

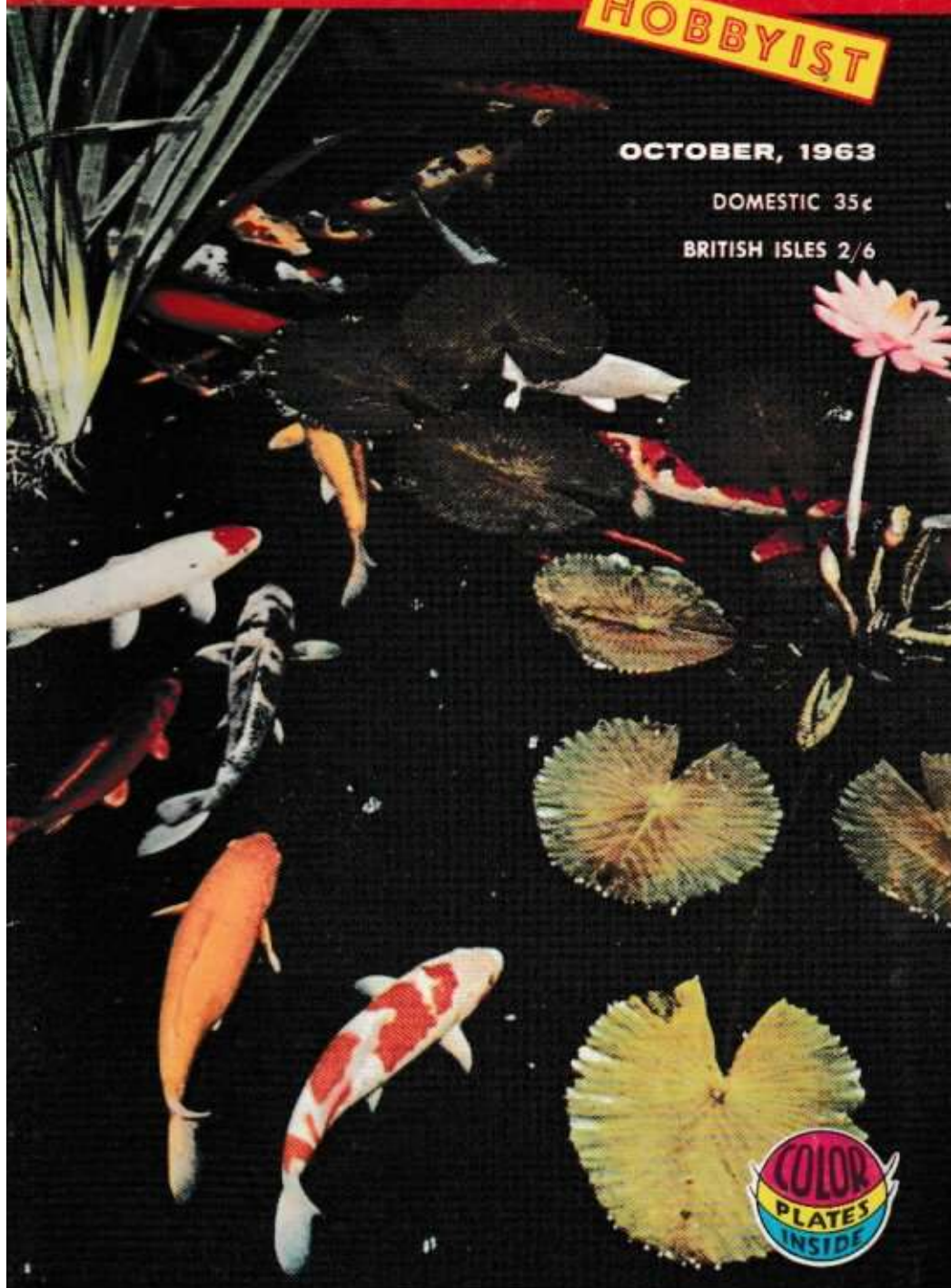
TROPICAL FISH

HOBBYIST

OCTOBER, 1963

DOMESTIC 35¢

BRITISH ISLES 2/6



TROPICAL FISH HOBBYIST

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In a new TFH Goldfish book designed to meet the needs of both beginning and advanced Goldfish fanciers, Wilfred L. Whitem traces the origin of the Goldfish and describes the best ways to keep and breed the species, including the common and the more rare and expensive varieties.

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Carrying the reader through detailed descriptions of the proper aquarium conditions, water temperatures, foods, and lighting arrangements, author Whitem proceeds to authoritative accounts of Goldfish breeding techniques and treatment of common Goldfish ailments.

Two separate plant sections are given, one devoted to plants in the home aquarium and the other dealing with those plants best suited to the outdoor pool.

Even the reader who is interested in Goldfish only as decorations will find Mr. Whitem's book useful, for there is a complete description of the construction of a garden Goldfish pool from start to finish, with the author's personal recommendations for simplicity of design and

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 (Actual date of distribution Sept. 25, 1963)

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FEATURES
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 Sails From The Seven Seas, p. 52; Society News, p. 66

COVER
 This month's cover features a garden pool and a number of Koi, as photographed by Dr. Herbert R. Axelrod in Hawaii. It was in Hawaii that Dr. Axelrod learned of these beautiful new Carp and had an opportunity to view the good work being done in development of these exotic fish.

EXOTIC TROPICAL FISHES SUPPLEMENTS
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EDITORIALLY . . .

Now that the cold months are coming on, we will come to rely more and more on that most important piece of equipment in our aquaria, namely the heater. It is now high time to check this highly important tool and make sure that everything is in working order. Perhaps you have added a few tanks during the summer months in which you did not need heaters until now. You will find them at a variety of prices at your dealer's. When buying a heater, remember that your purchase will also include life insurance for all your valued fishes, and that a little misplaced economy here can mean a big loss afterwards. A CHEAP HEATER IS THE MOST DANGEROUS PIECE OF EQUIPMENT YOU CAN PUT IN YOUR AQUARIUM! Why? Because it gives no warning; it doesn't tell you it's burned out or that the thermostat is sticking until it's usually too late and your fish are frozen or cooked. Buy one of the dependable heaters advertised in the pages of this magazine and then when something needs replacement you can get spare parts anywhere. Check with your dealer as to the proper wattage you will need, and use this wattage. As for your old stuff, when in doubt, throw it out! Maybe you were lucky last winter with that old heater, but your luck can't last forever! Put in a good one, set it to the desired temperature, and enjoy your aquarium without ever worrying that some morning you'll find your prize Discus in a chowder, garnished with stewed Madagascar Lace Plants!

William Vorderwinkler

Tropical Fish Hobbyist

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A pool full of just a few of the many colorful varieties of Koi is a beautiful sight.

Koi, the New Japanese Colored Carp

By DR. HERBERT R. AXELROD
 PHOTOS BY THE AUTHOR.

For centuries Orientals have been famous for devotion to beauty . . . even beauty of small things. Where an American or Englishman would send his sweetheart a dozen roses, an Oriental might send one rose and a few twigs, and the arrangement resulting would be much more beautiful than the dozen roses.

So it was with fishes. First came the Goldfish and its scores of varieties. The earliest Goldfish varieties were mere color varieties. Later, Goldfish with different finnage were developed. Finally, different scale structure and eye development was added to the complex of

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color and fin variation until hundreds of different Goldfish varieties are available today.

