

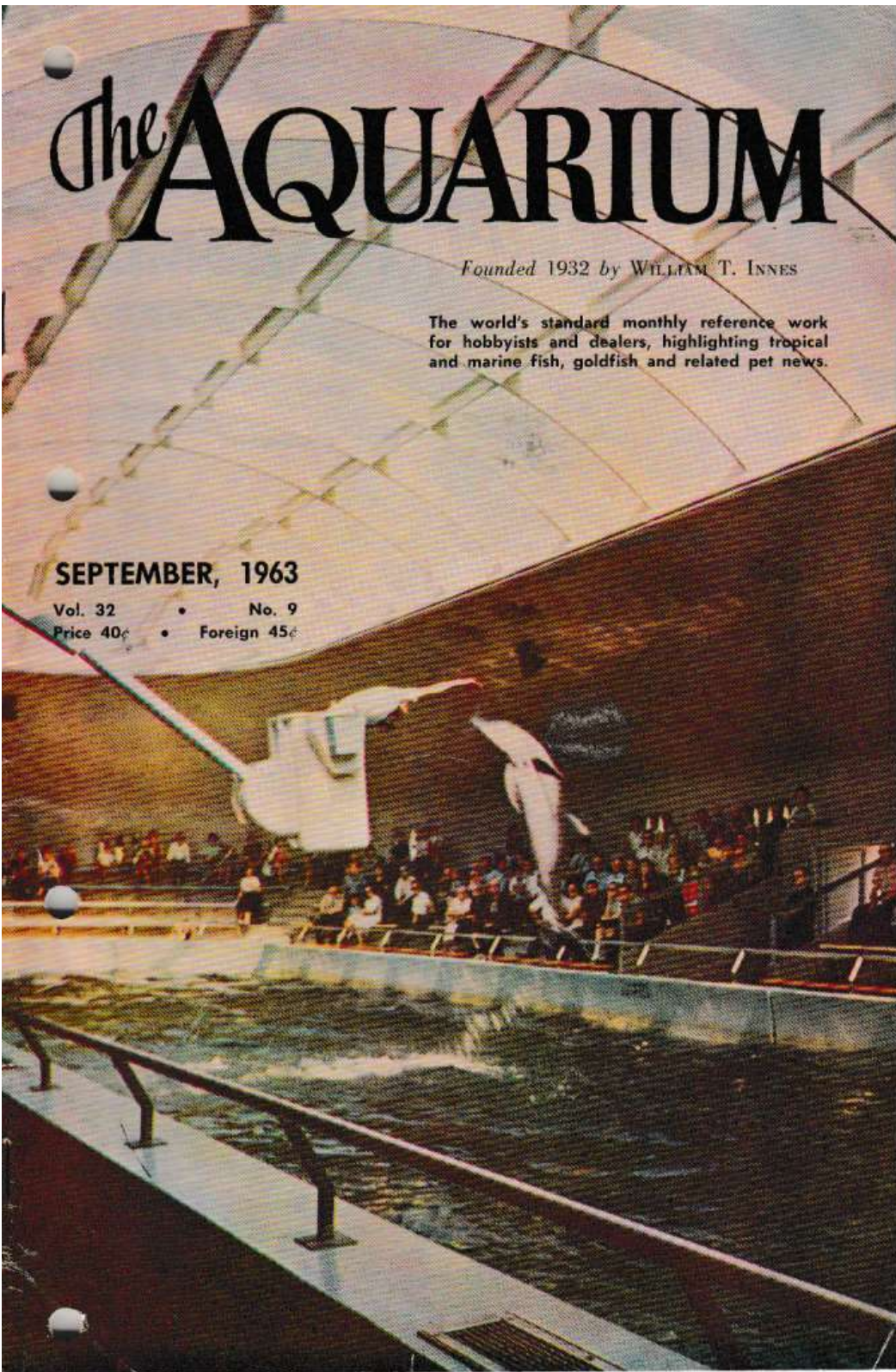
The AQUARIUM

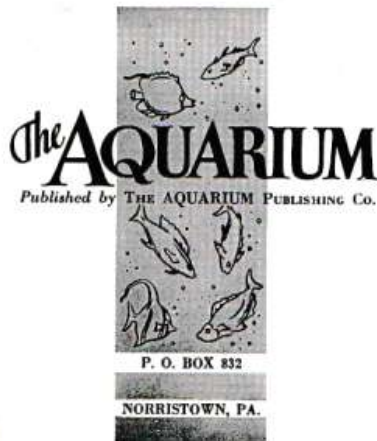
Founded 1932 by WILLIAM T. INNES

The world's standard monthly reference work for hobbyists and dealers, highlighting tropical and marine fish, goldfish and related pet news.

SEPTEMBER, 1963

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Our Cover—
 The Brookfield Zoo of Brookfield, Illinois, features a unique indoor porpoise show . . . here you see one of the performers! Krantzen Studio of Chicago, got the shot . . . Rohm & Haas Company, Philadelphia made the photo available to us. See story on page 2.

— Published Monthly —

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SEPTEMBER, 1963

September, 1963

Vol. 32, No. 9

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The Editor's Letter

WHAT IS good for the hobby" is a favorite subject for discussion among dedicated aquarists and although opinions offered are modified by the judgment of the deliberators, it is generally accepted that the line of demarcation is fairly discernible.

The importance of detecting what is good for the hobby came home to us rather sharply recently when we were present among a group of nonhobbyists. A polite show of interest was made when we were introduced as a member of the editorial staff of a publication devoted to the interest of fishkeeping.

"It probably is a fascinating hobby," one of the women remarked, "but my one venture into it discouraged my youngsters as well as myself from ever becoming really involved with it."

Curious, we naturally asked for the details of the disappointing experience.

"My sixteen-year-old and his younger brother," she obliged, "saw an ad for some kind of fish eggs in a magazine. All you had to do, the ad claimed, was to put these eggs in water and fish would result. We bought quite an elaborate setup and installed it in the local high school biology lab. My youngsters thought it would be fun to share the adventure with their classmates and couldn't wait until the eggs arrived in the mail. The aquarium was set up and the directions on the box the eggs came in were followed to the letter. As nothing happened the first day the eggs were put in the water, we thought it might take a few days. The children kept waiting and waiting but nothing ever happened."

"Did you write the company that put out the eggs?" we ventured.

"By that time we were fed up with it," the woman exclaimed, waving her hands to accent the annoyance the recollection gave her, and, ignoring our effort to make further justification, she switched to another subject.

This incident is related here to illustrate a sample of what is bad for the hobby. The story was implanted in the minds of all the women present and there was very little we could do about it. It is difficult to recognize sometimes what will be a boost or a bane to the hobby but very often the experienced hobbyist has an ear for what will be one or the other. We of *The Aquarium* will back anything we consider good for the hobby and although we cannot claim clairvoyant ability, our batting average has been good.

Sincerely,

H. W. S.



Entrance of the Seven Seas Panorama of Brookfield Zoo, Brookfield, Ill. Note Plexiglas door which is built in sections and can be removed during the summer months.

the brookfield zoo pioneered the first indoor porpoise show

Several months ago, when we wrote our article on Philadelphia's Aquarama, we were under the impression that this was the first time for a porpoise show to be brought indoors. We were quite mistaken. The Brookfield Zoo, of Brookfield, Illinois (near Chicago), has been operating such a show for some time. In fact, back in 1959, Mr. Robert Bean, Director of the Brookfield Zoo, began to look into the possibility of turning into reality what he had envisioned for many years, a porpoise exhibit as part of the Brookfield Zoo. He took his idea to Olsen and Urbain Architects and Engineers of Chicago, and every aspect of the idea was considered. At first only a summer show was proposed, but when it was learned that the transportation of porpoises back and forth

By Helen Simkatis

Photos courtesy of the Rohm and Haas Company, Phila.—taken by Kravitz Studio, Chicago.

from one environment to another would inflict a hardship on the animals, the summer show idea was abandoned.

