water, so one needs to start with soft water, either rain or distilled with a heaping teaspoon of salt added for every two gallons of water. This filter will gradually acidify your water, turning it a tea shade. So "take tea and see" what it will do for the colors and health of your egg-layers. In addition this soft acid water will do wonders for your *Cryptocoryne*, *Cabomba* and *Ambulia*. Don't ever put livebearers into such a tank. They need a harder and more alkaline water, and we know, don't we, that there are quicker methods to kill them than to go to all the work of making a peat filter?

Brown, soft, acid water discourages growth of many bacteria and fungi. Most kinds of algae also have a hard time making headway in peat water. The peat filter will clean as well as acidify the water, but don't try to clean the peat, just dump it and start all over.

If you are the ambitious type and desire to try to spawn some of the difficult species such as the Rasboras, the pencils, the tetras and certain of the egg-laying cyprinodonts, this is the type of filter and water used by the German aquarists who have had spectacular results with these fishes. The blind cave tetra is an exception. It comes from limestone caves where the water is excessively hard. It requires a hard alkaline water such as often comes directly from the water tap.

Book Notice

The Galathea Deep Sea Expedition, 1950-1952

Described by members of the expedition and edited by Anton F. Brunn, Sv. Greve, Hakon Mielche and Ragnor Spärck. Translated from the Danish by Reginald Spink. English edition published March 12, 1957 by the Macmillan Co., 60 Fifth Ave., New York 11, N. Y. Price: $8.00. 226 pp., many halftone illustrations and a folding map.

DENMARK has sent out two world-wide oceanographical and marine biological expeditions during this century. Considering the geographical extent of these expeditions, this is a feat not equalled by any other nation. The first of these expeditions, the Carlsberg Foundation Oceanographical Round-the-world Expedition of 1928 to 1930 with the research ship *Dana* is still being reported upon in scientific literature. The second world-wide expedition, the Danish Deep-sea Round-the-world Expedition of 1950-52 with the research ship *Galathea* is the subject of the present book. This book is a general, popular (but authoritative) account by various members of the expedition about their life and work aboard the *Galathea*.

The aquarist who has a wide interest in the aquatic environment will find much of interest in this book. The primary purpose of the Galathea expedition was to explore and collect specimens of all kinds from the great depths of the seas. However, a wide variety of oceanographical and other research was carried out. This book includes chapters on the history, purpose and methods of the expedition; on the fauna and flora of various parts of the seas, life in the open ocean and depths. Fishes are by no means neglected and the odd kinds found in the depths receive considerable attention. Such diverse subjects as bird life, ethnology, bacteria of the depths and elephant seals receive special attention in this book. An investigation of all of these and many more subjects was carried out during the expedition. Those who wish to better understand the world about them, particularly the aquatic world, should not hesitate to read this book. Aquarists should have a general idea about the purposes, methods and results of the oceanographical research. The present volume will provide this well and without great effort to the reader, for the book is written simply throughout. — S.W.

* * *

CLUB NEWS

The Eugene Aquarium Society

Results of the annual elections of the Eugene (Oregon) Aquarium Society include: President, George Prince; Vice President, Hollis Oxley; Secretary and Treasurer, Don Mills, according to Mr. Mills.

* * *

San Francisco Aquarium Society, Inc.

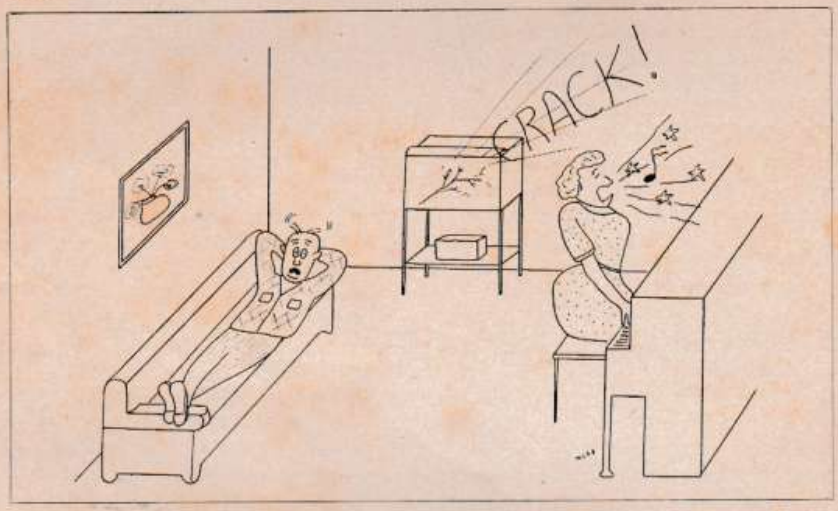
The next regular meeting of the San Francisco Aquarium Society will be Thursday March 6, 1958, Steinhart Aquarium, Golden Gate Park at 8:00 p.m. The program will include a demonstration of the application of a crystal background paint on the back of an aquarium, and also will feature a Panel of Experts to answer any of the members' problems with their fishes, according to Henry Kalb, Program Chairman of the society. A special treat of the evening will be the showing of 40 color slides of the Oceanographic Museum of Monaco, with slides taken by George F. Hervey, frequent contributor to the editorial columns of *The Journal*.