As the Japanese nation recovered from World War II, more and more gardens appeared, with slowly moving streams, beautiful pools, and artistic landscaping. But the Japanese were tired of the same old Goldfish, and their eyes were turned to the huge Carps that appeared in slightly different color variations from time to time. They called these colorful Carps by the name "Koi," and a tremendous business is currently developing in Japan over the sale and breeding of these beautiful fishes.

Koi are merely fancy varieties of *Carassius carassius*, which the naturalist Linnaeus described about 1758. They have probably been interbred with the Prussian Carp, *Carassius gibelio*, and with the Common Carp, *Cyprinus carpio*. Some varieties have barbels and some varieties do not. There are scaled Koi and the "German" scaleless Koi. Actually, the so-called scaleless varieties have one or two rows of extremely large scales.

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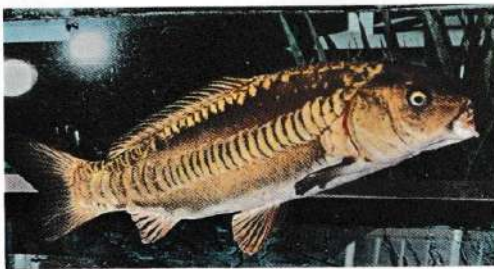
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Continued on Page 57

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Tytocharax madeirae and other Xenobryconine Characids

BY DR. J. GÉRY¹

While in Belém do Para (Brazil), in November 1962, Dr. H. R. Axelrod discovered in a "little ditch" a Xenobryconine characid (fig. 1) whose presence there justifies the following note:

The tribe Xenobryconidi was formed by Myers and Böhlke (1956) for a few very small, strongly sexually dimorphic relatives of the Glandulocaudinae. They are characterized as follows: male with a caudal "gland" on the middle of the base of the fin, covered by a large, ornamented scale, the caudal being split into two halves at the "gland"; pelvis enlarged, as well as the anal fin, which is often thickened, hooked and prolonged by filaments; dorsal originating behind the middle of the body; lateral line incomplete; often no adipose fin. The most striking feature of these fishes is the disposition of the teeth; they are generally very numerous and very minute, arranged in bands inside as well as *outside* the mouth, giving to the head of some species (under magnification) a quite unusual aspect.

At that time three species only, in three monotypic genera, were known: *Tytocharax madeirae* Fowler 1913, *Microcaelus odontochelus* Miranda-Ribeiro, 1939, and *Xenobrycon macropus** Myers and Miranda-Ribeiro, 1945, respectively from the Rio Madeira (and upper Amazon), from the middle Amazon, and from the Mato Grosso.

Later on, Böhlke (1958b) discovered two new species of *Tytocharax* from the Rio Huallaga. Taking advantage of their description, he very critically discussed the various characters of the Xenobryconines, and he was led to lump *Tytocharax* and *Microcaelus*, thus recognizing four species in *Tytocharax* (with the addition of *odontochelus*). The monotypic *Xenobrycon* was retained, on the basis of the peculiar ventral fins of the male (placed rather high on the sides instead of being inserted, as usual, near the abdominal profile), as well as on the uniserial premaxillary teeth.

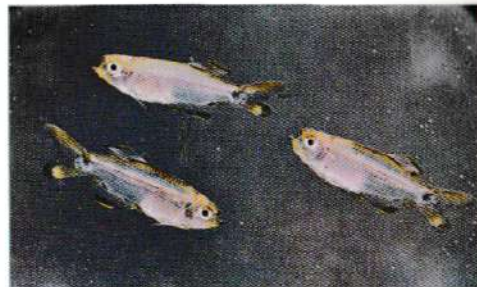
Now, despite this excellent work, the Xenobryconines are still little known. *T. odontochelus* and *X. macropus* have not been collected again, since their first, rather incomplete, description (the former one is represented by only two "poorly preserved" specimens in the Museu Nacional de Brasil). Only *T. madeirae* is relatively well known, being relatively abundant in the eastern part of the Brazilian Amazon. Ladiges (1950) redescribed it from Tabatinga, under the name of *Microbrycon cochui*, which has been shown by

¹ No. 29 of the author's series: Contributions to the Study of the characid Fishes.
* Myers and Böhlke did not explain why they chose for their new tribe the latest name instead of the first one, which had priority, and which is much more "typical".

Myers and Böhlke to be a mere synonym. (The late Dr. O. Schindler of Munich was well aware of this synonymy; he had prepared a note on typical material of *M. cochui*, as compared with an abundant material he received from the Lago Tefé—approximately between Manaus and Tabatinga; I am honored to present here some excellent photographs of his unpublished work, in memory of this greatly missed specialist on South American fishes). Still more recently, Harald Schultze collected it in the "Kingdom of the Neon Tetra", the Igarapé Preto (see Trop. Fish. Hobb. II (1), Sept. 1962 pp. 43-49), together with a slightly different form which is still to be described.

Here is the right place to point out that the real *Microbrycon cochui* (which must stand as *Tytocharax madeirae*) has nothing to do with the "*Microbrycon cochui*" occasionally figured in aquarium literature, particularly in Sterba's *Süßwasserfische aus aller Welt*, 1959 (p. 109), and in Axelrod-Vorderwinkler's *Encyclopedia of Tropical Fishes*, 1961 (pp. 556 and 664). In both cases the

Fig. 1: Male *Tytocharax madeirae* Fowler, from Belém do Para. Photo by Dr. Herbert R. Axelrod.



Tytocharax madeirae collected and photographed by Harald Schultze in Lago Tefé, Brazil about four years ago.

photographs represent an interesting new species, first noticed by Böhlke (1958a p. 29) and belonging to the rather different *Henabrycon*-group. Unfortunately this new species, which is probably also a new genus, came (in 1956) into the U.S.A. (imported by Aaron Dvoskin), and into Europe (imported by Tropicarium Frankfurt/Main) without a definite locality: I take the opportunity to repeat here, as Dr. Böhlke did in 1958, that any precision concerning the exact locality "is looked forward to with a great deal of interest."

Returning to the Xenobryconines, we may try to summarize what is (taxonomically) known of the species:

¹ *X. macropus* may be put apart from the other species, on the basis of its eccentric locality (Rio Paraguay basin), its feeble dentition (5-7 pmx. teeth, 4-5 mx., about 11 dn.), lack of an adipose, snout moderate, very short maxillary, mouth slightly upwards, very short head, etc. It has many rays on the pectoral (i 13), and few on the anal (iii 12-13), dorsal (ii 6?) and ventral fins (i 6); the latter ones are quite elevated on the sides in the male; scales (2-3) 31-32 in longitudinal series.

² *T. rhinodus* Böhlke, 1958, from the Huallaga basin (where it seems to be rather abundant), is best distinguished by its relatively large size (up to 32 mm in sd. lgh.), its elongated body with a long snout, the mouth being somewhat inferior; it possesses an adipose fin; the following counts are given by Böhlke: D ii 7 or 8, A iii 13-15, P i 8-10, V i 7; scales (5-7) 35-37.

The Pearl Gourami

BY CAROL HONNOLD

Trichogaster leeri, also known as the Pearl or Mosaic Gourami, is an Anabantid that comes to us from the Malayan Peninsula and Sumatra. In spite of the fact that it attains a size of four inches, it is completely peaceful at all times. (I hear you in the back row arguing this point, but this has been my experience with them.)