The heating problem was only one of the problems to be solved, however; maintaining an exhibit of this kind poses many. One by one, with the help of experts, The Seven Seas Panorama became a reality. It is owned and operated by the Chicago Zoological Society under the direction of Robert Bean, and William R. Dickerson, Jr. serves as President.

The project is composed of four components, the first being the large porpoise display tank, 25 feet wide, 125 feet long and 18 feet deep in the center section. It contains approximately 180,000 gallons of 4 percent salt water solution that is filtered at the rate of 120,000 gallons per



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hour. The enclosed seating area around the upper level of the tank accommodates 800 adults. Additional seating in raised tiers increases the seating capacity to about 1,000 people. An underwater viewing gallery with 16 large windows allows viewing trainers and performing animals as they carry on beneath the water's surface. The entire surface area of the pool is covered by a Plexiglas skylight which has been made up in sections so that it can be removed during the summer. A thin shelled concrete roof structure protects the spectators in the seating area. There are two open air pools and grottos for sea lions and elephant seals. These, too, are designed to allow viewing animals when submerged. Display tanks are located along the walls of the underwater viewing gallery of the porpoise tank. These are

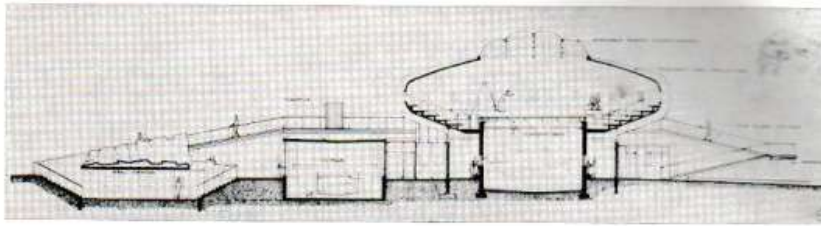
conventional tanks equipped with photographic lights and independent aquarium filtration systems.

Probably the most critical decision that had to be made during the planning of the Seven Seas Panorama was whether or not to use a brine solution for the animals. As there was no precedent to refer to, the operators had no choice but to pioneer the use of an artificial sea water solution. Theory indicated that porpoises could remain healthy and happy in such an environment, but only practice could check out what merely looked good on paper. Happily, the man-made salt solution proved successful.

Filtration was another problem that had to be solved. Not only did the water have to be maintained in a condition that would meet the health requirements of the

Beneath this huge sky-light dome, inlanders receive glimpse of the most talented performers of the sea, the porpoises, at the Seven Seas Panorama. During the summer there are 5 daily performances, and from 2 to 3 during the winter months.





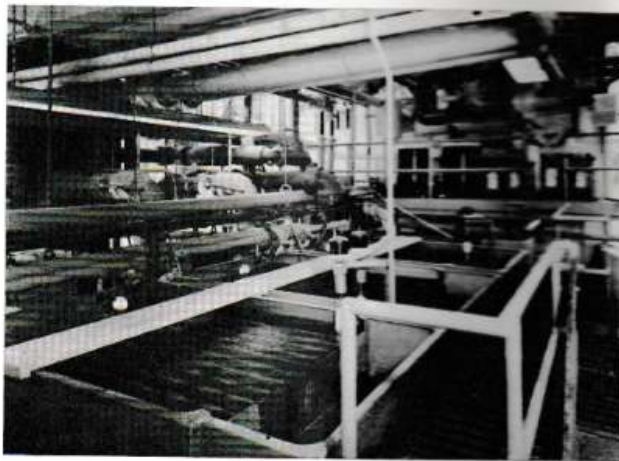
A drawingboard view of the viewing tanks of the Seven Seas Panorama Porpoise and Seal Show a component of the Brookfield Zoo of Brookfield, Illinois (near Chicago). Architects, Olsen and Urbain.

animals, but it had to remain clear for proper viewing. All piping had to be made of a material that would not break down when in contact with salt water, and iron in the deep well water had to be removed. After several months of frustrating investigation, consultations with specialists in the field, and finally with the installation of a filtering system designed by Henry Armbrust of B. I. F. Industries, Inc. of Providence, Rhode Island, suitable water conditions were maintained. The salt water solution is made up of a product containing 99.6% Sodium Chloride, 0.31% Calcium Sulphate, and 0.1% Calcium Chloride. Two percent of the brine is present when the pool is filled, and 2% is added during operation. No sea water salts or sea water chemicals are added.

Although the project has proved to be

a highly successful one, there is a feeling among its originators that it should have been designed on a somewhat larger scale. During the summer months, for example, five performances are given daily and seating is filled to capacity. Even in the coldest days of winter audiences are large and from two to three shows a day are given.

The Seven Seas Panorama is a landlocked sample of the "Sea Around Us" and has given those of us who have had no intimacy with the element that covers most of our world, a glimpse of the wonderful creatures that inhabit it. Certainly Director Robert Bean, President Wm. R. Dickenson, Messrs. Olsen and Urbain, and all the others who took part in this project are to be congratulated on pioneering what was in the beginning only one man's dream. ■



The heart of any aquarium is its filtering system. Here we see a portion of the intricate pipeline system that assures the performing porpoises of the Seven Seas Panorama of a clean, healthful environment.

Photo by Adolph Presler

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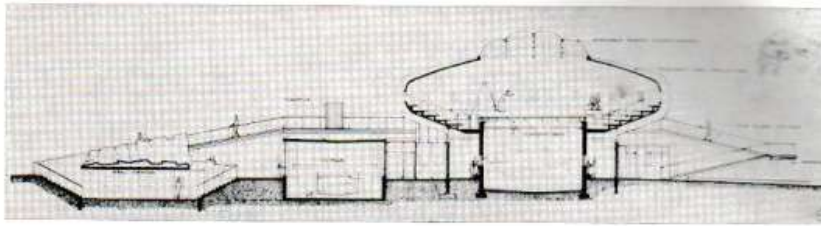
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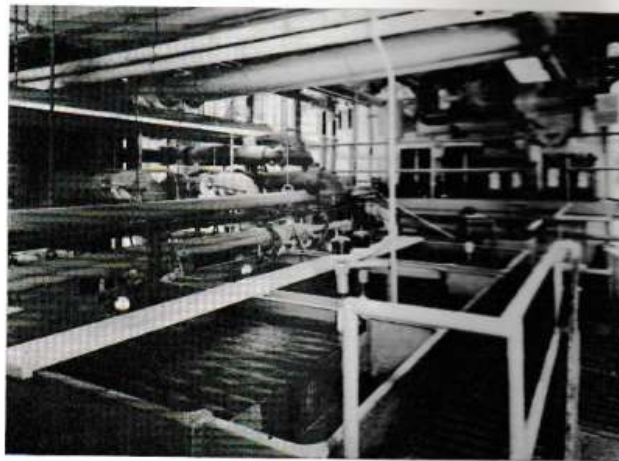
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Photo by Adolph Presler

The Aquarist's Calendar



ARIES



PISCES



AQUARIUS



TAURUS



GEMINI



CANCER



LEO



VIRGO



CAPRICORN



LIBRA



SCORPIO



SAGITTARIUS

Although September is more than half spent before we consider the summer is over, there seems to be a hint of change of season right after Labor Day. We need not, of course, take fish inside that have been basking out-of-doors in pools all summer until the end of the month, but we should begin to plan ways for disposing of surplus stocks of both fish and plants. Approximate inventories can be taken now as a guideline as to how many fish we intend to give away, sell, or auction off at club meetings. Many elementary and high schools will be happy to receive donations of fish for classroom aquarium projects.

Fishes that have been kept out-of-doors in pools can withstand the temperature changes we will experience as the month progresses, but tanks indoors should be watched rather carefully. Most of us do not have our heating plants in operation as yet, but frequently cool evenings in September are sharp enough to bring down aquarium temperatures abruptly unless we have installed thermostatically controlled heaters. As a precaution, if we are not equipped with the latter, it is a good idea to keep windows closed in the fish room during the night.

