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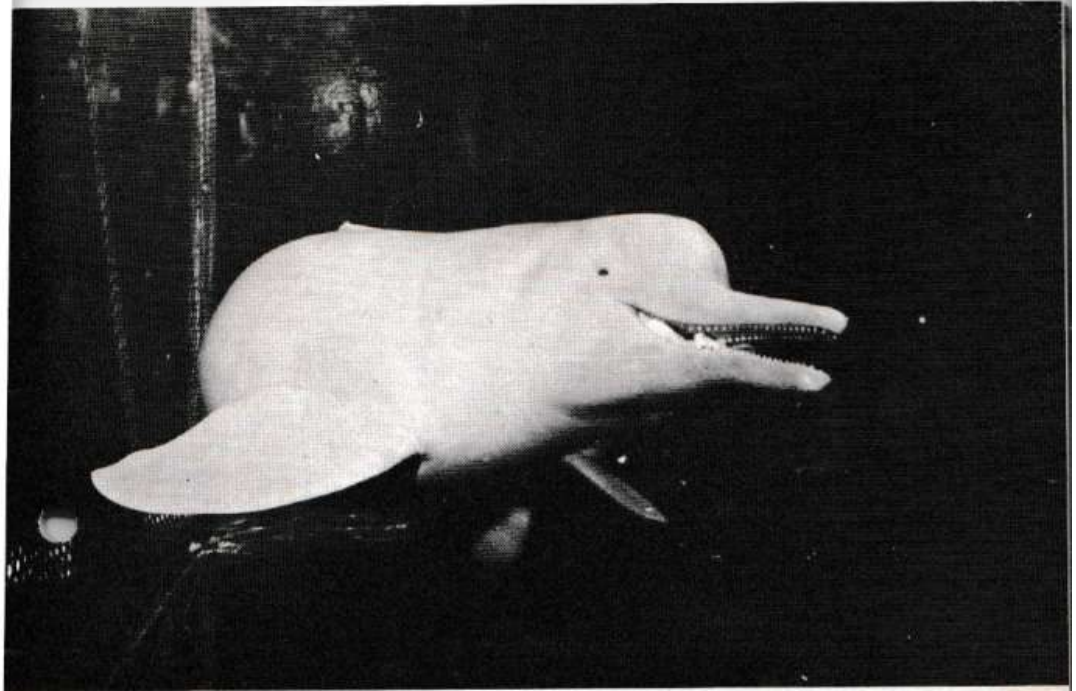
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cover photograph

A pair of *Cichlasoma spilurum*, owned and photographed
by Gene Wolfsheimer, F.A.I. For more information about
this unusual cichlid, turn to Paul Loiselle's article on
Page 216. For more about Mr. Wolfsheimer, turn to
Richard Stratton's interesting profile starting on Page 246.





A freshwater dolphin — given to Steinhart
Aquarium by the S.F. Aquarium Society

Meet "Whiskers"

THE STORY of Whiskers, Steinhart's famed freshwater dolphin, started in the very warm waters of the upper Amazon in the area of Iquitos, Peru, on the eastern slope of the Andes. It was here that the 45-pound male was netted by the field collectors of Florida's Gulf Fish Hatchery; before long he was en route by cargo plane for Tampa, Florida, and a special holding pond.

In the next six weeks, this little dolphin's friendly nature made him the special pet of all the Gulf staff, and he was appropriately dubbed WHISKERS by eight-year-old Jodi Socolof. A series of short, strong whiskers along the top of the snout is one of the distinctive characteristics of the freshwater dol-

Earl S. Herald
and
Robert P. Dempster
Steinhart Aquarium

phins. The playful nature of this agile little cetacean was quickly evident; food was often used as a toy, being banded about for amusement before it was eaten. By the time Whiskers' acclimatization was completed, Ross Socolof had constructed for him a special carrying case lined with foam rubber and plastic. Earl Herald arrived in Florida to accompany Whiskers on the 3000-mile trip

Photo: Needlesharp teeth make Whiskers a formidable dolphin, but fortunately he is always friendly. Photo: Fred Jenne.

to San Francisco, but Hurricane Dora quickly changed these plans. Two weeks later, Bob Dempster made the actual trip, which required 30 hours elapsed time not including a one-day swimming stopover at Shedd Aquarium in Chicago. The long trip ended on September 24, 1964, when Whiskers was dropped into his new tank at Steinhart Aquarium and to the delight of the staff, immediately consumed six pounds of fish (whitebait). The tank volume was approximately 2300 gallons and the water was 80 degrees Fahr.; over the tank was suspended a heat lamp to provide warm breathing air of at least 70 degrees.

Many intriguing bits of information were learned about this strange animal during the next weeks. Unlike some of the smaller cetaceans, he liked to spend much of his time upside down and in this respect resembled the beluga whales currently displayed at the New York Aquarium. Whiskers was not a jumper, but he would do such things as mischievously throwing his rubber ring over

into the adjacent piranha tank. Within three weeks after arrival he learned to use his snout as a baseball bat to knock the six-inch rubber ball around the bottom of the tank. Whenever anyone was walking near the back of the tank in the work area, Whiskers would quickly approach to have his snout scratched or to be tickled along the side of his body. In spite of the needle sharp teeth, it is possible to place one's hand in the mouth without losing a finger. Like a big friendly puppy, he often stands vertically in the water, resting his tail on the bottom until some staff member pays attention to him. However, he is also cautious, for if someone approaches who has clothing of a different color than that with which he is familiar, he will not come near the adjacent edge of the tank. A new object placed in the tank might be ignored for a week to 10 days but then be discovered with great gusto. Like many small cetaceans, Whiskers

Photo: Whiskers going through some of his bagful of tricks while on camera, clicked by Fred Jenne.

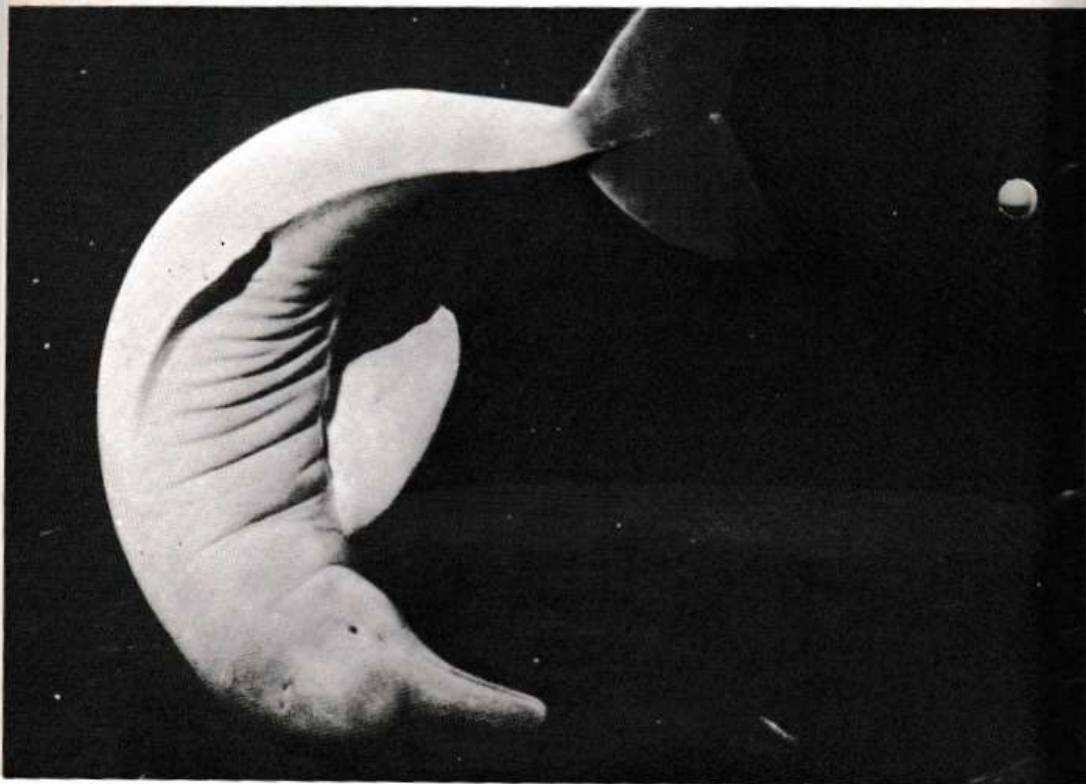
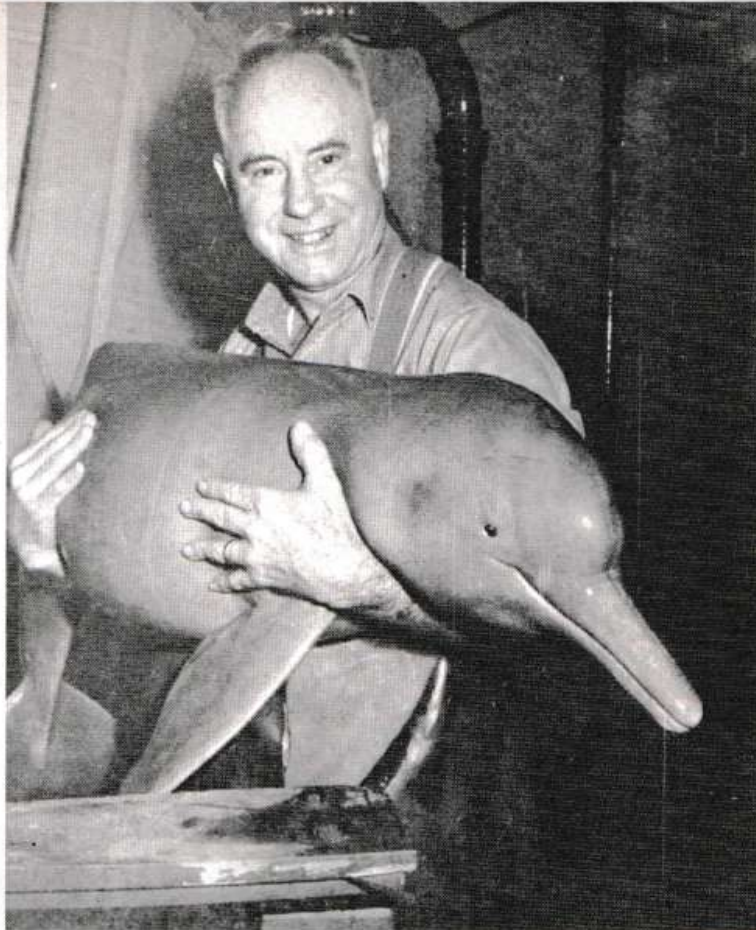


Photo: Bob Dempster, assistant curator of Steinhart Aquarium lifts Whiskers each week for his weighing session. With the maximum weight for Whiskers pegged at 300 pounds, the staff wonders how long Bob's muscles will last!