The Anabantids are a family of fishes that have a labyrinth, or accessory breathing organ, located behind the head. The fish rises periodically to the surface and takes in a big gulp of air which is slowly absorbed. When the air is all gone, the process of rising to the surface is repeated. A common notion among hobbyists is that Anabantids are not dependent upon the oxygen in an aquarium, so it doesn't matter how many of them are placed in a tank, but the same rules about overcrowding apply to these fishes. A Pearl Gourami, like other Anabantids, just won't do well in a small, overcrowded tank.

This is an extremely beautiful and graceful fish. The compressed body is bluish with a rosy-white overcast, covered by many "pearly" dots. A zigzag black line begins at the lip and runs the length of the body to the tail. During spawning, the throat and breast of the male become a brilliant red, and he is truly a sight to behold. Male and female are equally attractive, except that the female lacks the red breast during spawning. Sexing is accomplished by observing the dorsal fin, which is much longer and more pointed in the male than it is in the female. Also, the body of the female is a little deeper than that of the male.

This fish has a small, upturned mouth; it therefore does best on small floating foods. Don't misunderstand me—they need a variety which includes live foods, too. They especially love white worms, and baby earth worms almost send them into a frenzy. These two foods are ideal for conditioning these fish for breeding.

The male, by the time he is approaching three years, begins to develop long "spikes" or extensions of his large anal fin. This is a sign of old age, and an indication that the fish is past its prime. Such a fish should not be used for breeding, although he may continue to live for quite some time. With this fish, as with all others, best results are to be had in breeding young adults.

The Pearl Gourami is not difficult to spawn—in fact if you are eager to try your hand at spawning a bubble nest builder for the first time, this one is an ideal choice for a starter.

The courtship of many of the Anabantids is a wild affair, with the female often coming out minus many pieces of fins and scales. Not so with the Pearl Gourami. Their courtship is a beautiful thing to watch, for no male was ever more gallant toward his mate than this fish in his most gorgeous colors. He

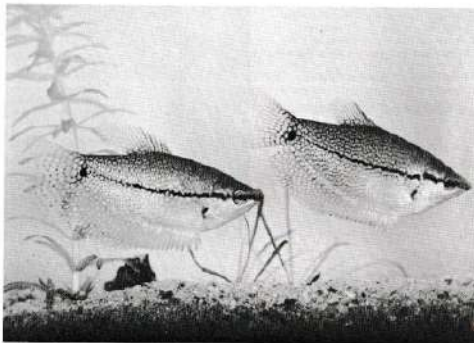
is so gentle with her you can almost imagine hearing him say, "After you, my dear."

Many hobbyists recommend conditioning the sexes separately, and this is advisable with many fish. However, these two may be put into the breeding tank and conditioned together. My breeders never quibble among themselves, and I have on several occasions had two pairs in a twenty-gallon tank and had both pairs spawn simultaneously in opposite corners of the tank. If you are a beginner, this is not recommended practice, however.

A ten-gallon aquarium should be set up, minus sand for these fish, and with the water eight inches deep. The surface should be supplied liberally with floating plants—Watersprite, Hornwort, etc., for they like to incorporate bits of plants into their nest. It is not necessary to provide hiding places for the female, for she will be treated with the utmost respect and gentleness.

There is one important variation which sets the Pearl Gourami spawning pattern apart from the spawning pattern of other members of this family. The temperature should be 87°—no more and no less. In fact, my experience has been that they simply will not spawn if the water is any cooler than this. I put my fish in (after the water has aged for at least 24 hours) with the temperature at 78°. The temperature may then be gradually increased to the 87° which is essential for these fish.

The male (at left) of this pair of Pearl Gouramis has the longer dorsal fin. Photo by G. J. M. Timmerman.



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After the female is well rounded with roe, the male will set about the business at hand, the building of his nest. He may, on occasion, permit the female to help him. Within a few hours, he will have built a mammoth nest several inches in diameter which protrudes as much as an inch out of the water. It is not as substantial as some bubble nests, for it disintegrates readily. After the nest meets the specifications of the male, he will gently nudge the female under the nest, where they go into a typical embrace, with the male wrapping himself around the female. After a few such efforts, the female releases a few eggs which are immediately fertilized by the male. There is one important difference between the Pearl Gourami egg and the Betta egg: the former is lighter than water and will float to the surface without the male catching it and spitting it into the nest. The embraces continue until the female is depleted, at which time the male will drive her away from the nest. Nothing is to be gained by leaving her in the tank, so she should be removed, leaving the male to concentrate on caring for his nest.

The eggs (about 200 of them) are very tiny, and will hatch in 48 hours and become free-swimming in another two days. At this time, the male may be removed, for he has done a good job so far, and there is no use tempting fate, although I have never had these parents harm their fry.

The fry are almost infinitesimal and need copious quantities of food. I have had better luck with these fish by starting them the first week on fry food available in most pet shops.

By the second week, they can take Micrograin, which should be sparingly dusted over the surface of the aquarium several times a day. Well cooked egg yolk, finely mashed and then put into one ounce of water and thoroughly mixed, is excellent—feed 10 drops at a time.

At three weeks, they can handle newly hatched brine shrimp, which is eagerly taken. Gouramis are always hungry, and many fry are lost through starvation.

Get yourself a magnifying glass, the best you can afford, to help you to see whether the bellies of the fry are bulging. If they aren't bulging at all times, you aren't feeding enough and can't possibly hope to raise many fish.

Some of these Pearl babies are precocious and develop their labyrinths the second week. However, most of them go through this phase during the third week, and this is a most critical period and one during which losses are likely to be heavy unless certain precautions are taken. First of all, the temperature should not vary the slightest bit; secondly, no draft should touch the surface of the water. If colder air touches the developing labyrinth, it fills with mucus and the fish promptly dies.

After labyrinth development is complete, it is safe to start adding water to the aquarium. These fish are not as delicate as some of their more finicky cousins, so one-half inch of water of the same pH, DH and temperature may be added as often as every third day. The easiest way to do this is to mark a

corner of the aquarium at one-half inch intervals and fill to the mark. At this time, temperature may be gradually reduced to 78°, and if any floating plants remain on the surface, they should be removed so they do not interfere with the small fry coming to the surface to use their new labyrinths.

Most hobbyists will tell you that there is a variation in the rate of growth of their fry. This seems to be especially true of the Pearl Gourami. In no time, you will find that you have quite a few fry that are big, while there are others that look as if they just came from the egg. You will find that you have much better luck raising your "brood" to equal sizes if you keep them separated. Once a week, I separate the larger ones, and this gives the smaller ones a fighting change to grow up, too. By doing this, it is surprising to find that you have a batch of fish of pretty uniform size by the time they are about four months old. At this stage they are not yet sexable, but they are a nice size for hobbyists. It goes without saying, too, that the more growing space you can give them, the more rapid their growth will be. If left in the 10-gallon aquarium where they hatched, some will be so permanently stunted that they are never good for anything except food for larger fish.

Once labyrinth development is complete you should have little trouble, for this is a fairly hardy fish. They are, however, quite susceptible to Velvet disease, which is caused by a nasty parasite, *Oodinium limnericum*. The disease first appears as a rusty patch under or near the dorsal fin. It spreads rapidly over the entire body; the fish loses color and vitality and dies in rather short order. I have never successfully treated Velvet disease in these fish, but have found that it is fairly easy to prevent by frequent siphoning and changing of one-third of the water. By frequently I mean at least once a week.

