

SPECIAL SCALARE NUMBER

# The AQUARIUM



VEILTAL GOLDFISH ON JAPANESE POSTAGE STAMP  
(Enlarged)

Vol. XXI No. 9

September, 1952

Price, 25c  
Canada, 30c

# THE AQUARIUM

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*Published Monthly by*

INNES PUBLISHING CO., 129 North Twelfth Street, Philadelphia 7, Pa. \$2.50 per year, in United States and South America (except Guianas), 25c per copy. Canada and other countries, \$3.00 per year, 30c per copy. Neither text nor illustrations from *The Aquarium* may be quoted or used without permission by the publishers.

Entered as second-class matter, May 27, 1932, at the post office at Philadelphia, Pa., under Act of March 5, 1879.

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Vol. XXI

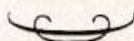
SEPTEMBER, 1952

No. 9

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# THE AQUARIST'S CALENDAR



SEPTEMBER is, in most localities, that in-between month which is neither Summer nor Fall, but in the space of a few hours, can become either one with short sharp rises and quick drops in temperatures. This is a disturbing problem to hobbyists who have delicate fishes in outdoor tanks and pools. It is better to be safe than sorry, so the wise thing to do is to make plans to take the best of them inside now, even though in many parts of the country it is reasonably safe to leave them out until mid-October. Guppies are often good "indicator" fishes in this respect. They are usually among the first to show signs of discomfort. Some of our exotics such as the Gouramis and Scalares may slow up a bit after a cold night, but they seem to snap out of it as soon as the sun hits the water, but the Guppies, once they have had a fairly stiff chilling, promptly pass out or go into the "shimmies" without further exposure.

It is noteworthy that most fishes which are adaptable to outside pools and tanks, can stand lower short period

low temperatures in outside pools than they can in an inside tank. This is mainly because temperature changes take place more slowly in a large body of water, as well as the fact that there is considerably more oxygen in their outdoor pools, also the fishes themselves are in better condition to withstand the shocks. However, September is an excellent time to forestall any possible danger by getting the fishes inside *before* a chance cold snap can do irreparable damage.

September is also the time to get out the heaters, thermostats and reflectors, check, test and put them in good shape. It can be done leisurely now—later, might be too late.

Many hobbyists have accumulated a surplus stock of both plants and fishes during the Summer season. If enough of them can be gotten together to make a substantial deal with other fans, well and good, but if not, a gift to a "shut-in" or handicapped friend may pave the way for bringing untold happiness into lives which are "trying" to say the least.



## FISHES ON STAMPS

by *Wm. T. Innes*

**I**N OUR issue of June, 1943, appeared an article by C. Dewar Simons 3rd, of Rosebud, Staten Island, N. Y., headed as above. Mr. Simons is a philatelist, with a leaning towards fishes. After looking through the various stamp catalogs he found about a dozen fish subjects, apparently none of them aquarium fishes. They covered the period from 1866 to 1895.

Mr. Simons requested other readers to advise him of any discoveries in his special field. We believe he had some direct answers, but we have never seen them, nor learned whether they made any desirable additions to his list (published in his article).

Very recently a letter from Mr. Eugene J. Dreger, of Brooklyn, N. Y., revived the subject by sending us 6 stamps showing fishes. If Mr. Simons is still among our readers we are sure he will welcome the information.

Five of the subjects, shown herewith, are marine, and are of the types sometimes seen in large public aquariums. The stamps are in beautiful colors, approximating the beauties of the showy fishes themselves.

The sixth subject, a magnificent Japanese Veiltail Goldfish is on a Japanese stamp. Regarding the work of art as being worthy of a color reproduction on our cover we have "blown it up" to the size shown, without any loss of quality or detail. This is a credit not only to the exquisite workmanship on the original, but also to our engraver, the Atlas Photo-engraving Company.

This is the first popular aquarium fish we remember seeing on a postage stamp.

Somebody in Japan had a bright idea, considering that the Goldfish is not only an important item of commerce in that



country, but the Goldfish for centuries has been a traditional feature of interest to the Japanese people.

This prompts us to suggest that certain fishes could appropriately be honored by other countries. At least among aquarists Brazil is known the world over as the home of the Fresh-water Angel Fish (*Pterophyllum eimekei*). This is always a clear-cut subject for illustrators.

*Betta splendens* is known everywhere for its beauty and adaptability to aquarium life. It is also well known in its own country, Thailand (Siam), both as an aquarium fish and in the national sport of fighting them in matches, where great sums of money are wagered.

It is our intention of making that suggestion to both those countries. Perhaps others will follow. India is the home of many of our most popular species, and the hobby has taken a deep hold in that tropical land.

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#### *Notes from the University Aquarium News Letter Ann Arbor, Michigan*

##### MEDICATED FOODS AND YOUR FISH

Note with alarm that most of the fish foods now contain antibiotics. Certainly you don't take a shot of penicillin before each meal to prevent pneumonia. The Food and Drug Administration is investigating one of the major antibiotics because of its serious toxic effects (over 200 have had serious effects in the past year from taking). The leading fish pathologist of one of the largest public aquariums has warned of the danger of even little dosages of these powerful medicines. They should not be used as preventatives as they may even encourage fungus diseases. If you used them frequently their medicinal effect may be gone when you need them.

Also, note the increasing numbers of fish being lost for no apparent reason. Used to be you could almost always tell why a fish died. If you must use foods with medicines, use them for sick fish.

##### GETTING YOUR FISHES HOME SAFELY

We at University Aquarium believe that you can bring many more fish home safely if you do this single thing. Bring several jars to your local shop when you're buying. Put the fish you buy in the water from the aquarium they were in. Don't have all the fish you buy crowded into one little jar with water from gosh knows where. The leading aquarist constantly warns against rapid changes of water and for gradual adaptation to new water. So see that your new fish are brought home in the water they were in at the store.

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#### *Another Big Show Coming Up*

The Greater Pittsburgh Aquarium Society will put on their 6th annual Tropical Fish Show in the Buhl Planetarium, North Side, Pittsburgh, Pa., October 4th to the 19th, 1952, inclusive.

These shows have been outstanding in layout, decorations, number of entries and keenness of the competition. Fanciers from a very wide area in and around the Pittsburgh section have exhibited some of the finest specimens in the country at these shows.

The general public has shown great interest in the exhibits. This is the basic reason why the show plans have been extended to greater efforts than in previous years. Bulletins covering competitive classifications and show regulations are now available through Mrs. Elizabeth Rowland, Show Chairman, 268 Creston Drive, Dravosburg, Pa.

# HOW THE "KING" LIVES AT HOME

by *W. Praetorius*

of Santarem, State of Para, Brazil

(Translated by Dr. O. B. Helfrich)

*Pterophyllum scalare*, sail-fin, king of the aquarium fishes, with a high-sounding name! Not long ago the most fervent wish of thousands of aquarium hearts was to possess and, if possible, propagate, this desirable fish. The course of the years has more or less seen the fulfillment of this wish; but the "king" still maintains his rank. It is indeed an inspiring sight to see him, or a school of his young, swimming in a well-planted water garden. I, myself, was uplifted when, about ten years ago, I saw the first spawning; a school of the young fish disporting themselves in a great tank at the Cvancar—Hamburg, I believe it was.