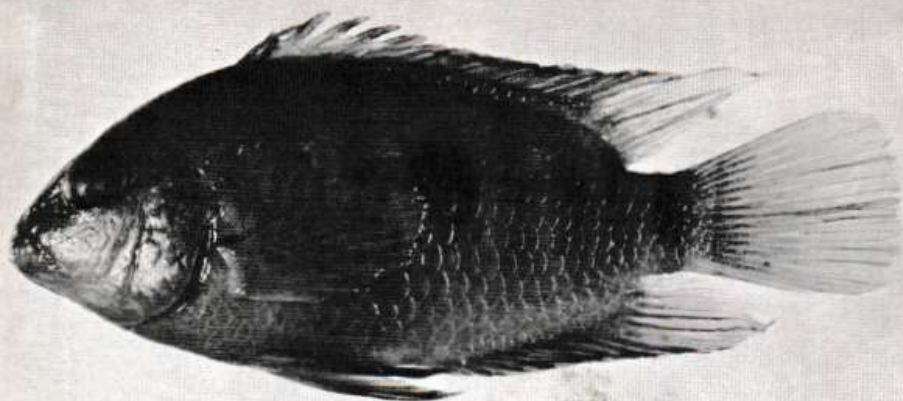
also has an erotic side to his nature, but that will be discussed elsewhere. All in all, he is a very friendly, yet shy little fellow.

Whiskers' weight upon arriving at Steinhart was 49 pounds; on a mixed diet of various kinds of fishes he gained fairly rapidly at the average rate of one pound per week, reaching 66 pounds by January 20, 1965. His first blood count was quite surprising: red blood cells were only 3,110,000, and the hemoglobin was 8.7 grams (60%) as compared with counts of 5,000,000 to 6,000,000 and 14 to 16 grams (105%) for the Pacific white-sided (marine) dolphins living in another part of Steinhart.

We suspected that Whiskers might be

anemic, but we couldn't be sure since this was the first time a blood sample had been taken from any living freshwater dolphin. As a precautionary measure, we started him on iron pills and vitamin B-12. Although these were hidden in the food, Whiskers apparently did not approve of the taste, for he would pick up the fish and shake it vigorously, often dislodging the medication. Thus began a battle of wits with Senior Aquarist Tom Green attempting to hide the pills in a different way each time. In spite of these difficulties, the technique was successful, for two months later the red blood cell count had increased to 4,430,000 and the hemoglobin to 86%

(Continued on Page 236)



A new cichlid from Central America that rivals the "red devils" from same area

Cichlasoma spilurum

[See Cover Photo]

CENTRAL America is the homeland of many of the aquarium hobby's oldest and most popular fishes, but until quite recently, aquarists saw little of that area's untapped piscatorial resources. This is probably because the fish originating from this area, such as the congo and firemouth cichlids and many of the aquarium livebearers have proven so prolific as to make further collections of wild fish unnecessary. This has led to a sort of vacuum in importations from this part of the world, but the last two years have seen some spectacular new developments from this long-neglected area. Easily the most remarkable are the "red devils," erythristic variations of several species of large cichlids from the Great Lakes of Nicaragua and the surrounding territory, long known to the natives as *mojarras coloradas*. Several other species have also

Paul Loiselle

La Mirada, California

been introduced over the last two years, and once the furor over the red newcomers has died down, I venture to predict that these introductions will establish themselves a secure place among the ranks of aquarium fishes.

Before discussing in greater detail the life and mores of one of these newcomers, *Cichlasoma spilurum* Gunther, I beg the reader's indulgence in presenting a bit of the history behind these new additions. Quite recently, Mr. William Bussing, a graduate student at the University of Southern California, had the oppor-

Photo: *Cichlasoma spilurum* (Gunther). Young, mature male. Body will deepen with age. Note prominent caudal and lateral spots and faint stripes. Photo of freshly-killed specimen by William R. Bussing.

tunity to do field work in Costa Rica. An aquarist himself, Mr. Bussing made a point of bringing back alive those fish he considered as potential aquarium candidates. Despite many vicissitudes, he managed to accumulate a considerable collection which he transported to the U.S. and entrusted to the competent care of Mr. Gene Wolfsheimer. Included in this collection was the famous *Cichlasoma dovii*, Charlene, and specimens of *C. spilurum*, *C. spilotum*, and *Herotilapia multispinosa*, an algae-eating cichlid of breath-taking coloration. Also included were poeciliids such as a new species of *Phallichthys* described by Mr. Bussing, *Neoheterandria*, and a very colorful *Brachyraphis* species that will undoubtedly prove new to science. With the exception of *H. multispinosa*, Mr. Wolfsheimer succeeded in spawning all of these successfully. As a consequence, they are all more or less available in the Los Angeles area. The author is presently working with several of these species, and hopefully will be in a position to describe them further in the not too distant future.

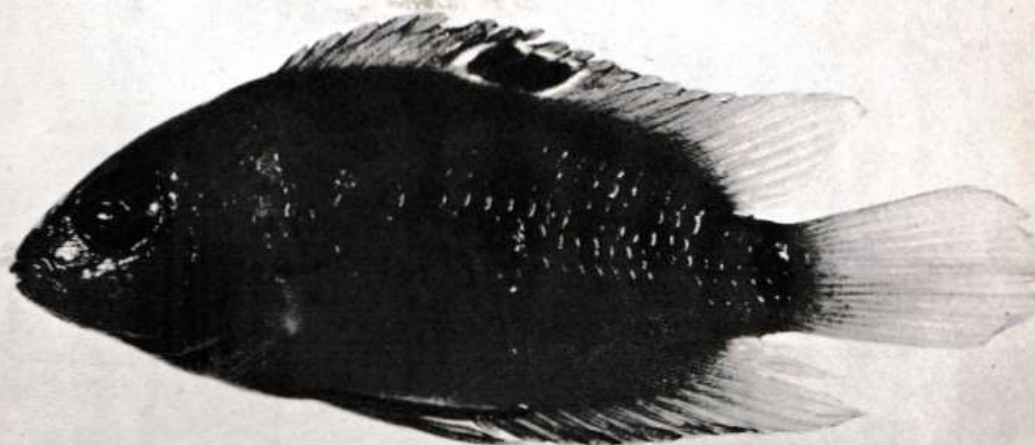
Cichlasoma spilurum entered my life in a fairly predictable manner. While browsing in a local shop, I was struck by the remarkably vivid breeding coloration

of several specimens. Inquiries elicited that the fish were first generation tank-raised stock, bred from the original imports by Mr. Wolfsheimer. It was not until later that I learned the particulars concerning their origin and other pertinent data. As it was, the fish were sufficiently striking for me to disregard a self-imposed rule of long standing about purchasing mature pairs of cichlids. I have rarely broken a rule and enjoyed such pleasurable consequences.

A cichlid that appears to have been consecutively dipped in powder blue and orange inks and then liberally overlaid with gold leaf is hard put to avoid causing a stir. This thumbnail sketch, allowing for individual variation, fits *C. spilurum* quite nicely. Males are a warm orange-brown, with a broad band of blue-edged orange scales along the flanks shading to a vivid blue throat and breast.

A large black spot in the center of the body and a lesser one on the caudal peduncle (whence comes the specific name) are present with greater or less intensity, according to the mood of the fish. The vertical fins are vivid orange shading to bright blue, and the ventrals are a dusky blue edged in black. The

Photo: *Cichlasoma spilurum* (Gunther). Young, mature female. Note distinctive "sex spot" in the dorsal. Photo of freshly-killed specimen by William A. Bussing.



female is about two inches short of her mate's five inch length, and is dusker in coloration. Her back is blue-grey to brown, shading quite sharply to a well defined band of metallic gold along the flanks which in its turn gives way to a deep blue opercular region, throat and breast. Her fins are markedly darker than her mate's, and in the center of the dorsal is a *pi*-shaped black spot edged in metallic yellow. Due to her darker body, the two spots are usually less conspicuous, save at breeding time. The eyes of both sexes are of such a striking shade of blue that no more appropriate name than that of blue-eyed cichlid could be bestowed upon the fish.

The body shape of this fish bears a strong resemblance to that of *C. nigrofasciatum*, to such a degree that the literature has often confused the two. When working with preserved specimens, and a key based upon proportional lengths, fin and scale counts, such confusion is understandable, as in these respects the

two fish are identical, and in addition, *C. spilurum*, in formalin, develops vertical bands similar to those of *C. nigrofasciatum*, while the distinctive blue eye coloring is lost. One worker was on the point of listing the two species as identical when Mr. Bussing discovered them living together in the Rio Puerto Viejo in Costa Rica. This made it apparent that there were indeed two distinct species rather than simply geographic variations of a single one, as had been hypothesized. The two species are, however, quite closely related.

Perhaps the most immediately evident feature that the newcomers have in common with their banded relatives is an heroic appetite. Anything is grist for their mills, as long as it is present in quantity. Live and frozen foods are greedily gobbled down, and dried food is not scorned. Two dietary peculiarities of this fish should, however, be mentioned in passing. First of all, while not primarily piscivorous in the wild, *C. spilurum* has a very marked taste for half grown live bearers in captivity. It is interesting to note that barbs and young cichlids of a comparable size were not molested by the fish in my possession. This selective preference is perhaps related to the availability of small poeciliids in *C. spilurum*'s native environment. Be that as it may, prudence would dictate that any small fish of a streamlined body shape be kept well away from this species. Secondly, *C. spilurum* demands a strong vegetable element in its diet. Should this be lacking, soft-leafed plants will soon be the worse for wear. Boiled lettuce or spinach are accepted in lieu of plants, and if fed once a week or more often, will entirely eliminate this sort of destruction. *C. spilurum* is not a wanton uprooter of plants, even at spawning time.

C. spilurum is considerably less aggressive towards other fishes than is *C. nigrofasciatum*, although mature pairs



REMEDY and TONIC

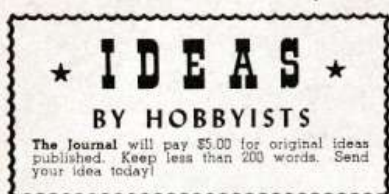


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show a far stronger attachment to a given territory than does *C. nigrofasciatum*. If