The slides will give a piscatorial and picturesque tour through the interesting museum of Prince Rainier of Monaco. Members, their friends and guests are cordially invited to attend.

Beginners Corner

By Albert J. Klee

One of my favorite stories concerns a survey made by the U. S. Fish and Wildlife Service to learn more about the distribution of the dogfish, a small species of shark. The dogfish were captured and then released with a band that bore the message, "Notify U. S. Fish and Wildlife Service, Wash. Biol. Surv." Some time later, the Service received the following letter from an irate housewife:



Dear Sirs,

My husband caught one of your fish and according to your directions, I washed it, boiled it and surved it. It was awful. You should stop trying to fool the public with this thing. There are better ways to spend the taxpayers' money. Sincerely,—J"!

Although this story illustrates some of the difficulties in being married to a fisherman, I cannot help but note that aquarists' wives have their problems too.

Some time ago I chuckled over an article in DATZ (a German magazine) which summarized the best advice that one "tropical fish widow" could give another. The following highly paraphrased version is offered with the hope that the wives of beginning aquarists as well as those misses contemplating marriage with persons known or suspected to be addicted to the tropical fish hobby might find useful.

1. Be optimistic and believe everything your dear man tells you about the purchases of his fish, plants, aquaria and other equipment. True, that fish he told you cost only 50c may actually have cost $3 but remember, sooner or later he will voluntarily suggest that you buy a new hat or dress as a salve to his overburdened conscience.

2. Be resigned, contented and satisfied

with the few places in your home remaining to you and the children. The living room, dining room and even the bedrooms may be cluttered with tanks and equipment, but be consoled with the thought that cooking aromas will probably force him to keep the concentration of aquaria in the kitchen down to a bare minimum.

3. Be economical in your housekeeping. In this way you will compensate for the high cost of daphnia, shrimp, etc., that, being food, must certainly come out of the household budget.

4. Be inventive and learn to use substitutes when you can't find kitchen implements that are "temporarily" being used to strain brine shrimp, sift white worms and do other necessary jobs.

5. Accustom yourself to harrowing trifles like finding worms in the refrigerator or mosquito larvae cultures in the back yard.

6. Undergo physical training and conditioning to keep your body elastic and durable. Hikes for daphnia can often last the whole day and helping to lift heavy aquariums is not for the weak-muscled.

7. Develop a rich inner life or accustom yourself to long periods of solitude while your husband disappears for hours among his fish. You might culture a taste for TV or movies, or start a collection of Currier and Ives prints.

8. Study aquarium books and learn the peculiar language of the hobby. In no time at all words like *Pterophyllum* and *Aequidens* will be tripping lightly from the end of your tongue, and you will again be able to converse with your husband.

9. Be deceitful and untruthful when facing aquarist visitors. When your husband blandly announces that the water in his breeding tanks is at least 6 months old when you know that they were filled only the night before, look his visitors straight in the eye and back him up. The blackmail you can practice later may not be moral but it is legal between spouses and the profits are enormous.

10. Sit down, relax and contemplate your own fish for there is a lot of wisdom in the old adage, "When you can't beat them, join them!"