Although much has been written about this fish, little or nothing has been reported concerning his life at home. I will, therefore, attempt to portray him as I see him here in his native waters. First, as to his range; where it begins I cannot now say. However, in numerous travels to such places as Brevès, Camatà, Gurupà, Almirin, and others, I have sought him in vain. I do not claim he does not occur there, but the beginning of the real region is not more than 150 to 200 miles upstream. At this point (Santarem), where the Tapajoz flows into the Amazon, his occurrence is such that he is no longer king but merely an ordinary being.

In the Tapajoz he is found only on the left bank, in what is called the

• The original of this article appeared in the July 12, 1932, issue of "Wochenschrift für Aquarien und Terrarien Kunde."

"varjè." Along the right bank, where the ground is solid, one seeks him in vain, just as one seeks in vain any other fishes. In the Amazon, one likewise finds him only in the "varjè"—areas which at the time of high water lie partially or totally submerged. In the middle of the stream he is totally absent. His kingdom is rather the immediate neighborhood of the shore, and there only where plants are found.



SOUTH AMERICA, SHOWING *Pterophyllum* HABITAT

The best time to observe him is in the dry season, when the water is low. The banks are then lined with the flooded cane growth; the so-called Canarana

and Premenbeke. The stalks of the first are covered with fine, stiff hairs, which penetrate the skin when touched. Below the water surface these hairs become long, fine roots, similar to those of *Eichornia* (water hyacinth). At the brink, and under these plants are great numbers of fish; among them the *Pterophyllum*. Proceeding slowly in a canoe along the edge of these growths, one can observe groups of fifteen to twenty individuals. They hang close to the vegetation, ready to disappear at the slightest disturbance.

Usually the *Pterophyllum* is accompanied by the *Cichlasoma festivum*, which is even more numerous. His conduct in this environment is not at all kingly; on the contrary, he is very timid and humble. So easily terrified is he that if one makes a sudden motion with the rudder or the arm he shoots out of the water, falls flat on the surface and lies there making senseless and futile motions. One can easily catch him by hand. The natives consequently call him Pacu Doido. Pacu means "surface fish" and doido means "crazy." They call him also Acara-Bandeira, or Flag Acara.

The spawning period comes with the beginning of high water—that is in January. Great areas along the banks are then flooded and the plant growth is abundant. Paranas and Buchten form a carpet under which one finds almost every kind of fish. For the care of the young it is very badly arranged. I found the young fish always alone and in small swarms, enemies being so numerous that the *Pterophyllum* is driven from his brood.

As is generally true of all fish, he is difficult to capture during the high water period. There is, however, an unsporting means of determining whether *Pterophyllum* are present. One strikes

the water a sharp blow with the flat of the paddle or a stick, and instantly all individuals in the vicinity spring high out of the water.

Strange to say, beautiful examples with perfect fins such as we know in the aquarium are rarely to be found. Due to the encounters with numerous enemies, all are more or less ragged. The variety under discussion is *Pterophyllum eimekei*. The *Pterophyllum scalare* occurs much further upstream.

The first *Pterophyllum* introduced into Germany originated from the region of Manoa. The temperature of the water there is 28 degrees to 30 degrees centigrade (83 degrees to 86 degrees Fahrenheit) and does not change in the night. Of course, the Amazon has a smaller temperature difference than the Tapajoz. The latter is 1 to 2 degrees centigrade (2 to 4 degrees Fahrenheit) warmer and crystal clear, while the Amazon is cloudy yellow. Both, however, seem to suit the *Pterophyllum*. Ordinarily it is considered quite hazardous to transfer fish from dark to clear water (or the reverse) without a slow transition. However, I have often gone out for hours with a motorboat and placed fish caught from the arms, bays and lagoons of the Amazon directly into Tapajoz water without being able to discern the slightest discomfort.

Highly erroneous ideas appear to exist with respect to water temperatures in this part of the world. In a current publication appears the following reference to a certain South American species. "Home: Region of the Amazon. Temperature 25-28 degrees centigrade." This is a gross inaccuracy. There are places where the water is hot; for example, 40 degrees centigrade (104 degrees Fahrenheit); and other places where, for our considerations, it is icy—18 degrees centigrade (64 degrees Fah-

renheit). In the latter case it is usually a large brook which originates in the interior and flows rapidly. But even these so-called Igarapes harbor many species of fish. This is a subject, however, that I will come to in a later article.

The *Pterophyllum* does not seem to enjoy a long life here, for one catches and sees only medium-sized specimens. Large ones are rare. Nevertheless, nature rules are sufficiently well so that, despite enemies both in and out of the water, the continuation of the species is assured.

In conclusion, I can say that *Pterophyllum* is a fish of the warm, plant-rich, quiet and not too deep waters (about two meters [eighty inches]). Furthermore, he is not unintelligent, for in the swarm the *Cichlasoma festinum* are always found in front or higher. The *Pterophyllum* appears to have learned the wisdom of the saying, "Hahnemann, go thou before."

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#### **Bulletin Exchanging An Excellent Idea**

It is particularly gratifying to see the rapid growth of the hobby throughout the country, and the many ways in which interest in the hobby has spread. One of the best ways in which a Society can reach out and hold its members, and at the same time attract new members, is through monthly bulletins. Some of these bulletins are highly instructive, very interesting in content and thoroughly informative in recording the news and views of their members. The extent of the spread of the Society bulletin idea is truly remarkable. Re-

cently, "The Tropical Breeze" of the San Diego Tropical Fish Society (P.O. Box 4156 North Park Station, San Diego 4, Calif.) mentioned that they are exchanging bulletins with more than twenty Aquarium Societies. Their librarian has catalogued the bulletins and in this form they are available to all members. This presents the membership with a very interesting source of condensed information relative to the activities of other societies. Also many informative notes are presented to help the members in their everyday problems. One of the facts that has become obvious through their bulletin exchange is that many other hobbyists and societies as groups, often experience the same problems in the pursuit of the hobby. Bulletin exchanging is exceedingly helpful to Society Program Directors, to Membership Chairmen, to Show Committees, in fact to all Society officials who are earnestly trying to make their Society an outstanding success. It is definitely a mark of real progress in our hobby.

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#### **New Austin (Texas) Aquarium Society**

Due to the increased interest in tropical fish in the Central Texas area, fanciers in Austin and the surrounding cities have organized a society through which they can broaden their knowledge and pleasure by working together and sharing experiences.

The Austin Aquarium Society was organized July 1, 1952, and will meet the first Tuesday of each month. Those interested in joining them are cordially invited to contact Mrs. H. L. Owen, Corresponding Secretary, 3706 Lamar Blvd., Austin, Texas.



# SEX DIFFERENCES IN THE *SCALARE*

by William T. Innes

• Many of the statements in this article were contained in Mr. Chambers' contribution in this issue, but with his gracious consent, I am using them here in conjunction with my own studies, thus avoiding duplication.

