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Federation of British Aquatic Societies




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Dear Reader

Here we are again with another issue full of fishkeeping facts which we hope will keep you interested and informed.

Visiting the Petindex Trade Exhibition recently brought home just how diverse fishkeeping is and how many different interests there are for the support trade. Obviously equipment needs to be promoted and everything from pack flat tank cabinets and stands to CO2 test kits were there to see. Building up the fish's inner man was well catered for with several new foods on display — one digression was a Veggie-Burger for iguanas. On the livestock front one supplier was offering fish guaranteed free from the various nasty diseases such as Spring Viraemia of Carp.

The tip in the last issue was taken up at the recent KAAS Convention (we have a report and more tips) and there is an accent on pond topics bearing in mind the time of year with Jim Day's expert advice on breeding Bristol Shubunkins (what else?) and a review of pond filtration theories and more. If you thought you'd heard all there was to hear about Corydoras, then John Edwards has news for you, and Terry Waller's into breeding Killifish. Do you constantly reminisce about the 'good old days'? Wart Ellery could be a soulmate. How do you think space travel could influence fishkeeping? Nora Green speaks up for the street level aquarist.

Whatever your 'bag' you should be able to find something within these pages to enjoy — if so, tell your friend, if not tell me and we'll try to do something about it.

Dick Mills, Editor, FishWorld

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From the Chairman of the Federation of British Aquatic Societies



Dear Friends & Readers,

The showing season is now well underway for 1996. So far the Shows I have visited this year have had entries in the 4-500's, which is a very good start.

The Final of the British Open Championship was held at the Corby Open Show, there were some very nice fish on the bench and it was good to see new faces in the "Winners Enclosure".

| | | | |
|-----|------------------|-----------------------------|-----------|
| 1st | John Powell | <i>Lamprologus calvus</i> | 86 points |
| 2nd | Mr. & Mrs. Moore | <i>Fariowella acus</i> | 85 points |
| 3rd | Terry Hewitt | <i>Barbus miolepis</i> | 83 points |
| 4th | John Egan | <i>Hyphessobrycon metae</i> | 82 points |
| 5th | Paul Whidett | <i>Garra orientalis</i> | 81 points |
| 6th | Tom Moyle | <i>Corydoras narcissus</i> | 80 points |

The First & Second winners came from opposite ends of the country, John Powell from Kent and Mr. & Mrs. Moore who came all the way from Yorkshire. Bryan McHugh was the Judge.

Well done to everyone who took part.

I would like to take this opportunity to wish every success to Seascale Junior's First Open Show on the 30th of June and I would urgently ask that those of you who normally show fish in that part of the country, support this event.

I look forward to meeting many of you during the show season and to those who enter, I wish you every success.

Yours in Fishkeeping

Peter A. Furze

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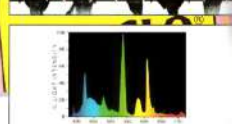
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Breeding Killifish

by Terry Waller

'Gems of the Aquarium' is a title that is often bandied about but Killifish really are The True Gems. Their colouration and finnage can be staggering, presenting a beauty that is unrivalled in the freshwater fish world. But, for all this, they remain mainly unpopular with the average fish-buying public; most shops don't even bother stocking them and when they do, make them almost price-inhibitive.

Killifish are Toothcarps — a group that they are often said to loosely share with the 'livebearing toothcarps' fishes of Central America — but they are however egg-laying fishes. They are mostly small fishes, two or three inches being the norm with a few getting larger and a few being smaller (how else would you arrive at an average size?). They are divided into several families but we are going to concentrate on one, *Aphyosemion*, because it is these you are most likely to find in the shops (yes, I know you can find the American Flagfish, *Jordanella floridae*, quite easily and yes, I know it is classed in with the 'killies' at Open Shows!).

Killifish are native to both the Old and the New Worlds and it is easy to explain how they reached America, you only have to look at an Atlas of the World to see how the East Coast of Africa, even now, at one time fitted neatly into the Gulf of Mexico during the super-continent 'Gondwanaland'. After the 'split' occurred and America drifted away, the Killies that went with it evolved their own way, some developing a whole new reproductive system, 'viviparity'. Killies are meat-eating fishes, carnivorous, so as the *Aphyosemion* are strictly top-swimming we can safely assume that most of their natural diet is made up of insect life that alights on the water surface.

We must bear this in mind when feeding, and make sure we give generous amounts of *Tubifex*, *Daphnia* and *Mosquito* larvae in their diet.

The fishes I have selected to breed are *Aphyosemion gardneri*, *A. australe* and *A. striatum*. If you hunt about you can usually find these three species on sale somewhere. When you buy them, try to purchase some extra females so that you are working in a ratio of one male to three females (some blokes have all the luck!) but this gives the females a rest because the male is a hard driver.