* * *

PRODUCT NEWS

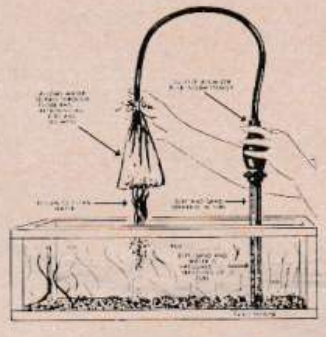
METAL FRAME AQUARIUM CO. of Pine Brook, New Jersey has introduced a unique and efficient kit containing a Metaframe Air Pump, Filter, Charcoal, Glass wool and plastic tubing which hobbyists and aquarists should find useful. The Metal Frame Aquarium Co. has

long been known as a manufacturer of quality aquariums and stands, in addition to aquarium heaters, thermometers and other fine products for the hobbyist. For more information regarding this handy kit, ask your dealer or write to the Metal Frame Company at the above address.

* * *

FRAMAR MANUFACTURING CO., of Los Angeles, famed maker of Jiffy Aquarium Products, including the Jiffy Sub-Sand Filter and Jiffy Aquarium Cleaner, is also manufacturer of the well-known Jiffy Filter Wool. In the aquarium, sediment is drawn into the sand around the base of the filter, where it is easily removed by using the Jiffy Aquarium

Cleaner, as shown in the sketch. One of the best and safest filter materials available today is the Jiffy Filter Wool, which



offers splinter-proof action. It is safe for fish and safe for you to handle. It fills the corners of the filter for more efficient action. For more information regarding Jiffy products, ask your dealer or write direct to the Framar Manufacturing Co., 3958 Alla Road, Los Angeles 66, Calif.

* * *

Nutshell

(Continued from page 93)

For goldfish, a safe rule to follow is to allow two gallons of water for each inch of fish, not including the tail fin. At least this much water, and probably more, should be allotted to local species like sunfishes or minnows. Tropicals require only about a half gallon per inch of fish. It should be remembered that fishes collected in ponds or shallow lakes have a much better chance of surviving the transition from natural to captive conditions than do those taken from running streams or deep, cold lakes. Trout, for example, simply will not live in standing tanks unless they are refrigerated. The above figures may be somewhat conservative, but it is better to start an aquarium with a fish population that is below the maximum and to approach that figure gradually.

The capacity of a tank may be increased by circulating or aerating the water. This is generally accomplished by means of small air-pumps designed for that purpose. The beginner is well advised to stay clear of these mechanical devices, however. Until he gets the "feel" of a tank and its fishes, he is better off without filtration or aeration. Too often these become "crutches" that hold up aquaria which would otherwise disintegrate because of gross overcrowding, chronic overfeeding or other abuse.

Not all fishes will get along together. Many, like the sunfishes, crappies, paradise fish and Siamese fighting fish are "antisocial," especially at breeding time. In general, the guppy, platyfishes, danios, tetras, Corydoras catfishes and some of the barbs are the most satisfactory species for the community tank.

The following are among the best books on the subject of keeping fishes in the home:

"Exotic Aquarium Fishes" by William T. Innes (18th edition, 1955). Innes Publishing Company, Philadelphia. 541 pp., illustrated in color and black and white. ($8.75).

"Tropical Fishes as Pets" by Christopher W. Coates (revised edition, 1950). Liveright Publishing Corporation, New York. 259 pp., illustrated in color and black and white. ($3.50).

"How to Keep and Breed Aquarium Fishes" by C. W. Emmens (1953). T.F.H. Publications, Jersey City. 202 pp., illustrated. ($2.50).

"All About Aquariums." by Earl Schneider (1956). Practical Science Publishing Company, Orange, Conn. 128 pp., illustrated. ($2.75).

"Aquariums" by Anthony Evans (1952). Dover Publications, New York. 128 pp., illustrated. ($.65).

If you are somewhat more technically inclined, the article on the keeping of fishes by Dr. Myron Gordon, which forms a chapter in the book, "The Care and Breeding of Laboratory Animals," (John Wiley, N.Y.) is by far the best thing that has ever been done on aquarium keeping.

Salt Water Forum

By Robert P. L. Straughan

I recently purchased some brine shrimp eggs, and although I followed instructions carefully, only a small portion of the eggs hatched. At the time, I was especially anxious for a good hatch of shrimp as my pygmy seahorses had babies and I wanted so badly to save them. But as it happened, I got so few shrimp out of the package that the little horses starved to death. Aren't the brine shrimp eggs supposed to hatch every time?