LET none expect too much of this article. No easy method of distinguishing sexes in *scalares* has ever been found, but there are many indications, some of which have stood up well under repeated tests, and in presenting this difficult subject, I am giving the reader not only my own observations, but all that I have ever heard described by others.

mates and the eggs hatch. I am not trying to be funny; only thinking of what happened to our old friend William L. Paullin years ago. He was the first man in America to breed *scalares*. Bill is known as one of the sharpest-eyed observers among aquarists. Having bred a pair and then spent months in studying sex differences, he selected another "pair" from his stock. They

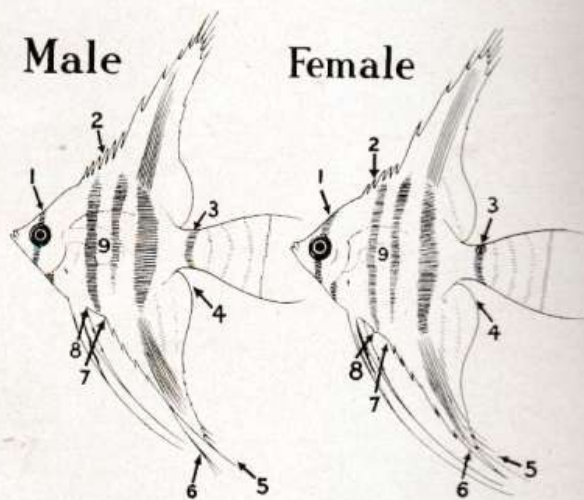


DIAGRAM OF SEX DIFFERENCES IN *Pterophyllum* SPECIES  
(See text for explanation)

It is doubtful whether any one can always distinguish sexes in this fascinating fish with certainty. There is only one sure way. This is when a pair

mated, had eggs twice and each time they were infertile. On the third spawning he saw *both* fish depositing the eggs!

That will give the reader an idea how similar are appearance and actions of male and female. A day before spawning both fish develop a short breeding tube which appears to come from the vent. From this tube the female deposits her eggs. The male follows immediately after her with very similar movements, but he is spraying the eggs with milt fluid, which, of course, means that he is fertilizing them. We may now observe a distinct sex difference. The tube of the male is more pointed, and is carried more vertically, or slightly forward. That of the female is more blunt and points somewhat backward. The illustration of our cover shows these tubes. For the benefit of the reader they were slightly exaggerated in length in the photo-engraving. Otherwise they would have been almost obscured by the "feelers," which are in a folded position during spawning. I leave it to the reader to judge the sexes in the picture by the tubes. The fish are not in position to judge all the other points. From the small number of eggs on the left it is apparent that they have not been at work very long.

Mr. Wm. Wright of the Hudson County Aquarium Society is credited with discovering a difference in the sexes by looking through the fish by transmitted light. The male is described as showing a "pear-shaped" transparent spot, while that of the female is "round." For some years I have intended checking up on this, and in the preparation of this article, have just done so. An inch circle was cut out of a black cardboard. This was placed in back of a narrow photographing aquarium containing the fish, and in back of that, a 400-watt nitrogen photographing bulb. By moving the cardboard to a point where the hole was opposite the middle of the fish, but screened from my eye by the fish, something could be seen, the room having

first been darkened. It was larger than expected, and not exactly pear-shaped, but more like the spot on the accompanying outline drawing of the male fish, indicated by the figure 9. Yes, this turned out to be a male. Other known males showed the same, while the females presented an oval opening, as shown in 9 on the female diagram. I thought the males not quite as translucent as the females. These observations were concurred in by several spectators, including the owner, Mr. Bausman, and his son.

This experiment could no doubt be still better carried out by using the light of a small projecting machine. No cardboard would be necessary if the pencil of light were reduced to a point a little smaller than the body of the fish. It is quite possible that the "candling" of *scalares* will come into general practice, but we do not know at what age these differences show, nor whether they show out of breeding season. With most fishes the internal anatomical differences out of breeding season are microscopic. But on the whole this method is well thought of by those who have been able to put it into practice.

The space between the ventral fins (feelers) and the beginning of the anal is a most important region. Six of the observed differences are concentrated in that small space. The most commonly used is the distance between the feelers and the fin. This is longer in the female. The distance between figures 7 and 8 on the male diagram indicates this span.

In referring to this difference on the two figures, I wish to make it very plain that the differences in the drawings are in all cases exaggerated, and it will take a lot of careful looking to actually observe them in life. The only points in the drawings which are not exaggerated are the difference in the shape of the

body spot viewed by transmitted light, and also the lip protrusion.

The line between "feelers" and anal fin on the female is not only longer, but it is also straighter, and where the anal fin (the long, deep lower fin) leaves the body, it is at a slightly sharper angle in the male than in the female. This is at point 7.

The vent of the female is just a mere trifle more prominent than that of the male. We have figured the vent in the female diagram only.

Some observers claim that the excrement from the male leaves the body at a forward angle, and from the female at a backward angle. This has not been fully confirmed, and if other observers find anything of value in this manifestation, we would be pleased to hear about it. In fact, we would be very glad to have the comments of anyone who has had actual experience in observing known pairs.

Various claims have been made as to the spurs on the end of the anal fin. These theories are of very doubtful value and have been disproven in a number of instances. Perhaps this is partly because the extended spines are easily injured or broken off and therefore observations would be without value. However, we present them for what they may be worth. At point 6 the spur branches off into a Y shape. This is supposed to indicate the male. At point 5 the second extended spine is considerably longer in the female, while on the male, the first spine is the longer. Now we come to point 4, the upper part of the anal fin, in which the female shows a greater breadth just before reaching the tail.

Point 3 indicates a rounded development somewhat like a dot at the top of the band across the base of the tail. Here again let me warn the reader not

to expect too much. The dot is quite indefinite.

On the male fish the spines at point 2 are claimed to be deeper and more jagged in the male than in the female. Point 1 is intended to show a slightly straighter black line through the eye in the male than in the female.

A well-known method of judging these fishes is by leaving them without food for a day or two and then looking down upon them from the top. The female is the broader, but it is doubtful whether this test would be of value unless the fish is ripe with spawn.

It is a general observation that the bodies of males are more completely rounded than those of females (from side view).

Still another point is the relation of the upper and lower jaws to each other. In the male the lower jaw extends out slightly more (which is definitely the case in the male *Danio malabaricus*), whereas in the female they appear to be about even, or possibly the upper will be protruding very slightly. While this difference has not had the benefit of any long or extended observation, it seems to be one of the few which holds any hope of telling the sexes in comparatively young specimens. I have observed the difference in a large number of young with bodies about as big as a quarter-dollar, but, unfortunately, have not as yet had time to follow through these cases and ascertain whether the sexes develop accordingly. The difference as shown in many adults appears in the two drawings.

What we would like is a sure-fire method of telling sexes when the fish are young, when we usually purchase them. I do not believe that any such method has been discovered. If so, let the pioneer step forth and receive the plaudits of the fish fancy.

# LEARNING TO BREED THE *SCALARE*

by Wm. E. Chambers

(As told to A. S. Moody)

TO start with, let it be understood that this author is neither an old experienced fish breeder nor a scientific authority on the *scalare*. He is merely a novice who set out very earnestly not so long ago to breed this gorgeous and popular species, and who, at this writing, is just emerging from that discouraging initial period during which one learns mostly what not to do. He humbly offers this report of his experiences and observations to other novices for what it may be worth.

One of the first things I found out about the *scalare* was that the prospective breeder must start with a mated pair. It seems that this fish is temperamental, like people, and that placing two strange individuals together in a tank is no more likely to result favorably than placing two strange human beings together and expecting them suddenly to fall in love and marry. Before understanding this point, I wasted a lot of time and energy getting information on how to distinguish the sexes so that I might pick out good specimens and mate my own pairs. My belief, after interviewing many successful breeders, is that there are only two sure ways of getting a pair that will spawn. The first is to buy or otherwise acquire a known or guaranteed pair; the second is to secure a lot of young fish, allow them to grow up together, and pick out the first or best pair that results from the courting which will

take place at maturity. A pair is easily spotted by its definite withdrawal from the crowd.

