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Dear Reader,

Congratulations to the FBAS upon reaching its 60th Anniversary! As part of the celebrations there are a number of special offers available (listed on page 48).

EDITORIAL

"Fishworld" has undergone a bit of a "facelift" due to changes in the technology used for its production. You will also notice that there is more use of graphics, more pages and a change to the format.

I hope that you enjoy my first issue of "Fishworld" as much as I have enjoyed it. Please feel free to offer constructive criticism or new ideas at any time - nothing improves without feedback!

Help me to provide the type of articles that the hobbyist wants by putting pen to paper, or if you have a problem with that, use your cassette recorder instead and send me the cassette. Remember to include your name, telephone number and address. If you are under 16 I would also appreciate your age. Everyone who completes an article will receive a free copy of the issue that their article appears in. You can also submit articles compiled by groups (e.g. clubs or your class at school). Articles must, however, be original or accompanied by specific permission for "Fishworld" to reproduce them. Tell me about any breeding successes you have had, special club news/meetings, special projects, public aquaria you have visited, fishkeeping/fish shops abroad, etc.

Thanks to all contributors for their efforts to fill the extra pages now available to readers of "Fishworld". More changes will follow in the next issue! Watch this space! Good luck to you all for the coming season and thanks to Dick Mills for his continued support! Good luck also to all those taking part in the many competitions in this issue!

Sue Crew, Editor

Contributions for the next issue should be posted to me by 30th April, 1998. Please address to: The FBAS Year Book (1998) or Sue Crew c/o Epoch - address below. Federation of British Aquarists Society 1998. The Editor accepts no responsibility for views expressed in any article which remains the opinion of the author. EBCJ Printed by Epoch, HMP Albany, 55, Parthurst Road, Newport, Isle of Wight PO16 5TB. (Tel: 01983 524655 Ex. 402)

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COVER PHOTOGRAPH:

Eritihistes pussilus(?) seen at "Aquarama '97", Singapore. photo - Paul Corbett

THOUGHTS FOR '98

by Dr Peter Burgess Aquarian Advisory Service (Editor, "Aquarium Sciences and Conservation")

First, I would like to wish Sue Crew all the best in her new role as Editor of this magazine. As an Editor myself ("Aquarium Sciences and Conservation"), I well know how much of a struggle it can be to acquire articles - so I hope everyone will do their best to supply Sue with lots of 'fishy' material for publication.

As I write this piece, it is December 29th and my thoughts turn to our hobby in 1998 and beyond into the millennium. Anyone who has kept fish for more than a decade will realise just how much our hobby has advanced over recent years: many new fish species of aquarium life support systems, and advances in aquaculture has meant that we can produce more and more species through captive breeding, thereby relieving fishing pressures on the wild stocks.

Just down the road lies exciting new advances in hormone-induced spawning techniques which may eventually allow us to breed an even wider range of aquarium fish, including species which are too small to be induced to spawn by existing hormone injection methods. Gene technology should allow the commercial fish farmers to produce new colour varieties of popular species in a single step, without the need for years of painstaking selective breeding. Of course, all these new variants may not appeal to we purists who like our fish to be as close to the wild type as possible. However, for those aquarists who would actually enjoy keeping fluorescent green zebra danios or bright purple tiger barbs, then the technology may soon turn this into reality.

With an ever increasing human population, conservation issues must surely remain a major subject of international debate. Our hobby is still very much dependent on wild aquatic

habitats to supply us with virtually all of our marine fishes as well as many freshwater species. The future health of the world's seas and freshwaters is therefore paramount to the survival of the pet fish trade. Man-induced changes such as global warming, water pollution, rain-forest and coral reef degradation may all seem very remote to us here in the UK, but they affect our hobby indirectly, by threatening the future survival of the fish we enjoy keeping.

1977 was the "Year of the Reef", as I am sure most of you will be aware, and it appears to have been very successful in terms of raising global awareness of the world's coral reefs and the urgent need for their conservation. I hope that we may soon dedicate a year to rivers, lakes and other freshwater habitats, which are equally in need of protection.

As many of you will know, fish conservation is one of my personal concerns, and I have been extremely pleased to see an increasing number of conservation-based themes and projects at the major fish shows and within individual clubs. Those who visited some of the major events in 1997 may have noticed the endangered fish conservation displays on the Aquarian stand, which were set up by staff from Chester, London and Bristol Zoos. I hope that more of our public aquaria and zoos will make a conscious effort to breed and raise endangered fish in captivity.

As aquarists, we can also help by breeding more of our fish and by exchanging our fish breeding skills and discoveries. Most readers of "Fishworld" belong to clubs, and I think we can serve a useful role by encouraging new members to breed from their own stocks. In my view, the spawning and rearing of fish is the most exciting and rewarding aspect of the hobby.

Well, here's my suggestion for 1998 - let's make it the "Year of the Spawning Mop"!

With this in mind, I urge you all to go forth and multiply ... aquatically speaking, that is!

MAKING SPAWNING MOPS

by Dick Mills

In their natural habitats, the adhesive eggs of many fish become caught in the leaves of bushy plants and are thus protected from being eaten. In the aquarium, artificial spawning mops can be used as substitutes. These have the advantage that they make pre-hatching, collection and transfer of the eggs elsewhere easy.



1. You will need some nylon wool, a pair of scissors and a small book or piece of card approximately 6-8 cm wide.



2. Wind the wool around the book several times, securing with a single strand along the book's spine under the wool turns.



3. Carefully cut through all the wool strands at the opposite end to the knotted single thread.



4. Tease out the strands into a fluffy mass.



5. Suspend the mop by hanging it over the side of the tank or by attaching it to a floating piece of cork.

TED DERRICK

27th AUGUST 1924 to 11th JANUARY 1998

A tribute by Eric Harding

I first met Ted back in the 1960's, when we went on a fishing trip together. We discovered an interest in tropical fish as well as catching the ones in the River Severn. Ted was a member of Merseyside Aquarists Society, whilst I was a member of Warrington Aquarists. We met frequently on the show circuit and a mutual respect developed. Unfortunately, we lost touch when I moved from the area in the 70's, but met up again in the 80's when Halton Aquarists Society was formed by Steve (Ted's son), Ted, Dave Litherland, Kevin Hordley, Paul Reid and Dave Barrow. Ted became a prominent member of Halton Aquarists Society from the beginning and after he retired from work he went from strength to strength in pursuit of his hobby. I had moved back into the area by this time, and both Ted and I joined the show circuit, showing our fish all over the north west, where Ted achieved more than 45 "Best Fish in Show" trophies as well as numerous other cups and prizes. We even invaded Yorkshire, the Midlands and finally Scotland to see what we could achieve.

Ted was very successful on the show circuit, achieving four "Champion of Champions" at the British Aquarists Festival, three winners up and three thirds. Last year (1997), we ventured over the border to the Scottish Festival. Ted received the ultimate accolade from the Scottish judges by being the first person to ever achieve the "Scottish Supreme Championship" for both tropical and coldwater sections of the Show in the same year. In the last few years Ted had concentrated more on breeding his fish whereby he became a Master Breeder of the Federation of Northern Aquatic Societies - this means that he had spawned and raised to maturity over 113 different species of tropical fish - and as anyone who went to his house knew, his garage became his fish house, housing over 80 tanks as well as being overrun by tanks inside the house. If there was a spare space, a fish tank went into it, including the bedrooms!

When Ted became too ill to manage any more, his bed was brought downstairs. Plans were formulated to install a tank at the foot of his bed so he could still watch and care for his own special fish.

Ted was Chair of the Halton Aquarists Society for many years and was responsible for organising their Open Show each year. Well, I remember it as a time of chaos and excitement, with all members, their wives and kids being roped in to get the showing season off to a fine start. Ted was always busy, running around and sorting things out. Even when he became very ill, in these last few years, he still tried to attend and contribute to the success of the show.

It is with sorrow that I write this and feel I am echoing many people's sentiments when I state that Ted will be sorely missed by all aquarists everywhere, that we have lost an integral part of the show circuit, but hope that the legend of S & T Derrick will continue to prosper for many years to come.

Many thanks to all at Halton Aquarists Society, especially those who made the effort to see Ted in his last years and those who contributed so much to Ted to help further his hobby.





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## ASPIDORAS BREEDING DIARY

by Roger Crew

### GENUS ASPIDORAS

The genus consists of 14 species, all from Brazil. The largest of the genus being *A. lakoi* and *A. menezesi* at 55mm standard length. Although similar to *Corydoras*, the most obvious difference is the very small eye situated towards the front of the head and the more elongated body than is generally associated with *Corydoras* species—although the shape of *Aspidoras* is similar to *C. barbatus* and *C. macropterus*.

Literature suggests that *Aspidoras* do quite well if kept in similar conditions to those required for *Corydoras* (pH 6.8-7.0, 22-26°C).

*Aspidoras* seem to appear sporadically, in shops—usually around the Autumn. Often they are labelled "Aspidoras species" or just "Aspidoras" probably due to the difficulty in distinguishing most of the species apart. The easiest to identify is *A. pauciradiatus* which differ from the others in the genus by only having six soft rays in the dorsal fin, whilst others all have seven.

### MY PURCHASE OF ASPIDORAS

In the shop, these *Aspidoras* were noted to be very active, looking well fed and healthy. I felt they were probably *A. fuscoguttatus* and when selecting the individual fish for purchase, I purposefully selected some small fish hoping they might be male as well as going for the biggest, most robust specimens hoping these might be female. I was correct on all three counts it transpired!

### CONDITIONING THE FISH

Although lucky enough to have purchased good quality fish which had little conditioning to do, I followed my normal routine for conditioning prospective breeders. The group were fed good quantities of three day old Brine Shrimp nauplii produced in three glass sweet jars on a rotational basis providing a constant supply.

Feeds were supplemented with live grindal worm and live blood worm. Other foods given were Aquarian tropical flake, JMC catfish pellets, Tabimin tablet food and Promin fine granules.

### THE BREEDING TANK

The group of six *Aspidoras fuscoguttatus* were housed in an 18" x 12" x 15" (10 gallon) tank with pea gravel substrate, undergravel filter, sponge filter and light. This is a mature tank previously used on several occasions to spawn *Corydoras* species and is planted with Amazon Sword and has some algal growth. It faces east and gets indirect morning sunlight. The week prior to spawning I had completed a 95% water change using rainwater. The water was 76°F at spawning, pH 7, GH 6.

### DAY 1

Raining. Air pressure 1002mb. Rained yesterday, too.

**21.45** - Carried out 20% waterchange - 50/50 rain/tapwater. Fed group Promin fine granules. Shortly afterwards group became active, but not noticeably more so from norm after feeding.

**23.20** - First noticed spawning activity. Only two out of the group were spawning, but all were active. The breeding male was the smallest of the six fish and the female the second largest fish in length.

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There were two obviously conditioned females.