Answer:

This is a rather pathetic situation and can be remedied by using the San Francisco Vacuum Packed Brine shrimp eggs. Though they cost slightly more than other eggs, they hatch out rapidly and give a much higher yield than most brine shrimp eggs. The vacuum pack insures eggs that will hatch. They cannot be destroyed by the high humidity, in tropical fish stores.

* * *

CLUB NEWS

Southern California Aquarium Association

The 1958 Southern California Aquarium Exhibition will be held March 6 to 16, 1958, at the Shrine Convention Hall, 700 W. 32nd St., Los Angeles, Calif. Any exhibit relating to fish life, plant life, shell fish, shells or any subject relating to fresh or saltwater will be considered. For further information regarding the show, please contact the secretary, Mrs. Kay Ragland, 1825 W. 68th St., Los Angeles 47, Calif.

* * *

The Puget Sound Aquarium Society

This group is now publishing their own club paper, according to Mrs. Margaret Jerome, Corresponding Secretary, 7327 58th N. E., Seattle 15, Washington.

The National Aquarium Society

The National Aquarium Society, Washington, D. C., under the auspices of the National Capital Flower and Garden Show, will hold its Second Annual Exhibition at the National Guard Armory, Washington, D. C., from Thursday, March 6 through Wednesday, March 12, 1958. Hours are from 11:00 a.m. to 11:00 p.m. daily, except on the opening day, when the hours are 2:00 p.m. to 11:00 p.m.

The Exhibition is under the sponsorship of The Ambassador of Pakistan, His Excellency Mohammed Ali, and General Thomas D. White, Chief of Staff of the United States Air Force.

The judges are Mr. Herbert R. Axelrod, author and Editor of *Tropical Fish Hobbyist*, and Dr. Leonard P. Schultz, Curator of Fishes, United States National Museum, Smithsonian Institution. These gentlemen have co-authored the "Handbook of Tropical Aquarium Fishes."

A.G.A.

(Continued from page 99)

article on how to start a Tropical Fish Club in your area.

The Duluth, Minn., Aquarium Society, William C. Max, President, and Mid-West Guppy Club of Chicago, a section of Mid-West Aquarists, Frank J. Schmidt chairman, have formed A.G.A. Groups.

Our fellow A.G.A. member Phil Scala, International 1957 winner of many firsts in Germany, has unselfishly offered to help Dr. Rutkowski and myself with donations of pairs of Guppies from his very fine strains, to help supply the A.G.A. groups that are formed and forming so that all the groups can be supplied with the pair of fish coming to them.

LAWRENCE KONIG
Executive Secretary

P.S. — Remember to qualify for the free pair of Guppies your group application must be in by March 31, 1958.

LETTERS

A column of questions and comments by readers. Those questions which the reader can find the answer in standard aquarium books will not be considered. Only the more interesting correspondence will be published. No reply by mail to persons in the U. S. unless a stamped, self-addressed envelope is enclosed.

From: Mrs. Catherine Mullis
San Gabriel, California

I would like to have some information regarding brine shrimp eggs. I have hatched them for my tropical fish but have been wondering if one could actually raise them and if so, how could I go about it. Are these shrimp edible?

REPLY: *Yes it is possible to raise adult brine shrimp from eggs but in my opinion it is seldom worth the effort unless you have absolutely no other source of live food and have fishes that will eat nothing but live food. When fed well, shrimp will mature in a little over one month, sometimes less. They are known to reach sexual maturity within 18 to 21 days. In attempting to raise brine shrimp one needs large tanks of brine, preferably ponds of at least 100 gallons. These should be strongly aerated and receive lots of sunlight. Since I myself have not attempted to raise shrimp to maturity, I cannot tell you exactly what would be the best salinity but try that recommended for hatching eggs. A salinity of about 1.15 to 1.20 would probably be about correct. Brine shrimp but not their eggs are reported to die off below about 43 degrees F. and should be kept about 75 degrees F. for rapid growth. In the wild, brine shrimp eat algae and other micro-organisms that are able to live in saltwater. You will have to find some way of providing this type of food or a suitable substitute.*

Brine shrimp are not related to the kind of shrimp ordinarily used for human food nor do they grow as large. Seven sixteenths of an inch is about the adult length. So far as edibility is concerned, I haven't tried them but I have a 4-year-old son who is considerably braver than I. He has tried them and lived to tell about it, but he did not report on their palatibility. Who knows, perhaps on crackers they're good! In any case, Indians that once lived around Great Salt Lake are said to have utilized dried brine shrimp as food.