Borax and Brine Shrimp

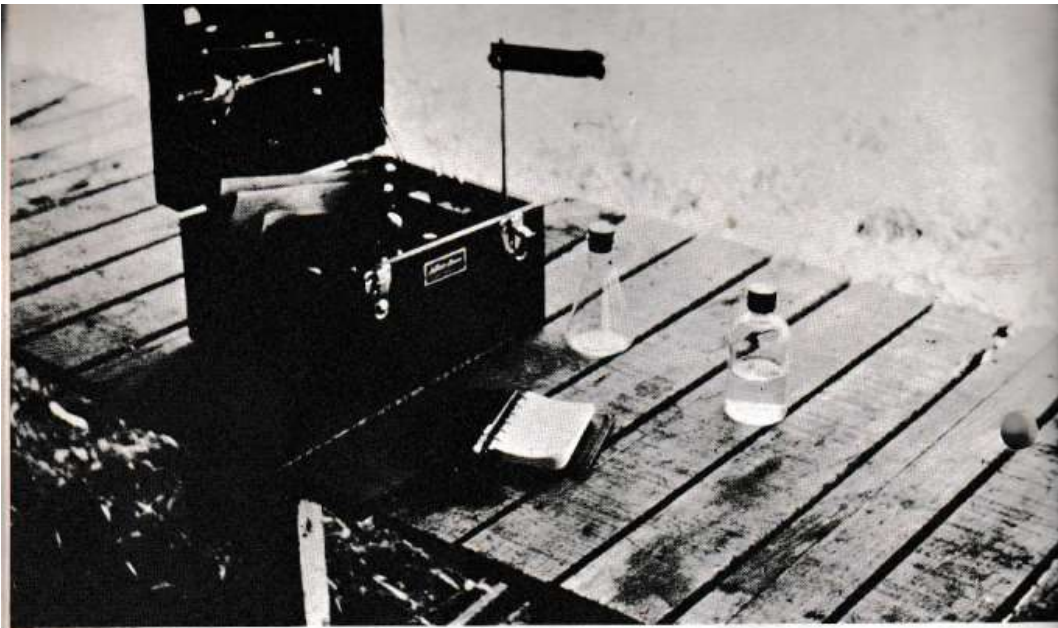
As you know, for the first time in many years our area here has run out of San Francisco Brine Shrimp Eggs. What happened, no one has ever ventured to guess. So we have had to turn to the other egg market, Utah. Now these eggs are much smaller and the shells seem to be much harder. The little brine shrimp cannot seem to break out of the shells in our regular solution. This caused much concern as all of a sudden there was nothing to feed our baby fish. Were they to die of starvation? For weeks we went around experimenting with every conceivable variation of saline solution. Nothing seemed to work, except a hard stream of air into the jars seemed to break the shells and release the baby brine, but still there was not the hatch that should have been considering the amount of eggs. Then, like manna from heaven, came the news: Make your regular saline solution then add one tablespoon of 99.5% borax to two gallons of solution. This can be varied to your own water supply. It apparently softens the egg shells to where the baby brine can break out of them. It is pure and will not harm the brine shrimp and the hatch will be over 90%. Be sure to mix the solution, then let it set before use. After the sediment settles to the bottom, pour off the good solution and use it. There are many brands of borax on the market, but to achieve the best results, use 20-Mule Team Borax found in any grocery store in the soap department. — M. A. Reuting, Alameda, California. ◀

given a cluster of rockwork under and about which they can excavate a cave, a pair of mature *C. spilurum* will spend the greater part of their time in and around this area, leaving it only at feeding time. When it does occur, antagonistic behavior is directed primarily towards other cichlids; schooling fishes too large to be eaten are ignored. Bottom dwelling scavengers are also extended a good deal of toleration. One somewhat monomaniac *Plecostomus* in my possession refused to take the hint and actually managed to penetrate as far as the cave's entrance before encountering the rightful owner. It would be hard to say who was the more surprised, but the male *spilurum*, a magnificent five inches of outraged respectability, promptly picked up the intruder by his erect dorsal and carried him to the other side of my thirty-five gallon display tank, dropped him, and swam sedately back to his castle. This territoriality is conspicuous by its absence in immature specimens. Young "*spilurums*" in my possession under three inches in length have not displayed the slightest inclination to imitate their parents' behavior. I have, however, had small specimens of *C. nigrofasciatum* only an inch in length act in this markedly territorial manner. However, a distinct social hierarchy is quickly established in any such group of young *C. spilurum*.

Cichlasoma spilurum is a ready breeder, although it cannot begin to compete with the assembly line productivity of a healthy pair of *C. nigrofasciatum*. I have spawned this fish on my own premises, and in connection with my duties as manager of the Sunset Aquarium in Los Angeles, and in all cases, the pattern of pair-

(Continued on Page 238)

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The Rover Boys attack a jungle stream
and find more than just tropical fishes!

"Me Aquarist-You Jane?"

PART V

THE NEXT day at Tournavista found us ready and eager to start our exploration. The first thing on the agenda was a visit to Jon's compound, a 10-minute walk from our dormitory. The compound itself was quite extensive, covering a plot of ground roughly 75 x 200 feet. It featured a high, thatched roof and a construction of the pole variety with no nails used whatsoever. All of the poles were lashed together with vines. The holding tanks, about a hundred of them, were simply constructed of flat boards lined with a polyvinyl plastic sheet. They held water and that was all that was required! A few "luxuries" such as planks on the ground to keep mud off the feet and

Albert J. Klee

West Chester, Ohio

some tables for working space, completed the compound. A sort of "apartment" was built up in the rafters, reached by a rickety ladder. None of us slept there but we did use it to store supplies and equipment.

Someone announced that there was a small jungle stream behind the compound, and most of the party elected to try to reach it. This was easier said than done since although the stream was hard-

Photo: The LaMotte field water testing laboratory in use at Tournavista. All photos in article by the author.

ly 200 feet away from the compound, the ground leading to the stream dropped sharply and was covered by the thickest sort of jungle imaginable. Most of us were wearing the usual grey work pants and shirts, plus 8-inch leather boots. Our shirts were long-sleeved, an advantage going through the jungle since almost everything (it seems!) that grows in the Peruvian Amazon has a thorn or a spine on it. To go bare-armed is to invite scratches and stings of sundry sorts.

The jungle had a succulent aroma to it and it was dark. All kinds of strange-looking vegetation grew about and we had to take care on two counts, viz., where we placed our hands, and where we placed our feet. The former had to do with accidentally grabbing some thorn-clad vine or tree, or perhaps even some stinging ants, and the latter with stepping into a hole and breaking an ankle or else stepping on a snake. I will remark at this point that every one of the snakes we captured personally were venomous. But more about poisonous snakes later!

We broke up into three groups, each group reaching the stream at different points. The light broke through the jungle here, and the air felt somewhat cooler. The jungle stream itself was perfectly delightful, running over gravel for the most part. It was of a brownish hue but clear, and moderately fast-flowing. This turned out to be the only gravel-bottom body of water we found during our travels. Everywhere else we found strictly mud bottom. The stream averaged perhaps 4 feet wide and 1 foot deep but at places it widened and/or deepened to double these dimensions. We switched to sneakers for wading purposes and started looking for fishes. These were not long in forthcoming and soon we spotted some at the surface in the calmer pools formed by bends in the course of



Photos: (Top) The ole swimmin' hole in the jungle. (Below) A nest of termites, common in the Peruvian Amazon jungle.

MAY, 1965



Photos: (Top) This is what is laughingly known as a "trail through the jungle." (Below) A very typical thorn-covered tree trunk.



the stream. They were not particularly easy to catch, however. The seines were too big to use so hand nets were employed instead. Although it is true that the stream had practically no aquatic vegetation (one of the things that really amazed us was the general lack of vegetation in these natural waters. In our jungle stream, the explanation was simple . . . the light was insufficient for plant growth! In the darker spots of the jungle, there is no plant growth even on the ground. The vegetation amounts mainly to trees, bushes and vines.), there was plenty of woody debris that continually snagged our nets. We did catch them, though, and they turned out to be none other than *Rivulus peruanus*, the only species of killifish caught on our trip. This was a significant discovery for the original locality for this fish, "Perim," Jeru, cannot be found today. No one knows or has ever heard of "Perim"! You might have expected that the first fish a group of American Killifish Association members might find would turn out to be a killie! *Rivulus peruanus* is a beautiful killifish and we soon discovered that there were two color forms present, viz., a brownish-reddish variety and one with a pronounced bluish enhancement. These fish were placed into plastic bags we carried for this purpose.

Darting in and around the rocks were isolated specimens of some sort of bottom fish. These were especially prevalent in the more swiftly-moving areas of the stream. A few vigorous scoops of the net brought up not only pebbles and stones, but some fish as well! They turned out to be various forms of loricariid fishes such as *Hypostomus*, *Ancistris*, *Hemiancistris*, etc. There were so many, many forms, fat and skinny, with and without whiskers, dark and light, etc., that we gave up trying to identify them scientifically then and there. At this point, I got a little careless and banged into a wasp's nest that was attached to a branch span-

ning the stream some 5 feet above it. One of the wasps stung me on the cheek and I was forced to take off in a mad flight up the stream, pursued by an angry hoard of the insects! That sting in the cheek was no fun and I had to return on land (to avoid the wasps) through the thick jungle that surrounded the stream.

We followed the stream for a distance and observed that it started to run over a solid rock bottom, finally turning into a 10-foot waterfall, a picture right out of a Tarzan serial! Just before the waterfall, however, we discovered a silvery fish swimming about in a pool formed by the stream. These, being fast, were hard to collect but we were successful and found them to be a species of the characid genus, *Prionobrama*. Our attention now turned back to the waterfall, which culminated in a pool about 4 feet deep, 20 feet long and 12 feet wide. The water was cool but not too clear due to its roiling by the fall of the water. For a while, the pool served Win and me as a private "swimmin' hole." The air temperature in the afternoon frequently went to 95° F,

so we had real need of a means to cool off. We had no bathing trunks but since the pool was not exactly situated in the middle of Times Square, we did not have to worry about being interrupted swimming in our "birthday suits." The second time out, however, Win complained that something nipped him. Nothing happened to me so I accused him of having an overactive imagination. He complained again the third time out and as I was laughing at him, something pinched down on the left side of my chest. At this, I jumped four feet straight up out of the water, did a right turn and wound up on a rock ledge! We discovered that we weren't the only swimmers in that pool and that it was infested with a smallish crab, about two inches overall, that had pincers a full one-half inch long! Since we were swimming in the raw, we were a bit concerned about where the "phantom" would strike next and so, reluctantly gave up our favorite swimming hole.

Photo: This is a typical habitat for *Rivulus peruanus* in the Amazon jungle. Photo by Mr. Klee.



Before starting on our trip, I had made up my mind to do some serious water testing of these natural habitats. What was needed was a lightweight field testing laboratory, one which incorporated simple but reliable chemical tests. My first thought was of the LaMotte Chemical Company, a well-known, respected chemical concern which has manufactured water testing equipment for the aquarium hobby for years (they primarily are in the business of making test equipment for professionals). Their testing equipment for aquarists is, in my opinion, the best available. For example, their colormetric test for pH involves a rather precise color matching technique using vials of "standard color" where both control and test samples are viewed behind samples of water to be tested. Through the courtesy of LaMotte, I was outfitted with a beautifully constructed field kit (e.g., mahogany case, polyfoam cushioned compartments, etc.) weighing but 14 pounds, that enabled me to make

11 different tests of water quality, including such involved analyses as dissolved oxygen. I plan to devote one complete article in this series on what I found since very little information of this nature is available. Far too many aquarists have made trips to South America and returned with the hobby being none the wiser as to the water quality of natural habitats. Let's be quite honest — anyone can travel to South America and discover new fishes. It is even no feat to have a dozen fishes named after you as a consequence of these discoveries. All you have to do is to go down there. South America is virtually unexplored as far as fishes are concerned! It is another thing, however, to make meaningful observations that are really of some value to hobbyists. With this thought in mind, I collected water samples from the jungle stream and returned to the compound to complete my tests.