Toward the end of the month, we should commence taking in fish from pools and this will be an excellent time to sort out those specimens we consider show material along with those we intend to prime as breeding stock. Tanks should be set up to receive these chosen ones, and conditions and feeding schedules should be designed to implement their achieving their potential. Don't forget to use some of the pool water in receiving aquariums to cushion the shock of transfer even though some suspended algae may be present. A ball of *Nitella* in each tank will retard the growth of suspended algae if flourishing rooted plants are not present.

Tropical lilies are best considered expendables, as it is most difficult to carry them through the winter. These are bonus days for them, however, for now until the first terminating frost they will give their best blooming performance. Hardy lilies, of course, can, with little pampering, withstand the winter, but preparing them for their resting period can be counted as one of next month's chores.

Many aquarium societies are holding exhibits and shows this month and it is a good idea to become posted on such events that are taking place in nearby towns. September offers many wonderful days for driving and an aquarium show in another town gives us a good excuse to get away for an afternoon and learn what clubs other than our own are doing in the way of creative fishkeeping.

culturing fruit-flies in an easy way

By J. J. Greve Scheel, F.A.I.

I am much too lazy to run around the country to catch daphnia and the like for my fish. I raise all the live food needed inside my house and garden. My major live food is fruit-flies or *Drosophila* which is extremely productive and which is regarded as a very fine live food as it contains a quantity of vitamins which comes from the yeast on which the flies are fed.

These flies can be cultured in many ways. I use a very simple one which gives me little work and I have been depending on this source of live food for my fish for years.

I culture the maggots on rasp which I make from the waste white bread of my household. The bread is first dried, then passed through the electric meat-chopper. Approximately 20 percent of its weight is added in common table sugar. This deters fungus and speeds fermentation. The rasp is then stored dry until needed.

For culturing containers I use one quart jam glasses and to each glass 2 to 3 teaspoons of rasp is added. Bakers yeast is crumbled in a bowl and sugar is added to disintegrate the solid pieces. After a few minutes the yeast becomes liquid and water can be added to prepare a yeast-water. This is then added to the glasses until the rasp is soaked to the point that it almost becomes a liquid also. If the rasp is too moist, however, the flies will drown and if it is too dry the eggs and larvae will not live in it. Probably a paste-like consistency is the best description of how moist the mixture should be.

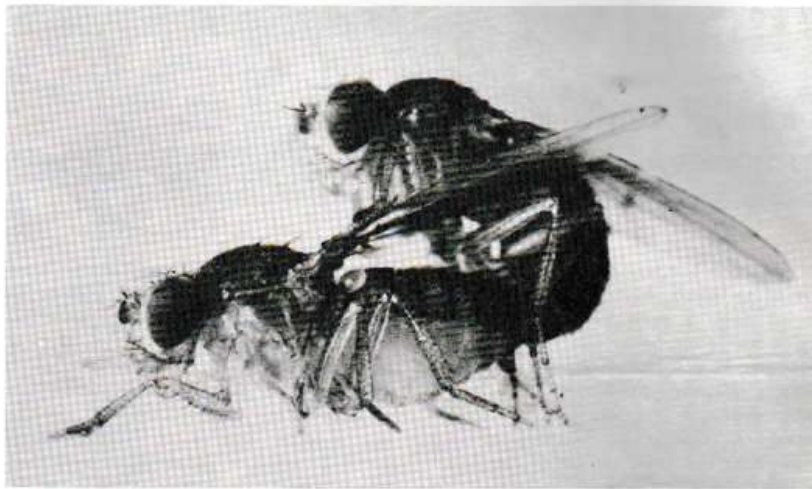
My fish room is separated from my living rooms and therefore I can use open cultures but if yours is in close proximity to the family quarters it will be best to cover the cultures.

I obtained my culture one summer years ago by placing an open culture in my garden. The smell of the yeast attracted the fruit flies and they placed their eggs into the moist rasp and from now on I have only to maintain my cultures to have a constant source of live food. I have two different species of flies. One is the well-known *Drosophila melanogaster* which is used in laboratories for the study of genetics. This is a small species, not exceeding approximately 2 mm. The other one is probably *D. funebris*, which is darker and bigger, reaching 4 mm. in length. These 2 species live peacefully together as the *melanogaster* breed in the fresh cultures, whereas the *funebris* prefer the older cultures.

The female fruit fly mates about 12 hours after she breaks through her pupa. After another 36 hours she lays her first eggs. She may live for up to 6 weeks and give up to 700 eggs, but normally she lives only for a few weeks and yields from 50 to 70 young flies. This is quite enough, however, for our use. I do not know any small animal which produces so quickly and numerously as the fruit fly.

Eggs are placed at the surface of the fermenting rasp. They will take 10 days to develop into young flies at 77°F, 15 days at 68°F, 18 days at 60°F, and up to 57 days at 50°F. The production stops when temperature exceeds about 86°F and the larvae might be ruined. At approximately 78°F you will have a new generation every fortnight.

As I use open cultures normally, I cannot use the various forms of *melanogaster* which are cultured in laboratories and which have deformed wings. These forms cannot fly into new cultures and they cannot escape from the tanks and fly back



Mating *Drosophila melanogaster*. Photo by J. J. Greve Scheel, F.A.I.

to the cultures if they are not eaten by the fish. I store my culture-glasses in my fish room. About every 2 to 3 weeks I prepare new cultures and place them near the old ones. The flies soon find the fresh yeast-smelling fresh cultures and lay their eggs there.

The air inside my fish room is rather dry, especially during the winter. In order to decrease the evaporation and to make it easier to collect the flies, I place a white plastic lid with many small perforations over each culture as soon as the heaviest rise of the fermenting yeast rump is over. If I place the lid on the glass too early, the concentration of alcohol inside the air of the glass will be too strong for the adult flies. After from 3 to 5 days, however, this danger no longer exists and I can safely place the perforated lid on the glass containers.

When collecting flies, one takes a glass similar in shape as that which contains the culture in one hand with the opening down. With a quick movement place the empty glass on the rim of that holding the culture. Turning the culture glass on its axis in a strong light induces the flies to rise up into the empty glass. Insert a piece of cardboard between the two glasses, and you have captured the flies

in the empty glass. Repeat this as many times as you wish and as you have glasses to receive flies.

When enough flies have been collected, place the glasses on a cardboard large enough to more than accommodate the openings of the glasses. Now place from 5 to 10 drops of ether on the cardboard near each inverted glass. Push the glass over the ether spot and the flies will become anesthetized and will lay on the cardboard. The fly-catching glasses now may be removed and you can proceed with feeding your fish. The ether will do no harm to your specimens.

If you raise micro-worms in your house as food for your fry, you will soon find your fly cultures infected by those small worms which may reproduce so quickly that your cultures will be ruined.

The open culture method for fruit flies given above can easily be converted to the closed-culture cultivation. The only difference is that the culture glass should be covered with a piece of nylon tulle or other such material and placed below the perforated lid described above. The cloth should be wide so that you can keep it on the open end of the glass when you remove the lid. When you have bred enough flies inside the culture, be sure

to keep the cloth over the open end of the glass when you remove the lid. Then the catching glass is placed over the rim of the culture glass. Remove the cloth gently from between the two glasses and follow the rest of the procedure as you would if you were working with an open culture.

Very often it will be sufficient to place fresh cultures in your fish room for establishing new cultures. A few flies usually escape and will fly to the open fresh cultures and lay their eggs in the rasp. It is certainly the best way to capture flies that have escaped during feeding. If this method does not give you enough eggs, one or two adult flies can be taken from the etherized lots of flies just before feeding. Cotton tufts should be placed in the fresh cultures to receive these etherized flies because until they recover from the ether they are apt to adhere to the fermenting rasp and die.

In summary, two things seem to be important in the reproduction of fruit-flies. First, it is important to keep the rasp moist, not too moist, and not too dry. Second, it is important to get as many fly-eggs into fresh culture as possible. This will keep away the fungus which can cover the culture and ruin it.

If the cultures begin to give off a strong odor, they should be discarded, and new cultures set up.

I realize that the culturing of fruit-flies will not be useful to all aquarists, as some do not like any type of fly and others may be sensitive to ether. However, if you are a killifish fancier and have the facilities to breed the fruit-flies, this will prove to be a most beneficial type of live food for your specimens.