Each method has its advantages and disadvantages. The first is quick and certain, but is likely to necessitate a greater cash outlay at the start and, of course, is not always possible, although some of the larger fish dealers who ship all over the country are now offering mated pairs, guaranteed, at relatively moderate prices. The second requires several months of waiting and involves the possibility of disappointment due to mishap or inexperienced handling of the growing youngsters. If I were starting again, I should set out to find a pair of good fish whose capabilities as parents had been demonstrated by at least one successful spawning. If such a pair were not obtainable, or the price was beyond my means, I should purchase at least a dozen youngsters, place them in the largest, healthiest tank I could get, nurture them carefully and await results. Or if some of my friends were interested, I should get together with them and purchase a hundred youngsters, preferably in two lots from two different sources (to avoid too close inbreeding). Out of such a number, properly grown, it should be possible to select at least a dozen pairs of really fine specimens. As with other fish, not all *scalares* turn out to be good breeders, and success is not entirely assured until one has a pair which has actually

• Amateur breeders will find a lot of solid meat in this article. Among other things, it covers the much discussed question of acidity or alkalinity of water.

produced a good size spawning of fertile eggs. With several pairs to choose from, or fall back on, the likelihood of disappointment due to poor spawners is practically obviated.

My observation of successful hatcheries, and conversations with their proprietors, indicate that the breeding tank, which should be selected, placed and planted some days before the fish are introduced, may be any size from ten gallons to fifty. My own tank holds thirty gallons, but I have seen a number of pairs living and breeding success-

fully and contentedly in the ten-gallon size. Location seems to be of considerable importance. The tank should have some sun, or strong diffused light, but a dark or shaded position into which the fish may retreat at any time is also necessary or at least advantageous. Following the advice of the breeder from whom I bought my fish, I placed my own breeding tank close to, but not directly in front, of a south window. This position appears to be entirely agreeable to both fish and plants.



PARENTAL SOLICITUDE

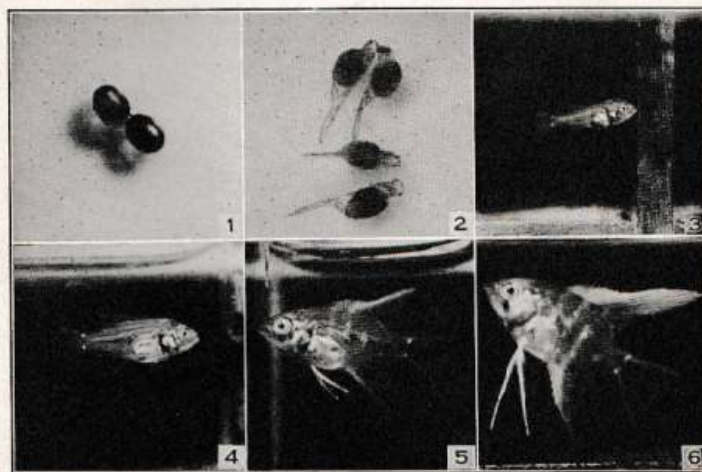
THIS picture, which was obtained only after several hours of patient waiting, shows a pair of *Pterophyllum eimekei* caring for a fine lot of day-old young. Both parents have been picking up bunches of fry, rolling them about in their mouths and spraying them back on the leaves. If one fails to stick, it is gathered up in an instant and gently blown again into the nursery. The peculiar expression about the closed mouth of the upper fish is due to carefully holding a mouthful of babies, about to be released.

At this stage the tails of the young fish are in constant and rapid vibration, so that a group of them, as shown here, appears to be a quivering mass. Individually the young look like Fig. 2 on the opposite page. This picture was made at the hatchery of Emil Link.

The tank may be planted lightly or heavily with *Sagittaria sinensis* (giant), *Vallisneria spiralis* and *Cryptocoryne*. I have observed many arrangements of the above and all are evidently quite satisfactory so long as an open space is left around the leaf or leaves on which the fish are expected to spawn.

My knowledge of temperature requirements is limited to the observation that, other conditions being satisfactory, my fish spawn continuously and regularly at 77 to 80 degrees Fahrenheit.

Having provided the proper space, light, plant and temperature conditions, the hopeful breeder will be called upon to exercise his discretion in only two other matters during the preparatory period. These are feeding and seeing that the purity and correct pH value of the aquarium water are maintained. As regards feeding, I am in no position to give advice. My own fish came to me with a well developed appetite for dry oatmeal flakes and live *Daphnia*. They consume large quantities of the former



EARLY STAGES OF *Pterophyllum cimcki*

FIGURE 1 shows newly-laid eggs. On account of their yellowish color they photograph much darker than they really appear in life. Figure 2 is the alevin, three days old, partially developed fishes with yolk-sac still full, which furnishes nourishment for further development and for giving needed energy in constant vibration of the tail. At this point they are in the adhesive stage, and will usually "stay put" where placed. The sticky substance comes from the top of the head. Figure 3, incredible as it may seem, is the 12-day baby of what is to become a royal fish. It is now in the free-swimming stage, and has just started to develop fins. Figures 4, 5 and 6 represent ages twenty, twenty-eight and thirty-five days. The rapid development of the characteristic fins and "feelers" is interesting, as well as the widening of the body. The dark lines on the body of the adult are up to this age represented by light bars on the young. Two white spots at the base of the tail fin, as well as the light upper and lower edges of the fin itself will soon disappear.

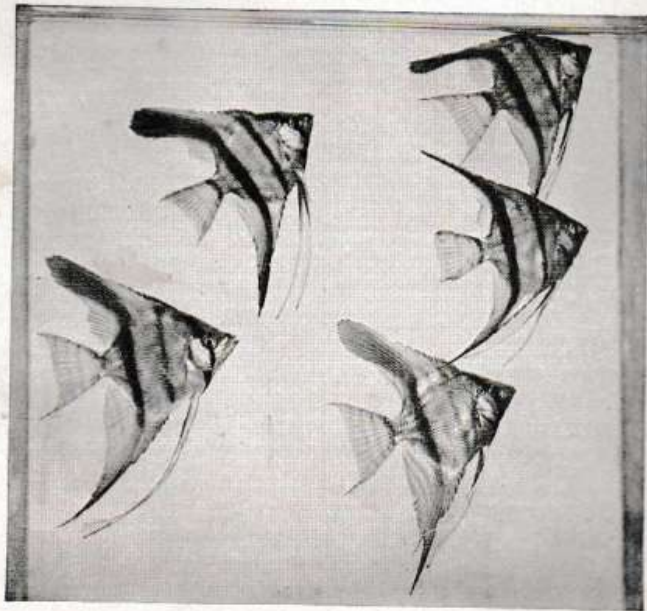
Figures 1 and 2 were taken by Berry-Homer and are magnified six diameters. Figures 3, 4, 5 and 6 were photographed by Wm. T. Innes, and are magnified two diameters. Living specimens were supplied by courtesy of Wm. E. Chambers.

(fed a few at a time to avoid clouding the water), and relish one feeding a day of the latter, which keeps them apparently in perfect condition. I have observed *scalares* in other hatcheries, however, that would not touch oatmeal, and for such as these, advice must come from more experienced sources.