Who said fish keeping was easy? I wonder how many buckets of water I have carried in the years I have been a hobbyist. But I can't think of anyone I would rather carry water for!

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Mysterious crash of a famous B-17.

What Happened?

BY WILLIAM VORDERWINKLER

A plane flying from San Juan, Puerto Rico, to Panama makes no radio report and disappears; three months later some Indians find the wrecked plane in the mountainous country in Colombia. There were only two authorized persons aboard when the plane started out, the pilot and the co-pilot. Yet, when the wreckage was found, three bodies were aboard. The plane left carrying the registry number N 131 P, but the wreckage yielded number 32080. Still, the plane itself is unmistakable. Who changed the numbers? Who was the third person? Why was there no radio report? Why did the pilot,

instead of flying to Panama as he was supposed to, veer far from his course to Colombia in good flying weather?

The plane, a Boeing B-17, was well-known in the Miami Airport as the "Flying Fishbow" and was a veteran of 75 flights to South America, where she brought down freight (mostly perishable vegetables which you just can't grow in South America) and took back millions of tropical fishes for Paramount Aquarium of Ardsley, New York, and Vero Beach, Florida. She was a sturdy old bird, and two of her 75 trips provided the author with an

The heroine of our story, shortly before her last trip. Her most unusual task was to fly back three living white whales from Alaska to New York, which she did successfully. Photo by Skoscin Studio.



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experience he will never forget. She flew me down and left me in British Guiana, where I spent two weeks for which many fish hobbyists have since envied me. On the next trip I was picked up and flown from there to Leticia, Colombia and Iquitos, Peru, picking up many boxes of fish and then returning to Miami. Never once did I have any qualms about being forced down in the seemingly endless expanses of jungle we crossed. Fred Cochu, President of Paramount Aquarium, told me then that he was thinking of making a flight from South America to Africa in that plane, and promised to take me along.

A few days before she crashed, Fred had sold the plane to a firm which assigned it to a run between Panama and Puerto Rico, carrying meat and other perishables. She was on the way to Panama from San Juan when she crashed into the side of a mountain 19,000 feet high on the northern coast of Colombia.

What happened is a question to which we'll probably never have anything approaching a complete answer. No matter how you try to

put the puzzle together, there will always be a lot of missing pieces. There are experts who can examine wreckage and come up with a wealth of information, but there was plenty of opportunity for looting by the Indians of that locality. For all we know, there may have been more people aboard than the three bodies found, and there may have been some survivors who could have made their way through the almost impenetrable jungle. That third person might have stowed away and then tried to force the other two to go elsewhere, there to take possession of the plane. This might account for the changed registry number. Sounds like cloak-and-dagger stuff, doesn't it? But with Communist activities being what they are, the hi-jacking of a converted World War II bomber isn't at all fantastic, is it?

Fred tells us that he has purchased another plane, one of more recent vintage. But the "grand old lady," as he calls her, had a lot of class and was a great old work-horse. She won me over completely in the short time that I knew her.

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Wingless Fruit Flies as Live Food

BY FRED HOWARD

The debt owed by man to *Drosophila melanogaster* is truly great. At least one serious biologist has suggested that a much larger-than-life monument should be erected to this very small (2 millimeter) fly, commonly known as the fruit fly. Probably no experiments in heredity are more famous than Mendel's with various garden peas, experiments which showed almost conclusively the principles of heredity. Yet Mendel had to guess at the reasons for the results he vividly saw before him in his garden during the seven famous years of hard work.

It was not until Dr. T. H. Morgan started experimenting with fruit flies in 1906 at Columbia University that the guesswork was greatly reduced. For, in a few months, and in just a dozen or so bottles, it became possible to duplicate with fruit flies what it had taken Mendel years to discover. Through this quick and cheap method of easily raising clouds of fruit flies in small bottles, biologists were able to make significant strides forward in the field of genetics.

The choice of fruit flies was most fortunate, for the flies have only four pairs of relatively large chromosomes, clearly visible with modern microscopes—all of which made the study of heredity more observable and scientifically ascertainable.

But what does all of this mean to you?

Well, for one thing, there are many kinds of fruit flies available—

in fact, a motley throng—variously described as curled, dumpy, jammed, fringed, elbow, humpy, fat, etc. So, you may be saying, how does all this benefit the tropical fish hobbyist? Well, if he likes healthy fish—fish that are well fed on the right kinds of food and *shove* it, the hobbyist would do well to learn about fruit flies.

Out of the experiments conducted at the turn of the century, scientists, through careful breeding, through taking advantage of "normal" mutations, and through artificially produced (X-ray) mutations, have given us a conveniently-raised, natural food for fish.

Let me digress for a moment. I'm sure that we all realize that hobbyists probably should feed live food to fish fry as early as possible. These fish, when they are later weaned to dried, prepared food, seem to do better on it than fish that have been started with dried food only.

Newly born livebearers and fry of egglayers need very small live foods, of course, and for them brine shrimp nauplii are perfect. But as baby fishes grow they can take larger foods, and fruit flies are among the very best live foods. They are easy to use, easier than microworms.

As my fish (I specialize in Guppies) get to the two-month stage, I introduce fruit flies—then watch the fish scamper here and there in the tank as they eagerly take the flies. It's a sight to make a breeder very happy!

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But, you might say, don't you have trouble with fruit flies? Don't they fly away? Don't they "bug" your wife? Think of the money you must spend on insecticides! And so on. Well, the answer to these questions is quite simple.

It is found in what is probably the most useful (for hobbyists) of all the queer looking fruit flies—the vestigial-winged fruit flies. These have only the "remains" of their wings. Their full-length wings have been bred out of them. They are stump-winged and cannot fly. And the fish seem to go for them the way I do for a plump, juicy steak!

And what's more, they are, I feel, much more easily raised and handled than are the ubiquitous white worms. For the flies are not particularly messy. And you do not have to fool around with loam and constant feedings and preparation washings, the way you must when you culture and use white worms. And, of course, while white worms are excellent as supplements to a fish diet (once or twice a week), there is always the danger with white worms that over-feeding might cause fatty degeneration of the reproductive organs.

So, you might be saying, I wouldn't touch a fruit fly if I were paid to. Well, the beauty of using these flies is that you don't have to touch them at all! I can even get my ordinarily squeamish wife to feed the flies to my fish when I am overly busy; I know better than to suggest that she dig into the white worm loam! Handling fruit flies, though, is simple.

All you have to do is shake from nine to twelve adults into a bottle containing almost anything in the line of food that fruit flies like

(banana peels, banana-pabulum mash, or moist corn meal, etc.), then sit back, watch the larvae turn into pupae and then into flies, and shake the flies into your aquariums—all in a matter of a few days. When you add the flies to your culture, also add a pinch of dried yeast. One culture usually lasts me for a month or more of harvesting. Sometimes more meal can be added to "freshen" the culture.

The negligible expense and trouble, the small space a few pint bottles take up, and the convenience of automatically having live food ready to go all add up to an excellent procedure that many new aquarists have been overlooking.

Stump-winged flies (vestigial-winged *Drosophila*) are easily come by in the larger cities if you have a biological supply company in town. Many high school and college laboratories order directly from these companies so they can make sure that the stock they receive has certain hereditary characteristics. Then the laboratories' experiments can be begun from known breeding stock. But it is not necessary for you to be this fancy, I suspect. And you can probably get good cultures more cheaply elsewhere.