One may summarize our findings in this, the first body of water we investigated, as follows:

1. *No aquatic vegetation of consequence was found. This appeared to be a result of the poor lighting this heavily-shaded jungle stream received.*

2. *The three major types of fishes found (characins, killies, catfishes) occupied three different, general ecological "niches." The catfishes were found on the bottom among the rocks; the characins were found nearer the center of the stream at a small distance below the surface in moderately-flowing water; and the killies were found at the surface near the banks of the stream in slowly-moving water.*

3. *The characins and killies were quite obviously nourished by the many insects that fell into the water, especially the latter fishes. The catfishes, on the other hand, definitely grazed on the algae-covered stones that covered a good portion of the stream bed. They were found in*
(Continued on Page 231)

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ALTHOUGH almost every aquarist is familiar with the characin or "tetra" shape, actually there are few families of fishes showing as much diversity in form as well as habit and temperament. Some

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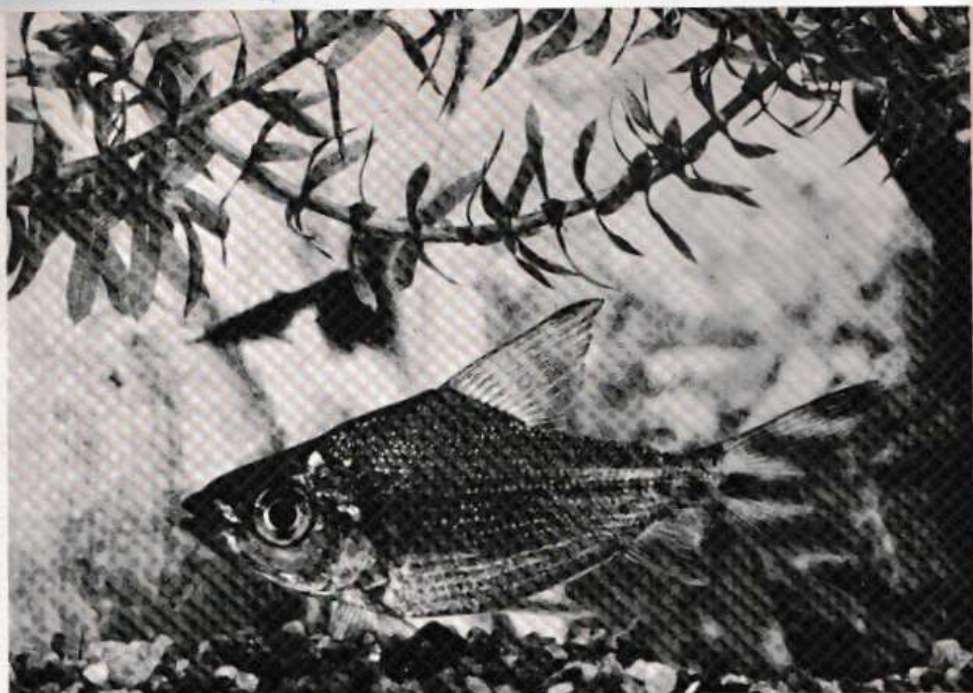
"Kissing" Characin

characins are disc shaped and flattened laterally, others are long and cigar shaped, some hop about on the bottom like our North American darters, others fly through the air, some are entirely carnivorous and even feared by man, others are strictly vegetarian. There are those which swim in a tail downward position and those which swim in a head downward position. The inoffensive *Nannostomus marginatus* hardly reaches an inch in length while the African tigerfish may weigh over 100 pounds. This diversity is nature's attempt to utilize every inch of space and every type of environment available.

Although many fishes are vegetarian, there are few so well equipped as the characid subfamily Prochilodinae to utilize the algae and other small organisms which anchor to almost everything stationary in the water. Fishes of the genus *Prochilodus* can convert their mouths into a circular sucking disk and the rows of tiny teeth on the lips form a rasp which can scrape loose even the most stubborn algae from rocks or underwater logs. When viewed head-on in the aquarium, cleaning algae from the glass it is hard not to notice the similarity between

Photo: *Prochilodus* species, as photographed by Braz Walker.





the shape and sucking action of the lips and that of the familiar kissing gourami *Helostoma temmincki*. Although this "kissing" action is similar in appearance, as far as efficiency goes there is little contest.

The algae cleaning ability of the kissing gourami is at best limited, but the various species of *Prochilodus* are among the most effective of the algae cleaners, keeping not only the glass clean but also plants and rocks except in crevices impossible for them to reach with their lips. They even attempt to scour the sand free of algae in overlighted tanks and do reasonably well at this almost impossible job. In any event the correct answer to this is not a more efficient algae eater but less light.

These are among the larger of the aquarium fishes since in nature they may well reach a length of over one foot, although a length of over one-half this size is unlikely even in a very large aquarium. Like other large characins they may become somewhat aggressive

and will chase almost any fish which will run from them and is large enough to be considered competition. Usually little harm results.

The genus *Prochilodus* contains a large number of species, many of which are very similar in appearance. Several of the species are characterized by a handsome striped tail and are usually sold under the name *Prochilodus insignis*. *P. insignis* is a silvery fish with reddish ventrals and a yellowish dorsal fin. Its caudal fin is adorned with the characteristic stripes similar to those in the photo. In other species the caudal stripes vary in number and intensity and also the coloration of the fins as well as the markings on the sides.

The other fish pictured is a light golden color with very few markings except for some obscure cross bars which appear from time to time along the sides. Rather drab in comparison to the "flag-tailed" species, the fish still has an at-

Photo: *Prochilodus insignis*, as photographed by the author. Identification is tentative.

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tractive quality about him and is every bit as diligent in his algae cleaning duties as the more handsome members of the genus. Several species of the *Prochilodus* are of commercial importance in South America and are known by the natives as "boca chica." They are dried and taken to the larger towns to be sold in the market places along with huge rolls of dried pirarucu (*Arapaima gigas*).

Like many other characins, especially the larger ones, all of the species of the *Prochilodus* are excellent jumpers and should be kept only in covered aquaria. To my knowledge none of these fishes has spawned in captivity which is probably due to several factors. The price is never cheap and the few that do reach the size of maturity are seldom placed in aquaria which would be large enough to be suitable for raising a family. It is possibly a community spawner since Eigenmann found one species in countless numbers ascending the Magdalena River in January to spawn. They may need to spawn in stream conditions and the quiet water of the aquarium is inappropriate.

Although *Prochilodus* are larger, they are reasonably peaceful and will get along all right with most large tank-mates. Any type of fish food, especially paste foods, are greedily eaten. Unless considerable algae grows in the tank, spinach or green lettuce should be provided since these fishes are largely vegetarian in nature. It is practically useless to try to grow the more delicate aquarium plants in their tank and only strong leaved varieties should be used, such as Amazon swords and sagittaria. All things considered these are among the most satisfactory of the larger characins.

Join the S.F.A.S.

Klee

(Continued from Page 226)

both slow and swift waters. The catfish referred to are suckermouth types, previously mentioned.

4. The killies laid their eggs on the vegetative debris (sticks, branches, leaves, etc.) that was found close to the banks of the pools (I actually found some RIVULUS eggs!). The characins scattered their eggs which fell to the bottom to be concealed by either the mud or the stones. It appeared likely that the catfishes built nests among the stones or in the mud near the banks.

Of course, there was other aquatic life present as well, including various crustacea and aquatic insects. However, the common notion that natural bodies of water in the Peruvian Amazon are just teeming with live food for fishes is ridiculous. It just isn't true! We caught no

Rivulus, for example, with the bulging stomachs that indicate recent feasting. Could it be that we overfeed our fishes in the aquarium? A full chemical analysis of this stream will be presented later but we can briefly mention that this was water high in oxygen, low in dissolved minerals and of moderate pH. We placed our *Rivulus*, *Prionobrama* and assorted catfishes in the compound and returned to Tournavista for a quick lunch of papaya and steak. The Peruvian idea of steak, however, is two-thirds shoe leather and one-third garlic. By breathing in the general direction of the mosquitoes after eating this steak, we did better than even a can of "Raid"! After lunch, we departed on an exploration that took this writer closer to death than at any other time during our trip. ◀

(To Be Continued)

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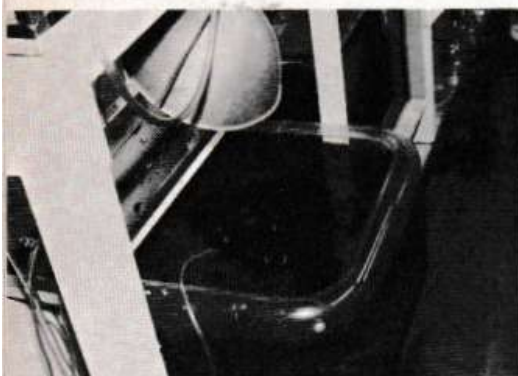
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Photos: (Top) A portion of the board and membership of the Duluth Aquarium Society. (2nd) Clem Burak in his basement fish hatchery. (3rd) Mr. Burak's homemade Ozone Sterilizer. (4th) Plastic tub from washing machine converted to tank. All photos by Diane Schofield, unless otherwise credited.

MY HAT is indeed off (and this is especially difficult when one never wears a hat) to those stalwart souls who attempt to keep tropical fish in the teeth of perpetual howling blizzards. Now this is not to be interpreted that in this particular area that one is torn between a choice of how-to-breed-better-huskies and how-to-rear-better-bettas since this region contains really very little frozen

FINNY FOLKS

By Diane Schofield

tundra and not even a sickly Northern Light or two. It is just that to this "Californiaized" lass, Minnesota in the winter was even colder than I normally keep the thermostat in my deep freeze and somehow I had great mental difficulty in correlating this climate with that in which tropical fish normally romp.

I and the famed Winter Carnival in St. Paul arrived on the same day. What the Winter Carnival did there was strictly its own business and I never did find out, since I was busy holding forth in Rip-Tide Tropicals. Now, when Roger and Donald Ripley wrote me that they would like me to be on tap to cut the ribbon when they opened their new pet shop, I countered with another offer. Would they please mail me the ribbon? I'd cut it smartly in California where it was warm. Then I'd fold it neatly and mail it back to them. This, I thought, was an awfully sporting gesture. Never could understand why it was refused.

The Ripleys have a shop that is unique in this area of the United States. It is the only shop in the entire state of Minnesota that is devoted entirely to tropical fishes.

This may frighten some people, but did you know that the pre-disposition to keeping tropical fish is inheritable? The father of the Brothers Ripley used to

AQUARIUM JOURNAL

rik's homemade Ozone Sterilizer. (4th) Plastic tub from washing machine converted to tank. All photos by Diane Schofield, unless otherwise credited.

(Four-page Removable Insert)

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- (a) *NO ENTRY FEE* for members of the Society, or for dealers who enter only in Class 10.
- (b) 50c entry fee per tank for NON-MEMBERS in Classes 1, 2, 3, 4, 5, 6, 7, 8, 11 and 12.
- (c) 25c entry fee per tank for Juniors under 18 years in Class 9.

Juniors may compete in any other class but must then abide by the rules given for such class.

Entry fees may be applied to membership prior to June 4, 1965.

GENERAL RULES

Entry blank giving required information must be mailed to S.F.A.S. Fish Show, Steinhart Aquarium, Golden Gate Park, San Francisco, Calif., prior to May 17, 1965.

Entrants will provide information about their exhibit at time of entry.

Set up and removal dates: Exhibits must be set up on Thursday, May 20, or Friday, May 21, between 10:00 a.m. and 9:00 p.m. Definitely no entries accepted after this time. No exhibit shall be removed before 5:00 p.m. May 24, under any conditions. After set up time, fish or plants cannot be removed or exchanged, except sick or dead fish may be removed at the option of Show Chairman. All exhibits to be removed on Tuesday, May 25, before 9:00 p.m. or on Monday, May 24, from 5:00 to 9:00 p.m.