The two breeding fish seem to have 'paired' and are constantly together. The female presses the male into the corner of the tank or substrate to "T" and gives the Cory 'quiver' when expelling eggs into clamped ventral fins. The male waits for the female to deposit the eggs and continues the constant mating. She offers her barbels in classic Cory-style - he arches around her head in the standard "T" position. Their mating differs from *Corys* in that there is no rest period.

The eggs are dropped into the clamped ventral fins (egg basket) one or two at a time and are almost indistinguishable through the fins. The female is happy to discharge into the egg basket flat on the tank floor rather than head up or down in true Cory-style.

All eggs were laid into the inside elbow of the lift tube where the water is highly oxygenated.

The female seems to select this as the breeding site because of the highly oxygenated water which assists hatching. *Corys*, too, prefer spawning sites in highly oxygenated water. The *Aspidoras* did not go up to the surface for air between matings as I have observed *Corys* do during mating, possibly due to the fish absorbing oxygen whilst inside the lift tube.

### DAY 2

**00.09** - Spawning pair tiring - so are wife and I!

**00.20** - Fed three day old Brine Shrimp nauplii to deter the adult fish from eating the eggs. Decided to remove eggs because

male is visiting the spawning site. The lift-tube outlet was removed under water with eggs intact and removed to a 12" x 8" x 8" tank with silica sand substrate. The tank was filled with one gallon of the breeding tank water and 2 drops of acriflavine added to prevent the eggs developing fungus. A 4" air stone was added and the lift-tube outlet weighted as it was determined to float! The heater thermostat was set to 79° to aid hatching. Approximately 60 surprisingly large (for the size of fish), brown, spherical eggs counted. All were laid next to each other on one side of the outlet rather than on top of each other as *Corys* will do (especially aeneus).

**16.00** - Breeding tank given a 2 gallon water change (50/50 rain/tapwater) reducing the temperature to 70.5°F. Fed Promin fine granules. Raining again. The

fish have been cleaning the tank again. Activity increases after feeding.

**19.00** - Breeding tank fed three day old Brine Shrimp nauplii. Fish activated again. Individuals playing in the bubbles from the (new) lift-tube.

**21.45** - Male attempting to "T" with each of the females. No eggs laid.

### DAY 3

Adult fish showed encouraging signs, but no developments.

Fry tank given Liquifry (egg layer) to prepare infusoria ready for newly-hatched fry.

### DAY 4

Some fry hatched. Fed Liquifry (egg layer) pH/GH as for breeding tank, temp. 80.5°F.



### DAY 5

Additional fry hatched - continued feeding Liquifry (egg layer).

### DAY 6

Fry given first feed of three day old Brine Shrimp nauplii plus fine powdered fry food. Videoed fry as a record of their size (*N.B. Proud father!*). Water change: 1" out, 2" rainwater in.

### DAY 7 - 20

Siphoned sediment from substrate every other day and topped up water level with rainwater.

### DAY 21

Tabimin tablet food introduced as a supplement in the mornings.

### DAY 36

Videoed fry again. They are now taking Tabimin Tablet food quite readily. It is quite amusing to drop a tablet into the tank and watch the fry 'pounce' on it - they make a 'halo' of wriggling tails around the tablet! They are now capable of accepting Tabimin as their only food, though the three day old Brine Shrimp nauplii is continued and will be (gradually) supplemented with Aquarian flake foods (including growth food), pelleted foods and other live foods as appropriate to their size. The fry tank is syphoned daily to remove the muck and given approximately 30% water changes of rainwater each time. No mortalities to date.

### DAY 37

**00.06** - Adults commenced spawning. One female well-conditioned, but all plump. Only three eggs laid on tank glass adjacent to the sponge filter. Eggs scraped off the glass and transferred within tank water to hatch elsewhere.

**00.51** - Activity ceases both inside tank and out!

### DAY 38

Despite a water change the adults refuse to spawn.

### DAY 40

One well-conditioned adult female dead - measured 40mm standard length\*. On getting the scalpel to her, she was found to be full of eggs. What a waste! There is no apparent reason for her death apart from her fullness with eggs.

### DAY 41

Juveniles now requiring more space despite daily water changes. Moved eight to other tanks to grow on.

### DAY 42

Moved eight more juveniles. I am moving the juveniles in small groups to reduce the chance of losses and to keep the fry tank stable.

### DAY 44

Still carrying out daily water changes/moves.

**POST SCRIPT** - raised 42 juveniles from 60 eggs

\*It is noticeably difficult to maintain adult fish at full show size - my experience is that most fish die at this size.

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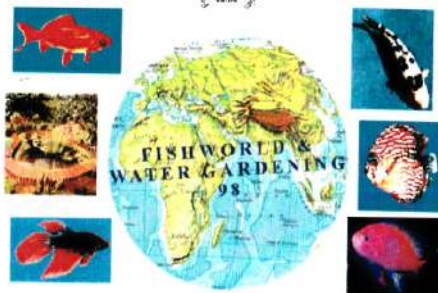
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**FATHEAD FUNDAMENTALS**

by Robert Bock  
 (Re-printed with the kind permission of "American Currents" - Fall 1997)

Fly the humble fathead minnow. Reared in farm ponds throughout the United States, valued only as bait, its destiny to be impaled on a hook.

A new orange color variety of the fish has been developed and marketed in the pet trade as "rosy red" minnows. But mainstream aquarists regard the fathead with as much respect as do fishermen. Rosy reds are sold for about a dollar a dozen, as food for oscars and other big, carnivorous tropicals.

Although underappreciated, the fathead, *Pimephales promelas*, is one of our more remarkable native fishes. Along with other members of its genus, the fathead is one of the few members of the minnow family that prepares a nesting site and defends its eggs until they hatch. From carp to redbelly dace, other members of the minnow family typically swim away after spawning, leaving their eggs unattended.

The fathead is also extremely hardy, not all fussy about what it eats, tolerant to a wide range of water conditions, and reaches a maximum size of only about 2-2.5 inches. These characteristics, and the ease with which it may be acquired, make it an excellent fish for beginners.

Wild fathead minnows usually spawn from April to August, once water temperatures reach 58°F, and daylength reaches about 16 hours. The spawning behavior is truly fascinating. Typically, the male, which is slightly larger than the female, chooses a spawning site in a hollow log, under a rock, or even under a lily pad. Using the breeding tubercles that erupt on his snout, the male will scrape the site clean, and pull any remaining debris away with his mouth or by sweeping it away with his tail.

The minnow gets its common name from the fact that the breeding male develops a dark, spongy, wrinkled pad from his head

to its dorsal fin. This spongy pad secretes mucus, which the fish smears on the spawning site. It is believed that the mucus aids egg survival by protecting against fungus and parasites. The mucus may also serve to warn rival males away from the spawning site.

The spawning males also lose the ability to secrete the "fright chemicals" (sheekstoff) that members of the minnow family produce when they are injured. If the male kept producing these chemicals, the irritation produced by his rubbing the spongy pad on his back against the spawning site would frighten away all prospective mates. (The fright chemicals secreted by injured minnows may also serve to attract predators - some fishermen report that breeding male fatheads are inferior to females as baitfish.)

Females may be chased into the spawning site by the males, or attracted by a display in which the males erect their fins for two to three seconds. A male may also display by rapidly swimming upward to the female, rolling on his side, and then swimming back to the nest. During spawning, the male will press the female between himself and the spawning site. The eggs are adhesive and stick to the surface of the site. The male will aerate the eggs and keep them clean by fanning them with his fins.

After the spawning, the female is chased away, and the male will defend the site from other fish and even turtles by either butting them with his snout tubercles, or swiping at them with his tail. A nest may contain eggs at several stages of development, as males will spawn with a number of females in sequence. The females will release up to 10,000 eggs in a season, from nine to 1,100 eggs at a time. Females will also spawn with several different males during the course of a season.

Although the fathead has been ignored by aquarists in its own country, the British have been quick to recognize the merits of this remarkable little fish. In an article in the February 1997 issue of the British magazine, *Practical Fishkeeping*, Neil Bosson and Steve Windsor report how they

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first noticed a pair spawning in their aquarium in September, 1995. Phone calls to various importers failed to shed any light on the fish's mysterious behavior. Perhaps the fish weren't even minnows. Bosson reasoned, as he understood minnows to be egg scatterers. A call to coldwater expert Dr. Peter Burgess, however, resulted in the identification of the fish as "Fat-headed Golden minnows."

The account in *Practical Fishkeeping* provides a blueprint for those who wish to breed the species in an aquarium. Bosson keeps a group of five or six in a tank of about 20 gallons, using undergravel filtration and an internal sponge filter or a power filter. He recommends 20 to 25 percent water changes every two weeks. The pH may range from 6.0 to 8.5, but Bosson suspects neutral (7.0) is probably best. Adults are fed flake food, or food tablets stuck to the side of the aquarium.

According to the article, the eggs may be left with the male (all other fish should be removed) until hatching, or removed and incubated in a four litre container. Aquarium spawning takes place at about 22-26°C (about 72-78°F). The fry are too small for brine shrimp at first, and so require infusoria and lipulifry. After two weeks, the fry will reach a large enough size to accept newly hatched brine shrimp, and in about three or four months will be large enough for flake food.

NANFA member Carrie Nixon reported that her husband and longtime collecting partner, NANFA member Phil Nixon, once did research on fish that homeowners could stock in their garden ponds to control mosquito larvae. One spring, Phil stocked a series of outdoor 30 gallon tubs with fatheads, goldfish, koi, gambusia, and other

fish easily obtained by homeowners. With apparently no other help from Phil, the minnows bred profusely, and apparently didn't consume that many of the young. By the end of the summer, Carrie young numbered in the hundreds. Carrie said that where she works, fatheads are often reared as feeders for bass. Typically, a few fatheads are put into a 55 gallon tank, along with overturned flower-pots or half round tiles. The adults are fed flake food, and perhaps daphnia, and the fry are given newly hatched brine shrimp. Because the tanks are kept in greenhouses, they accumulate lots of algae, which the fish may be eating as well.

According to the Peterson "Field Guide to Freshwater Fishes," by NANFA member Larry Page and Brooks Burr, the fathead can be found over much of North America, from Central to Eastern Canada, down through Arizona and New Mexico, Texas, Northern Mexico, and much of the Eastern U.S. The fish is most abundant in the great plain states, generally not found in mountainous regions, or on the Atlantic slope, south of the Delaware River.

Because of its hardiness and its widespread use as a bait fish, the fathead has also been widely introduced outside its range, a practice that can often be detrimental to existing populations of native species. The fathead prefers slow headwater pools, as well as lakes and ponds and tolerates muddy, low oxygen conditions that other fish can't. Fatheads can be collected by seining, dipnetting, or with baited traps.