A member of a nearby tropical fish club, for instance, may have some extra flies—thousands and thousands of them. And he might be only too happy to use some of them up by getting you started. A college or high school laboratory might be willing to give you an initial culture. Sometimes the flies can be purchased through mail order. Once you have a culture, you can use it to start others, too.

What about the flies' breeding?

habits? Although it seems much shorter, newborn flies begin to lay eggs after a few days. (In fact, newly "hatched" flies breed after only ten hours!) Larvae will appear in three to five days, pupae by the seventh, and new flies by the eighth or ninth day. By the end of three weeks, just one female may have produced 300 offspring. Fruit flies are fascinating creatures, cleaner than house flies because you can control them exactly. You might even get interested enough in them to rework Mendel's monumental experiments for your own benefit or that of some youngsters. Other experiments are also possible. Within three years one can obtain 60 generations—or, in other words, about as many generations as have accrued to mankind during all of the Christian era!

After the fly culture gets going, simply uncover your bottle and shake some flies into a fish tank. The flies float until they are gobbled up—usually within a few seconds. For the most part, surface tension—a phenomenon I don't fully understand—keeps the flies from being able to cling to floating objects or to the glass sides of the tank. They simply remain on top of the water—but not for long.

I have before me a small bottle that I started five weeks ago. I have "tapped" it ten times of between 50 to 100 flies each time!

Sometimes I concentrate on feeding the fruit fly larvae to young fish so that I can take advantage of the growth hormone produced during the larval stage. Lastly, one culture of fruit flies can be used to start hundreds of others.

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MAIL CALL

If you have an aquarium question and cannot find the answer in any of the standard reference texts, send it to MAIL CALL. Each month this column will publish the most interesting questions received and their answers. Letters containing questions cannot be acknowledged or answered personally. Address all questions to MAIL CALL, T.F.H. Publications, Inc., 245-247 Cornelison Ave., Jersey City 2, N. J.

"Miss Mixup"
 Q. I have a green Swordtail which I thought was a female. She is about a year and a half old and has never had babies, which I think is odd. I could never figure out what was causing this poor fish's condition. She ate well and grew to a full mature state, but still no babies. My male is a good healthy fish and has made mothers of the other females many times, so I couldn't put the blame on him. My so-called female started to grow a sword like a male has. It has not tried to mate with the females as yet, but I noticed that the normal male and "Miss Mixup" don't get along at all. Even my husband thought that she was just late in developing but I guess not, now that I have read your booklet *Swordtails*. I would like to know if it is bad to leave "Miss Mixup" in the tank with all the other fish? Also, I have noticed that in the past few days she has been "drooping." Could it be the change that took place make her die?
 Mrs. Henry McQuade, Brewster, N.Y.

A. Your Swordtail was never a functional female, as demonstrated by her inability to bear young. Although her hormonal balance made her a superficial female, the was undoubtedly sterile. It is not unusual for such a fish to "change sex." The only thing which you might say happened was that she changed from an apparent female to an apparent male. No, leaving her in with the others would do no harm. Perhaps the strain may have caused her to "drop," on top of having the healthy male pick on her. Transferring her to another tank would probably be beneficial.
Chanchitos.
 Q. 1. I am getting ready to buy a 20-gallon tank. Which is better, the "high" or the "low" type? Why?
 2. My city is going to put fluoride in all water used. What will this do to my fish? How can I remove this from water if it is harmful?
 3. I have a pair of Chanchito Cichlids that took place make her die? During this time the plants are uprooted, pits are dug in the gravel, and

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Tropical Fish Hobbyist

other fish are chased all over the tank by the Chanchitos. How can I stop them from mating and tearing up the tank?

Melvyn Erdos, Detroit, Mich.
 A. 1. The "high" 20-gallon tank has the same water surface as a 15-gallon tank, and is built 25% higher to accommodate the extra 5 gallons. It has no more to offer to the fish than a 15-gallon tank, but the extra height gives a greater viewing area. The 20-gallon "low" tank is a true 20-gallon tank where water surface is concerned. There is less viewing area, but it will accommodate a few more fish than the other.

2. Every time a city announces that it will fluoridate its water supply, I get a flood of mail from panicky hobbyists who worry but their beautiful fishes die. I have been assured by water companies that the amount of fluoride used is so infinitesimal that it presents no danger to man or beast. Removing fluoride would entail a complicated and expensive chemical process which would gain nothing.

3. Chanchitos (the name means "little pig" in Spanish) will insist on spawning whenever their time comes, and you cannot stop them from tearing up the tank even if you separate them with a glass partition. If you want to keep your fish, you'll have to put up with this.



Chanchitos, *Cichlasoma fectum*

Keeping Bettas together.

Q. I tried recently to breed a pair of Bettas. The female was a recent purchase and was quite ready to breed. The male was also ready and was in fine trim, but when I put him into the breeding tank which I had used before to breed the same male in he did absolutely nothing except make passes at the female. In fact he didn't even build a bubbler. The male is about two years old and in good health. He gets feedings of baby brine shrimp, dry foods, and white worms; lately he has gotten other live foods. I have ruled out sterility because I have had babies from him and as far as old age goes he can still chase that female around the breeding tank.

Now that I have finished my question I shall make some statements which will weaken some age-old theories, such as:
 1. Two males in the same tank will fight. 2. You should never put females

in the same tank as males. 3. The Betta's fighting instinct cannot be removed through breeding. To begin with, it is not only possible to keep two Bettas from fighting but it has been done not only by me but by another fish breeder who in one 25-gallon tank had two quite chummy male Bettas with about a dozen females. It was quite surprising to see this at first, but I finally must believe it as I also have the same conditions, two males who weren't raised together and one female who follows the males around occasionally. Whether this friendliness can be continued and made a trait I cannot say, but from what I have seen it is not impossible.

Brian Gillis, Ottawa, Ont., Canada.

A. A two-year-old Betta is well beyond his prime. He's never too old to make passes, but the poor old guy isn't even able to make a bubbler any more! As for your statements, I agree with you. A male Betta's fighting instincts are not primarily instincts, but merely a desire to protect a territory which he has chosen for himself and his mate. If there is sufficient room for another male to establish a little territory of his own, there will be little or no friction until one tries to move into the other's spot. Another cause for fights would be rivalry over the same female. With a dozen females to choose from, there is no argument;

October, 1963

the boys are so busy with the girls that there is no time to fight! The other situation you mention, where you have two males and one female living harmoniously, is something else again. I suspect that one of these males is the old boy you mentioned at first, and the female isn't much to fight about anyway. But just get a situation where one of the males pairs off with the female and watch the scales fly!

Dropsy.
 Q. Every female Guppy that I have gets pregnant, but in the last days of pregnancy they just lie on the sand and die. They get red behind the gills and the scales come away from the body, but do not drop off. No babies have been born. I use a 51-gallon tank with an under-gravel filter plus an outside filter. The tank is fitted with 2 light sockets in which I use

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4. Guppy Editor Paul Mahnel has gone into detail frequently about how he feeds his Guppies to make them the gorgeous creatures they are. Suggest you read "Guppy Corner" for November, 1962. Mollies would respond well to the same feeding but in addition should have the opportunity of nibbling at algae which a large, murky tank would give them. You still find it practically impossible to raise show specimens of Mollies in an aquarium; the best ones are pool raised in Florida under conditions which would be impossible to duplicate exactly in the aquarium.