Supplement Listing of Aquarium Societies

In our June issue we published a comprehensive list of aquarium societies in the U. S. and abroad . . . the list was not

complete and is still not complete, however, the following names have come in since our original compiling.

CALIFORNIA

Long Beach Aquarium Society
2300 Studebaker Rd.
Long Beach, Calif.

Los Angeles Aquarium Society
1122 Cole Ave.
Los Angeles, Calif.

Modesto Aquarium Society
12th & "L" Streets
Savings & Loan Bldg.
Modesto, Calif.

San Gabriel Valley Aquarium Society
First Christian Church
3415 Parsons Blvd.
Riveria, Calif.

Southern California Guppy Assoc.
Mr. Clyde Bailey
2126 W. 247th St.
Lomita, Calif.

(Continued on next page)

Ask the oldtimers!

LIVE FOOD is best.

- fruit flies
- microworms
- white worms



Fruit flies have been fed to fish for years. But now science has produced a mutated stump-winged fly that does not fly and which is EASILY handled. Fish love it! Stump-winged fruit flies make excellent fish food because:

- One culture in a baby food bottle lasts a month or more.
- Just one female can produce 300 offspring in a short time.
- Surface tension of water keeps them on top - not on aquarium walls, etc.
- Fish go wild over them.
- Fruit fly larvae have a growth hormone you can take advantage of.
- You can raise them on almost anything - bananas, corn meal, etc.
- You can sprinkle them on top like dried food!

**LIVE FOOD IS CHEAPER IN THE LONG RUN
-AND IT MAKES YOUR FISH HEALTHIER**

Initial biologically stable cultures of fruit flies are \$1.75 each, postpaid; cultures of microworms and white worms (*Enchytraeus albidus*) are \$1.25 each, postpaid. Full, simple directions are included.

SEND IN TODAY-before your fish start complaining!

AQUA ENGINEERS

Box 1 Ortonville, Mich.
Operated by fish hobbyists who guarantee satisfaction!

CONNECTICUT

Northeast Council of Aquarium Society
34 Stoddard St.
Seymour, Conn.

FLORIDA

Florida Marine Aquarium Society
Simpson Gardens
55 S.W. 17th Rd.
Miami, Fla.

Tampa Tropical Fish Fanciers
4608 Bayville Ave.
Tampa, Fla.

HAWAII

Hawaii Guppy Society
2680 Ala Wai Blvd.
Honolulu, Hawaii

ILLINOIS

Chicago Killifish Fanciers
Ralph Bodamer
5721 W. Archer St.
Chicago, Illinois

Elgin Aquarium Society
1st. Federal Savings Bldg.
Cor. Highland Ave. & Grove St.
Elgin, Illinois

Tropical Aquarists-
Fire House
Wood Dale, Illinois

IOWA

Greater Iowa Aquarium Assoc.
Easter Seal Treatment Center
2920 30th
Des Moines, Iowa

MICHIGAN

Aquarium Club of Battle Creek
Kingman Museum
Battle Creek, Michigan

Washtenaw Aquarists
Mrs. Pat Klinger
1832-1 Stadium Place
Ann Arbor, Michigan

Flint Aquarist Society
Fred Howard
Box 1
Ortonville, Michigan

MISSOURI

Heart of America Aquarium Society

Kansas City Museum
3218 Gladstone Blvd.
Kansas City, Mo.

NEBRASKA

Nebraska Aquarium Society
J.C.C.- Room 25
101 No. 20th St.
Omaha, Nebraska

NEW JERSEY

British Ichthyological Society
William Southon, American Br. Sec.
49 Broad St.
Milltown, N. J.

Hudson-Bergen Aquarium Society
Kunisch's Hall
67th & Hudson Blvd.
North Bergen, N. J.

New Jersey Aquarium Society
Veterans Hall
Bond Drive
Union, N. J.

Pompton Aquarium Society
206 Main St.
Lincoln Park, N. J.

Tri-County Aquarium Society
Noel Belanger
60 Evergreen Place
East Orange, N. J.

NEW YORK

Queens County Aquarium Society
31-27 41st Street
Astoria Republican Club
Long Island City 3, N. Y.

PENNSYLVANIA

Harrisburg Aquarium Society
State Museum Bldg.
Harrisburg, Pa.

York County Aquarium Society
Pine St. Recreation Center
301 E. Phila. St.
York, Pa.

TEXAS

Fort Worth Aquarium Society
Botanical Gardens
Ft. Worth, Texas

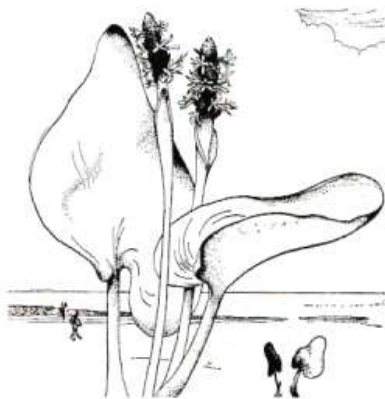
(Continued on page 19, Col. 2)

the pickerelweed

by Charles O. Masters

Not a single one of the authors of the many books which have been written about wildflowers of the eastern United States neglects to describe in detail the beauties of the Pickerelweed. This is indeed a tribute to the aquatic herb which is undoubtedly one of the most beautiful of the American native plants. It is unfortunate that it is restricted only to the eastern half of the nation. Here, however,

The leaves are thick, dark green, glossy, and arrow shaped. However those which are submerged are tape-like, closely resembling the leaves of Wild Celery. This is a response to habitat which is so often demonstrated by aquatic plants. The rootstock is heavy and lies horizontally just a few inches within the soft bottom mud. Flowers are violet-blue in color and are arranged in the form of a dense three inch spike. Blossoming takes place all summer long with the majority of plants blooming during the month of August. Individual flowers last only an extremely short time.



The Pickerelweed—Drawing by William Schuele.

Technically the plant is a member of the Pickerelweed family: *Pontederiaceae* and was named *Pontederia cordata* by Linnaeus. Fassett lists four distinct forms of the species based on individual characteristics as pointed out by botanists.

In most areas the plant is commonly known as the Pickerelweed but in other places it has a variety of names such as Alligator Wampee, Cooter Wampee, Dog-tongue Wampee. Wild Gentian or Black Potato. Oddly enough, in the state of South Carolina alone it has been known by five different names.

the Pickerelweed is quite common in and about ponds and streams from Florida all the way north to the southern area of Canada.

The nut-like seeds, which are available in the early fall, are starchy and serve well as a pleasant and hearty food. They are of local importance as a wild-duck food and have been found in the stomachs of ten different species, most frequently in those of the mallard and northern black duck.

Along with the Water Hyacinth which is a very close relative, the plant is often used as an ornamental in water-lily pools. It grows best in soft mud and shallow warm water where the stems, leaves and blossoms sometimes reach up two feet above the surface of the water. Propagation is accomplished easily by transfer of the rootstock.

Most water-lily nurseries sell the Pickerelweed as an item which does well in both small and large ornamental lily pools. It is well worth the investment and will fill in places where lilies can't grow. ■

The Editor's Letter

WHAT IS good for the hobby" is a favorite subject for discussion among dedicated aquarists and although opinions offered are modified by the judgment of the deliberators, it is generally accepted that the line of demarcation is fairly discernible.

The importance of detecting what is good for the hobby came home to us rather sharply recently when we were present among a group of nonhobbyists. A polite show of interest was made when we were introduced as a member of the editorial staff of a publication devoted to the interest of fishkeeping.

"It probably is a fascinating hobby," one of the women remarked, "but my one venture into it discouraged my youngsters as well as myself from ever becoming really involved with it."

Curious, we naturally asked for the details of the disappointing experience.