Currently, I'm keeping five rosy reds in a 65 gallon tank, along with an assortment of about 25 other minnows, and I haven't observed any squabbles so far. I frequently feed the fatheads and other minnows



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# BTC

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soaked Hikari Cichlid Gold baby pellets. Soaking the pellets prevents the accidental deaths that occur when dry foods, eaten in too large a quantity, take on water and expand inside a fish's digestive systems. When I don't have time to soak the pellets, I throw in several Hikari sinking bottom feeder pellets. These large, disk-shaped pellets are too big for the fish to swallow at first, but the fish can later pick off small pieces as the pellets soak through. I've been busy lately, and so haven't kept up with water changes as I should have, but the fatheads and other minnows don't seem to care. The fatheads also don't seem to mind the hard, 7.6pH water that comes out of my tap.

So far, my rosy reeds haven't spawned, but two are beginning to thicken around the head and back. One of these has taken an interest in a hollow cavity inside a water logged stump I brought back from the Gumpowder River just outside Baltimore a few years ago, spending a lot of time inside it, and chasing the other fish away. The fatheads are among the few residents of my fish room that I've actually purchased, not collected. At about 10 cents a piece, these interesting (although over-looked) little fish are well worth the expense, and about the best bargain in fishkeeping today.



### NANFA - THE NORTH AMERICAN NATIVE FISHES ASSOCIATION

The North American Native Fishes Association serves to bring together professional and amateur aquarists, fishermen, fish and wildlife officials, researchers and anyone interested in the conservation, preservation, collection, study and aquaristic appreciation of the fishes of North America. As part of your subscription cost you will receive "American Currents", NANFA's quarterly publication and the "Darter", NANFA's bi-monthly newsletter, as well as the opportunity to contact - and even converse with - other dedicated native fish enthusiasts.

### NORTH AMERICAN NATIVE FISHES ASSOCIATION SUBSCRIPTION FORM

Membership costs \$17/year to non-US residents (cheque or postal order in dollars made out to NANFA)

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## aquarian

WALTHAM's experts are often asked for advice on feeding and care of fish. We include a selection of your questions here.

*Dear Dr. Ford,*

**My new Shubunkin eats the Aquarian Flakes greedily, but then spits them out making quite a mess. I have tried other foods, but the same thing happens. Does the fish have an eating problem or is this normal behaviour?**

Yes, this is quite normal .... Shubunkins are Goldfish, a member of the Carp family. They feed by suction rather than chewing. The fish suck gravel and sand from the bottom of their watery home, sift out anything edible such as plants, worms, larvae, and spit out the gravel and sand. They will do the same with flake food. The fish will take it back in again after shredding and blowing. If the fish is making a mess you are feeding too much at once.

**I have a conductivity meter and get a reading of 200 microsiemens in my tropical aquarium - how do I convert this to a hardness value?**

No, you can't convert the conductivity measurements to hardness, or softness, values. The meter reading in microsiemens is a measure of the ion content of the water. Certain molecules, when in solution, split into positive and negative ions. These will flow if an electric current is applied (positive ions to the cathode - hence they are called cations - and negative

ions to the anode - hence anions).

The conductivity meter does not apply a direct current (or the water would just become a 'cell' and the ions would separate) but an alternating current that makes these ions 'dither'. All the cations that give hardness (Calcium, Magnesium) plus all their anions (carbonate, sulphate) will dither, but so will all the others (Sodium, Potassium and chloride, phosphate, etc.). The conduction reading cannot tell the difference.

The value of conductivity values is in showing changes in the ionic content of water. This is why their best use is in seawater aquaria where a stable ionic mix is required by the coral fishes and especially invertebrates. In public aquaria, the conductivity meter is connected to a computerised pump system that can automatically add pure water or extra salts to maintain a constant value. In your freshwater aquarium the readings can only be noted and if this remains fairly constant you know you have a stable system, but if the value falls or rises you know something is wrong and you need to investigate (or do just a part change and then start again with a new reading. For hardness you need a different kit designed for GH, KH, etc.

**I have bought a Rainbow Fish called a "Melanotaenia hybrid". I have looked for the name in all the lists of Rainbow fish without success.**

**Can you identify the species and give feeding instructions, etc.?**

There are over 50 Melanotaenia species from Australia and New Guinea, ranging from 2" to 6" and coloured red, green, blue and all shades in between. Most can be interbred to form a hybrid, so your fish could be any colour and any size according to the gene mix. However, this is like interbreeding pedigree dogs and expecting the resultant mongrel to be better than the original. The wild Rainbows are such beautiful fish that they should only be pure-bred species.

Your fish is peaceful and will take all foods. It prefers medium hard water that is Oxygen-rich (well-aerated and filtered). The fish are easy to breed, they scatter eggs into plants so breeders use mops like the Killifish-keepers. The fish look similar, but the males are more intensely coloured.

**I attended a conference on Marine Fish Breeding in England where an American aquarist said he used a vegetable drink called V8 to feed a plankton culture for live foods for marine fry. I have not seen this drink in the UK. Is it available?**

The "V" stands for vegetable and the number means there are eight different vegetables in the drink .... it is sold in supermarkets in the USA, but only in health stores in the UK. However, you can make your own. Use a kitchen blender and blend tomatoes, lettuce, carrots, cucumbers, peas, and so on, into a soup. Dilute well and allow to stand, pouring off the top liquid. This can be kept refrigerated for several days; drip feed to the plankton culture.

**I see there is a tablet food in the Aquarian range - is this just for larger fish?**

Tablet foods have several uses in the

aquarium. Certainly large fish will take a whole or broken tablet. The tablet will fall to the bottom of the aquarium so they can be used to feed bottom living fish such as Corydoras and Plecostomus. These are best fed at 'lights out' because most catfish are night feeders and it reduces the attention of the other fish.

Some tablets (certainly the Aquarian brand) have a sticky character when wet. This means you can push the tablet onto the front glass, where it will stick and attract the fish forward to feed. Useful for showing off your fish to visitors or for attracting shy species into the open for viewing.

The tablet can also be used for fry feeding. Larger fry, such as Kribensis or Livebearers, will gather round a tablet and feed continuously. Be careful to remove surplus - scoop remains up in a linen (not a mesh) net.

When you go on holiday, a tablet a day (or two or weekly) can be left with a fish-minder to avoid any chance of over-feeding from a tub of flake.

**I have an aquarium with a few tropicals and a glass rock on coloured gravel. I think the tank looks boring, can you suggest a better design that will also be interesting for the fish?**

Aquascaping is really up to you - an aquarium can be bright with coloured gravel, garish plastic plants and pot mermaids, or it can have river sand, real plants and petrifed logs. It can be a slice of an Amazonian river scene, a rocky African lake or a brackish pond, even a part river bank with a dry area (called a paludarium).

Every tank is different too because it is a living biological system. So experiment and design the things you like to see, not what we, or friends,

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recommend - it is your tank, do your own thing. The fish do not mind as long as the water quality is OK.

**I think Bettas are fantastic fish, can I breed them in my home aquarium?**

Siamese Fighters, or Bettas as they are called in the USA, make good community fish if only one male is kept. For breeding, the water can be soft, medium or hard and any pH from 6 to 8, but the temperature must be constant as fluctuations or cooling can chill the fish and fry. 82°F (28°C) is the ideal.

The aquarium can be small (about 18" x 12" - but not a jam jar!) but a 24" x 12" is better so the fry have room to grow. Only half fill it so there is a head of still, warm, moist air. This helps bubble-nest building and is essential when the fry reach 4 weeks and fill their labyrinth organs - if cool air is taken, the fry chill and die.

The female must be fat with eggs or the male may kill her. Feed her well (insects, carnivore flake, chopped earthworms) away from the male. He can be kept in the breeding tank until she is ready. A few floating plants will help nest building. Add her late at night and they should spawn next day. Then remove her quickly. Let the male stay with the fry until they are free-swimming, then remove him, too. Feed the fry microfine foods, crumbled flake, freshly hatched Brine Shrimp and Growth Flake, in sequence.

You will then need to separate males or fighting may start. Don't forget that they are an annual fish and so are mature at 6 months and die after a year, although captive fish may survive 18 months or more. A female may produce 3 or 4 good spawnings (usually a month apart), but then is spent. Remember also that offspring are

brother and sister, so do not use them for further spawnings or inbreeding will give poor results. Breeders use several families so the best can be cross-bred.

**I see Arowana fish are now on the CITES list of endangered fish and should be unavailable for the home aquarium, but I have still seen some for sale. Are they easy to keep?**

There are several species of Arowana and not all are banned. Even the rare species are still available in the trade because they carry a certificate to prove they are captive bred, not wild caught species (some even have an identifying microchip inserted in their backs).

The most common Arowana is *Osteoglossum bicirrhosum*, which originates from the Amazon floodplains. They prefer soft (10-GH), acidic (pH 6.5) water in a large tank with a lot of swimming area. A high temperature is best .... 80°F (27°C).

When small, the fish accept flake food and live foods, such as larvae and worms. However, as they grow (to a maximum of nearly 4 feet!) they only eat live fish, but they may be coaxed into taking whole fish from the fishmonger. They are jumpers and care has to be taken when the lid is off the tank (it can lift them too, so the cover needs to be fixed). They are air-breathers (via the swimbladder) which is another reason for the fish to leap up.

Brooding is possible, the females are fatter when full of eggs and the males have longer anal fins. A pair will give a breeding display and lay eggs that are over 1/2" in size. The male carries the eggs in his mouth, which will take about 6 weeks to hatch and after absorbing the egg-sac the fry are almost 4" and readily take larvae.

worms, flake, etc. What you do with a few dozen growing Arowana must be quite a problem. The fish are definitely unsuitable for community aquaria.

You can send your question to us at the address below. We are sorry that we are not able to reply to the questions individually, but the most frequently asked and the most interesting ones will be answered on these pages.

When you write to us, make sure you tell us which part of the country or world you live in, because the advice may need to be different:

Waltham Centre for Pet Nutrition,  
PO Box 44,  
Leicester,  
LE14 4ZT

In the UK write to:

Aquarian,  
PO Box 67,  
Elland,  
W. Yorks  
HX5 0SJ

or EMail:

[aquarian@compuserve.com](mailto:aquarian@compuserve.com)

**JACK'S BIT**

*It has been a recurring thought that the great accumulated wealth of knowledge, experience and enjoyment possessed by some of the 'elders' of our hobby should be committed to memory to benefit us all. To this end, Jack Stillwell - one of our more notable fishkeeping 'elder statesmen' - has agreed to provide a regular trip down memory lane!*

The following memories are all from early 1948 and recounted here to illustrate the difficulties, cost of keeping fish in those days and the enormous progress we have made since then. Despite these difficulties at the time it is much more difficult nowadays to run a Society than it was in those days. This, it would seem, is primarily because of the pace of life in the 1990's and the lack of time to be able to commit to regular Society meetings.

In February 1948, the very first fish import licenses were issued. This not only re-introduced species unseen for many years, but also served to infuse much needed new blood into our inbred stocks. The Federation of British Aquatic Societies made application in 1948 to import specimens for bona fide breeders, but was unfortunately turned down by the Board of Trade as the licenses were strictly limited in number and duration.