(Four-page Removable Insert)

S.F.A.S. FISH SHOW

Equipment and food: The exhibitor must provide his own tank or tanks complete with fishes, plants, sand or gravel, tank-top and lights, as well as such thermostats, heaters, filters, air-releases and connections as he may desire. Stands for the tanks, aged water (hot or cold), compressed air, electrical outlets and current, and daily feedings of live adult brine shrimp will be furnished free by the Aquarium, unless the exhibitor expressly states on his Entry Blank that he does not wish one or more of these services. Any electrical device used with any display must be of approved kind and free of defects. Entries or displays are the exhibitor's responsibility. No responsibility for losses or breakage is or will be assumed by the Society or the Aquarium. If entries are mailed from more than 200 miles, show committee will provide tank and set up exhibit. Correctness on entry is exhibitor's responsibility. Incorrect entries may be disqualified. Lights are to be left on during exhibit hours unless specified otherwise by exhibitor.

Judging and Prizes: The judging will be conducted by acknowledged authorities before North American Hall opens on Sunday morning, May 23. All fluorescent lights will be turned off during judging. The judges will use the points standard as described below in determining the awards and their decision is final. First, Second and Third Place will be awarded in all classes in which 3 or more entries are made. All First Prizes will be trophies and all other will be ribbons.

Each exhibit shall be entered in one class only.

CLASS 1. Guppies. The guppy division will be divided into three classes, depending on the number and type of exhibits. Most likely these classes will be (a) black, green or blue broadtails, (b) red broadtails, (c) other.

At least two matched pairs constitute an entry. Guppies must be spawned and raised by exhibitor. Guppies will be judged on American Guppy Association official point system.

	Body	Dorsal	Caudal	
Shape	5	5	10	20
Size	10	10	10	30
Color	5	5	15	25
Condition	5	5	5	15
Department				10
			TOTAL	100 points

CLASS 2. Marine Tanks. (2a) Tropical marine and (2b) Temperate marine are the two classes. Points for judging as follows: General arrangement 40, selection and compatibility 30, condition 30.

CLASS 3. Community Tanks. Fish in these tanks must have some measure of permanence and compatibility. Colored gravel, ceramics, plastic tanks, etc., are permissible. Fish in community tanks need not be spawned and raised by exhibitor. Points for judging as follows: fish 40, natural plants 30, and general arrangement 30.

CLASS 4. Bettas. Tanks shall not contain plants, but natural sand or gravel is optional, artificially colored sand or gravel will not be permitted. (a) Bettas spawned and raised by exhibitor, (b) Bettas not spawned and raised by exhibitor. Each betta will be judged separately as follows: Color (clarity of color) 40, fins and body 40, and department 20.

CLASS 5. Terrariums. Animal condition 30, quality and color 30, department 10, arrangement 30.

(Four-page Removable Insert)

S.F.A.S. FISH SHOW

CLASS 6. *Not Spawned and Raised by Exhibitor.* No less than 2 fish nor more than 6 fish per entry. a) Livebearers, b) egglayers. Points for judging as follows:

Size	20
Color and quality	30
Matching of fish	25
Condition and deportment	25

CLASS 7. *Livebearers*, other than guppies, spawned and raised by exhibitor.

CLASS 8. *Egglayers*, spawned and raised by exhibitor. (8a) killifishes, (8b) cichlids, (8c) anabantids, (8d) other egglayers.

Rules for classes 7 and 8 are as follows: A minimum of three fish to be exhibited, excluding the parents. The parents may be exhibited at the option of the breeder. Points for judging as follows:

	<i>Egglayers</i>	<i>Livebearers</i>
Difficulty of breeding	30	10
Size	15	20
Color and quality	20	30
Matching of fish	15	20
Condition and deportment	20	20

CLASS 9. *Junior community tanks.* Exhibitor must not be helped by any adult, and he must be under 18 years of age. Points will be awarded on the same basis as Class 3.

CLASS 10. *Dealers' display.* Wholesalers and retailers may enter only in this class. This class will be subdivided into a) fresh water and b) salt water.

CLASS 11. (a) *Goldfish*, (b) *Carp*. Points to be given as follows: Body 30, fins 30, condition 20, and deportment 20. One fish will constitute an entry.

CLASS 12. a) *Pet.* Entry in this class will be limited to one specimen which is the exhibitor's favorite pet. It may be fresh water, salt water or reptile. Points for judging as follows:

Relative size	25
Condition	25
Deportment	25
Decoration	25

b) *Novelty.*

A trophy will be awarded to the Fish Exhibit that in the opinion of the judges most nearly exemplifies perfection in home aquariums.

The San Francisco Aquarium Society, Steinhart Aquarium or the Show Committee cannot accept responsibility for damage to any of the exhibits, and the Show Committee reserves the right to refuse entry of any exhibit.

For additional information contact the SHOW COMMITTEE, Joe Zins, Chairman, LO 4-6701; or Bob Dempster, BA 1-5100.

(Four-page Removable Insert)

S.F.A.S. FISH SHOW ENTRY FORM

NAME..... PHONE NO.....

ADDRESS..... CITY.....

SENIOR MEMBER JUNIOR MEMBER
NON-MEMBER DEALER

ENTRIES CLOSE FRIDAY, MAY 27, 1965

CLASS	SIZE AND DIMENSIONS OF TANK	GENERAL DESCRIPTION OF FISH AND TANK
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

I will furnish my own stands Yes No

I acknowledge that I have read the show rules and agree to abide by them and by the decision of the show judges and the Show Committee.

(Signature).....

keep a 10-gallon tank . . . now this was back in the days when there was no artificial light to keep the plants green and sassy, so every day one of the boys would have to carry the entire affair out in the back yard to get some sunlight. Presumably this feat was only carried out in the warmer Minnesota months.

Rip-tide Tropicals was a case where the shirt came before the shop, to paraphrase an aphorism. When Roger Ripley was stationed in Okinawa he had eight "electric" turquoise blue shirts made for future use in their shop by his brother Don and himself. Roger took an illustration of two discus from one of the aquarium textbooks to an Okinawan and said, "Copy this on the back of all of the shirts!" So in the days to come, some Okinawan women went to work copying the discus picture in embroidery on the backs of all eight shirts and in addition, sewing "Don" into four of them and "Rog" into the remaining four, over the front pockets. To complete our "act," the Ripleys purchased a matching little turquoise blue number for me to wear while I was helping them with their Grand Opening. This kimono had an assortment of rabid orange goldfish cavorting gayly over the border. We all looked as if we were about to go into an Oriental Shuffle-Off-to-Buffalo routine at any minute.

The Ripleys are full of gimmicks. For instance, on St. Patrick's Day they give 10% off on anything green. Now you may think that, "Ah ha! What a grand and begorrah day to buy plants!" but this chopping off of the price of anything of an emerald hue is also extended to things like a pump that came in a green box, a remedy that has malachite green in it and Peruvian green discus. It doesn't however, extend to fish that might have become afflicted with a slight case of mal de mer.

Washington's Birthday brings about a 25-cent reduction in certain items. After

MAY, 1965

Photos: (Top) Betty Jayne Ormsby of the Duluth group. (2nd) Clayton Howk, past secretary-treasurer of TIFAS. (3rd) Obie Mastin, president of the Inter-



national Aquarium Society. (4th) Charles Sabourin president of juniors of the I.A.S. Last two photos by Dick Larson.

all — whose picture is on a quarter, pray tell?

• • •

Now the Twin Cities have a number of Blue Laws, which have absolutely nothing to do with the shade that people turn as the temperature swoops down past the zero mark. One of these is that no shop can stay open on Sunday, with the exception of certain necessary grocery and drug stores. So on the day that Rip-Tide Tropicals was closed, the Minnesota Aquarium Society was kind



enough to step into the breach and hold an open house for me at the police station. When I first read this I thought that they were trying to tell me something. I did perhaps expect a bar, but frankly not several and all of these vertical. And how were the more permanent inhabitants to view this carte blanche phrase, "open house"? But hold a reception, they did, in the "party room" of the Bryant Police Station. You will forgive me, won't you, members of the Minnesota Aquarium Society if I break up all over again? It's just that, to tell the truth, I have never thought of police stations as having "party rooms."

• • •

It may boggle the imagination to think that it gets even colder the farther north that you tromp in Minnesota, but in Duluth, forsooth it does. At least, this is the rumor that I heard and I wasn't about to put it to a test this time to find out. You see, just as winter was about to infect this part of the country as autumn was "falling" away, Vera and Dick Larson had taken me up there to visit the Duluth Aquarium Society and if this was the "mild" part of the year, pritheer spare me from the harsh! Now, Minnesotians, before you pick up that first stone — stay your hand! I am one of you, since I was born there. It's just that for all but two years of my life I have been cuddled down in California where 40°F. above zero is a real "cold snap."

I have the greatest admiration for people who doggedly pursue the hobby in the face of much more austere odds than we face in California. It is always such a completely wonderful surprise to come charging in out of a cold driving rain and find a collection of thriving tanks that are prospering, such as those

Photos: (Top) Tank drawing by Diane Schofield at the Rip-Tide Tropicals with Don and Roger Ripley. (2nd) Walter Simon of Halvin with Harold Behn, president of the Duluth group. (3rd) Open House for the author in the "party room" of the Bryant police station.

AQUARIUM JOURNAL

that I found in the living room and basement of the Buraks.

To any of the various clubs, who exchange with the Duluth Aquarium Society, the name "Burak" does not fall unfamiliarly on the ear. Helen Burak has been, up until recently, the editor, with an able assist from her husband, Clem, of the *Duluth Aquarist*. Clem has not only assisted with the club bulletin, but he has come up with a couple of rather original and helpful ideas where our little scaled scooters are concerned . . . when he was not involved in spawning his albino *Corydoras aeneus*.

One of these is an all plastic "tank" that he utilizes most effectively. This was a case of ousting the poker chips and putting in the fish. While it may sound as if this tank was used in one of the "dens of iniquity" in Las Vegas, it originally was stationed in the window of an appliance dealer. This "tank" originally was a clear plastic washing machine tub . . . you know, the type where poker chips are whirled around dizzily to illustrate the remarkable efficiency of the mechanical de-dirter.

If the name "Burbak" wins a flash of recognition, then the name Betty Jayne Ormsby should put ditto marks under this very same flash. Betty Jayne's writings are liberally laced all throughout the *Duluth Aquarist*. She regularly writes an excellent piece on their Fish-of-the-Month, another one on the Plant-of-the-Month, pens still a third on "Meet Our Fin-Folks" and winds up with "Fin Flash," a column of general fishy interest.

Obviously Betty Jayne is making up for lost time. You see, she was rather a slow starter — not only a slow starter, but a reluctant one, as well, and those are the very worst kind. A number of the service friends of her husband, Ken, had aquariums, but Betty felt that three boys and the pets they managed to bring home was about all that she could handle, and promptly vetoed the idea every



time it came into their discussions.

(To be Continued)

Photos: (Top) Exterior of Rip-Tide Tropicals in very untropical snow. Photo: Dick Larson. (2nd) Closeup of intricate embroidery work that appears on the backs of the Ripley brothers' shirts. (3rd) Vera Larson, who staged open house at station house, as photographed by Dick Larson.



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Whiskers

(Continued from Page 215)

(12.5 grams). At the same time the white blood cell count had changed from 9650 to 13,350.