* * *

From: B. F. Calrow
London, England

With interest I read of the decline of the hobby in England described by George Hervey in the October 1957 issue.

However I cannot allow the description of the decline in England to go by without bringing to your notice that while we do agree that the hobby is no longer enjoying the Valhalla days of 1952, it is not exactly correct that all societies are suffering a decline in membership.

Strangely enough there is here in Hendon, England, one society that has withstood the decline, and indeed is far stronger than at any time of its colourful history.

Several weeks ago we had an attendance of 150 keen as mustard aquarists in a Hendon hall. Not all of them are from this district, but we can safely say that in the main all of them are drawn from within 15 miles, which is not so far in these moon travelling days.

Although in N.W. London there are many clubs, they do altogether attract hundreds of aquarists, many of them holding weekly meetings.

This Hendon society staged last year a single meeting attracting over 800 fans, and intend to repeat that this year when Mr. Carels and Mr. Wante of neighbouring Belgium visit us.

There is no apathy where the fish club keep to fish. The only marked decline has been where a regular meeting has been devoted to non-fish business, and it is true to say that many of the 1952 societies which fell out in recent years were more devoted to being Social Clubs than Fish Clubs.

Perhaps the answer to the whole thing is that we have spent most of our ideas and time with the view of propagating the hobby, and are capable of supplying free speakers on many subjects to any society needing just that. We have spared nothing in creating a competitive club spirit. We have mobile display teams to enter any competitions, and a collection of color slides ON FISH second to none in this Island.

We extend to any of your readers the opportunity of sampling our club life and fishkeeping, with 13 fish houses within the radius of ten miles, and would be pleased to meet any visiting Americans interested in probing the reason for our success.

We are proud to have among our members four of your countrymen, and am certain that they too will defend our achievements to those who may read your contributor.

* * *

From: Dudley G. Mattox
Jacksonville, Florida

I am an amateur tropical fish enthusiast and am writing your organization in and attempt to secure the titles of books which will help me in my hobby. I would also like to know whether there are any magazines or papers to which I may subscribe. At the present time I have four tanks, one 15-gal., one 12-gal., one 5½-gal., and one 3½-gal. I have read just about everything in the local library, however most of these books are old and I believe techniques have changed over the years. Any information you may be able to give me will be greatly appreciated.

REPLY: *Naturally we would recommend our own magazine as the best periodical reference. So far as books are concerned there are three books available that are well worth the purchase price. There are many books available at present, all claiming a high degree of accuracy and content of information but in our estimation, the following publications are the best available: For techniques in maintaining fishes, "How to Keep and Breed Tropical Fish" by C. W. Emmens, available for about $4.45 from the T.F.H. publications, Inc., 57 Academy St., Jersey City, N. J. For techniques of breeding fishes, investigate "Breeding Aquarium Fishes" by Nachstedt and Tusche, available from the Aquarium Stock Co., 31 Warren St., New York, N. Y. For identification of aquarium fishes, we suggest "Exotic Aquarium Fishes" by William T. Innes, available for $9.75 from the Innes Publishing Co., 12th & Cherry Sts., Philadelphia 7, Pennsylvania. Although this book is somewhat out of date and does not contain many recently imported fishes that are proving to be popular, it, in our estimation, is the most accurate of the books for identification purposes.*

• • •

Hot Foot for Tubing

Any time that you experience any difficulty in forcing an old hard piece of tubing (plastic of course) over an air valve, take a match and slowly warm the end of the tubing until it is soft and then pop it on the valve. Of course, if you let it catch on fire, just forget the whole miserable thing.

– Lockheed Aquarium Club's "Fin Fun"

• • •

Ode to a Spiny Lionfish

Hail, oh, Hail little Lion
Is that a saintly sigh you're sigh'n?
You are a heavenly missionary
For the barefoot placed unwary
If a skindiver on you should trod
You will send him straight to God.

— DIANE SCHOFIELD