Also in 1948, the Federation published its first goldfish standards, which included the most nondescript fish - the Nymph, a fish with a twintail's body, but with a single tail and anal fin. The Nymph resembled an obese Bristol Shubunkin and was the first step in the reversion of the veiltail to

wild type. I would say, "Thank God it was later abandoned".

The second Water Life National Exhibition was held at the Royal Horticultural Hall, London. In 1948 the Water Life Diploma was the most sought after accolade in the hobby. I wonder how many are still preserved by those who proudly accepted these awards - or their relatives. My own Society (Portsmouth) was delighted to win one in a class of 20 club tropical furnished aquaria at a Water Life Show.

As I made reference to at the beginning of this piece - it is much more difficult to maintain viable Societies today than it was 50 years or so ago. Such was the popularity of aquarist's Societies at the time that Willesden Aquarists Society decided to keep its membership down to 50 members, which resulted in the Society having to maintain a waiting list for prospective members. Could any of you imagine such a situation arising in the 1990's?

In the last fifty years, the hobby has also

seen a reduction in the price of many fish, believe it or not! In 1948 half-grown Neon Tetras were being offered for sale at 55/- (£2.75) each, which was equal to half the average weekly wage for the time! In the days before plastic was used to transport fish, galvanised tanks were used, which proved to be very heavy and accounted for much of the importation costs. Using galvanised containers may also have been more than just a contributory factor towards the difficulties faced in these early days of attempts to breed certain species of fish!

In 1948 the Federation of British Aquatic Societies announced at its Annual General Meeting a credit balance of £75.00 - just enough to buy 30 Neon Tetras!

Other notable events included the formation of a new specialist Society, the Goldfish Society of Great Britain, the first classes were set up for potential judges and the availability in this country of William T. Innes' book "Exotic Aquarium Fish". This book was to remain our 'fish bible' for many years to come.

I hope that I may have stirred a few memories in those old enough to remember, imparted a little information to those who are not and provoked a few thoughts in everyone.

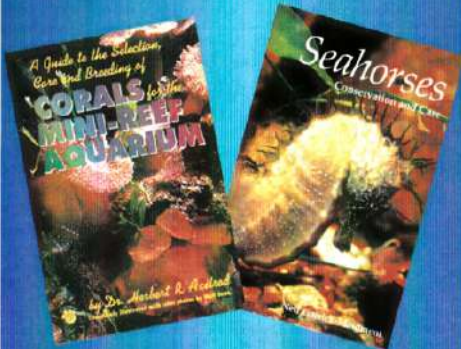


The Nymph

*Jack.*



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Championship at the Supreme Festival of Fishkeeping.

We have received a number of letters and reports, some of which are included here:

David Marshall (Secretary of Ryedale Aquarist Society) tells us that as part of their 1998 AGM they decided to hold a competition for the children of their members to paint a picture of their favourite fish. Well-known local aquarist, Gerry Hawksby kindly acted as judge. The quality of entries was high and the age range from 3 to 13 years - the majority were NJFA members. The first three places were awarded to:

1st	Miss Laura Campion	Age 13
2nd	Miss Rachael Campion	Age 11
3rd	Master Jake Read	Age 5

We hope that you had the very best in the Festive Season. If you had some money left after getting the latest game, clothes and discs, maybe you were able to get something extra for your fish tank! The NJFA have been promised sponsorship again and one of our sponsors - Tetra - is supporting Junior Fishkeepers in a big way this year - see below. We want you to do something to push the NJFA forward.

We know that many Clubs have Junior Membership and/or Sections with lots of participation, but we would like to see as many of you as possible entering fish in your local club's Open Show. We would like to see three Junior Classes in Open Show Schedules (Egglayers, Livebearers and Coldwater). If these Junior Classes are listed in Show Schedules submitted to the FBAS Trophy & Brooch Officer, we will try to arrange to supply some prizes and/or awards. The NJFA also hope that your Show Secretary will ask Judges to choose a Best Fish in Junior Classes. The details of the first to fourth place Junior Class winners would have to be submitted to the Trophy & Brooch Officer on the Open Show Returns Form. This will enable us to mail any awards and if we have sufficient participation, we might invite each of the Best Fish in Junior Classes to a

Lots of good things are going on up there in Ryedale. Well done David and your Committee. Keep up the good work!

We are putting on an information stand at the Yorkshire Aquarists Festival and will display as many as possible of these paintings.

In the year ahead we will continue our policy of encouraging an aquatic interest in our younger members, running our Junior Fishkeeper of the Year contest and involving children in all aspects of our Society.

It is gratifying to receive letters, no matter what they have to say, but especially like this one from Faye Warfield:

"Thank you very much for the Badge, the Book and the Membership Card and thank you for making me a member of the NJFA. I am sure I'm going to enjoy being a Member. I have two fish in my room. I've got a new tank, they weren't quite used to it when I first put them in, but they seem

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to be quite used to it now. PS. I hope you have a lovely New Year."

Perhaps a touch of 'new tank syndrome' there, Faye. You have to watch that, however, I'm glad they're doing fine now, and thank you for the thoughts.

Keep your letters coming in. Let us know about the fish you keep, what you and your local Society do - write a short report on an interesting Club night activity or your local Open Show.

#### NEWS FRONT

The FBAS have informed me that with their and other manufacturer's sponsorship, they are hoping to make available an information pack, entitled the "Diamond Year Volume". The pack is expected to comprise of the following publications: Book 3 - "Show Fish Guide Starter Pack" with Supplement 12 containing Cichlids and Catfish, Book 6 - "National Show Fish Sizes" 1997 edition; Book 7 - "Year Book" 1997 edition; and Book 25 - "Quiz Book".

There will only be 60 copies of these packs available and the FBAS would like them to go into middle school libraries. If you think your school would like one, send in the full name and address of your school, and the name of the teacher in the library. Allocation is 'first come, first served', so get your nomination in quickly. Remember to include your own name and address, too.

If printing goes well, you should also get with this mailing your Show Schedule for the next NJFA Fish Show on Sunday, 31st May, 1998 at "Fishworld '98" in the Queensway Halls, Dunstable. Get your showfish up to scratch and polish your show tanks. Classes will be identical to those at last year's Weston.

#### APOLOGIES

On the FISHWORLD NJFA Section Competition front, I have to apologise for an error - down to the printers, I'm afraid - in "Fishing for Words - 1P". The word

PEWTER should have started from the bottom right hand corner of the grid and go vertically upward from there. Unfortunately, it was shown as PEWTEE. We hope that this did not put too many of you off and, if this was the only one missing from your grid when you sent it in, we will take account of this in the prize-giving. We felt that this, however, also affected the ability to determine the result of "What remains?" We are, therefore, going to hold open the closing date of "Fishing for Words - 1P" until 17th May, 1998, so get cracking if you haven't sent in your solution already. This again will be taken into account when we review the solutions already sent in. A new printer has taken over, effective this quarter, and we are hoping that this will not happen again.

#### WATER CHEMISTRY

By the time this section reaches everyone, you will hopefully be thinking about what you might do in the year ahead, in your own fishworld. This might include setting up your first tank, expanding to a second tank (or more), or starting a breeding programme. Whatever it is you are planning - even if it's just a promise to your watery friends to improve their conditions - then you should understand that water is the single most important factor for successfully sustaining life in the aquarium environment. It should be borne in mind that water is to fish like air is to humans, therefore, an understanding of the constituents of water is important, if you are to be a truly successful aquarist, particularly in the raising and breeding of tropical fish. The aquarium can only be an artificial environment, it lacks the natural conditions to which they are accustomed and adapt to.

Although fish are generally tolerant of many unnatural conditions, it is important to know the difference between the natural conditions of water and the home aquarium. This information is invaluable for the fishkeeper who would like to breed and raise their own tropical fish.

Many aquarium fish, especially egglayers, come from habitats that are soft and slightly acid in water chemistry. If these fish are kept in alkaline water, the chances of breeding them are reduced. In fact, in some species it has been known that the eggs nearest the female fish's vent, near to the time of expulsion, calcify, complicate the reproductive process and, in some cases, caused the death of the fish. On the other hand, livebearers generally do best in alkaline, slightly hard water, both for general maintenance and breeding.

Plants are also dependent on water conditions, if they are to grow and mature. Some plants do better in acidic water, whilst others thrive under alkaline conditions.

Alkaline, hard water, in natural habitats is caused by compounds of calcium and magnesium combining with carbonate, bicarbonate and hydroxide ions. It is an ideal medium for algal growth. In both natural surface waters and aquaria where algae flourish, pH values of 9 to 10 are often found. Alkalinity in the aquarium can be caused by the shells of dead snails, ornamental coral, evaporation and sand or gravel which hasn't been checked for lime content. Excessive alkalinity can be prevented by regular water changes, particularly if a certain amount of soft water is added.

Soft water is best defined as lacking calcium, iron, manganese and strontium in significant

amounts. Acid water in natural environs is caused by carbon dioxide or strong mineral acids. Another consideration, in today's industrialised society, is that natural water supplies can become very acidic in nature, due to the sulphur by-products of industrial burning in the atmosphere. Whilst many improvements have been made, these mix with rain/fall and result in the phenomenon known as 'acid rain'. This can cause a lot of problems in the balance of an aquarium, if used untreated, since this type of water has become a diluted form of sulphuric acid, which is very corrosive.

Carbon dioxide is a normal component of all natural waters. In the aquarium, as well as in nature, CO<sub>2</sub> is the product of both aerobic and anaerobic bacterial oxidation of organic matter. The pH of natural waters usually runs about 6.8, although there are a number of species of fish that require a much lower pH level in order to breed. If the water is too acid, acidosis will occur - aquarium fish will display distinct signs, such as sudden raising of scales and fins, a tendency to swim in circles and shimmying movements before dying. If, on the other hand, the water is too alkaline, alkalosis will occur - the branchial epithelium of the fish will corrode and fins will become frayed.

The fishkeeper should ensure that any natural water, used in the aquarium, is free of all undesirable elements. This can be achieved by several methods, today. The first is filtration i.e. passing the water through a single medium or combination of media, such as sand and gravel which will retain suspended matter and most of the bacteria. It may also be passed through charcoal filters to remove gases such as



hydrogen sulphide and ammonia. Aeration, such as spraying the water into the air, is another method of natural purification. Boiling water for 10 to 15 minutes will kill many micro-organisms, but it will not remove any of the dissolved solids present (it can also play havoc with the electricity or gas bill, and possibly create a condensation problem in the kitchen!). If you want to use natural water, then it seems that the best combination is to pass the water through a filter consisting of a layer of charcoal at the bottom and a layer of gravel above it. This should remove many of the dissolved particles in the water and most of the offensive odours. You could, of course, use the most up-to-date, electrically operated, water purification units - however, this, too might burn a serious hole in your pocket!