The question of pH value (acidity or alkalinity) of the water is a matter to which circumstances forced me to give intensive study. It was practically the only point on which I was unable to obtain authoritative opinion or competent advice when I started out. And when, after losing a prize spawning of over one thousand eggs by actual count and discovering on carefully checking back to locate the reason that this was

the one factor which might have been awry, I determined to learn something about it. A series of costly but enlightening experiments followed, the results of which, I am convinced, explain many of the previous failures with this and other so-called difficult species and make it plainly evident that the factor of water acidity or alkalinity cannot be ignored, particularly in localities where the natural waters or the city water supply are strongly acid or alkaline.

The following brief account of my investigation and experiments is submitted as evidence to support my conclusions on this point. First, equipping myself with a standard pH test set, I visited every known breeder of *scalares* within calling distance. Wherever the



EIMEKEI PRINCELINGS

At three months they show all the marks of royalty  
Fishes owned by Fred. G. Schaefer

breeder would consent (and most of them were more than willing to help unearth the facts), all breeding and rearing tanks were tested. The final record of several hundred of these tests showed the following indisputable facts:

(a) The water in which *scalares* were kept varied not less than 1.6 points, or from pH 6.0 (acid) to pH 7.6 (alkaline). My testing kit, with Bromthymol blue indicator and color standards, would not reach above or below these points, so that the actual variation may have been even greater.

(b) *Scalares* were not spawning in water below pH 6.6 or above pH 7.4. I do not presume to say they will not spawn outside this range; I can only state that no spawning was found beyond these limits.

(c) The most prolific spawning, the most successful hatches, and the most vigorous fry were, without exception, in tanks whose pH readings lay inside the relatively narrow range of 6.6 and 7.2.

With this evidence in hand I resolved to determine by a series of tests with my own fish and spawn whether or not there was an exact pH condition at which best results could be expected, and if so, whether it was possible or practical to attempt to establish and maintain such a condition through the addition to the aquarium water of mild acid or alkaline substances. By consulting all available references to the subject in files of scientific publications and conferring with many experienced aquarists, both scientific and practical, I learned that acid sodium phosphate and sodium bicarbonate were frequently used for this purpose, and that both were harmless to aquatic life in solutions of such strength as would ordinarily be required.

Six small vessels were then set up and to seasoned tap-water, which was approximately neutral, small quantities

of these chemicals were added to produce exact readings of pH 6.4, 6.6, 6.8, 7.0 (neutral), 7.2 and 7.4. Each vessel was labelled, and all were kept at a constant temperature of approximately 80 degrees Fahrenheit. An equal number of newly spawned eggs was placed in each, and a daily record of the results in each vessel was started.

The experiment was carried on until certain facts were evident. At its conclusion another was started with a fresh lot of eggs and fresh water. To eliminate all possibility of error this was repeated a number of times, and I was able, finally, to draw the following conclusions:

(a) Below pH 6.6 and above pH 6.8 a high mortality of eggs and fry can be expected. The farther beyond these limits, the higher the mortality.

(b) Slightly acid water is preferable to slightly alkaline water. At pH 7.4 the eggs hatched, but no fry survived longer than four days.

(c) At pH 6.7 or 6.8 the mortality of eggs and fry is negligible. The fry under test at these readings showed abundant vitality and great activity, feeding voraciously.

Since carrying out these experiments, the water in spawning tanks as well as hatching and rearing vessels has been carefully maintained at pH 6.7. Results so far as the production and hatching of eggs is concerned have been practically perfect, although in the absence of an adequate and regular supply of Infusoria and Rotifera—the natural foods of the young fish—losses have occurred and, unfortunately, are still occurring due to starvation during the first two weeks. I have not yet learned how to keep 100 per cent of the babies alive on artificial food.

I have covered the matter of pH control in some detail because I cannot find



that it has ever been covered before (at least in any of the aquarium publications), and also because it is unquestionably a vital factor. No doubt the complete failure of attempts to spawn *scalares* reported from certain sections of the country is due to the excessive acidity or alkalinity (that is, excessive from the aquarium standpoint) of the native or city waters. It would be interesting to know the results of correcting the water in some of these sections.

To get on with our story, I believe I am safe in saying that any intelligent fish hobbyist who has a mated pair of *scalares* in a suitable sized tank, located and planted as described, with water at the correct temperature and pH value, will, if his fish are eating normally, get a spawning of eggs. As I am informed that the actual spawning, and the preliminary requirements therefor are fully described elsewhere in this issue of THE AQUARIUM, I shall omit this part of the story, except to say that the process is extremely interesting to watch.

Within twenty-four hours after the eggs are in place, the breeder must decide whether to play safe and remove eggs or parents, or risk losing the spawn in order to watch the subsequent stages of the reproductive process. If one's object is to raise *scalares* for the market, then the eggs had best be removed, not only to guard against cannibalism, but to hasten the next spawning. If one is more interested in seeing how wonderfully nature works in these matters, however, the eggs should be kept with the parents.

If the eggs are removed, it is necessary to transfer them quickly and carefully to a vessel of clear water of the same temperature and pH value as that of the spawning tank. Be sure this water contains no dirt, algae or small organisms which might foul the water

or attack the eggs. Also be sure the water contains plenty of oxygen; *i. e.*, do not take it from a crowded aquarium. In about forty-eight hours at 80 degrees the eggs will hatch, but it will be five days more before the young are sufficiently developed to swim. Meanwhile they cling together in a cluster wherever they happen to be attached and wiggle briskly and continuously.

The young require feeding as soon as they become free swimming. Any delay in providing nourishment will weaken them to a marked extent, and from my own experience I do not believe a set-back at this time—or any time, for that matter—is ever fully overcome. This first breeding, therefore, is most important. As yet I have discovered no satisfactory substitute for the natural live foods—minute organisms such as protozoans and rotifers. *Paramoecium*, produced by Infusoria powder or decaying vegetable matter such as lettuce leaves, pieces of cantaloupe rind, hay, dried water plants, etc., will carry the babies through to the *Daphnia* stage, at which stage, in the absence of strained *Daphnia*, they will eat small particles of chicken liver, oyster, crushed *Enchytrae*, or other soft foods.

Live food, if introduced by a net or filter paper, without any of the polluted water in which it usually occurs, may be given in doses sufficient to last for several hours. Artificial food, or live food in water, must be administered in small doses at frequent intervals to avoid fouling the nursery and to insure the adequate nourishment of the fry.

Beyond this point I cannot advise or even suggest, I am still experimenting with many problems, but hope before I am through to have mastered the secrets of producing first quality specimens of *Pterophyllum scalare* (or is it *eimekei*?) practically to order.

## Summary of Breeding Requirements for *Pterophyllum* Species

**T**ANK size required—10 to 50 gallons. Planting—Giant *Sagittaria*, *Cryptocoryne*, *Vallisneria*.

**Location**—In a quiet room near sunny window—one end of tank shaded or screened by plants. Surface plants like water fern desirable.

**Temperature**—77 to 80 degrees Fahrenheit.

**Water**—Must be clear and untainted, and within the pH limits of 6.6 and 7.2. (Just slightly on the acid side is best.)

**Selecting breeding stock**—From a group of adult *scalares*, select two good specimens which appear to have paired off and separated from the others, or buy a guaranteed mated pair. Do not waste time trying to pick out individual males or females.