5. I presume you are referring to the pectoral fins of a Guppy. You have to start with a fish which at least has some of the color you are trying to achieve. That it is a matter of breeding selectively, always choosing the offspring which the most color and mating them with each other.

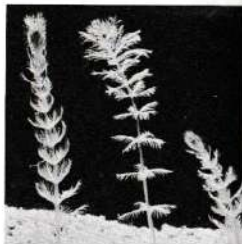
6. The easiest way to sex mature Corydoras aeneus is to look down at them from above. Females have considerably wider bodies.

Adding salt.

Q. I think *Myriophyllum spicatum* is a beautiful plant, but I wish that it could be more than just temporary. Is there any way to make it root? In its natural state does the plant reproduce only by budding?

A. I have a female Sailfin Molly that is about 2 inches long (excluding fins). I bought her three months ago and placed her in a 20-gallon community tank (no other Mollies). Now she has a dark spot in front of her anal fin and looks as if she is pregnant. Two male Swordtails have been chasing her. . . . that's the only possible explanation that I can see. Could they have crossed-bred? They're about the same size.

3. I have six Platies in a 15-gallon tank. Three different times I have put in a teaspoonful of salt per gallon, as recommended, but every time I do the plants rot and the roots turn brown. Do you know a safe amount of salt?



Myriophyllum spicatum

4. In another 15-gallon tank I have four 4-inch Goldfish. Every plant that I put in there is eaten up in one week. Can you think of any plant that they couldn't eat?

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5. How large does a Swordplant have to be to send off runners?

Cindy Vermillion,
Long Beach, Calif.

A. 1. *Myriophyllum* will root readily if you do not leave too long a stem on it. Trim it to a point about 3 to 4 inches behind the tip when you plant it. In the warm months while in its natural state, *Myriophyllum* sends up aerial spikes with male and female flowers which are pollinated by the wind.

2. I doubt very much that your female is bearing hybrids. Female livebearers have the ability to accept and hold living male sperm for quite a time before the eggs ripen, so do not be disappointed if the youngsters turn out to be just plain Mollies.

3. Yes, I know a safe amount of salt: none at all. Platies do not require salt in their water and do very well without it. Did you use fresh water every time you added salt? If you did not, you accom-

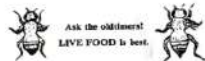
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lated three spoonfuls to the gallon, and it's no wonder your plants couldn't stand it.

4. "Every time I give them greenery, my four Goldfish eat the scenery!" Maybe we should go in for song-writing. All that I can suggest is that you put in some plastic plants and, as an apology to the fish, give them some chopped spinach in their diet.

5. It varies, but generally about 7 or 8 inches.

Attention, doctors!

I should like to take advantage of your generous offer, as published in the latest issue of *Physician's Management* magazine, for a subscription to your magazine. (Note: Dr. Flaster refers to an offer made by Dr. Axelrod to give a year's subscription to TFH to the first 1,000 doctors who requested one after reading an article about keeping tropicals in *Physician's Management*.)

I am not familiar with the magazine, but as I delve constantly into my copy of your excellent *Encyclopedia*, I am certain that the magazine will be well worth reading.

Why not attempt to form some union, albeit loose and by correspondence only, of tropical fish enthusiasts among the physicians, something like the Flying Physicians Association? Our lives and daily schedules are of such a disrupted and constantly chang-

ing nature that we are rarely able to partake of general club activities with fixed meeting times, etc. I'd be happy to help during my spare time (like between 2 and 3 a.m., barring deliveries and other emergencies!).

Donald J. Flaster, M.D.
Kings Highway, Valley Cottage, N.Y.

All right, Dr. Flaster, we've published your name and address; the rest is up to the physicians who are interested.

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Guppy Corner

By Paul Hahnel

What to do with them all?

Q. I have three bowls, one of 3 gallons and two of 2 gallons. For the few bowls I have, I have 18 Guppies, a pair of Angelfish, and Catfish. The Angels and Catfish are not mates, but my Guppies multiply like wildfire! I can't seem to stop it. Most of my Guppies are in one of my 2-gallon bowls. Can I stop this without separating males and females? I haven't the heart to feed them to my Angels. I need an answer and would appreciate your advice because recently I had a batch of 38 Guppies and still haven't gotten rid of them all. Even though my fish are a little crowded they seem to be quite happy and contented. They don't go to the top for air and hardly ever get sick. A neighbor of mine has no problem with her fish multiplying. She has a 30-gallon tank full of Guppies!

Elaine Jorgensen, Bainbridge Island, Wash.

A. Sorry to hear to tell you this, but you should feed your baby Guppies to the Angelfish; the Angels will love it. It sounds cruel, but in nature it happens every minute. This is what is known as "the maintenance of nature's balance." There is no other way out, as you have only three small bowls.

Frozen foods, and sexing.

Q. I have been raising Veiltails and Delmas for years, and have had astonishing success with them. But for as long as I can remember, I have had trouble keeping them fed with a variety of live foods. The only easily obtainable foods for me are brine shrimp and white worms. Recently I started buying frozen live foods. Now my feedings

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Tropical Fish Hobbyist

include brine shrimp, white worms, frozen *Daphnia*, frozen bloodworms, frozen *Cyclops* and, of course, dry food. Is this diet OK? Are these frozen foods good for conditioning breeders? In the February issue of TFH I read that someone has been sexing their young Guppies by the position of the mouth and eyes. He states: "If the position of the mouth and eyes forms a sharp triangle, it is a male." I too have been using this method of sexing for years, and it is more than fairly accurate. In fact, it is the most accurate method I have used.

Richard M. Chikos, Chicago, Ill.

A. In addition I suggest you try to get frozen beef hearts, fish roe, and brine shrimp. This will give an even greater variety to the diet. To condition breeders you have to provide them with a wide variety of foods. I also read the interesting article on sexing young Guppies. I hope

that many hobbyists will profit from this article by learning how to sex Guppies.

Mysterious lump.

Q. I raise fancy Guppies, but there is one thing about them which puzzles me. The males develop a lump which appears to be a broken back, around the time when they should be getting their color. This condition persists until they are just about full grown. It then disappears as quickly as it had appeared, and the fish then shows no sign of ever having had any such condition. I would be very grateful if you could answer this question.

Frank Granieri, Flushing, N.Y.

A. This is also a puzzle to me, and if I could see the fish I might be able to tell you what is wrong. Does this ailment appear in successive generations? If so, I would recommend that you stop breeding this strain.

October, 1963

Salts From The Seven Seas



By Alfred A. Schultz

Q. When Mr. Vorderwinkler was here in Pittsburgh at the Great Pittsburgh Aquarium Society Show he said that you would answer any questions pertaining to salt water fish keeping addressed to you:

1. I am building a 4-inch plywood aquarium with glass in the front only. Can I use 3/4-inch glass, or is it best to use 1/2-inch? Will 3/4-inch glass hold the water if the frame is braced at the top? The aquarium is 24 inches high and 5 feet in length.
2. What type of paint can I use on the inside to give a better appearance?

Bob Ford, Pittsburgh, Pa.

- A. 1.** 3/4-inch glass is strong enough if braced.
 - 2.** There are any number of paints sold that are waterproof, such as those used on boats or for the inside of swimming pools. If you like the grain of the wood, you can use a good waterproof spar varnish.
- Q. 1.** I have a 6-gallon plastic aquarium containing nine Dwarf Sea Horses and a Pipefish. The tank is aerated by an airstone and filtered by an undergravel filter. My Sea Horses won't mate. The males seem willing, but the females

don't seem interested. I have five males and four females.