The average public water supply is generally suited for use in the aquarium, however, it may, at times (weekends for example) contain chemicals that could harm or kill tropical fish, if they are present in large enough quantity. Chlorine is a chemical that is added to public water supplies to prevent the spread of water-borne disease. The use of chlorine in supplies has become so widespread that it is pretty much taken for granted today. For the fishkeeper, the presence of chlorine in the water could spell disaster. If the aquarium water itself is not well-balanced and contains excessive amounts of ammonia, then this will react with the chlorine to form the more dangerous chloramine, a persistent fish killer! Therefore, it is recommended that, unless you are very experienced, any water taken from a public supply is dechlorinated. The cheap method, if you have the storage capacity, is to draw your water ahead of time and let it stand for a day or so, exposed to

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the air - passing air from a pump through the water will speed up the process. The alternative is to use one of the proprietary dechlorinators now readily available from aquatic outlets.

Another aspect of water chemistry is the dissolved oxygen content of the water. All living organisms are dependent upon oxygen, in one form or another, to maintain the metabolic processes that produce energy for growth and reproduction. Comparing our two atmospheres, our air is composed of approximately four parts nitrogen and one part oxygen, due to the partial pressure conditions that exist in the atmosphere. The water environment is much poorer in oxygen content than the air we breathe.

Temperature plays a considerable role in determining the amount of oxygen which pure water is capable of absorbing by volume. As the temperature increases, the oxygen content of the water decreases. The following table gives an idea of the solubility of atmospheric oxygen in fresh water:

At 50°F 7.8 parts per 1000 by volume  
 At 60°F 6.9 parts per 1000 by volume  
 At 70°F 6.3 parts per 1000 by volume  
 At 80°F 5.7 parts per 1000 by volume  
 At 90°F 5.0 parts per 1000 by volume

This demonstrates how rapidly the oxygen content diminishes as the temperature of the water increases.

Aquarium water is considerably different from the fresh water described by the above table. Ordinary aquarium water contains only about half the amount of dissolved oxygen of natural fresh water. In an aquarium, there are a number of gases, generated mostly by decomposition of organic wastes, that constantly displace the oxygen in the water. In fresh water at about

75°F, there are about 5.0 parts per 1000 of dissolved oxygen, in an aquarium however, there are only about 3.3 parts per 1000!

It is appropriate also to look at the matter of aeration in the aquarium. Contrary to popular belief, fish are injured or killed by an excess of carbon dioxide rather than by any lack of oxygen. Aeration is an important process for keeping the levels of dissolved carbon dioxide down in the aquarium - especially at night, when aquarium plants are producing CO<sub>2</sub> rather than oxygen. Another misconception is that air forced into the water by an aerator becomes dissolved into the water, thus providing the fish with sufficient oxygen. Although the water can absorb some of these air bubbles, the main achievement of aeration is the circulation of the water in the aquarium. This is because most of the dissolved oxygen comes from the surface of the water - aeration contributes by distributing the fresh oxygen throughout the aquarium. If large amounts of air are forced into an aquarium, a great deal of carbon dioxide will be liberated, but the problem with this degree of aeration is that the fish will soon become dependent upon the amount of dissolved oxygen generated by this means. Should the aerator ever malfunction, the carbon dioxide level rises, forcing the fish to seek oxygen at the water's surface. This will quickly cause death among fish, particularly if the tank has been maintained in an overcrowded state!

Nitrogen is another important element, because both humans and animals utilise it from sources in the atmosphere or from inorganic compounds in order to produce essential proteins. To supply their own proteins, fish like animals, are ultimately dependent upon plants to 'fix' the nitrogen

which is then transported through the food chain. Within the animal body, protein matter is used largely for growth and the repair of muscle tissue, although some may be used to provide energy. Nitrogen compounds are released in the waste products of the body during the animal's life, and at death, when those proteins remaining in the body become waste. Urine contains nitrogen which results from the metabolic breakdown of proteins; the nitrogen in urine occurs principally as urea. Urea is hydrolysed rather rapidly to ammonium carbonate by urease, an enzyme. Animal faeces contains appreciable amounts of unassimilated protein matter (organic nitrogen). This and the protein matter remaining from the bodies of dead animals and plants are converted to ammonia by the action of saprophytic bacteria under either aerobic (with oxygen) or anaerobic (without oxygen) conditions. The ammonia released by bacterial action on urea and proteins may be used by plants to directly produce plant protein. Next, autotrophic (self-sustaining) nitrifying bacteria, known as the 'nitrite formers' convert ammonia under aerobic conditions to nitrites while obtaining energy from this process. The resulting nitrites are oxidised by the nitrate formers. These nitrites serve as fertiliser for plants, especially algae. If the nitrate content gets out of hand, the aquarium will eventually develop an undesirable quantity of algae. Since the nitrate- and nitrite-forming bacteria require oxygen, too much algae could seriously reduce the dissolved oxygen levels in the aquarium. For this reason, it is important to change some of the water in an aquarium periodically. Kits are

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available through your local aquatic outlet, which determine ammonia, nitrate and nitrite levels in your aquarium.

Sulphates also create a problem in an aquarium. The sulphate ion is one of the major anions (negatively charged ions) occurring in natural waters. In the aquarium, the sulphate anion will combine with the organic matter and then decompose by the action of anaerobic bacteria. This process forms hydrogen sulphide, water, methane and carbon monoxide. At pH values of 8 and higher, most of the reduced sulphur exists in solution as hydrosulphide ions. Sulphide ions and odour problems do not usually occur at this pH level, but at pH values of less than 8, the formation of non-ionised hydrogen sulphide begins to form. At a pH of 7, about 80% of this formation is complete. What this means to an aquarist is that odour problems will be prevalent at a low pH.

Water not only absorbs beneficial oxygen but tends to absorb many injurious gases and fumes as well. Fumes from varnishes, varnish removers, paints, turpentine, shellac, insecticides and other compounds are all very harmful to fish and, in most cases, can be fatal. One gas that may not prove fatal to aquarium fish is tobacco smoke, although it is considered not exactly beneficial for them either.

Metals should also be kept from coming into contact with aquarium water. Remember, slightly acidic water will soon dissolve the metal ions in the water to the point where they become toxic to fish.

Certain metals which are not toxic in normal quantities, such as iron and manganese, can cause the water to discolour. This can be removed with various neutralising agents which are available through your local

aquatic outlet. Some chemicals, used for the prevention of fish diseases, contain metals that can be dangerous to fish, if not used carefully or in accordance with the instructions from the manufacturer. An example of such a product is the group of chemicals that contain copper, such as copper sulphate and malachite green (copper carbonate). Copper in high concentrations can kill fish. Particularly at risk are those scaleless fish such as Loaches, Botias, Labeos, etc. The effects of long term exposure to high levels of copper in animals is cirrhosis of the liver, growth retardation and jaundice. The best preventative measure for over-exposure to metal poisoning, due to pharmaceutical treatments, is to follow the directions for the product carefully and change the water often.

The final subject on the matter of water chemistry to be discussed is that of water temperature. Too much emphasis has been put on the idea that all tropical fish require a high temperature in order to grow and develop properly. Many species, sold in aquatic shops, however, do not come from strictly tropical regions, and many of those that are, do not occur in particularly warm waters in their natural state. Although most exotic aquarium fish cannot tolerate chilly water, they do not consistently require high temperatures of, say, 80°F. Temperature levels of between 72°F and 76°F, are perfectly acceptable to most of the available tropical species. The aquarium, unlike the natural environment, does not provide the thermoclines, or water temperature variations, to which most fish are used to in their natural habitat, therefore, the only way to determine if your community or breeding tank is of the correct temperature is to research the particular requirements

of the fish you keep. The rule to keep in mind, concerning aquarium temperature, is that, as the temperature increases, the dissolved oxygen level decreases, while the bacterial action and the speed at which odours accumulate also increases.

To summarise, the aquarist, controlling the environment contained in the aquarium and the fish therein, has a special responsibility, so make every effort to familiarise yourself with the all-important factors of water chemistry and, in the long run, each and every fish in your tank(s) will thank you for it by showing off to their very best.

(Thanks to sources, including Zacharias, enabling this to be put together.)

#### TETRA AQUA QUIZ

An exciting opportunity for Juniors everywhere is the TETRA AQUA QUIZ, which is to be held during 1998 and culminating in the Final at this year's Supreme Festival of Fishkeeping. Jointly organised by the FBAS and Tetra Club, eliminating heats will be conducted throughout the year and the competition is open to all Junior fishkeepers up to the age of 16. Watch this space for more progress!

#### CALLING ALL JUNIORS

With the pond season not too far off, the FBAS, is pleased to announce the LAGUNA JUNIOR FISHKEEPER'S POND DESIGN COMPETITION - an exciting new competition sponsored by Laguna as part of the Federation's 60th Anniversary year.

Junior fishkeepers (between 8 and 16 years of age) are invited to submit designs for a garden pond, which will not only be suitable for fish, but also attract other aquatic or insect life. The two best designs (subject to practicability - nothing too complex, please!) will be featured on the FBAS display at this year's Hampton Court Palace Flower Show to be held in July.

The complete pond together with its surrounding plants, marginals and/or bog garden, must fit within an area of 6 metres by 4 metres. Provision should be made for pump, filtration, etc. in the design. Please send your designs (plan and side elevation sketches with dimensions, planting layout, etc.) to: Junior Pond Designs, c/o Peter Furze, 9, Upton Road, Hounslow, Middlesex TW3 3HP.

#### Life with 'Goldie' by Uloo



"We've got a comp' this week Goldie - Don't forget last time the judge said you lacked colour!"



"Well - Let's go for it - On with the lippy!"



Well done Goldie!

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## FISHING FOR WORDS - III

Sponsored by Rolf C Hagen and Tetra

S C A L L I P T E R U S G It's Barbs galore in this month's  
 U J A E L S R A N A R A S FISHING FOR WORDS Competition.  
 T F O X I H I B A R N R A They are: AFER, ASPER, ANEMA,  
 A E A A N C O R E I E U R ANOPLUS, ARCISLONGAE,  
 L U N N E A N F U P A L C ARULUIS, ASHMEADI, BULU,  
 U T E O A S A S S I S I I C CALLIPTERUS, CHOLA,  
 C A M P T A C A N T H U S C AMPTACANTHUS, CANIUS,  
 A E A L U H A L E I M S L EUTAENIA, FOXI, HALEI, JAE,  
 M N O U S L N A S S E D O TICTO, TITTEYA, RIMACULATUS  
 I I I S T I T T E Y A O N  
 R A R A L O H C I D D E G  
 T S E B U L U O T C I T A  
 L A T E R I S T R I G A E

What remains? .....