"My sixteen-year-old and his younger brother," she obliged, "saw an ad for some kind of fish eggs in a magazine. All you had to do, the ad claimed, was to put these eggs in water and fish would result. We bought quite an elaborate setup and installed it in the local high school biology lab. My youngsters thought it would be fun to share the adventure with their classmates and couldn't wait until the eggs arrived in the mail. The aquarium was set up and the directions on the box the eggs came in were followed to the letter. As nothing happened the first day the eggs were put in the water, we thought it might take a few days. The children kept waiting and waiting but nothing ever happened."

"Did you write the company that put out the eggs?" we ventured.

"By that time we were fed up with it," the woman exclaimed, waving her hands to accent the annoyance the recollection gave her, and, ignoring our effort to make further justification, she switched to another subject.

This incident is related here to illustrate a sample of what is bad for the hobby. The story was implanted in the minds of all the women present and there was very little we could do about it. It is difficult to recognize sometimes what will be a boost or a bane to the hobby but very often the experienced hobbyist has an ear for what will be one or the other. We of *The Aquarium* will back anything we consider good for the hobby and although we cannot claim clairvoyant ability, our batting average has been good.

Sincerely,

H. W. S.

BILL BRAKER'S *Tank Talk*



By **WILLIAM P. BRAKER**
Assistant Director
John G. Shedd Aquarium, Chicago

The Calgary Aquarium

An offhand remark by an employee, inspired Mr. J. B. Cross, president of the Calgary Brewing and Malting Company, to build an aquarium. Faced with the problem of what to do with a pond on the company's premises, it was suggested that they could put fish in it. This seed of an idea germinated, took root, grew and flowered into one of the finest aquariums in North America.

The Calgary Aquarium was built at a cost of \$500,000.00 and completed in 1960. Located on the grounds of the brewery in a setting of beautiful gardens and outdoor trout ponds, the aquarium provides Calgary residents and tourists



The Calgary Aquarium, built by private funds and open free to the public each day of the week, reflects the philanthropic attitude and public spiritedness of the management of the Calgary Brewing and Malting Company.

The truck to the left of the building is delivering its cargo of 3000 gallons of saltwater.

alike a chance to view native Canadian freshwater fishes as well as saltwater fishes from the Pacific coast, Hawaii and Florida. These are exhibited in 21 large concrete tanks, the biggest of which is 28 feet long and contains 4500 gallons. In addition, there is a good selection of tropical fishes from all over the globe, displayed in 31 wall tanks.

Dominant among the saltwater displays are fishes and invertebrates from the Pacific coast of Canada. There are many species of rockfish, seaperch, flounders, blennies, sculpins and greenlings, including the very large member of this family, the lingcod, which grows to 100 pounds. Also on exhibit are leopard and dogfish sharks, rays, sturgeons and a good selection of invertebrates such as anemones, starfish and crabs.

Freshwater fishes include Cutthroat, Lake, Dolly Varden, Brook, Brown, and Rainbow trout, Salmon, Grayling, Rocky Mountain Whitefish, Pike, Perch, Walleye Pike and many others.

Five different water systems, two salt and three fresh, make it possible to keep a wide variety of specimens. The total salt water capacity is 50,000 gallons. This saltwater is brought across the Canadian Rockies from Vancouver, 700 miles away. The method by which it is transported is the brainchild of Elmer H. Taylor, Curator of the aquarium. A large neoprene bag, one-half inch thick and holding 3000 gallons, is filled with sea water at the Vancouver Aquarium and trucked to Calgary. There the bag is emptied by gravity flow into reservoirs, rolled up, and returned to Vancouver for another load. Because the bag takes very little space and is light, the return trip is almost free.

The public area of the aquarium is spacious and has a good traffic pattern. The fishes are well identified and exhibited in close approximations of natural surroundings. The tanks are well lighted and water clarity is excellent as evidenced by the fact that one can see another person very clearly at the opposite end of the 28 foot tank. All piping throughout the building is poly-vinyl-chloride.

In addition to the aquarium, there is

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The public area of the Calgary Aquarium. The tank in the immediate foreground is 28 feet long and holds 4500 gallons. Photo by Matthews Photo Lab, courtesy of Calgary Aquarium.

a fish hatchery adjoining, which was started as a project of the Calgary Brewing and Malting Company but which is now operated by the Provincial Department of Lands and Forests. Six million trout, perch, pike and pickerel from this source are planted in Alberta's waters each year.

On the second floor of the aquarium is a unique museum called the Horseman's Hall of Fame. This exhibit depicts various facets of the life of the hunter, trapper, guide and scout and of the plains Indians. One scene, using life-like figures, portrays

the signing of the treaty by Col. James A. Macleod of the Northwest Mounted Police and the Indian chief Crowfoot. Col. Macleod who did much to bring about peace between the Indians and the settlers and who was greatly respected by the Indians because of his fairness, was Mr. Cross' grandfather.

The Calgary Aquarium is a must for any visitor to Calgary or traveler along the Trans Canada Highway. It is a high-spot among the many tourist attractions in Canada. (Their product is good too) ■

Behind the scenes at the Calgary Aquarium. An attendant makes his rounds to feed the fish in his section. The large tank in the foreground is a reserve tank where surplus specimens are kept. Photo by the National Film Board of Canada, courtesy of Calgary Aquarium.





by Kay Ragland

the goldfish bowl

Two months ago, the National Goldfish Society was launched officially and immediately letters came in from all parts of the country, commending The Aquarium for its part in establishing the society and enthusiastically acclaiming the whole idea. Many of the letters contained charter membership, offers of help, and articles to be used in the publication when started.

To bring details up-to-date, here is what has been accomplished to show just how quickly the idea caught on:

1: Mr. Clyde Hutchinson, Frammer Manufacturing Company, and a long time devotee of the goldfish, has accepted the position of Acting Treasurer to handle the finances of the new society. He has established a bank account and all monies received and sent in the future will be turned over to him.

2: Membership cards (and what membership cards—just wait until you see one!) are now being printed and will be mailed to all members within the next ten days.

3: The new publication of the society will start with the August issue, be known as "The Goldfish Bowl," will contain articles on goldfish, their care, breeding, hints, news of the society, of the members, occasionally a timely article on fresh water tropicals. All persons, member or not, are cordially invited to submit an article or newsy items. An exchange of other societies with publications will be established.

4: Altho just two months old and a staggering infant, the National Goldfish Society has already entered a major show aquarium display and came out triumphant!

This show was the 18th edition of the Los Angeles Home Show, one of the largest in attendance in the country. Ten Charter Members and the first junior charter member in the country entered the goldfish category and came out triumphant! The trophy went to Mr. Mel Boyle with his beautiful Orandas in a 50 gallon display. As about anything can happen in a show, the Orandas spawned while the visiting press and dignitaries were viewing the section, much to their delight. Some of the young fry were saved by Mabel Ervin and myself, who had to perch upon chairs with net in hand amid a vast audience and literally snatch the young from the avaricious parents. Anything that moved in the aquarium, regardless of size, was another baby and both adult and children would yell "There goes another" despite the fact that from where they stood it would have been literally impossible to detect the young.

Mrs. Marion Stern displayed a trio of bubble-eyes, those utterly ridiculous looking goldfish; Ann Sellers showed Celestials and Black Moors; Barbara Sage some beautiful lionheads; Clyde and Myrtle Hutchinson some fancy goldfish; Rita Johnson, young Orandas; Mrs. R. Yee, four beautiful fantails; Don Dixon came up with a huge snifter with four calicos; Clela Kendell had an aquarium of young pearl and blue scales; and our young junior Ralph Brandt brought in his 'just goldfish', named appropriately "Wiggly". And, believe it or not, this little critter nearly stole the show! Constantly on the move, he would raise his head out of the water before I could get the worms down to him. So eager was he to eat I was constantly afraid of losing a finger up to the elbow when I feed him. His young master spent considerable time in the junior section, talking up the National Goldfish Society and tropical fish to the children that visited the display, with a result of many new prospects.

One week later Mr. Clyde Hutchinson entered his goldfish under the banner of the society in the San Diego Fair and at last report, his entry drew much attention.

I have received several letters from

are perhaps, the same species.