**Conditioning breeding stock**—Feed all they will eat (in frequent small doses) of Bloodworms, or mosquito larvae; *Daphnia*; canned shrimp, salmon, or tuna, chicken liver, scraped beef, oatmeal (boiled or dry flakes); or any prepared food they will take, with some live food, if possible.

**Other fish**—Leave in tank or take them out as convenient, but babies cannot be reared with other fishes present.

**Preparations for spawning:** *Scalares* will spawn on *Sagittaria*, or *Cryptocoryne* leaf or any upright tubular surface. If glass tubes are used, paint them green or brown inside or place them over an opaque rod or tube of metal or wood. Clear glass

is disliked. When female fills up with roe and ovipositor extrudes slightly, the fish will begin to inspect spawning sites. A sudden increase in the supply of oxygen at this stage will increase the activity of the pair and probably hasten spawning. The laying of the eggs will be preceded by the careful cleaning of the surface on which they are to be deposited, and when this cleaning starts, the eggs may be expected within a few hours.

**Care of eggs and young**—If eggs are left where spawned, parents will do the rest. In captivity, unfortunately "the rest" frequently consists of devouring eggs or young. To avoid this, remove egg support to a previously prepared shallow basin of clear water (aquarium water, strained through filter paper and allowed to stand near the spawning tank is best). Be careful not to touch eggs. Carefully remove with forceps all those that turn white. Hatching will take place in about 48 hours.

Start feeding Infusoria or Rotifera immediately the free-swimming stage is reached, and continue every two or three hours for the first ten days. After that, strained *Daphnia*. If no natural Rotifera or Infusoria are available, make an infusion of hay, lettuce or other vegetable matter and feed resulting paramecium in small doses, being careful not to foul water in which fish are swimming. At end of two weeks, babies placed in larger quarters will grow better.

A. S. M.

# REVISED OBSERVATIONS ON ANGEL FISH

by *William T. Innes*

OUR ISSUE of September, 1932, was devoted almost exclusively to the history, care and breeding of the popular Angel Fish, often known as the "Scalare." Anticipating that this very thorough number would be in demand for years to come, we printed several thousand extra copies. For a time it looked as though they were going to last forever, but finally all things come to an end, and about a year ago the supply became exhausted, and we have been buying them in at premium prices for those collectors who insist upon having a complete file.

The issue proved so helpful that it is now clear that most of it should be re-printed, and that is just what is being done here.

In re-reading the articles I find that some of them need bringing up to date. Instead of changing what others wrote, I am simply making a few comments here. They concern principally the thorough and very good article by William E. Chambers, whose biologist wife was responsible for bringing the subject of pH (acid-alkaline waters) to the attention of aquarists. This article, I fear, has been responsible for giving the widespread impression that acid water is a *must* for breeding Angel Fishes. Such is not the case. In Louisiana and Florida where the waters average 7.2 to 7.4 (alkaline) enormous quantities of these fishes are reared commercially. Great success is had with them here in Philadelphia, where the tap water is from 7.0 (neutral) to 7.2.

Acid water is supposed to prevent fungus, yet in Camden, N. J., where the water is acid, fungus occurs freely. Aquarists raising Angel Fish there take the eggs away from the parents and hatch them in water lightly impregnated with methylene blue in order to combat fungus.

Chambers in one paragraph *does* say that the most vigorous youngsters occur within the pH range from 6.6 to 7.2, but later he says that high mortality among youngsters can be expected above 6.8. Evidently this last figure (like most errors) took the deeper hold. It is quite possible that his proposed ideal range of 6.7 to 6.8 is sound, but experience points out that aquarists unable to produce and maintain that standard need not be discouraged.

It is remarkable, anyhow, what extremely different results attend efforts at breeding this distinguished fish. Some just can't fail, rolling along endlessly from spawning to spawning, while others are so happy if anything hatches, and overjoyed if half-a-dozen are brought to the body size of a dime, for from then on they are as good as reared. The odd part of it is that the successful breeders do not appear to be conscious of any special secret, other than suitable water and a supply of live food for both the parents and the young. One breeder here in only a medium-sized plant has at present a contract to supply 1000 small Angel Fish per week.

Now I would like to touch on an important point in reference to first food

for the babies. In 1932 when these old articles were first printed, both Chambers and Moody (A.S.M.) fell into the error of prescribing "infusoria" as the first food, meaning mainly *paramecium* and other organisms cultured by milk, hay infusion, rotting lettuce, etc. We now know that after becoming free-swimming they can take larger and better foods, such as newly-hatched Brine Shrimp or live *Daphnia* sifted under water through a fine tea-strainer. Perhaps the best starting food of all, and the most used, is called "Pond Infusoria," which is not correctly infusoria at all. It is the rotifer *Brachionus rubens*, which can be collected in a fine-mesh net through most of the *Daphnia* season. These little creatures, while not parasitic on *Daphnia*, do often attach themselves on them for a free ride. They eat microscopic algae and infusoria. Sometimes they crowd the surface, presenting the appearance of a rusty film on the water. In sifting small *Daphnia* from larger ones, the rotifers often pass through the screen in quantities, thus giving the babies two splendid foods at the same time. Most professional collectors of *Daphnia* have "Pond Infusoria" for sale from Spring to Fall. As to Brine Shrimp, eggs for hatching them may be brought from some dealers, or from the original collectors, the San Francisco Aquarium Society. Directions for hatching them come with the eggs. Good eggs may be kept dry for years, and still hatch.

Occasionally the parents will bring a spawning through perfectly. It is a most gratifying sight, but in practically all cases the professionals choose to remove the eggs, attached to their support, and hatch them separately in a tank where aeration induces a movement

of the water comparable to the fanning by their parents. The egg supports recommended in the earlier writings were broad-leaved plants, such as *Cryptocoryn* and Giant *Sagittaria*. Slabs of slate, stood at an angle a little off vertical, are now in general use. They are about the size of a 1-foot ruler about two inches wide. Sometimes they are set in a small base of Portland cement. These egg-supports are convenient for removal to separate hatching tanks.

A point of minor importance which continues to puzzle us is why it is that the vertical bars on the sides of the fish vary in intensity, sometimes being a brilliant black, and again rather pale. This variation does not seem to indicate anything about health, and cannot be attributed to the water, since fishes with both dark and pale bars are often found in the same aquarium at the same time. In the present reprints we are omitting the very excellent scientific article by Dr. George S. Myers, which is devoted mainly to the history of these fishes, and a discussion of three different species supposed to have been imported here, and recognized by science. Their identification is doubtful. What we are sure of is that the first importations (no doubt *Pterophyllum scalare*) were quite large, and they did not breed. Later a smaller species appeared (*Pterophyllum eimekei*), which reproduces well. It is apt to have "fly-specks" spots on the sides and very red irises, but these characteristics are variable. What we now have everywhere is almost certainly *P. eimekei*, or possibly hybrids from it.

Dr. Myers' prediction in 1932 that the Angel Fish would not be supplanted in popularity has certainly proven him to be a prophet with honor, even in his own country.

TENDING A BIG SPAWN  
This remarkable photograph of a pair of *Pterophyllum eindeckei* faithfully fanning their eggs (on 2  
Sagittaria leaves) was taken by Bradford F. Adams, Salem, Mass.