Carefully draw a line around each of the names in the grid, enclosing only the letter used. When you have done this, you might find something has revealed itself. In the space provided below the wordsearch write down what you find and send this whole page to:

National Junior Fishkeepers Association,  
 Fishing for Words - III,  
 44, Lakewood Drive,  
 Wigmore, Gillingham,  
 Kent ME8 0NS

Entries must be received by 17th May, 1998. The first three correct entries out of the bag will each receive a HOLDALL and FISH FOOD. The next seven correct entries will each receive tubs of FISH FOOD. Winner's names will appear in a future edition of "Fishworld". Please complete the following so we know where to send your prize should you be a lucky winner!

Surname: \_\_\_\_\_ Forenames: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_ NJFA Membership No: \_\_\_\_\_

County: \_\_\_\_\_ Postcode: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

If you haven't joined the NJFA yet and would like to, please complete the Membership Application Form included as a loose leaf, send it to the competition address and your details will be passed onto the Membership Officer.

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## POLLUTION EFFECTS ON BRITISH NATIVE SPECIES

Some of you may have read the article in the Daily Mail dated Thursday, 22nd January, 1998 written by their Science Correspondent, David Derbyshire, entitled "The Fish Being Turned into Freaks". For those of you who did not, David wrote of the sexual changes being found in Britain's native species.

The article explained that in some rivers - notably the River Aire in Yorkshire and the River Nene in Northamptonshire - almost every male fish had become hermaphroditic due to hormone-disrupting chemicals (oestrogen) in treated sewage and factory waste.

The report highlighting these problems (published by the Environment Agency on 21st January, 1998) stated that the effects had been much worse than had previously been expected. The study on which the report had been based, had involved the examination of over 2000 male Roach from 23 sites in 8 rivers across the country.

Apparently all the male fish have mutated testes, but around 60% of the Roach found downstream from sewage

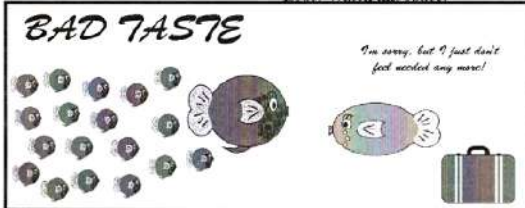
outlets exhibited testes growing eggs cells, which would normally only occur in females. The report linked the concentration of effluent found with the degree of deformity exhibited in the fish.

The oestrogen found in the rivers, enters via sewer treatment works with female urine. Treated effluent also carries pesticides, chemicals, some plastics and detergents, the by-products of which can also mimic female hormones.

It is not yet known what the full effects of these mutations - for example whether or not these hermaphroditic fish are able to reproduce or not - and which of the various chemicals found are responsible, but it is clear that the Environment Agency intend to use their powers to restrict releases of chemicals into the environment whilst confirming their research and advocating alternative non-disruptive chemical products.

Apparently earlier research indicated similar deformities in populations of Bream, Gudgeon, Club and Dace.

"Fishworld" will endeavour to report further on the subject in the Summer Issue. Watch this space!



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## FISHING ON THE NET

by Roger Winter

Roger is a member of the Bracknell Aquarist Society and Viviparous. He maintains the Viviparous Web Site which can be found at <http://home.clara.net/xenotoca/> Roger can also be contacted by e-mail at [xenotoca@clara.net](mailto:xenotoca@clara.net)

Roger will be a regular contributor to "Fishworld" and commences the first of his series of articles with a general introduction to the Net for those of you who are not so familiar with this aspect of fishkeeping.

Even in the quiet and peaceful world that surrounds the aquarist, there can be few who have not heard of the World Wide Web or the Internet. Yes, it's out there and along with every other subject under the sun, there is a lot of information about fish to be found on it. All the 'sites' are maintained by keen aquarists from around the world and whilst a few are in a foreign language, most are in English.

To access the Net you need a computer and a modem, which is connected to your telephone line, and transforms those horrible noises you hear whenever you accidentally dial a fax number, into words and pictures on your monitor screen. All of this information can then be captured and stored on your computer's hard disk for perusal later. Also, most of this information is

copyright free and a simple request to the site owner will allow you to reproduce this information for non-profit making purposes - a boon to editors of club magazines scratching around for articles! Even most of the commercial contributors will be willing to allow you to reproduce their information if you seek their permission first.

The Fish Site can roughly be divided into five categories:

**Home Sites** are pages of information where the contents of the 'site' are mainly provided by one person.

**Group/Society Sites** are 'sites' where the information is provided by several individuals and related to the interests of the group.

**Commercial Sites** are maintained by aquatic manufacturers and breeders and

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whilst they primarily exist to promote the companies products, will normally have lots of practical information on them as well.

Scientific Sites are maintained by the universities and other scientific bodies. These 'sites' hold a wealth of scientific information on fish as well as data collecting, etc.

Link Sites are exactly that. Whilst every site will have a 'links page', here are so many sites with an aquatic content that special 'sites' exist to list them all. A simple click of the mouse will take you to the selected 'site'.

The main purpose of this feature is to have an 'in-depth' look at some of the sites available and in this issue we will look at two 'sites'.

### BRITISH AQUARISTS RESOURCE

<http://www.cfk.demon.co.uk>

This was originally started by Kathy Jinkings as Clacton Fishkeeping Club's site. It has now evolved into a national site. On reaching the site you are offered a selection of places to go.

CLUB HOUSE plays host to any UK club that wishes to be included on the pages. Various local clubs and societies are listed and a click on the link will either take you to their page or provide information about the club or society named. The Federation of British Aquatic Societies is represented here.

LIBRARY holds articles of aquatic interest under various CATEGORIES

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such as Catfish, Cichlids, Plants, etc. New articles are added on a regular basis and it is always worth a visit.

GALLERY features original pictures and artwork with an aquatic content.

CAUGHT IN THE NET consists of reprints of articles on aquatic sites on the Internet which were originally published in Aquarist and Pondkeeper Magazine. Whilst these articles do not give an 'in-depth' review, all the sites mentioned are linked saving you a lot of typing.

DIARY includes all the dates of various national and international aquatic events, including shows, auctions, etc. This page depends on event organisers notifying Kathy of their diary dates, so get your event publicised and e-mail Kathy from the site.

OPEN FORUM is basically a bulletin board where you can post your aquatic questions and others can answer. The questions and answers are available for all to peruse. Obviously some people abuse this (I wonder how the chap digging his 48ft deep pond is doing?), but most don't. These type of boards work really well and we will be looking at the specialised board in a later issue.

CROSSWORD You can while away the time with the various aquatic puzzles on this page, or even build your own virtual aquarium and populate it! Crossword is very clever and entertaining.

BOOKSHOP is part of the commercial side of the site where you can select from a choice of aquatic books (most have a short review) and even buy on line if you wish.



## An exciting range of Granules, Floating Sticks & Floating Pellets

Now you can give your tropical or coldwater fish a choice of superior nutrition – AQUARIAN Flakes or the exciting new range of AQUARIAN Tropical Granules, Tropical Floating Sticks or Goldfish Pellets.



SHOPPING is also part of the commercial side of the site. You can buy a large selection of aquatic goods on line or contact various British dealers who have links here.

LINKS is one of the better link pages where all links are separated into various categories such as Livebearers, Catfish, General, etc., which saves time when looking for specific information.

UTILITIES contains an excellent aquarium calculator, which works out the number of fish (coldwater, tropical or marine) that you can safely keep in a tank. The program allows for various shapes of tank and will even work out your light and heating requirements. There is also a powerful search engine to find that elusive subject as it is bound to exist somewhere on the Net.

AOL CLUB (stands for Aquarists On-Line Club) meets once a month. Once logged in, you can talk to anyone else who is also logged in. This is done by entering text via your keyboard. Various guest 'speakers' have appeared - including our very own Dick Mills - and recently has attracted aquarists from other countries, sealing several international friendships.

WEB BUILDER provides links to useful Web page building tools and utilities for any budding Webmasters in your club.

Now to look at one of the link sites:

WEBFISH CATALOGUE  
<http://www.ggservice.com/webfish/>

This site provides links to many of the aquatic sites on the Net. It stands out

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from the rest because each site is given a brief review. This provides you with an idea of what exactly is on the site. Each site is also given a star rating. Whether you agree with the ratings given or not, it does provide a 'rough and ready' guide to a site's quality. The down-side of this site is that it obviously takes a lot of maintaining and the site has not been updated since July 1997, whilst the site looks for sponsors.

### KAAS CONVENTION

Saturday, 21st March, 1998

Smithy's Hotel,  
23-25, Eastern Esplanade,  
Cliftonville,  
Margate,  
Kent  
Tele: 01843-221053

Entry by ticket - obtainable in advance from: Alan Best, 73, The Fairway, Rochester, Kent. Cost £10.00.

Commences at 1.00 pm

Speakers: Roger Foggitt  
Dave McAllister  
Gina Sandford

Also: Quiz, Fish Auction and Buffet

Overnight accommodation available - liaise directly with hotel. Cost £22.50 per head B&B. Mention KAAS Convention when booking to obtain price quoted.

### HOME FURNISHED AQUARIA

by Malcolm Goss

Growing plants seems to be a side of our hobby that a lot of aquarists cannot cope with. This is not just the case with new aquarists, but also those who have been successfully keeping fish for many years. Many aquarists purchase their fish and plants, but end up with a bare tank within the first few months. Nothing looks worse when entering someone's lounge than looking into an aquarium with a couple of rocks, maybe a water wheel being rotated (just) by an air stone and green algae usually covering everything from the substrate to the aquarium glass. Such quantities of algae usually means that the plants have already been killed.

Some aquarists, in their frustration, buy plastic plants, but all too soon these, too, are covered in algae and make a very poor sight.

Within the following months the fish die or are given away and the aquarium is put into the garden shed or up in the loft. This person is now another aquarist lost to the hobby.

There is actually no real mystery about growing plants - you don't even have to talk to them despite what the 'old wives' tell you! You do, however, have to understand them and provide them with the environment they require to thrive. Imagine putting a horse in your garden. Within days the plants that had not been eaten would have been trampled into the earth. If you then added a marquee over the whole of your garden the much lower light penetration would kill off any hardy specimens still surviving.

This may be a rather drastic comparison to an aquarium in your

lounge, but aquarists do buy large growing cichlids or vegetarian fish and introduce them to a confined space. They then add a tank lid, only putting on the light-source for two or three hours in the evening when the family comes home and expect the plants to survive.

To help you to understand plants you should invest in a good book on the subject - perhaps 'Aquarium Plants' by Dr. Karel Rataj and Thomas J. Horemian (ISBN: 0-87666-455-9) published by T-H Publications in 1977. You need to research the plants and their needs together with fish that will be compatible with them. Over the next few issues of 'Fishworld' I will endeavour to give you some practical advice to help you to achieve a good show of plants in your aquarium.

The first piece of advice I would like to give you is that you can rarely grow or keep plants with large species of fish. When you go out to purchase fish check just how large the pretty and cute little souls you see in the tank will actually grow. Also ask whether they make good community fish.