Whiskers is entirely distinct from the marine dolphins and belongs instead to the freshwater dolphins (Family Platinistidae) of which only four kinds are known: one in the Ganges, Indus and Bramaputra Rivers; another in the upper Yangtze; one in the La Plata River area in South America; and one in the Amazon and Orinoco basins. There seems to be some question about the definition of this last species, *Inia geoffrensis*.

Actually Whiskers was the second small dolphin obtained for the San Francisco Aquarium Society by Ross Socolof. The first was caught in 1963 also at Iquitos in the Peruvian Amazon. Unfortunately it did not survive the flight from Tampa to San Francisco. It was a very long-snouted animal weighing only 40 pounds, yet its anatomy was quite strange. It had a fantastic digestive tract which stretched across the Aquarium roof for 108 feet but was only one-fourth inch in diameter. The molar teeth were ground down so that the center cavity was open, and the pathology report from Dr. Richard Skahen on the cellular structure of the reproductive organs seemed to indicate that this "youngster" was really an old man, an enigma that still has not been unravelled. This long-snouted form is supposed to attain weights of 300 pounds and length of nine feet. In the Peruvian Amazon in the area of Iquitos we are told that the natives call the long-snout "buefo Colorado" as contrasted with "buefo negro," the short-snout variety to which Whiskers is assigned. Are these two the same, or are they different? We will have the answers when Dr. David Caldwell of the Los Angeles County Museum completes

*Communication from Mr. John R. Moore.

his studies on the anatomy and classification of these animals. Although Dr. Caldwell has recorded some 34 of these freshwater dolphins having been shipped from South America since the first arrived at Silver Springs, Florida, in 1956, only *four* are alive on public display: two at Fort Worth Zoo, one at the Toledo Zoo, and Whiskers, who is apparently the only one of the short-snouted variety in captivity.

Whiskers is a remarkable creature, but the most interesting aspect of his captivity is the reaction of the viewing public whose comments run the gamut from, "Isn't he cute!" or "I want one for our swimming pool" to "Look at that bump on his head and those crazy whiskers on his nose." Of course it is difficult to maintain a sane viewpoint on this animal when the Academy Director, Dr. George Lindsay, casually suggests that we discard the leviathan alligator gar who share the dolphin tank in order to make

more room for Whiskers and a proposed mate. Needless to say, Whiskers' future should certainly prove interesting. ◀

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Separating Baby Shrimp

Many times you will find that you have baby brine shrimp in with adult brine shrimp. These you would like to separate so that you may feed the baby brine to fish fry. This is done easily by cutting a piece of regular mesh netting and placing it over your regular baby brine net. Then siphon or "squirt" the water through both meshes. The coarse mesh will catch the adults and in the fine mesh you will find your baby brine free of adults.—Chris Ketner, Ventura, California. ▶

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Loiselle

(Continued from Page 220)

ing, spawning and fry care was similar. Two weeks to five days prior to spawning, the fish will begin to eat even more heavily than usual. This increase in intake is accompanied by a heightened interest of both sexes in one another, as evinced by lateral displays of a brief duration followed or preceded by concerted digging at one spot by the male. It is difficult to say precisely at this point what the significance of this pre-spawning digging may be, but it is not unreasonable to suppose that it is displacement behavior of some sort. This hypothesis is heightened by the fact that as the fish move into the jaw-locking phase of courtship, the digging, while still restricted to the male, increases in frequency. When jaw-locking is terminated by the onset of one of these brief periods of digging, it is generally re-initiated by the female, who is the more aggressive of the two partners throughout, her smaller size notwithstanding. Once the pair bond has been formed, random digging ceases, and the pair begin to excavate in earnest at some fixed site. If a cluster of rocks and a deep substrate is present, the fish will dig an enclosed site therein. When commercial breeding is contemplated, a ten inch flowerpot with a hole knocked out of its side and inverted over a gravel substrate is readily accepted. An established pair will use the site as home range and spawning place combined, and will not repeat the sequence of preparatory behavior outlined above. A peculiarity of this species lies in its tendency to go through many false spawnings, where the female assumes the heightened coloration characteristic of normal spawning, as well as an increased girth, although no eggs are produced, and her coloration returns to normal after a few days.

The fish are rather secretive about spawning, but apart from her reduced

girth, the female assumes a distinctive coloration after spawning that makes a diagnosis of the event quite simple. Her head and breast turn sooty black, her back becomes paler, and the gold band along the side glitters with increased brilliance. The ventrals, always dark, are now completely black, and the dorsal spot is much more conspicuous during this period. It is quickly observable that this distinctive coloration serves as an aid in keeping the school of fry together. The ventrals especially are used for "signaling," much after the manner of many *Apistogramma* species. The eggs hatch in three days, and the fry are free-swimming from five to seven days later, depending upon the temperature. The parents do not appear as solicitous of the free-swimming fry as of the ova, and the fry generally proved less responsive to the signals of the female than is the case with *Apistogramma* fry. The parents were, however, observed to masticate tubifex worms and large *Artemia* for the fry. The largest spawning I ever had numbered about two hundred eggs. As the pair, while fully mature, was still quite young, it is possible that the number will increase with age. The reddish-brown eggs are also quite large, a factor that may also limit productivity. Growth is rapid at 82°F. and the fry quickly graduate from *Artemia* naupuli to chopped tubifex and fine dried food. This species displays a wide tolerance of water conditions. Pairs will spawn happily in water ranging from pH 6.6 with a hardness of 40 ppm. to that with a pH of 7.4 and a hardness of 230 ppm. Abundant food and frequent changes of part of the water are apparently of greater importance in this respect than is the chemical makeup of the water.

The reader wise in the ways of cichlids will have undoubtedly caught another point of similarity to *C. nigrofasciatum* in the description of *C. spilurum's*

(Continued on Page 244)

MAY, 1965

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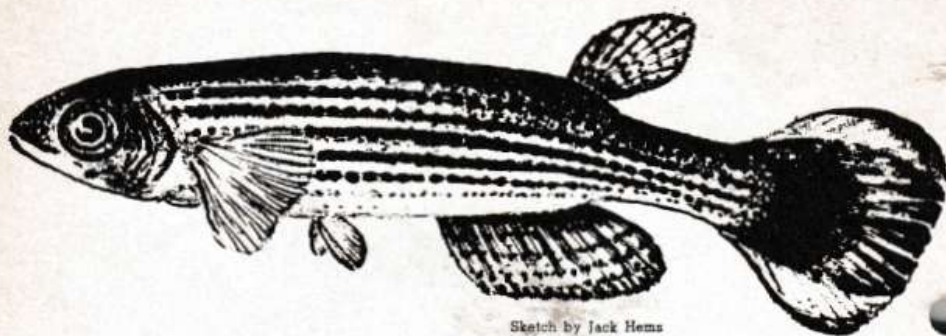
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Sketch by Jack Hems

Here is a tropical with much to offer —
definitely worthy of wider appreciation

Rivulus hartii

A TROPICAL which seems very little sought after these days, but which I consider definitely worthy of wider appreciation is *Rivulus hartii*. This interesting species, one of the large species of its genus and a member of the family *Cyprinodontidae*, killifishes, is widespread over eastern Colombia, Venezuela and Trinidad (in which countries, we are authoritatively told, it is eaten by the natives) and attains about four inches in length. It has a large mouth (despite this it will not molest any other fish too bulky to be swallowed whole) and an elongated body, almost, but not quite, cylindrical in shape.

The male is brownish on the back, shading gradually to greenish olive, sometimes overcast with pink, on the sides. These are adorned with an abundance of pinhead red spots arranged in close-set longitudinal rows. The center

Jack Hems

Leicester, England

of the caudal fin, and sometimes the posterior ray-ends, are colored blue-black; the top and bottom margins are suffused with rich yellow. The dorsal and anal fins are yellow dotted with red; the ventral and pectoral fins are clear. The female may be distinguished by her more somber tones (and sometimes by her larger size) and the grey inclining to black ocellus, or eye-spot, on the upper caudal base. This distinctive feature, which is characteristic of all rivulus females, tends to become less conspicuous with advancing age. [Editor's note: There is considerable color variation in this species, depending on area of origin. The geographical distribution of this

color pattern variation is not fully studied or understood by anyone. In some cases, color variations of this species may be masquerading under other scientific names or have been given scientific names by ichthyologists.]

Hart's rivulus is a quiet fish. That is to say it spends most of its time laying, albeit with ever-watchful eyes, in a slightly head-upward position, among the plants which grow at or near the surface of the water. Yet it can move with flashing speed when it wants to, and is an impetuous — nay compulsive — leaper. In the wild, when many of the sluggish streams and mud-holes are drying out under the burning sun, this fish leaves its shrinking domain and scabbles through the surrounding damp herbage to new wet pastures.

It is not a finicky feeder, and eats any coarse-particled dried food and all the usual, and unusual, substitutes for live-food. A point worth noting is that it quickly becomes tame enough to take tid-bits such as pieces of lean meat or worms or swatted flies from the fingers. Its natural diet consists largely of insects and their larvae. A temperature of about

75°F suits it best, though a drop to 65°F or a rise to 85°F, or higher, does no harm if the change is gradual. For the rest, a reasonably bright top light or some direct sunlight is obviously appreciated by these fish. Clear, soft water, with an acid reaction, is recommended, but is not essential.

A 2-gallon tank is large enough for a pair. And in this, provided it is well-stocked with bushy-growing plants such as milfoil or nitella, *R. hartii* will live at ease and breed frequently (even at a temperature of 68°F) between the months of May and October. [Editor's note: I have had *R. hartii* from Trinidad breed all year.] It is, however, as you will see later, a good idea to set aside two or three small tanks for raising the fry to maturity. (Alternatively, a large aquarium can be divided into two or three separate compartments with cross panes of glass.)

When the fish are ready to spawn the female shows a noticeable fullness on the sides and the male, garbed in richer colours, drives her in all directions through the tangles of submerged vegetation. Every now and again they will pause, take up a side-by-side position, and waggle their bodies from head to tail. And it is then, in these few brief but intense moments, that the female extrudes a single egg. This is large and sticky and naturally adheres to the nearest leaf or stem of a plant. The performance is repeated at frequent — or infrequent — intervals daily over a period of about a week.

(Continued Next Page)

★ IDEAS ★
BY HOBBYISTS

The Journal will pay \$5.00 for original ideas published. Keep less than 200 words. Send your idea today!

Syringe Clean-up

I have come across an idea which may help in the removal of dead fish and other debris. The only thing needed is a syringe type food baster, which can be bought at almost any grocery store. Cut off the tip of the tube approx. 1½ inches. Now simply put the baster in the tank and suck up the fish or debris into the baster tube. — Keith Ball, Round Brook, New Jersey. ◀

CLUB NEWS

The Chattanooga Aquarium Society

Newly elected officers for 1965 include: R. L. Smith, president; Clay Crownover, vice president, and H. C. Dunegan, secretary-treasurer, according to Mr. Dunegan.

Not many, if any, of the eggs are eaten. The fry normally appear in 10 to 15 days and, at a quick glance, could be mistaken for newly-born, abnormally large-eyed guppies. It is a wise precaution to remove the parent fish from the aquarium when spawning is over as the fry will be eaten by hungry parents. On the other hand, it doesn't do the eggs any harm to be collected daily (still adhering, of course, to their respective pieces of nipped-off vegetation) and incubated in a somewhat subdued light elsewhere. This is where additional aquaria come in useful, first, to receive the mounting harvest of ova, and, second, to provide ample accommodations for the fry at their various sizes of growth. The young must be sorted according to size for, herded together, without any sorting, in one aquarium, the larger will not be backward in demonstrating their physical superiority by savaging and/or eating the smaller.