A complete description of this fish (a male) is as follows (see Figure 4): Total length, including tail—3 inches. Basic coloration—brownish on back changing to violet ventrally. Large reddish-brown spots in more or less regular rows superimposed over greenish-blue flanks. Dorsal fin shows a number of light-brown spots near its base on a darker-brown background. Anal fin is greenish at its base, brownish-red otherwise; there are a number of dark-red spots liberally sprinkled over this fin. Finally, the tailfin is quite pretty. The bulk of the fin is colored brownish-green, tending towards yellow-brown at its upper edge. There is a narrow brownish-red band in the lower portion of the fin, contrasting nicely with the yellow which colors all of the fin below it. In summary, although it is not a brilliant or a gaudy fish, it is attractive.

Under aquarium conditions, *Rivulus chucunaque* readily eats frozen brine shrimp, chopped beef and other foods normally fed to fishes of this genus. When at rest, it assumes the typical arched-back pose of the genus.

In 1924, C. M. Breder, Jr. of the American Museum of Natural History, explored the Rio Chucunaque Drainage, located in Eastern Panama. Although this is well away from the reported location of the fish I received, there is no reason to deny that the species has a very wide range, especially should *chucunaque* prove to be conspecific with *brunneus*. In any event, it was on this trip that he discovered *Rivulus chucunaque*, naming it after the drainage involved. The expedition lasted from the beginning of February to the beginning of May, i.e., well into the dry season. Judging from the size of the younger fish and the condition of the adults, it appeared that spawning was over, having commenced some time towards the end of the rainy season. The chief occurrence of *R. chucunaque* was found to be in potholes containing water left by the receding dry-season streams. Such potholes are located in the beds of creeks and are fairly free of surrounding vegetation. Their edges are rounded and the holes themselves may vary from 5 to 14 inches



Figure 1: *Rivulus brunneus*. (after Hildebrand)

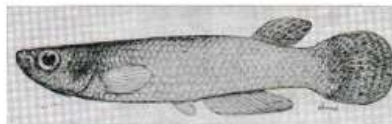


Figure 2: *Rivulus chucunaque chucunaque*. (after Breder)

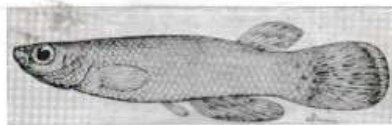


Figure 3: *Rivulus chucunaque sucubi*. (after Breder)

or so in diameter, and in depth up to 2 feet. The temperature of such creeks varied during the dry season between about 76° and 83° F.

Breder occasionally found *Rivulus chucunaque* flipping along the land, presumably in search of water. More startling, however, is the fact that he also found them buried in damp jungle debris to a depth of up to 2 inches! In this state, they spent the summer in estivation, a form of hibernation. The ability of *Rivulus chucunaque* to survive under difficult conditions was remarkable indeed.

Breder also comments that the lagoon-like nests of the frog, *Hyla rosenbergi*, were common along the stretches of the creeks inhabited by *R. chucunaque*. It was postulated that one of the purposes of the nest was to thwart the predatory attacks of this fish. In one recently-constructed nest, a specimen each of both frog and fish was found and although *R. chucunaque* was not at all concerned about the presence of the frog, the latter was quite upset over the appearance of the fish, so much so that the nest was not used even though in the following day, the fish was gone.

The mouths of the creeks along the

Chucunaque are affected, of course, by the tides. Tidal forms such as *Dormitator latifrons* are found here. Above this (in the dry season) are found a series of stagnant or nearly stagnant pools in which the concentration of fish life is very great. Understandably, the mortality is heavy both from asphyxiation and from the "easy pickins" that predators upon fishes have. A typical inhabitant of this area would be the catfish, *Hoplosternum thoracatum*, a fish which because of its ability to breath atmospheric oxygen, adapts well to these harsh conditions. Farther on, there is a change in elevation, resulting in cataracts, drops and deeper pools. The pools continue, mostly in the potholes mentioned previously, accommodating the sparse fish fauna in relative comfort. *Rivulus chucunaque* was found mostly above the falls although some specimens were found below, presumably swept over accidentally. Due to the presence of larger fishes in the *Hoplosternum* area which consume the rivulus, none were found deep into this lower level.

As a concluding thought, it is interesting to note that, of the three native groups located in the area, only the most advanced of them, i.e., the Cuna Indians, have a word to describe cyprinodonts in general. They refer to such fishes as AV-OO (phonetic pronunciation). Some of the natives have rather queer ideas about the local fishes insisting, for example, that cichlids are the young of marine fishes and that when they return to the sea, they become "dangerously large"! ■



Photo by Albert J. Klee
Figure 4: *Rivulus chucunaque*, a male.

SEPTEMBER, 1963

REFERENCES

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- Hildebrand, S., "New Catalogue of the Fresh-water Fishes of Panama", *Zoological Series, Field Museum of Natural History*, Vol. XXII, No. 4, 1938
- Hildebrand, S. and S. E. Meek, "The Fishes of the Fresh Waters of Panama", *Zoological Series, Field Museum of Natural History*, Vol. X, No. 15, 1916
- Hoedeman, J. J., "Preliminary key to the species and subspecies of the genus *Rivulus*", *Bulletin of Aquatic Biology*, Vol. 2, No. 18, Pgs. 65-81, 1961

LIST OF AQUARIUM SOCIETIES

(Continued from page 10)

Southern Texas Aquarium Society
C. M. Anderson
316 30th St.
Nederland, Texas

Southwest Texas Aquarium Society
3310 25th St.
Mrs. Charles H. Swift
Port Arthur, Texas

Tropical Fish Hobbyists of Dallas
Dallas Aquarium
Fair Park
Dallas, Texas

VIRGINIA

Potomac Valley Guppy Club
1014 Fowler St.
Falls Church, Va.

CANADA

Winnipeg Aquarium Society
William A. Sneesby, Pres.
11 Silvia St.
Winnipeg 5, Man., Canada

Montreal Aquarium Society
P. O. Box 653, Station B
Montreal, Que., Canada

ENGLAND

Midland Pool & Aquarium Society
Mr. L. Stokes
2 Carlton Road
Smethwick 40, Staff., England

A. G. A. NEWS

Lawrence Konig, *Executive Secretary*
824 Rebecca Place, Elizabeth, N. J.

The American Guppy Association, Inc.

Official Hobbyists' Organization with
National and International Membership

The Greater Akron Aquarium Society will hold its Fourth Annual Guppy Show on Sunday, September 29, 1963, in the Charles Goodyear Shelter, East Room, Darrow Road (Route 91) at 2077 Newton Street, Akron 5, Ohio. The facilities here are excellent for showing and for picnicking, inside or out, according to the weather. Last year this show drew over 250 entries. Since so much interest is being shown in the development of a guppy known as a half-back, a special classification is established in this show for the exhibition of half-backs. There will be 16 classes of competition. The public is invited and admission is free. For entry blanks and further information write or call Edward F. Hazle, Show Chairman, 2426 14th Street, Cuyahoga Falls, Ohio. WA 8-7024.

The Shore Area Aquarium Society will hold its 2nd Annual Tropical and Hobby Show on September 21 and 22, at Manning Place Fire House in Keansburg, N. J.

The 17th Annual Tropical Fish Show will be held by the Pittsburgh Aquarium Society at the Buhl Planetarium, Pittsburgh, Pa., starting September 28 through October 20, 1963.

The Greater Cincinnati Aquarium Society's 5th Annual Guppy Show will be held Sunday, October 13, 1963, at Xavier University Armory in Cincinnati, Ohio. For details contact Art Hopkins, 5705 Adelphi Avenue, Cincinnati 27, Ohio.

The proposed constitution for the A.G.A. has been forwarded to the active groups of our association. Many of these groups have already contacted us expressing their appreciation of the work that has been done by The Northern Ohio

Guppy Breeders Association on this project. There are a few differences of opinions on some minor points in the proposed A.G.A. Constitution. I do feel that these differences can be worked out to the majority approval, however.

One of the major problems has been that there has not been enough help and the right kind of administrative framework to keep the A.G.A. affairs from lagging. This problem will soon be a thing of the past because a Board of Directors, composed of not more than 12 or less than 6, who shall assist in re-establishing the A.G.A. within the framework of the new Constitution.