There is a selection of Tetras available which will provide a good display in a planted aquarium. The most commonly seen are Parachanna axelrodi (Cardinal Tetra), Hyphessobrycon pulchripinnis (Lemon Tetra), Hyphessobrycon rosaceus (Rosy Tetra) and many more. The Danio family includes Brachydanio rerio (Zebra Danio), Brachydanio albolineatus (Pearl Danio), which will also live happily with Tetras. You can include a few catfish in the form of Corydoras who will provide activity and variety to the lower regions of your tank. Some small Gouramis which are Anabantoids (air breathing) or a few small Barbs or Rasboras such as Rasbora heteromorpha (Harlequin Fish) will

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The new



# AQUARIST & PONDKEEPER

**AQUARIST & PONDKEEPER is the foremost fishkeeping magazine for the specialist and beginner alike.**

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further variety. It is most important, however, that you are not tempted to overcrowd your aquarium - ensure you stock accounting for the adult size of fish and not the size at which they are purchased.

Some aquarists successfully grow plants with undergravel filtration, but the very action of the filtration sucking debris down through the substrate (gravel) compacts the gravel over a period of time and limits plant growth unless you carry out regular gentle (to prevent root damage) gravel cleaning as part of your water change routine. Remember that in your garden you hoe the earth around plants to introduce air into the soil and to prevent compaction. Stimulate root development by lightly turning over the substrate in the aquarium with a plant stick.

I do not use any form of planting medium under the gravel as my plants have always grown well without it.

Whilst water movement is good for our fish and plants, too much turbulence will restrict plant growth and in extreme instances plants die off altogether. Some time ago, my aquarium (5' x 2' x 2') was filled with masses of aquatic plants - so much so that it looked like an underwater jungle. It was a beautiful sight. It was filtered by a small external Eheim power filter which seemed hopelessly inadequate for the size of the aquarium. A fellow aquarist was selling his 'bucket-type' Eheim and I had always coveted one, but the new price was prohibitive. I gave in and bought the filter, setting it up in my aquarium. I was impressed - it was just like turning on my bath tap. Within months, however, my underwater jungle had turned into something more resembling a barren waste land.

The answer is a trickling flow for plants. The same applies to air stones. Too much water turbulence together with too much air stimulates algal growth.

I have used many forms of lighting over my aquaria, whether they be tungsten bulbs, fluorescent tubes, halogen or mercury vapour. They all work quite well, but vary in the amount of electricity they use and the amount of heat they give off. In the tropics sunlight times can be in excess of 12 hours in every 24 hours. This means that whatever light we use over the aquarium, plants require a minimum of 12 hours artificial light every day.

Some British aquarists - like their Dutch counterparts - use 4 or 5 fluorescent tubes over their aquaria with individual timers on each tube. This is to create a 'staggered' effect for turning on and off each light. In real terms, however, it makes no difference to the actual growth of the plants, but this system enhances the environment for the fish sharing the aquarium with the plants as they do not require the light levels that plants do.

*In the next issue I will discuss aquarium water and the right type of plants to buy.*

## HELP

Can anyone recommend a good book on ichthyological terms for a novice to the subject?

Details please to:

Roger Crew,  
c/o HMP Albany,  
55, Parkhurst Road,  
Newport,  
Isle of Wight PO30 5RS

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# Tetra CORAL CREATIONS

A Tetra (USA) line that became unavailable in the UK three years ago. Recently a small stock was identified in the UK warehouse and Tetra have agreed to its **sole distribution** in the UK through the Federation of British Aquatic Societies' Merchandising at **absolutely knock-down prices!**

Here is the opportunity for all of you marine or Rift Valley enthusiasts (or any fishkeepers for that matter) to create a coral scene **without damage to the environment**, for **Coral Creations** are a synthetic resin product which is totally inert and harmless to your fish tank. Now you can enjoy the sight of lifelike 'coral' at a fraction of the cost.

As an example, the top of the range 'Brain Coral 1/2 helmet' which normally would



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retail at £23.25 can be yours for merely **£5.80** and for a 'Mini Brain Coral' in either white or natural, you pay only **£2.00 instead of £6.75**. Do not forget that these recommended retail prices are now three years old, so you are getting even better value!

This unique opportunity is only available to you through FBAS Merchandising. Obviously the cost of post and packing would be high on items of this kind, so we are offering **Coral Creations** for sale only at open shows and major shows and only whilst stocks last.

Enquiries via the Merchandising Officer - address in your Year Book!

## ORIGIN OF THE BRITISH KOI-KEEPERS SOCIETY

by Val Frost

At the millennium it will be 30 years since that first memorable meeting at the Royal Horticultural Hall in Victoria. Memorable, because approximately 70 people who had attempted to keep koi over the previous decade, in various states of isolation, could now get together for the first time and compare notes.

If it were possible to time-travel back 35 years, you would find yourself in a British Isles devoid of anything but the most basic fishkeeping aids. There were a few tropical freshwater fish dealers and angle-iron glass aquariums were produced, but most people were still acquiring their first goldfish bowl or a glass accumulator jar.

If you had a pond in it, it would either be in natural clay or painstakingly built with wood shattering, chicken wire and concrete. 'Weathering', even with the help of potassium permanganate crystals in the water to neutralise the lime leaching from the concrete, could take anything from 3 months to a year before fish and plants could be introduced. Synthetic building materials, filtration, aeration and bottom drains were still a mirage on a far distant horizon.

A few koi had arrived in this country during the Sixties via various routes, some were brought in privately by businessmen who saw them in Japan and one or two fish importers had a few on offer.

Although these first imports were rubbish by today's standards, those of us, who were already keeping fish successfully in attractively stocked garden ponds, were gobsmacked by their beauty the first time we saw them. No-one had ever seen a blue and red fish with mirror scales (Shusui) before or a highly metallic fish with lustrous fins, so those who could afford these novelties added them to their stocks with varying degrees of success as no knowledge of koi-keeping had filtered through at all from Japan at that time.

The late Ken Fawcett of Reigate, imported fish and fish publications from America, and was first to recognise the need for 'the pooling of knowledge' and advertised and organised the first afore-mentioned meeting in Victoria.

So imagine the joy with which those first koi-keepers greeted each other! By the time the meeting ended we had our first skeleton committee with Ken Fawcett as the President, and extremely lucky to have Eric Allen as our first Chairman.

Eric was the sales manager with the famous Perkins engine factory at Peterborough and through their Japanese sales conventions, he was the first person to make direct contact with Japanese koi-keepers with the knowledge and use of Japanese calligraphy.

Soon telephone wires and the postal system was working overtime all over the UK to facilitate the important exchange of ideas and information which eventually achieved the objective of enabling us to keep our koi alive and healthy.

It must be emphasised that there were literally no other source of assistance or help in the country pre-BKKS. No books, no specialist dealers, few available medications and certainly no veterinary knowledge. No Japanese garden ornaments, no filtration, no bottom drains or any other custom-made pond fittings.

This amateur society, run by amateurs, for amateurs, soon became the centre of all knowledge in the UK producing a news-letter, which subsequently developed into a colourful magazine. Apart from the formation of life-long friendships, we soon had Japanese koi books translated into English and Eric Allen invented under-gravel filtration (the pre-cursor of all the forms) for ponds.

Fish cures and treatments were developed along with special nutritional koi pellets (replacing trout pellets). Breeding programmes were started and koi successfully raised from eggs and fry.

During this period more sophisticated pond building materials became available such as thick polythene, butyl rubber, fibreglass, and a variety of more efficient pond pumps to back up the old Otter submersibles.

English koi-keepers met their Japanese counterparts for the first time in the Spring of 1975 when we were met and treated like royalty on a mind-blowing BKKS tour of Japan initiated by Eric Allen and organised by our then Chairman, Roland Seal. 'Mind-blowing' because we had not seen really good quality koi in the UK and could not believe how beautiful the quality Japanese fish were. We had always assumed the colour in the book illustrations had been touched up! It would be impossible to say how much information was picked up during that first and subsequent trips to Japan.

Koi shows were also being organised in member's gardens and gradually evolved into the sophisticated type of show you see here today.

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There is no doubt the BKKS is directly responsible for the enormous interest now exploding in koi-keeping, and in my personal friends Carol and Ray Kilham (North Herts & District Section Treasurer and Secretary respectively) you have two people worthy to carry on the true traditions of the society, following in the footsteps of legends like Ken Fawcett and Eric Allen.

#### FRUIT FLIES

by Sue Crew

A cheap and easy live food, the Fruit Fly (*Drosophila melanogaster*) can be produced at home with little effort. Both winged and wingless - and therefore flightless - varieties are available. The wingless variety are preferable as they can be fed to your fish by tipping them onto the water surface without them flying away.

#### THE FLIES

Fruit flies are small orange-yellow or light brown and measure approximately one eighth inch long. They are also known as Vinegar Flies. Adults are very attracted to fermenting substances and tend to lay their eggs in the breaks in the skins of very ripe fruit. The life cycle of the Fruit Fly is a week to ten days. Larvae, pupae and adult flies will happily co-habit in one jar or bottle. Adult Fruit Flies will live for upwards of two or three weeks and the females will lay about a hundred eggs during this time.

#### OBTAINING STOCK

The wild-type (winged) Fruit Fly can be harvested by placing a food culture in an open container to attract the flies. The wingless variety can be purchased from a pet shop or a supplier of live foods, or you can, perhaps, share a fellow aquarist's Fruit Flies.

#### FRUIT FLIES AS FOOD

The Fruit Fly is prolific and easily reared on a mixture of bran, fruit pulp and

fermenting substances. The body of the Fruit Fly is soft and floats easily on the surface of the water. It will live for several hours before being eaten. The fishkeeper can also harvest the larvae from the container and feed them directly to fish.

#### THE CULTURE

A glass or plastic container (e.g. jam jar) will be adequate for housing your Fruit Fly colony, but you will need to ensure a ventilated cover is available for your container to ensure your culture remains.

Dissolve one third of a sheet of gelatin in 1.5" boiling water in a milk saucepan. Then stir in breakfast oats or bran until the 'porridge' starts to form a ball. Cool the mixture. Suspend an ounce of yeast into a small amount of lukewarm water. Mash a banana with a fork. Add the yeast mixture to the 'porridge' when it is cooled (if you add the yeast whilst the 'porridge' is too warm you will kill the yeast) and then the mashed banana to form a thick 'porridge'.

Using a spoon, cover the bottom of the container with a half inch layer of the mixture. Keep the walls of the container clean. Place a piece of tissue or toilet paper in each container to absorb moisture. Place a few live flies in each container and cover the opening with a ventilated lid (thin nylon tights are ideal) and secure with an elastic band. Place the culture in a temperature of 68° to 70°F (20° to 26°C) in a light position.