## SPAWNING SCALARES IN COMMUNITY TANK

by *Lyman W. Close*

WHEN a pair of fish of a species that doesn't spawn readily insists on spawning in spite of serious difficulties, I usually conclude that the youngsters that will hatch from such a spawning are destined to be exceptionally strong and vigorous individuals, and my experience has amply borne this out.

As a case in point, this spring a pair of *Pterophyllum scalare* in a group of eight decided to spawn in a 50-gallon community tank containing about seventy-five fish of some twenty-odd species.

They picked out a *Sagittaria* leaf in about the center of the tank and their preparatory cleaning operations apparently gave notice to all the other inhabitants what their intentions were, because they certainly had their "fins full" defending their position and carrying out their project.

Because their time was so badly used up chasing other fish away, many times only after the marauders had succeeded in devouring some of the eggs, and because I decided that if any of the spawn was to be saved at all it had better be done as soon as possible and not wait for them to finish, I clipped the leaf and put it in a ten gallon tank, weighting the bottom down with a bit of lead wire, and placed an aerator release in such a way that a fine mist of bubbles would play along the eggs as it rose to the surface.

This tank was adjacent to an active hot water radiator so the temperature was kept up to about 88 degrees. The water was about a month old. A few fish had been in it now and then, but

the tank was wholly devoid of either sand or plants.

As I supposed they would, many of the eggs soon fungused, due most certainly to lack of fertilization, because the male was more active driving other fish away than he was in fertilizing the eggs. I took no particular care in removing the fungused eggs but merely knocked them off with the point of a sharpened stick. Many that were still clear were knocked off too, and fell to the bottom.

It soon became apparent that the good eggs were going to be few and far between, so I paid no further attention to them until one evening I noticed that several eggs had hatched. I counted twenty-five, many of which were adhering closely to fungused matter, and I expected it would only be a short while before they also became infected. Others were on the bottom far from the stream of air.

Two days passed and the babies were still active and apparently immune from infection by the fungus, so when they started to dart around I removed the leaf and cleaned out the fungused matter and decided, as an experiment, I would try to raise these presumably extra-strong babies on a dry food diet.

I started feeding them pulverized dried milk and egg yolk, and they began to grow. At this time I counted seventeen baby fish. I continued to feed them dry food, stepping up the degree of coarseness as they were able to handle it and at two months old they had grown so well and gave such promise of being exceptionally fine fish,

that I weakened on my original intention of raising them on dry food and they got their first small *Daphnia* followed by *Tubifex*.

At the time this is written they are only ten weeks old and several of them are nearly four inches overall of the fins, and they are all seventeen of them some of the most perfectly shaped scalares I've ever seen, and of beautiful color and markings.

It may be of general interest to state in this connection that I have fully disproven, to my own satisfaction at least, in many cases of spawning scalares, that there is any such thing as a mated pair. I mean that any female in spawning condition will spawn with any male of nearly the same size in good condition. Also I have observed that if given a choice, the same fish do not spawn with each other consecutively. So I don't put much stock in the idea of a mated pair. Incidentally, it is much less expensive to pick a male and female out of a group when buying a pair of them than to buy a pair that have spawned.

To make sure that you are getting a pair, you have only to look down on them from the top and get a good top view of the heads. The female is full and chunky across the head and the lines from the eyes to the mouth are somewhat convex. In the male the eyes are usually a trifle more telescopic and the lines from the eyes to the mouth are straight or in most cases definitely concave. The lips in the male are much more pronounced in this view. I don't know that this identification has any scientific foundation but I do know it's infallible, if the fish are of breeding size. I've never been able to concur in any of the many other ways that have been suggested to tell the males from the females in this species, but I've never missed on this way.

### "Popeye" in *Pterophyllum*

by FREDERICK H. STOYE

The great popularity of *Pterophyllum* is in no small measure due to its ability to live under all kinds of conditions, and its comparative freedom from diseases. While the majority of popular aquarium fishes are more or less subject to various common ailments, Scalares are rarely troubled by them.

However, an eye disease caused by larvae of certain parasitic flatworms of the class Trematoda, occurs not infrequently in *Pterophyllum*. It manifests itself by clouding of the cornea, bulging of the eye and almost invariably causes the death of the afflicted fish. Certain species of snails collected in ponds or streams seem to be responsible for the introduction of the parasites.

Dr. Wilhelm Schaperclaus in his booklet "Fischkrankheiten" writes on this disease as follows:

*Worm Cataract:* Blindness in fishes by clouding of the cornea is, in the majority of aquarium fishes, caused by invasion of the eye chamber or lens with larvae of *Hemistomum spaetbacerim* (Rudolphi). Before its relationship with the worm was recognized, it (the worm) was designated as *Diplostomum volvens* (von Nordmann). As a typical inner-parasite it belongs to the Digenea.

The fish, in this case, is second intermediate host. The main host is an aquatic, fish eating bird (sea gull, etc.). First intermediate host is an aquatic snail, particularly some species of *Limnaea* (and in North America also certain species of *Physa*; Ed.); in these the "Wander-larvæ," fork tailed *Cercariae*, are formed. They are only able to live (free) in water for about one day and die if they do not find a fish during this period. Once attached, they penetrate,

enter the bloodstream and wander to the eye. Their introduction is therefore only possible through snails from open waters.

*Pterophyllum scalare* became infected in this manner. The entrance of cercariae into a fish not only causes blindness; in small fishes measuring less than two inches, a mass infection may cause death within 15 to 20 minutes.

The worm-cataract is incurable; prevention of infection is the only hope.

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### Can *Scalares* Be Over-spawned?

The answer is yes, they can. It is true of other fishes, too. Some species are apt to be prolific spawners. In others it is only individuals that play themselves out with over-production. *Scalares* are in the latter class. Some females seldom or never spawn. Others will overwork themselves for about 2 years and then never spawn again.

It isn't always convenient (nor profitable) to be having too frequent showers of fry. What can be done about it? The spree of spawning can usually be ended by placing the fishes in a cooler temperature and separating them.

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### Why "*Scalare*"?

We always use the word with a mental apology to the critical reader. The true *Pterophyllum scalare* was the first *Pterophyllum* species to be imported. It was rarely bred, and is now practically extinct as an aquarium fish. Its place has been taken by *P. eimeckeii*, but the trade name of "*Scalare*" still sticks. The *Eimechei* is a little smaller, has red eyes (usually) and is apt to have "fly-speck spots" on the sides.

### A Perfect Frozen Fishfood

Although most of the prepared dried fishfoods are excellent, many aquarists search for fresh foods with which to alternate it. White Worms, living or frozen *Daphnia*, Tubifex Worms and Mosquito Larvae have been among the mainstays for that purpose.

A few years ago Mr. C. C. Sanders of Ogden, Utah, sent us a jar of living small shrimp taken from the Great Salt Lake. They were in their natural water. The animals were the size of adult Brine Shrimp from the Pacific Ocean at the shores of California, and were of a reddish hue, such as we like to see in our *Daphnia*. Length about 1/4-inch. Fishes in sizes from Platies up gobbled them with enthusiasm. They were just a little big for Guppies to manage. To get more of this choice food became a strong desire since learning of the unlimited supply in Utah. In our issue of October, 1951, Mr. Sanders gives a most intriguing account of the ease with which solid gallons of them can be quickly collected. Pure shrimp without any foreign matter nor fish enemies.