2. In my tank I keep finding small round things which look like eggs. They are about 1/4 of an inch in diameter and look like small pink spots surrounded by a bubble of fat. What are they?

3. About a week ago I found a small worm, about 1/2 of an inch long. Since then I have kept it in a jar with plenty of algae, which it seems to eat. My water is all artificial, so I have no idea as to how it could have entered. My biology teacher says it is not a leech, so do you have any idea what it may be?

4. I have an overabundance of algae in my tank. What animals that eat algae may be safely kept with Dwarf Sea Horses? Is it safe to keep hermit crabs with the Dwarfs?

Michael LaBarbera, Mt. Morris, N.Y.

A. 1. Let Nature take its course. Probably none of your females has had her eggs

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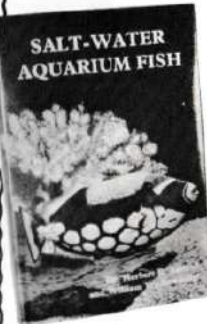
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ripen; all it takes is time and good feeding.

2. I wouldn't even venture to guess.
3. There are hundreds of worms and worm-type creatures which it could be. You overlook the possibility that it might have come in on your Sea Horse.
4. None. Yes, you can keep hermit crabs with your Dwarf Sea Horse.

Q. 1. I have a 15-gallon stainless steel tank containing fresh-water tropicals. Could this tank be used for a marine aquarium? Would it need some kind of treatment?

2. Would you recommend a turbine filter for this tank?
3. Which do you consider some of the hardest marine tropicals in a moderate price range?
4. Could Butterfly Fish, various types of Angelfish, Clownfish, and Dascyllus species be kept together in such a tank?
5. What food is suitable for marine tropicals such as those mentioned above?
6. Should scavengers be used in marine aquaria? Which, if any, in a 15-gallon tank?

Jimmy Grace,
Bay Shore, N.Y.

- A. 1. Yes. It should be cured with three overnight rinses of clean fresh water.
2. Definitely, although it is not absolutely essential.

3. Glowfishes, Dascyllus species, Neon Gobies, etc.
4. Butterflyfish and Angels tend to fight with each other. The same applies to Dascyllus of the same species.
5. Live adult brine shrimp is best. If you cannot get live ones, get the frozen ones.
6. Two hermit crabs would be interesting, comical, and useful.

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- Q. 1. Can you collect coral reef fish in any of the coastal waters of Florida?
2. What is the easiest way to go about collecting them?
3. What equipment would you need?
4. My tank is going to be 50 gallons. Do you think this is good?
5. What are some of the fish which can be found in the waters of Florida?
6. What fish will live comfortably together?

Wayne Larson,
Oakland, Calif.

- A. 1. Yes.
2. Wait for the tide to go out and catch those which have become trapped in small pools. Scuba diving is a much more difficult method, but it gets you to the deeper water where there are other species to be found.
 3. Keep it down to the bare essentials: a large net, a small net, and a large plastic bag.



Sergeant Major, *Abudefduf saxatilis*

4. Yes; the larger your tank, the greater your chances for success.
5. Sergeant Major, Angelfishes, Sea Horse, Blue Gregory, and many others.
6. Most of the above.

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Continued from Page 9



Koi are perfect pool fish, and their many colors can be used to complement the colors of water lilies in garden ponds.

So many color varieties have already been developed that the Japanese have run out of names for them. No English names have yet been assigned, and the names used here are used only for convenience. Where known, the Japanese name has been given under the photos. Though the names of the various color varieties are obscure at this time, the methods of care and breeding are well known.

Adult Koi are definitely outdoor fish. They do best in temperate climates where the water in a pool three feet deep won't freeze solid in the winter. Because they are bottom-feeding fish, they are dirty, and they do best in running water. Over-feeding is the greatest cause of their problems, and they should be fed once every two days after they are six months old. Younger fish should be fed daily.

Needless to say, Koi do best on pelletized Goldfish food, frozen brine shrimp, and *Tubifex* worms, but the economics of feeding fish that grow to two feet long and eat two pounds a week demands that the fish's diet suffer a bit to make Koi economical pets.

Pond fish food suits them ideally if you throw them some frozen brine shrimp once or twice a month. They are ideal pool pets and soon

Continued on Page 60

Continued from Page 15

as in the other species); it possesses an adipose fin; the dentition is said to be in a thick band (as in *T. madeirae*?). D probably ii 7, A iii 16, scales 32 (all from Dr. Myers's translation in appendix, 1950). The typical locality, indicated afterwards as "Para", has been shown by Myers and Böhlke to be eventually in the vicinity of Parintins, on the middle Amazon, approximately between the mouth of the Rio Madeira and that of the Rio Tapajoz.

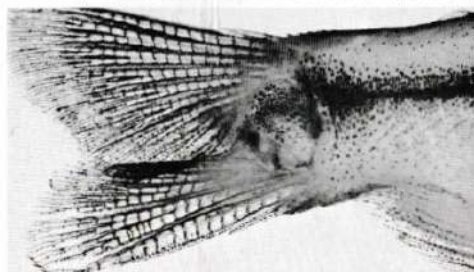
It is now time to return to the fishes collected by Dr. Axelrod in Belem do Para. I was quite excited in unpacking the specimens (4 tiny males, the largest being only 16.5 mm in sd. lgth.), because it was the first time that a Xenobryconine was recorded, with certainty, from so "low" a locality: remember that the species are known from the upper and middle Amazon (one also from the Paraguay basin), and not from the lower Amazon. The name Para once appeared together with *T. odontochilus*, yet it was shown to be rather dubious. Anyhow there was a possibility that Dr. Axelrod had rediscovered it.

In fact, the study of the specimens from Belem showed only very slight differences from *T. madeirae*, the "ordinary" Xenobryconine. They are approximately of the same depth (about 3.2 in sd. lgth.) with a short, "bristly" snout, a rather short mouth, directed slightly upwards, the maxillary just reaching the level of the front of eye: this is quite different from the description of *T. odontochilus* (if we may rely safely on it...). The eye is quite large (about 2.7 in head), the head moderate (about 3.6 in sd. lgth.). The scales are mostly lost, as usual; judging from the scale-pockets and from some series left on the "best" specimen, they may number about (2) 33 in longitudinal series, a slightly lower count than in *T. madeirae*. Dorsal ii 6-7, anal iii 15-16, pectoral i 7-8, ventral i 6 (as in *T. madeirae*). The general appearance and the pattern of the fishes (fig. 1) are similar to those of *madeirae*, including some black at the tip of first anal rays and the base of last ones, as well as on the lower caudal lobe and the base of the upper one, the distal part of the dorsal fin, and finally on the lips.