The Fruit Flies will lay large numbers of eggs on the tissue or on the walls of the container and after about 3-5 days you will see the larvae. The pupae will then appear and 4-6 days later will turn into Fruit Flies.

It is preferable to start a new culture every three or four weeks to ensure a constant supply of live food throughout the year. At room temperature, a new culture will produce the next generation of adults approximately every two weeks.



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# HAGEN

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Send your entries on a postcard or sealed envelope with your name and address to:

Hagen/Grocklemania Competition,  
8, Acacia Avenue,  
Brentford,  
Middlesex  
TW8 8NR

Draw to take place on 16th April, 1998



#### BROOCH AWARD SCHEME

During 1997 Brooch Awards were made to:

#### BRONZE

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Ruth Whiddett  
Tom Mayle  
John Egan  
Eileen Blackie  
Derek Watson

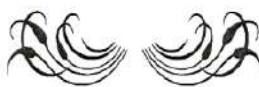
#### SILVER

Alan Stevens  
Tony Tyson (twice)  
Chas Raggio  
Roger Crew  
John Egan  
Mick Blackie

#### GOLD

Tony Tyson (two)  
Toni Mayle  
John Egan

This year the FBAS have decided to up-date the brooches awarded. All new brooches awarded will be a completely new design of Siamese Fighter on a stick pin.



## WANTED



INFORMATION REGARDING THE PRESENT WHEREABOUTS OF THIS MAN. NO CURRENT PHOTOGRAPH AVAILABLE. LATEST SOME 20 YEARS OLD. WHERE IS HE NOW?

HE IS KNOWN NOT TO BE DANGEROUS. HE IS NOT ARMED. FURTHER INFORMATION NEXT ISSUE.

#### FBAS ELECT NEW VICE PRESIDENT

Our thanks should go to Dick Mills who has just retired as Editor of "Fishworld" to devote more of his time to his 'day job' as Editor of "Aquarist and Pondkeeper" magazine.



In recognition of the work that Dick has done for the hobby, he has been elected a Vice Present of the Federation of British Aquatic Societies. Dick will continue with his involvement in the hobby and the FBAS, so we will still be seeing him around as usual.

Congratulations, Dick and thanks for all your hard work!



**BACK TO NATURE GUIDE  
TO CATFISHES**  
DR. DAVID SANDS  
SWEDEN: FOHRMAN AQUARISTIK  
AB  
ISBN 3-9805605-0-3

Reviewed by Roger Crew

This 128-page book rivals any of the currently available aquatic publications for print quality and photography, and is competitively priced at around £10.00.

In his introduction, the Editor, rightly declares that "...enthusiastic aquarists need to make a correct identification of a new purchase..." Unfortunately, the content of the book does not support this assertion, failing as it does to provide anything significant beyond good quality, but poorly numbered photographs to aid identification and - in some cases - even failing to correctly caption the photographs with a correct identification.

How unfortunate then, that the *Leiocassis stamensis* illustrated on p97 is captioned "*L. poecilopterus* (incorrect and misspelled caption)! Furthermore, *L. stamensis* receives no mention in the text despite being fairly often seen, but the rarely seen *L. stenomus* and *L. poecilopterus* receive a 'write up'. The reader is directed - when reading about maintenance of *L. stenomus* - by the wording "...As in *Leiocassis stamensis*..." All in all, a bit of a *Leiocassis* 'cock-up'!

I also felt there was little point in illustrating twice on p93, a *Chaca bankanensis*, but not the *Chaca chaca* mentioned in the text. I also found

duplication of illustrations (i.e. that on p11 is the same as that on p123). Another discrepancy I noted was that the picture captioned No. 4 on p59 is not *Agamyxis pectinifrons*, which is actually found on p67 with the label *Isoirioniscaria festae*! There were other obvious discrepancies, but space precludes mentioning them all.

My criticisms are justified. We pay good money for such publications as this and expect accuracy and proof reading in return, but lamentably it seems we rarely receive either.

Another subjective claim by the Author is that the book collects together the best known aquarium catfishes. This particular Americanism of our language - which seems obligatory for all aquatic publications nowadays - is a personal hate of mine. I make no apology for the fact that I know the plural of fish to be fish!

Whilst on the subject of personal foibles, I note Dr. Sands' reference to *Corydoras aeneus schultzi* (p39) with some pleasure. Some years ago I set the questions on *Corydoras* for the final of the Aquarium Aquacub Quiz - including one on this particular name - only to be embarrassed by the Quizmaster (one D.D. Sands, Esq.) insisting, despite my contrary claim, that he had never made any reference to this name! Elephants, et al never forget!

Notwithstanding all of the foregoing, this is a very welcome addition to the aquatic library, not in terms of identification, but due to the refreshing approach taken in identifying how to keep catfish in captivity. Dr. Sands deals in a no-nonsense way with such technical aspects as water chemistry, natural habitats, species compatibility and the 'fish versus planted aquaria' debate. The introductory chapters on "Aquarium - The Nocturnal Aquarium - Wood, Pebbles, Plants and Sand - The Green - Water" all effectively set the scene for the fish-related chapters.

All in all a good buy for the catfish enthusiast who knows what he/she is looking at!



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**JUDGES CORNER**



Welcome to the first Judges news page in "Fishworld". This page is for passing information between Judges as well as anyone else who is interested enough to read on!

Within "Judges Corner" I hope to be able feature 'new' fish seen on show benches and to pass on any relevant judging information.

I would ask all Judges and/or hobbyists to send me any fish-related information in time for the next issue of "Fishworld" - photographs can be included, if suitable, or they could be re-drawn for inclusion. Please supply as much information as you have available about the 'new' fish (e.g. references in books, etc.).

I hope that you are all looking forward to the new show season to renew contact with old acquaintances as well as making new ones. I am, at present wondering if any of the lesser-known fish shown last year will be around again this year - if so, let me know! It would be nice if anyone interested could highlight any shows they have attended and write up any observations about the show and the fish exhibited. These could then be included in future issues of "Fishworld".

As you are all aware, the Federation of British Aquatic Societies re-print the size sheets every year in order that all our

information is as up-to-date as possible and that there is no confusion as to what size a particular fish is judged to. Each page of the booklet has the year of publishing at the foot of the page to ensure current editions are being used.

I would be very interested to hear your opinions of the new layout of the size sheets book and the idea of underlining every 10th fish to make it easier to read. The 1998 edition of this book had to be re-entered into the computer owing to a lost file and no back-up! During the process all entries have been proof-read to eliminate spelling or inputting mistakes. I hope the new amendments will be suitable and that the spelling is correct, but if anyone has any constructive suggestions or spelling corrections, please pass them on to me.

I must now draw your attention to the size adjustment sheets - these must be with the Judges and Standards Secretary by the end of November each year so that any alterations can be inserted for the following year. If they are received after this date, they will be considered for the following year's update.

The next item is the usual moan for all Judges to have their workload forms in early - these should be submitted by the end of January - so if any of the Judges reading this have not sent in a workload form they are in great danger of being removed from the Judges List.

**Judges and Standards  
Committee,  
c/o 9, Edwin Road,  
Hastings,  
East Sussex  
TN35 5TJ**

**1998 SHOW DATES AND EVENTS**

**Rule Codes:** A = A of A, FB = FBAS, FN = FNAS, FS = FSAS, I = International Goldfish Standards, N = NEFAS, U = US of A, Y = YAAS

7-0.3.98	<b>Viviparous 10th Anniversary Convention, Chesterfield</b>
8.3.98	N.E.F.A.S. (N)
15.3.98	Merseyside AS Auction
21.3.98	<b>KAAS Convention</b>
21-22.3.98	<b>Yorkshire Aquarist Festival, Doncaster (Y)</b>
28.3.98	Eastleigh AS (FB), Northampton AS (FB), Halifax AS Auction, BCA Convention, Cleaton AS Auction
5.4.98	Abardere AS (FB)
12.4.98	Oldham AS (FN)
19.4.98	Merthyr AS (FB), Bishop Auckland (FB), Robin Hood AS (FN), Kirkcaldy AS
26.4.98	Swindon AS (FB), Strood AS (FB), <b>FNAS Convention</b>
3.5.98	Ryedale AS Auction
10.5.98	Corby AS (FB)
15-17.5.98	<b>Grookflemate, Isle of Wight AS (FB)</b>
17.5.98	Cast '88 (FN), Isle of Wight AS (FB)
23-24.5.98	Merseyside Section BKKS Japanese Style Open Show & Craft Fayre (BKKS)
24-25.5.98	South Hants Section BKKS Open Show (BKKS)
24.5.98	Hilton AS (FN)
30-31.5.98	<b>Fishworld '98, Dunstable (FB)</b>
31.5.98	Caer Urfa AS (FB)
6.6.98	SPASS (Coldwater) (I)
6-7.6.98	Worthing & District BKKS 8th Open Show (BKKS)
7.6.98	Erith AS (FB), Derby & DA (YAAS)
13.6.98	Bracknell AS (FB)
14.6.98	Tameside AS (FB), Castleford AS (Y)
21.6.98	Welland Valley AS (FB)
27-28.6.98	Middlesex & Surrey Borders Open Show (BKKS)
28.6.98	St Helens AS (FN), York & DAS (Y)
11.7.98	Port Talbot AS (FB), Southend Leigh & DAS (FB)
19.7.98	Bournemouth AS (FB)
26.7.98	Merseyside AS (FN), Oasis FC Auction
2.8.98	Yorkshire Koi Society (BKKS)
9.8.98	Grimby and Cloethopes AS, Salisbury AS (FB)
23.8.98	Glenrothes AS (FS), KAAS Show (FB)
30.8.98	TTAA (Area Group) (FB)
6.9.98	Alden AS (YAAS), Crumlington AS (FB), Cardiff AS (FB), Leeds BKKS Show (BKKS)
12.9.98	Hounslow AS (FB)
13.9.98	Mid-Somerset (BKKS), Silkdown AS (FN)
20.9.98	Mid-Sussex AS (FB)
27.9.98	Darwen AS (FN), Fair City AS (USA), Northern Koi Club Open Show (BKKS)
4.10.98	Halifax AS (FN), Littlehampton & Bognor AS (FB)
11.10.98	Washington AS (FB)
18.10.98	Solway AS (FB)
24-25.10.98	<b>British Aquarist's Festival, Manchester (FN)</b>
30.10-1.11.98	<b>Supreme Festival of Fishkeeping, Weston-Super-Mare (FB)</b>
15.11.98	FNAS Auction

**NOTE TO SHOW SECRETARIES**

The above dates are those available at the time of going to press. For the latest, most accurate dates and venue information (and trophy allocations where applicable), please refer to the Quarterly Supplement issued by the FBAS giving details of shows around the country. The Show Supplement is available, price 50p post paid from:

**SHOW INFORMATION**  
Dept. FW, 22, Flamelod Avenue, Wembley, Middlesex HA9 6DL  
In order to provide the most complete service to all Societies, please communicate your show information to the same address.



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