The youngsters will eat newly hatched brine shrimp, large infusorians and powder-fine dried food from the start. They grow so quickly that Grindal worms, brine shrimps, daphnia and the like must be included in their diet be-

fore long. Generally speaking, as much food as the fry can cope with at a time is the ideal to aim at, though, of necessity, such lavish feeding must be accompanied by regular dip-tubing of the bottom to prevent fouling of the water. Unless there is something very exceptional about them, or their conditions, the fry will reach full size in about a year.

It is interesting to note that *R. hartii* made its debut as a tropical aquarium inmate in Germany not so terribly long ago — in 1929. In some books it is referred to (colloquially speaking) as the wabine, or rain fish. As a rule, it remains remarkably free from temporary malaise or definite disease, and ordinarily enjoys a life-span of three to three and a half years. ◀

CLUB NEWS

New Orleans Aquarium Society

The N. O. A. S. will hold their 16th Annual Show at the New Orleans City Park Casino, May 20-22, 1965, according to Mrs. Norma Standage, publicity chairman.

• • •

Buffalo Aquarium Society, Inc.

The following new officers were elected for 1965: Mrs. Adelaide M. Delpriore, president; Ralph Barsalou, vice president; Mrs. Natalie Schmitt, treasurer; Mrs. Barbara Wolfe, secretary, and board members Douglas Anderson, Ernest Karm and Kenneth Kralick, according to Mrs. Wolfe. ◀

★ IDEAS ★
BY HOBBYISTS

The Journal will pay \$5.00 for original ideas published. Keep less than 200 words. Send your idea today!

Fitting Caps

I have often found it necessary to stop the flow of air through an air line fitting. An effective cap may be made from a short piece of air hose by heating the end over a flame until soft, pinch the end to seal, and cut off to the desired length. — Warren Contreras, Los Angeles, California. ◀

Get your copy of the booklet

THE BRINE SHRIMP
and how to hatch its eggs

An 8-page booklet prepared by The San Francisco Aquarium Society. It describes the Brine Shrimp, the Eggs; equipment needed for hatching; 3 requirements for a good hatch; how to hatch eggs; large scale hatching for commercial users; reason for a poor hatch; storing eggs; raising brine shrimp to maturity.

For your copy, mail 25 cents to:

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Steinhart Aquarium
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PRODUCT NEWS

Douglass Water Polisher

The Douglass Water Polishers, newly introduced aquarium filtering devices, differ from any now on the market. Utilizing a porous plastic cartridge with 5-micron openings, they screen out many small organisms normally found in tank water and not removed by any other type of filtration. Fish have actually been cured in tanks using these devices, after all other cures or combinations of cures had failed.

According to the maker, the surface of the cartridge collects highly nutritious food for fry while promoting the conversion of toxic nitrogenous compounds into nitrates beneficial to both fish and plants. Cartridges can be cleaned and re-used but will eventually clog and close. When this happens replacements are available at a nominal cost.

No charcoal or wool is needed, just an air source and lots of air. All water circulation occurs within the tank. Space required inside the tank is about the same as for a small old-fashioned filter. Does a good job in both marine and fresh-water tanks.

Longlife Makes 25c Offer

Longlife Fish Food Products of New York is offering to give fish owners 25c if they'll try the company's new product, Longlife Frozen Brine Shrimp.

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Robert P. L. Straughan, editor

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Longlife Frozen Brine Shrimp are "nature's own tropical fish food." The tiny shrimp breed only in extremely salty water, and they're harvested and "flash frozen" immediately by Longlife. ◀

Loiselle

(Continued from Page 239)

reproductive behavior, as both fish display a marked tendency towards maternal brood care. The similarities are apparently greater than just this, as recently hybrids of *C. spilurum* and *C. nigrofasciatum* have entered into the possession of Mr. Bussing. These fortunate genetic accidents are the result of a cross between a male *C. spilurum* and a female *C. nigrofasciatum*, and are presently the object of the author's intense study. To date, they take strongly after the *C. spilurum* side of the cross in appearance. In behavior, they resemble neither parental species to date, being more aggressive than either, towards one another and towards other fishes, and manifesting some motor patterns present in neither. As both pure-bred *C. spilurum* and *C. nigrofasciatum* are readily available, these hybrids present a providential opportunity to study the isolating mechanisms that led to the origin of the two species. With this end in mind, both Mr. Bussing and the author are waiting anxiously to see whether the fish in our possession will spawn, and if so, whether they will prove to be fertile. Be that as it may, I hope that I have whetted the reader's curiosity and stimulated his interest in one of the most striking additions to the rank of aquarium fishes in many years. ◀



Gene says he knows less about tropicals today than 18 years ago!

Gene Wolfsheimer: Aquarist

Richard F. Stratton

San Diego, California

IN CALIFORNIA Gene Wolfsheimer is known as Mr. Aquarist, and throughout the world he is known as a master aquarist, fish photographer, and writer. We don't often see articles by him because he sets a rigid standard for what he writes, declining to rehash what has already been said or to take a chance of giving false information. However, a primary reason is that his hatchery work takes most of his time. As a full-time wholesale fish breeder for 18 years, Gene has had a unique opportunity to keep, observe, and breed rare, as well as common aquarium fishes. He thus has a backlog of material to write about.

Gene's introduction to the hobby was much like that of the rest of us. He was subjected to the usual innocuous-

appearing first tank given to him as a gift, subsequent trips to the store to replace fishes, and of course from this he began to acquire fish after fish, and accumulate tank after tank. Later he became ill. This gave him time to study fishes, but kept him from the schooling required for professional work in fishes. So, in a way, he was forced into making fish breeding his livelihood. Many an aquarist undoubtedly wishes he could do the same; however, he might change his mind after experiencing the grueling routine, the ruthless competition, and the long hours necessary for a successful fish breeder. It is a tribute to Gene that he has managed to maintain enthusiasm for fishes after so many years in such a harsh, competitive business.

Gene's success as a photographer has its roots in the hobby. As he came to be well known, various tropical fish organizations called upon Gene to give lectures to their groups. The need for illustrations for such talks was immediately apparent, so he obtained a camera, and trained himself, in a great measure by trial and error, to be the expert photographer that he is today. Many fish books written in English and English language magazines as well as foreign publications contain Gene's photographs. However, his skill in photography is not limited to fishes as anyone who has seen his photographic file will testify.

He is something of a pioneer in the aquarium world, having many "firsts" to his credit. One of his best known achievements is that he was the first to discover and report that baby discus feed off a skin secretion of their parents.

CLUB NEWS

San Francisco Aquarium Society, Inc.

The next regular meeting of the San Francisco Aquarium Society will be Thursday, May 6, 1965, Steinhart Aquarium, California Academy of Sciences, at 8:00 p.m., according to Frank Tufo, President.

Program for the meeting will be a talk by the well-known Bay Area underwater photographer, Ralph Nelson, according to Jim Crawford, Program Chairman.

Fish of the Month for the May meeting: (1) Mollies, (2) Danios, Rasboras, White Clouds, Silversides, and (3) Angels, according to Charles P. Bange, Chairman.

There will also be an array of door prizes and ample refreshments supplied by Joe Zins, Chairman of the refreshment committee.

MAY, 1965

His best known article is probably the one that appeared in *National Geographic* (May 1960) with pictures of discus fry feeding off their parents.

During the boom in salt-water fish (about five years ago), Gene imported tropical salt-water specimens for wholesale. At this time he took many of his well-known pictures of marine fishes. Gene attributes the decline in the salt-water hobby to the fact that too many wholesalers began importing marine fishes. The fish became a glut on the market and were sold without being quarantined and at cheap prices. Dealers then became disenchanted when diseases raked through their tanks, killing thousands of dollars worth of fishes. Gene carefully quarantined his salt-water imports. He kept them in natural sea water filtered by a sub-sand filter. Before he would put new specimens in his tanks, he would thoroughly clean the tanks and the sand, and then make a complete change of water. He fed his fishes white worms, daphnia, guppy culls, and nearly all the foods we feed freshwater fishes, except tubifex worms which die quickly in salt water.

Speaking of feeding he was one of the first to experiment with the freezing of live foods, and he reported on his findings in an article 14 years ago. He also brought in the first microworms

★ IDEAS ★

BY HOBBYISTS

The Journal will pay \$5.00 for original ideas published. Keep less than 200 words. Send your idea today!

Dacron Filler

Dacron filler, used to stuff pillows, can be used as filter material. A \$1.50 bag is a large one, will last a long time and really does a fine filtering job in aquarium filters. — Sharon Morel, Redondo Beach, California. ◀

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to the United States. (Mrs. Morton Grindel of Sweden first discovered their use as food for fishes.)

Gene co-founded (with Bob Andrews of London) the first international aquarium society. So far as I know, it was to Bob Andrews that Gene sent the first killie eggs ever airmailed overseas.

A list of Wolfsheimer "firsts" could continue to the point of boredom — especially in the field of spawning rare fishes. The fact that he has been an extraordinarily successful breeder and photographer of fishes, and that he has so many years experience as a judge, and fish consultant has made him a sought-after figure for lectures at fish societies. Such fame has its drawbacks, for every "dyed-in-the-wool" fish fancier who visits the Los Angeles area usually has on his itinerary a visit to Wolfsheimer's hatchery. Now, believe it or not, a fish hatchery is a lot of work, and Gene has a definite schedule he has to adhere to, so unfortunately, he sometimes has turned away eager aquarists who arrive unannounced. However, he rarely turns down anyone who calls ahead of time for an appointment. Visitors will find him courteous and helpful. He is a humble man — especially for one who has such a list of accomplishments to his credit. He says wryly that he knows less now, after 18 years of working with, and studying, fishes, than he used to think he knew after only two years in the hobby!

Gene has one of the few "one-man" hatcheries in the country, and therefore, as mentioned before, he has a grueling schedule. He has a large but compact hatchery. In back of the hatchery are numerous concrete pools used for raising live foods. Gene likes to keep his growing young fishes where he can keep an eye on them. He believes the real challenge in raising fishes is not the spawning but rather the raising of the fry. The reason many

people fail with raising egg-layers, in his opinion, is because they are not careful with their infusoria. Gene is ultra-careful here. He checks his infusoria with a microscope (although he feels proper infusoria should be visible with the unaided eye), and he transfers them with a minimum amount of water. He believes killies are one of the easiest groups of fish to raise because most of the young can take newly hatched shrimp right away. He considers the

conditioning of fish the most important factor in spawning. Once the fish are brought to the peak of condition they will all but spawn out of water!

Most of us think of Germany or Denmark as being foremost in the aquarium world, but with Gene Wolfsheimer and certain other aquarists (who sometimes seem to be like the proverbial "prophet, unhonored in his own land") in this country, if we are not ahead we certainly are not lagging. ◀

WANT ADS - \$2

Hobbyists, breeders, and dealers (only) may now place Want Ads in *The Journal*. An opportunity to contact other hobbyists for wanted fishes or equipment, or sell same in a Journal Want Ad! The cost is nominal: \$2.00 for 20 words, plus 10 cents each additional word. Send your ad along with payment today!