Another similarity is found in the distal disposition of the anal hooks: like *T. madeirae*, the specimens from Belem have the following distribution: 3 (or 4) hooks on distal part of the 10th branched ray, immediately before the filament which prolongs the ray; 2 (or 3) on 11th; 2 on 12th; then generally one, up to the 15th, the last one, generally the 16th, has no hooks (fig. 4). The other species of *Tytocharax*, *rhinodus* and *atopodus*, have, comparatively, the hooks much more anteriorly, generally beginning on the 2nd up to the 10th, even 12th or 13th, branched anal rays, whereas *X. macropus* has hooks on the last unbranched ray (i) up to the 8th. Following a cursory review of the characid species whose males bear anal hooks, I may state as an hypothesis that *T. madeirae* is exceptional, even in the whole sub-order Characoidae, in having the hooks mostly on the posterior rays, which may indicate a pec-



Fig. 4. Enlargement of the anal (above) and caudal (below) fins of a male *T. madeirae*; the anal hooks, as well as the caudal pouch, are clearly visible. All photographs (figs. 2 to 4) made under the direction of the late Dr. O. Schindler, Munich.



uliar mating behavior. Moreover, whereas probably all Xenobryconines have hooks on ventral fins (including *madeirae*, and several characids from other groups), there seems to be another peculiarity in the structure of the caudal fin hooks of *T. madeirae*, as compared with the other two species: the latter ones have a few hooks on some rays of the lower caudal lobe, as well as on the upper one; the examined males *T. madeirae*, from Lago Tefé, and the specimens from Belem, do not have hooks on their lower caudal lobe, and only a few on upper lobe.

I may conclude in affirming the presence, in Belem do Para, of *T. madeirae*, previously known from some localities at least 1,000 miles upstream. The form from Belem differs only slightly from the typical *madeirae*, namely in the low scale count (about 33, instead of about 35), and in a small, well defined, vertically elongated humeral spot, which is only rarely seen in the upper-Amazonian individuals: these differences have, in my opinion at least, no taxonomic significance.

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This is the magnificent "Daito Sankei."

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learn to accept food from your fingers. The warmer the water the more active and colorful the Koi is, but the most beautiful require a "freeze" for a few months.

The care and breeding of Koi is exactly the same as that of Goldfish. The males develop nuptial tubercles on their gill covers and the females become plump with eggs. This all happens in the spring-time, around March or April in the Northern Hemisphere. The breeders lay their eggs in the roots of floating Water Hyacinth; unless they have been properly fed, they will start eating them almost as soon as they have laid them.

The Japanese use purely aesthetic standards for their Koi. The most colorful fish with the brightest colors and the greatest number of colors (a four-colored fish is a rare one), is the best. Purity of color is also prized. A white Koi is valuable only if it is pure white. One

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Finally I would suggest a possible explanation of the presence of the species right in the middle of the town of Belem. I imagine that those fishes are descendants of a few specimens which were, accidentally or intentionally, released in some pounds in the open, at the time (just before last world war) Museu Goeldi was the big stocking place for aquarium fishes to be shipped to Hamburg or New York (see Myers and Böhlke for details). I could even imagine that they are the progeny of those fishes (said to come from Parintins), which were described as *Microcachirus odontochilus*; then this dubious species would be nothing but our best known *Tytocharax madeirae*. Is it necessary to add that we are here leaving science to enter into the fascinating land of gratuitous hypotheses?

NOTE: I found these fish, which Harald Schultz and I both had called "The Pygmy Mimigoniates", in a small ditch about 30 miles out of Belem do Para, Brazil on the road to Brasilia. The ditch was no deeper than three feet at its greatest depth and was very fast moving and clear. Along with this pretty *Tytocharax madeirae*, which had once been named in honor of Fred Cochu, Paramount Aquarium, we found the typical varieties of Poecilibrycons, Hatchefishes of the genera *Carnegiella* and *Thoracocharax* and some small unmarked Characins. We only found these small fish in one, isolated pool, the slowest moving part of the ditch. We searched for two days in pools up and down the road from this particular pool but never found additional specimens of *Tytocharax*. It is quite possible that Fred Cochu brought these beautiful fish down to Belem and Museu Goeldi, but I doubt that he would remember for certain. At any rate, for all that Fred Cochu has done for the hobby, we are going to nickname this pretty little fish "Cochu's Pygmy Tytto" and hope that it sticks. The fish is very delicate and all specimens were dead within a few hours of collection. This is why I doubt that the fish came from upriver. Herbert R. Axelrod.

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The Koi at lower right in this photo of a shallow Koi pool is a rae-heavy female.

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black scale ruins it. Yet a white Koi with some red, black, and brown, regardless of how much of each color, is very highly prized. Koi with very contrasting colors are extremely valuable, and the fish that I like the best (and brought back from Harry Yee in Honolulu) were the metallic gold Koi. Yes, as unbelievable as it sounds, they have Koi with a solid gold coloration that actually glitters like gold!

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SOCIETY NEWS

Clubs and individuals interested in membership in The International Federation of Aquarium Societies should contact Mr. William I. Lawrence, Membership Chairman, 214 E. 29th Street, Wilmington 2, Delaware.

Rochelle Park, N.J. . . . The Exotic Aquarium Society of New Jersey and The Tri-City Aquarium Society will hold a combined tropical fish show on October 4, 5, and 6 at the Knights of Columbus Hall, 235 Rochelle Ave., Rochelle Park, N.J. This will possibly be the first time two societies have attempted a combined showing in New Jersey.

There will be a total of fifteen separate classes in the show, one of the highlights of which will be the New Jersey American Guppy Association Championship. Out-of-state and foreign entries are welcome. For entry blanks and additional information, contact Show Chairman Frank Birkner, 289 5th Street, Saddle Brook, N.J. Phone: Gr. 2-0922.

Riverside, Calif. . . . The second annual show of the Tri-City Aquarium Society will be held on October 26 and 27 at the Municipal Auditorium in Riverside, in conjunction with the Riverside Ninth Annual Hobby Show. All interested hobbyists are invited to exhibit. For entry blanks and additional information, contact Show Chairman George Donner, 4065 Dell Ave., Riverside, Calif.

Kansas City, Mo. . . . The Heart of America Aquarium Society will hold its eleventh annual show at the Kansas

City Museum on October 5 through 13. All hobbyists are invited to compete in the exhibition, which will have nine major classifications of entries. For entry blanks and additional information, contact Show Chairman Donald D. Salyer, 1318 Bernington, Kansas City 26, Miss.

North Andover, Mass. . . . A buffet dinner will be held at the Merrimack Valley Motor Inn, Route 125, North Andover, beginning at 2 P.M. on September 22. Cost of the dinner is \$3.75. Jeff Campbell is the after-dinner speaker, and clinics will be held by Roy Kennon, Hester Weed, and Bill Healy.

Kitchener, Ont. . . . The Kitchener-Waterloo Aquarium Society will hold its fourth annual show at the Victoria Park Pavilion, in Kitchener, from September 14 to 21. During evening hours at the show *The Stars of the*

Irish Shrimp will be shown for the first time in Canada. For more information contact Herb Allgeier, 108 West Avenue, Kitchener, Ontario, Canada.

Arlington, Va. . . . The Potomac Valley Guppy Club will hold its annual fall Guppy show on October 19 and 20 in the Holiday Room of the Arva Motor Hotel, 2201 Arlington Blvd., Arlington, Va. (only a mile from the Lincoln Memorial in Washington, D.C.). National participation is invited. For entry blanks and further information, contact Julia L. Menges, 1014 Fowler Street, Falls Church, Va.

Baltimore, Ill. . . . The Country Fair Shopping Center, Champaign-Urbana, Ill., will be the site of the second annual show of the Central Illinois Aquarium Club on September 23 through 28. Competition will be open.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Act of October 23, 1962; Section 4369, Title 39, United States Code)

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