The first Board of Directors shall be an "interim board" that shall serve until the first Board of Directors is installed through a nominating committee, and the vote of each affiliated A.G.A. Group.

Of course this will not happen overnight, but it can be a smooth transition with a minimum amount of technical points to solve. The proposed Constitution is clear in its purpose and insists that all directors must be functional and if for any reason a director can not fulfill his tenure, then a replacement can be put in for the remainder of the elected term.

If you have not received your copy for your group, please write to me and I'll have one mailed to your group. ■

Your Hobby Magazine was Represented at NAPI Show!

On July 19 and 20 at the Biltmore Hotel in New York City, The National Association of Pet Industries held a trade show in which dozens of exhibitors displayed pet and aquarium supplies to distributors. This show is a prelude to NAPI's 9th annual convention and show for dealers, Sept. 6-7-8.

Our booth was headquarters for providing authentic facts and information relative to "The Aquarium" magazine and our complete line of related books available to hobbyists from pet stores throughout the country. We also attend these shows to keep fish in the forefront of the pet industry so that more fishes of a wider variety are made available to all of us

interested in fishkeeping. At the same time, we are able to pass along information to manufacturers, distributors and dealers on what hobbyists have been asking for in the way of equipment, food and remedies.

Those in the trade will be interested in knowing that Mr. Irving Marder, known as "the dean of wholesale pet supplies," attended the show and is back on the firing line again after a temporary retirement . . . his firm . . . Wayne Pet Supplies, Inc. Many will remember his dog rack for all pet needs, the filter stem brushes, personalized dog towels and other creations he brought to the industry and its consumers.

This year's show was not only another tremendous success for the National Association of Pet Industries but for "The Aquarium" . . . your magazine as well.



Irving Marder visits "The Aquarium's" booth to chat with publisher John Anderson.



Avid hobbyist, Ken Fagen (center), had a story of a new fish developed in Hawaii and came to tell Helen Simkatis, our Editor, about it. Ken's dad (sitting on left), keeps a dozen or more tanks of fish in his New York city apartment.

"The Aquarium's" booth featured tropical fish swimming around "plastic coated" copies of our magazine. Howard Seldomridge welcomed distributors and explained the phenomenon.



Societies at Work

by Helen Simkatis

The June issue of *The Fish Culturist* (The Pennsylvania Fish Culturists' Association) features an article by William A. Sternke entitled "My Experience in Breeding *Metynnus roosevelti*." This is notebook material for those who have aspired to breed this attractive, hardy fish. In this same issue Paul A. Zahl discusses the Inversion of Sex in *Xiphophorus hellerii* and refers to the studies made by Essenberg in 1924. A careful description of the change is given based on Essenberg's observations. Exchange information regarding this publication, or orders for copies of issues should be addressed to Editor William I. Lawrence, 502 Hillcrest Ave., Hillcrest, Wilmington 9, Delaware.

We don't as a rule review reprints but *The Fish Lore* (Eden Aquarium Society), July issue, carries such a charming article by a nine-year-old, Ngaire Phillips, which originally appeared in *Aqua-Chat*, published by the Newcastle Aquarium Society of Australia, we can't resist giving it mention. The piece is entitled "What I Have Learned About The Tortoise." Although Tilly, the subject of the article, is not identified scientifically, she definitely is one of the aquatics, and it is seldom one finds in such a brief piece as much information on the maintenance of what we generally refer to as turtles as Ngaire offers in this one. Feeding, shell care, and general maintenance are all considered carefully. Ngaire's powers of observation are outstandingly sharp as is his quality of gentleness and talent for compassion. We should like to hear more from this Australian nine-year-old and commend Editor Heizenbuttel for discovering this informative piece which is not only enlightening from a practical stand-

point but is also an ingenuous lesson in kindness. This is the kind of material editors' dreams are made of—wish there was more of it around. We learn from this issue of *The Fishlore* that the Eden Aquarium will hold its show at the San Leandro Boy's Club, October 19 and 20. All societies are welcome to participate. Correspondence should be directed to the Eden Aquarium Society, Inc., P. O. Box 503, San Leandro, Calif.

The June issue of *Aqua Notes* (Sun-coast Aquarium Society) tells us that St. Petersburg is to have two new aquatic attractions. One will be called the Aquatarium-Kingdom of the Sea and will be operating by December 1, 1963. The facility covers a 15-acre tract between the Colonial Inn and the Gulf Winds Apartments on St. Petersburg Beach. The two million dollar attraction will include a main show pool, a 3-story building with an elevator to the seating areas, restaurants, an olympic size swimming pool for aquatic shows, cabanas, bath houses, etc. Still on the drawing board is the other facility which will be built at Ft. De Soto Park, Mullet Key. Dick Pope Sr., operator of Cypress Garden and Bob Eastman, former operator of Marineland at St. Augustine and designer of Miami's Seaquarium are planning the facility, which will cost 2 million dollars. A main tank will have 39 viewing windows and 51 tanks on the main floor and galleries. An aqua theatre is planned to accommodate performing porpoises, seals, and sea lions, while another section will be set aside for swimming and diving exhibitions. Restaurant plans are also included. Construction will have begun by the time this column is read and completion date target is November 1964. In this same

issue Editor McDougall points out that our aquarium society directory appearing in the June issue of *The Aquarium* neglected to include the following clubs:

Marion County Aquarium Society
727 E. Fort King Avenue, Apt. 4
Ocala, Florida (Alice Fralick, Sec.)
Tampa Tropical Fish Fanciers
4608 Bay Villa Avenue
Tampa, Florida (Robert Goeb, Pres.)

Write to Suncoast Aquarium Society, P. O. Box 12876, St. Petersburg, Florida for exchange information on *Aqua Notes*.

Helen Wainscott, Editor of *Aquanutz* (published by the Davenport Aquarium Society of Davenport, Iowa), uses for the basis of her editorial for July, memories of last year's show. Here she allows us a view of the seldom-mentioned lesser than highlights of a show and yet the essence of which memories are made. Three little elderly ladies, for instance, Editor Wainscott tells us, sneaked in through a back entrance to avoid standing in line at the front and proper route of ingress. They had committed their small crime because they were in a hurry, but once inside they became so fascinated with the exhibit, time and their lack of it was forgotten. And then there was the Sunday school teacher who had the temerity to usher her entire class of little boys through the show, risking the antics to which small boys in groups are prone. Surprisingly enough she had her flock well under control for they enjoyed the exhibit and left without incident. Side lights such as these make most enjoyable reading especially when related by such a talented writer as Helen Wainscott.

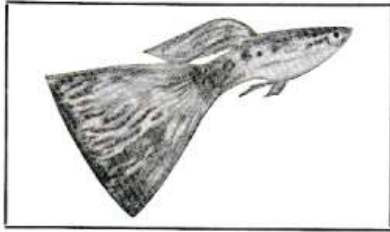
Exchange information regarding *Aquanutz* can be had by writing Editor Helen Wainscott, Davenport Aquarium Society, 305 So. Hazelwood, Davenport, Iowa.

The June issue of the *Wet Pet Gazette* (Norwalk Aquarium Society of Norwalk, Conn.) is beautifully executed, the hand-colored cover is most attractive. Editor Ginny Reed asks editorially "Do You Still Wonder?" She then goes on to list the avenues of self-expression opened up by the aquarist's hobby. Among the many interesting articles contained in this issue

is Ginny Reed's account of a tour through the New York Aquarium, some pointers by Ed McClenahan on how to keep tanks cool in the summer, and many well-chosen selections from other aquarium society bulletins. Write to Editor Virginia Reed for exchange information at 15 Center Drive, Old Greenwich, Conn.