Since then he has been developing a set-up for freezing the shrimp in bulk and distributing them commercially. He has appointed a few state-wide agencies (see another page). Shipment of the frozen food to these centers is now an established fact. As we see it, the next step in a wide distribution of this food is in getting enough retailers equipped with necessary deep freezer facilities so as to carry a stock for all customers. The frozen product is put up in small paper cups. They may either be shaved so as to suit small fishes or broken into chunks and melted whole in the aquarium. Our observation is that the few thawed whole shrimp that are not eaten at once are soon picked to pieces by fishes the size of baby Guppies, so that soon none is left. However, one should



always be careful not to feed to excess with any frozen food, as it decomposes rapidly.

Snails dispose of a certain amount of surplus.

It seems to us, that when the distribution problem is completely licked, Mr. Sanders has made one of the major contributions to the advancement of the aquarium hobby.

From observations as to the growth of baby fishes fed on young Brine Shrimp, we reason that these adults should be ideal food for all aquarium fishes, except possibly the few that will take nothing but live fishes.

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### *A Major Step in the Advance of Our Hobby*

For the first time, to our knowledge, a municipally sponsored Aquarium Society has been organized. The potentials of this very progressive step are tremendous. If such a movement could be brought about in other cities having similar Recreational Departments, the beneficial effects upon our hobby could be limited only by the imagination. The Officials of the City of New Orleans Recreation Department are indeed to be congratulated, and it is with a good deal of pleasure that we have to announce the formation of their new group—The "NORD" (New Orleans Recreational Department) Aquarium Society, sponsored by the City of New Orleans, La. The first meeting of this group ranging from 9 to 15 years of age, was highly interesting and most successful. They are growing rapidly and in turn would welcome visits from all other Juniors throughout the area. Contacts may be made by writing to J. P. Lyons Youth Center, 624 Louisiana Ave., New Orleans, La.

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### *"Angel Notes" of June, 1952*

#### *A good issue*

Among the reviews we have been giving the monthly publications of Aquarium Societies, we have noted many excellent issues involving devoted labor, as well as excellent taste.

"Angel Notes," from the Alamo Aquarium Society has already been praised, but their June '52 issue compels us to pen this supplement, particularly regarding their artistic illustration in color.

The cover of their 17-sheet issue (#5) contains a showy picture of a mature *Symphysodon discus*, set in a leafy framing of aquarium plants.

Further on, as a heading for the President's Letter they have a most creditable representation of Neon Tetras, done by offset in 3 colors.

These touches give a real professional effect to their well edited bulletin.

The editor is Mrs. B. W. Bradley, 12 Blanco Rd., San Antonio, Tex.

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### *New Society*

#### *A First for South India*

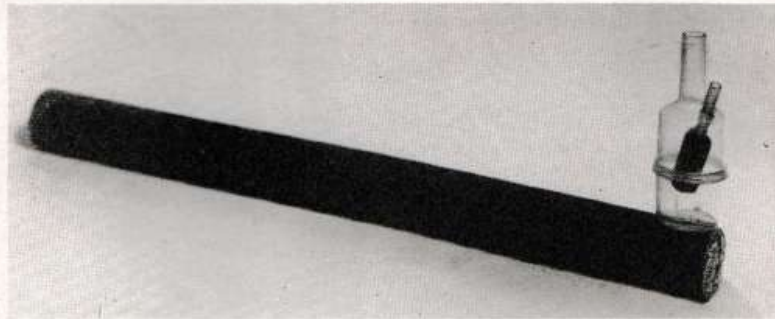
Starting out early this year, and now in full swing—"The Madras Aquarists' Society" of "Jothi," No. 2, Prakasa Mudali Street, T'Nagar, Madras-17 (India), has developed widespread interest with their excellent programs and monthly bulletins.

T. S. Narayanaswami, B.A., B.L., who is Vice President of the organization informs us that the Society is the first of its kind in South India. Thus another enthusiastic group in our World Wide Hobby is formed, making a fine contact for fanciers wishing to gather news and views from far off lands in which many of our finest aquarium fishes have originated.

THE AQUARIUM

## AQUARIUM GADGETS

*Eighty-seventh of a Series  
(An "Invisible" Aquarium Filter-Aerator)*



This newly designed filter which is the result of 16 years of experimental research, has been introduced from France by its inventor-manufacturer, Alfred Vansteenkiste. It seems to have several good points, among them is that the filtration chamber is entirely concealed under the sand. Another is that we are informed it has stood up under constant usage in breakdown tests lasting three years without removing or cleaning, and that the test is still in operation on the same units. There is no need for charcoal or glass wool charges in this type of filter. It permits

more inside and outside space for other purposes due to its being completely submerged except for the intake and outlet. There is no possibility of eggs or newly hatched fry getting picked up. It functions on a wide range of air pressures, from exceeding low to the highest obtainable from the average pump. The porous filter tubes or chambers are made up in lengths from 5 to 14 inches in length, giving filtration areas of 17 to 45 square inches of filtering surface. At present "Invisibles" are obtainable from most of the larger dealers in the East.

## CORRESPONDENCE



... Please ...

A stamped, self-addressed envelope should accompany every letter, as each one is answered personally, regardless of whether it is selected to appear here. To those who fail in this courtesy, replies will be sent postage collect.



*From: Earl J. Budwash, Brooklyn, N. Y.*

What can safely be used to waterproof a wooden tank and avoid long seasoning? Are asphaltum paints and enamels or parafin safe? Have a great deal of trouble with algae. Is there a harmless chemical to clear green water?

ANSWER:

*Using wood or concrete for tanks without seasoning is always dangerous—but, it has been done by coating them with a high grade asphaltum paint, or an equally high grade aluminum paint.*

*The danger is in the fact that after a full season's use, some of the paint peels off, exposing the bare wood, which in turn lets the natural wood acids into the water.*

*A tank that has been filled and emptied at least six times over a period of thirty days is usable, but with caution. Fishes must be removed immediately if they show signs of discomfort.*

*There are no known "harmless" chemicals that will clear Green Water.*

\* \* \*

*From: Mrs. D. S. Barry, Henrietta, N. C.*

I am at my wit's end. I have just begun to collect tropical fish, so I know very little about it. I have a pair of what I think are called Yellow Fantails. One of them seems to be doing rather oddly, so I began to watch it. It wouldn't stay down in the water for any length of time and it seems to flutter backward a good deal. All this time

the dorsal fin was held upright but the caudal fin seemed a bit folded. I put it in a salt water bath for about two days. It seemed fine so I put it back in the community tank. It became ill at once. Should I leave it in the salt bath or what should I do? What is the trouble? I also have two snails that are acting funny. They stay closed and float most of the time. When they do come out, they open only partly or hook on to the glass but never move. What is the trouble and what should I do.

ANSWER:

*If what you call "yellow fantails" are what we think they are . . . they are not tropical fishes, but Goldfishes.*

*Goldfish should not be kept in with the tropicals. They do not get along too well. They like water about 68 to 72 degrees—whereas the tropicals like it from 72 to 80.*

*The fish that would not stay down, probably had swimming bladder trouble. Put it in a salt bath (2 to 3 teaspoons to a gallon of water) for a couple of days. Do not feed it while in the bath.*

*Goldfish should also have plenty of swimming space. A pair of them about 2 inches long should have about 10 gallons all to themselves.*

*The snails would stay closed if there was more than two teaspoons of salt in the water. Evidently there is something in the water that they do not like. Perhaps chemicals to purify it . . . or the water is too fresh and has too much chlorine in it.*