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Salt Water Fish — coral, sea horses; not cheap, but fish are all healthy and disease free! Coral Reef Exhibits, P.O. Box 59-2214, Miami (AMF BR.), Florida.

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Hobbyists only — aquarium-raised specimen plants now available in limited quantities. Six *Cryptocoryne* varieties, plus Amazon, Pigmy Chain and Radicans Swords—*Hygrophila*, *Aponogeton undulatum* and others. Send \$3.00 for collection of choice plants, postpaid. Price list on request. Send to A. J. Holbrook, Box 202, Lynnfield, Mass.

Aquarium Decoration — brilliant colored hand-made plastic starfish to brighten your aquarium. One 3" and one 5" star for \$1.25, postpaid. Mike Frieders, Route 1, Gary Ave., Aurora, Illinois.

Freshwater and Marine Tropicals — also plants, wholesale. Prices reasonable. Write: Red Sea Aquarium, Singapore 9.

Show Stock — *Betta splendens*—(Males). Your choice of Blues, Greens, Blood Reds, Multicolors, Cambodias at \$2.98 each. Reg. Show Stock Bettas, \$4.98 each. New varieties available are Split-Tail Bettas in Red, Blue, Green colors. Also, Yellows, Blacks, Blue-w-Gold fins, Green-w-Gold fins at \$4.98 each. Price list for New Varieties on request. Live Delivery guaranteed. Pre-paid minimum order: Two males. Send check or money order to Robert DiOrto, 2 Washington Square, Larchmont, New York. (No C.O.D.'s please).

Aquarium Supplies — "Shop and save by mail, write for our free catalog today." C & L Aquarium Supplies, P. O. Box 5174, Mission Hills, California.

Aquarium Journal — 1947-1955 bound volumes; Aquarium magazine, 1946-49; Aquatic Life, 1927-1929 misc. bound; 30 other misc. aquarium books (some rare ones). Will trade for old guns or best offer over \$300. J. Kopec, 16164 Blackwood, Valinda, California.

Marine supply catalog — coral, plexiglass tanks, all salt-water items. Sea-Land Marine Distributors, Box 600, Wall Street Station, New York, N.Y. 10005.

**From: Herbert Horlick
Bronx, New York**

I am a hobbyist who has maintained tropical fishes for the past several years. Presently, I have mostly fancy guppies. I have coped with various problems and diseases with the help of such informative publications as your "Aquarium Journal," more experienced hobbyists and practical experience. Presently I am up against a condition for which I am in

ably not at fault. I would be greatly indebted to you if I could benefit from your experience concerning the above condition.

REPLY: I cannot be sure without examination of specimens. However, it seems likely that your fishes are victims of some kind of infectious bacterial disease. You should use strict quarantine, go to extreme lengths to prevent contamination of a disease fish tank by infected one.

Letters to The Journal

need of more expert and experienced opinions. Following is a summary of the disease:

1. **Type of fish involved** — Guppies of several independent strains.
2. **Incubation** — Fish showed symptoms within two weeks after introduction to infected tank.
3. **Selection** — The disease seems most virulent in mature females. The half black variety seems most vulnerable. Females, immediately after giving birth, show most severe symptoms. Males seem less susceptible. Fry and fish not sexually mature do not show symptoms. Some fish can remain in infested tanks and show no symptoms.
4. **Symptoms** — Fish become sluggish, refuse to eat, lose color. They stay at surface or nest at bottom with folded fins and show shimmy. The female anal spot loses its sharp black color and becomes a shade of brown. The faeces becomes white. The fish gradually wastes away, sometimes lingering on for months. Females, after giving birth, are left in a profoundly emaciated condition with hollow and sunken bellies. Their fry, however, seem normal and in good health.

I have maintained specimens of the various strains in healthy conditions in uninfected aquaria indicating food, water conditions and heredity factors are prob-

Perhaps antibiotics would help cure your sick specimens; it is worth trying; any of several standard techniques could be used. These are better explained in aquarium books than space would allow here. Also feed all your guppies some live food, at least two to three times per week. Fishes fed on dry food only often seem more susceptible to the symptoms you describe than fishes fed on live food. Crowded fishes more often get the symptoms you describe.

**From: Stanley W. Still
St. Petersburg, Florida**

I realize you cannot check all items submitted to you but one idea by hobbyists shows very little knowledge of aquarium practice. In the Dec. 1964 issue, page 624, pegboard plantholders. Maybe I am old-fashioned but putting a material composed of many chemicals in your aquarium is sure death for your fish. Masonite comes in several types and may stand up for a short time but eventually it will break down and release many bad substances into the aquarium water. This also would not allow plants to grow and throw out runners as is normal as they would be restricted by the pegboard.

REPLY: We agree, apparently some kinds of masonite are fine, for a time, but others are not. We can just imagine what

havoc would result if the masonite were made of redwood! Any wood products or wood should be used in the aquarium only with caution and it should be subjected to a long soaking and curing process beforehand.

*From: Roger Hoffman
Indianapolis, Indiana*

Could you please give me some information on the colleges that offer degrees in ichthyology? In reading many publications, and keeping many tropical fish of my own, my interest in tropical fish keeps growing and growing. I did not have any idea who else I could ask for information about this particular study so I thought you might be able to help. As I have an opportunity now to attend college, I certainly would like to study ichthyology. Any information you have I certainly would appreciate.

REPLY: Most courses in ichthyology are offered to graduate students; however, an introductory course is offered at many universities and colleges. You should look through various university and college announcements of courses under zoology and biology for listings of courses in ichthyology. If after some course work you find that you wish to enter the field of ichthyology you will first have to decide what kind of work with fishes interests you. Are you interested in their ecology, behavior, classification and evolution, or fisheries biology? After you are in college for
(Continued on Page 253)

CLUB NEWS

Guppy Associates of Toronto

The group held their International Spring Guppy Show Sunday April 25, 1965, at the Sons of England Hall, 73 Beresford Ave., Toronto, Ontario, according to Bill Wilson, Show Chairman. The show was open to the public. Admission was free, Mr. Wilson said. ◀

MAY, 1965

Salt Water Fishes

By Robert P. L. Straughan

All Glass Marine Tank

The latest in salt water aquariums for the home is the all glass marine tank, specifically constructed with the salt water hobbyist in mind. Everything



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two or three years you will perhaps be able to decide what aspect of ichthyology interests you, especially after introduction courses in zoology, botany, physiology, genetics, etc. If your grades are good you could then look towards graduate training in the specialization in your interest. You can then refer to your adviser and to the announcement of courses for various graduate schools in the country.

From: Ron. C. Forsyth, Rochester, N.Y.

Do ion exchange water softeners add salt to the water they soften? Assuming, of course, that the resin is well rinsed after recharging. I have read many confusing and conflicting articles on this subject. One side says not at all, the other extreme says that softening very hard water will add so much salt as to be lethal to most freshwater fishes. Please, clarify this subject for me.

REPLY: There are many kinds of ion exchange resins on the market and these do different kinds of things, thus the reason for your understandable confusion. In short, those resins which use common salt, sodium chloride, to recharge them, will make water "salty." They will exchange sodium ions for calcium ions. That is, they will take calcium out of the water and replace it with sodium. This is the most common type of water softener. How much "salt" goes into the water is dependent on how hard the original water was. Tap water that is very hard and already has a high salt

content of sodium and/or potassium can get salty enough to kill some plants and a few fishes when softened. Another ion exchange resin, the kind used to make "distilled" water, simply removes all metallic (i.e. salt and hardness ions) and replaces them with hydrogen ions. At the same time another resin present removes such things as chloride, sulfate, nitrate, etc. ions, replacing them with OH ions. The OH and the OH⁻ and H⁺ ions combine to form water, H₂O and in effect you have removed all salts. Other resins may remove other kinds of compounds in the water, but in a simplified explanation, these are the two kinds of water softeners you can use for aquaria. I recommend the type that makes distilled water — however, only if you have a hardness tester kit.

**From: Richard E. Dubois
Las Vegas, Nevada**

I have just acquired a pair of what I am reasonably sure to be *Mollienisia velifera* but would like a little more expert opinion. Using the color plates in *All About Tropical Fish* and pages 357 and 358 of *Exotic Aquarium Fishes* I am reasonably sure I have *velifera* or at least hope so. The dorsal on page 357 has short black bars like mine but no yellow on the belly as the text mentions. It does have quite a bit of metallic blue in the caudal fin, it is larger than the female as are all the males in pet shops as opposed to females. The top edge of the dorsal has a consider-

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able amount of orange running the full length. These specimens are from Florida and were either raised in pools or caught in the wild and have not had much conditioning to glass aquaria. I would appreciate any information in setting up an aquarium for these fish, that is in regard to plants that will do well in a tank 36 x 18 x 18 w/ fluorescent lights and one tablespoon of salt per gallon. A few species that would appreciate these conditions include a catfish if these are any that will do well in salty alkaline water. pH is 7.6 and DH is 8 to 9 German degrees.

REPLY: According to Drs. Rosen and Bailey in "The poeciliid fishes (Cyprinodontiformes), their structure, zoogeography, and systematics," published in the Bull. American Museum of Natural History, Volume 126, 1963, all species of Mollinnesia belong to the genus Poecilia so the fish in question should be Poecilia velifera. P. velifera is native to the Coastal waters of the outer part of the Yucatan Peninsula, Mexico. The fish is occasionally imported and bred. I have seen it for sure once, about 1956 in the San Francisco region but not since. Nevertheless I cannot be sure what you have from the information you gave because it is not complete enough. I would need the specimen. They may be very well developed Poecilia latipinna, the common molly found along the Florida coast. You should note that in any case P. latipinna, P. velifera and P. petenensis are all closely related species and may actually prove to be just geographical variants of the same species, different in minor characteristics. In any case these should be treated alike in the aquarium. One plant that will do well in a "salted" aquarium is Cryptocoryne ciliata found in a rather saline environment. A number of other plants have some salt tolerance and the best we can suggest is that you try small specimens of cheaper species first. Some

of the so-called banjo cats will probably do well in salty water but our experience is very limited and we can only suggest experiments. Corydoras are supposed to be intolerant of salt but species differ and experiments may be in order here too.

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From: Larry Brown
Denver, Colorado

I am inquiring as to the possibility of obtaining judging standards on individual fish. If this is obtainable please send any information to the Colorado Aquarium Society.

REPLY: We ordinarily don't have judging standards available in printed form, but see enclosed insert on the 1965 Spring Fish Show. Some articles and chapters have appeared in various aquarium magazines and books from time to time. Unfortunately in actual practice judging standards, even for guppies, are left up to the judge selected. If the judge knows something about the subject, the aquarist gets a fair deal, if not, woe! Of all the standards for fishes, those for goldfish are the best known and publicized. Yet I have seen a show "judge" select one of the poorest goldfish in a show as a winner, simply because it had a bright red color. At the same time some really fine specimens went unnoticed. Even with good point systems presented to a judge, for example so many points for good fins, so many for color, body shape, health, etc., unless the judge knows the particular kind of fish he is judging very well, and has raised, bred or studied them at great length, he will do a poor job. There is no substitute for knowledge of fishes from all standpoints when judging. Even then judging at best is quite subjective. ◀

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