Editor Carol Honnold voices caustic comment on available films slanted for aquarium societies and paucity of same in the June issue of *Colorado Aquarist*, published by the Colorado Aquarium Society. Her criticism is valid, and although we have seen fairly good films on subjects somewhat related to the interest of fish-keepers, it is regrettable indeed that inexpensive rental films have not been produced discussing and depicting aquarium techniques for the not too advanced and still not beginner hobbyist. The *Colorado Aquarist*, (this is the first issue we have had to review) is mimeographed and covers an excellent balance of society news and articles. This issue carries a piece on Goldfish by Al Wenzholz, and Ella Pittman discusses crayfish as aquarium pets. Further information regarding this bulletin can be had by writing The *Colorado Aquarist*, P. O. Box 183, Highlands Station, Denver 11, Colorado.

There is an exceptionally good article in the June issue of *The Boston Aquarium News* (Boston Aquarium Society, Inc.) by Charles H. Sonia entitled "Conditioning Fish for Breeding." This piece not only covers the subject matter its title promises, but takes the beginner from the time he first purchases his fish through to the time he is ready to breed it. Experienced hobbyists as well as beginners will profit from reading this one. There is also a resumé of a talk given to the society in April by Leon Blanchard entitled "All About Zebras." Mr. Blanchard discusses the breeding of this species in the home and then goes into laboratory techniques. He is employed by the Harvard School of Public Health where Zebra fish eggs are being studied to find clues for deformities in human babies. Formerly these deformities were thought to be hereditary, but now it has been dis-



Portrait of the Guppy

There was a time, five or six years ago, when large tail guppies were scarce and the people who were buying guppies for breeding would often have reason to say, "The young males do not resemble the father in form or color."

The word would then be passed around not to buy from certain breeders because they did not give related females when they sold breeding pairs of guppies. In some cases this was true, but in most cases it was not. At that time most of the breeders who had anywhere from 30 to 100 tanks and were working with big tail stock were not aware of the "visual control method" for breeding guppies. They were not aware of the fact at that time that guppy strains were not set or anchored in form and would not breed true. When poorly formed males showed up in their tanks, they were removed but their sisters were kept. The reasoning being that the females were related to the large tail fathers and eventually would produce males that would resemble the large tail fathers.

Gradually, as time went by, more and more tanks were dedicated to the cause of developing large tail guppies, and in many instances fish sold as breeding stock did produce more good stock. I know of many occasions when breeders did part with known good pairs for from \$20 to \$50 a pair and the offspring of these fish in turn were turned over to conscientious fishkeepers. I would not hesitate to say that there are at least 150 guppy breeders in the United States today who have 20 to 60 tanks or more devoted to guppies alone and from the records of the Amer-



By Lawrence Konig

ican Guppy Association there are at least 1500 people who keep from one to 10 tanks of guppies. At the same time there are probably two or three times as many more who keep more than one tank of guppies and because they do not belong to an aquarium society or show fish, they are not known or shown on the record.

With all these people breeding for good fish, it is no wonder that the culls today are better than the prize winners were in the 1950's. Just lately here in the East a breeder who had never entered fish in shows before has been taking prizes with some of the largest veiltails seen around in this area for some time. There were several flaws in this strain, namely, a slight bow in the center of the spine and a tendency towards being tail heavy. In other words, the males were swimming with their heads too high.

Since the finnage and condition of the fishes were excellent, I was curious to know what could cause this posture in the males. A visit to the breeder's fishroom revealed that the posture was not as apparent among the younger fish (4 months or younger). In discussing the matter with the breeder, it was pointed out that no new stock had been introduced to this strain for over 3 years. This could be one of the reasons for the cause of the flaws in this strain. At the same time there is the possibility of water condition

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Spotlighting NEW PRODUCTS

by Howard N. Seldomridge

2 New Products Announced by Tropicals Research

Tropicals Research, 1366 N. Dearborn, Chicago 10, Ill., has just marketed two new products . . . "Cryst-Al-Water Capsules" and "Minnie-Keep" . . . developed by the firm's Albert Rekow.

Cryst-Al-Water Capsules, according to the firm, do the job of five separate aquarium products at a fraction of the cost. In setting-up and maintaining healthy, crystal-clear aquarium water for tropical fishes and goldfish, C.A.W. Capsules accomplish the following:

(1) Adjust pH slowly to 7.0, without making the water hard; (2) Neutralize harmful chlorine in tap water so it can be used immediately; (3) Control algae growth; (4) Neutralize and adjust cloudy or foul water caused by overfeeding or

overcrowding; (5) Provide fish with all necessary minerals.

C.A.W. Capsules are simple to use by merely adding contents of one capsule to 2½ gallons of water. Packaged in a 3-color card for peg-boarding or regular display, C.A.W. Capsules are also inexpensive: 8 strip-packed capsules per card . . . enough for 20 gallons of water . . . retails for 79¢.

The firm's other new product, Minnie-Keep, was formulated specifically for keeping fresh-water fishing minnows several times longer than normal in a minnow bucket . . . by merely adding the contents of one capsule to one gallon of water with two dozen fishing minnows. Minnie-Keep is also packaged in an attractive 3-color display card, with 6 strip-packed capsules per card retailing for 59¢.



To Coat Your Plywood Tank . . .

The David E. Long Corporation of 133-20 91st Avenue, Jamaica 18, Long Island, New York puts out a vinyl copolymer resin coating which is called DEL A and which has been used for coating plywood aquariums, both salt and fresh water, in many public aquariums. This product should be most enthusiastically accepted by hobbyists who wish to build their own plywood aquariums.

In The Plant Department . . .

Newly renamed, *PLANT CLEANERS S-1 & S-2* are stealing the spotlight at Aquarium Stock Company, 31 Warren Street, New York 7, N. Y. These twins are guaranteed to remove all snails, leaches and parasites from aquarium plants *BEFORE* planting.

Aqua-Stock's Plant Cleaner combination actually provides two treatments. First plants are soaked in a solution of S-1, and then in a solution of S-2. Plants are now completely sterilized *without harming plants*.

S-1 and S-2 is available from local authorized Aqua Stock dealers at 60¢ for the set (6 treatments), or directly from Aquarium Stock Company.

A few prime distributorships still open.

Fish Foods From Mexico

Ernesto Ibarra Y CIA., S. A., Calzada Del Obrero Mundial, No. 296, Mexico 12, D. F. is packaging dried flies, Daphnia, Larvae, etc. For price list and other information write the above address.



Convenient New Product From Longlife—Longlife Leak Stopper

Longlife Fish Food Products, Inc., announces a new aid for aquarium owners . . . Longlife Leak Stopper.

This new product makes it possible to stop aquarium leaks instantly without emptying the tank or disturbing the fish. If a leak should occur in an aquarium, it is only necessary to wipe dry the area around the leak on the outside of the aquarium and apply Longlife Leak Stopper. Merely press a small amount of Leak Stopper into the crack and the leak will stop immediately, leaving the aquarium watertight once more. For further information write Longlife Fish Food Prod-

ucts, Division of Sternco Industries, Inc., 50 Cooper Square, N. Y. 3, N. Y., or phone BARKley 7-9270. Contact: Sabin Segal.

PORTRAIT OF THE GUPPY . . .

(Continued from page 23)

having something to do with the bow in the spine. On two separate occasions, I did bring some of these fish back to my fishroom (3 months apart). The males did not survive and the females did not have young. If excessive inbreeding was causing this strain to degenerate, this could easily be checked. Females from two other strains have been introduced to young males of this strain showing little or no curvature in the spine. There is a good possibility that these new females will infuse new vigor into this strain. Since environment has so much to do with the good and welfare of our fish, it is also possible to consider that tail dragging could be an indication of fish that have reached maturity 3 or 4 months sooner than average and tail dragging might point up advanced age. I'll report the outcome of the effect of introducing new stock into this established strain when the results can be properly appraised. ■

TIDE'S IN . . .

(Continued from page 22)

with a glass rod until completely dissolved.

This solution will contain 1 milligram of copper sulfate in each milliliter.

1 teaspoon of this solution should be used to each four gallons of water.

We realize that this is a weaker solution than that recommended in the original Dempster formula but we found that to be considerably stronger than necessary. Some years later when we discussed this matter with Mr. Dempster, he told us that he, too, was using the copper sulfate in a weaker solution than he had originally recommended.