We are going to need

- a small tank (8" x 10" x 10" is ideal)
- a tank divider
- some 3" or 4" maps with corks attached (not to keep the flies off)
- a really close-fitting top glass
- a heater (at a margin or ice-cream tub (empty))

Fill the tank and leave for a couple of days. Place in the divider and then the fish. Females on one side, male on the other. Position the top glass very carefully — a tiny gap and they will be on the floor. The heater should be set at 72-74°F (remember that although 'tropical', Killifish do not generally need upper 70s temperatures). Feed the fish an *Tubifex*, *Daphnia* and *Mosquito* larvae for about a week. Place three or four maps in the tank and remove the divider. The threads of the maps hand down, resembling the root structure of floating plants such as *Water Lettuce*, the spawning site for fishes in the wild.

Leave the fishes for two days, then half fill the ice-cream tub with water from the tank. Remove each map in turn and examine strand by strand. You should see tiny glass-like balls — Killifish eggs. You can remove these with your fingers (they're quite hard and not likely to be easily damaged) and place them in the tub, you soon get the feel of it. You can float the tub in the main aquarium if you like. Replace the maps and off we go again.

Breeding Killifish

(continued)

After about a week of this activity separate the sexes again — continual spawning only deteriorates the egg quality with resulting poor fish. During this week, you may well have collected a hundred eggs from a good trio of quartet of fishes. Keep on eye on the eggs, any that go white, or 'furry', try to remove as they are unfertilised and may spoil the good ones. Once the eggs have gone black (this is the embryo forming) you know they are going to be O.K.

The fish hatch in about two weeks and are usually quite a good size. Leave them in the tub for about four days before carefully emptying the tub into a growing-on tank, 24" x 12" x 12" or similar. Feed Brine Shrimp for a few days after which, because of their high growth rate, they will be able to take sifted *Daphnia*, crushed-up flake and scraped ox-heart. Microworm is also very good in the early stages. These fishes are known as

'annuals' — this means that in nature the fish only live for a short time. The fish doesn't want to die and, in fact, in our aquariums (where the conditions are always perfect) they may live for years. However, Nature dictates the fish's natural life-span by filling the pools and streams of their native habitat during the wet, or monsoon, season and then, perversely, six months later drying everything up during the summer drought! This means, in theory, that the fish hatches, reaches maturity and spawns the next generation all in a period of about six months — hence the terrifically-fast growth rate, a short life but a happy one!

If you become really interested (obsessed according to most wives) you can do no better than to join the British Killifish Association which will open the door to dozens of species of Killies you otherwise would only read about.

They're Back

Yes, it's those kids again and, by all reports, both older and wiser! Members of the **Seascale Junior Fishkeeping Society** are on course to make another impact at the **Supreme Festival of Fishkeeping** at Weston-super-Mare again this year.

Not content with running away with plenty of honours (and most people's affections) at last year's event, this year they are really contributing by presenting lectures of their own making. What makes this such an event is that the Society is exactly what its title says, it is **not** a junior section of an adult Society but fully run by, and for, youngsters. Helen and Chris Steele obviously lend pairs of hands to the steering from time to time and are facing an increasingly short deadline as the Society's first Open Show looms on the 30 June.



Still with the Weston front, another feature at this year's event is the availability of live fish, but with a difference. The organisers have invited Specialist Societies to bring along any **home-bred fish for Auction**, in addition to just being available, the fishes' **owner/breeders** will be on hand too to give first hand details on how the fish were kept, bred and raised, for the guidance of their new owners. The provisional programme for the Supreme Festival will be reaching Societies shortly but details and Booking Forms are available direct from:

**Supreme Festival,
8 Accacia Avenue, Brentford, Middlesex
TW8 8NR**

1996 SHOW DATES

(Rule Codes: A=A of A; FB=FBAS; FN=FNAS; FS=FSAS; I=International Goldfish Standards; N=NEFAS; U=USofA; Y-YAAS)

| | |
|-------------|--------------------------------------|
| 2.6.96 | Erith & D.A.S. (FB) |
| 8.6.96 | S.F.A.S.S. |
| 9.6.96 | DERBY A.S. (Y) |
| 9.6.96 | REDCAR A.S. (N) |
| 9.6.96 | TAMESIDE (FN) |
| 23.6.96 | MERSEYSIDE A.S. (FN) |
| 23.6.96 | WORKINGTON A.S. (FS) |
| 23.6.96 | YAS SCUNTHORPE A.S. (Y) |
| 30.6.96 | ST HELENS A.S. (FN) |
| 30.6.96 | SEASCALE J.A.S. (FB) |
| 6.7.96 | PORT TALBOT A.S. (FB) |
| 7.7.96 | N.W. Cichlid Group |
| 7.7.96 | SCARBOROUGH A.S. (Y) |
| 21.7.96 | ASHBY A.S. (Y) |
| 21.7.96 | PHOENIX A.S. (FN) |
| 28/7/96 | K.A.A.S. (FB) |
| 3.8.96 | GLOUCESTERSHIRE A.S. (FB) |
| 4.8.96 | PETERHEAD A.S. (FS) |
| 10/1.8.96 | KOI '96 BKKS NATIONAL SHOW |
| 11.8.96 | DUNFERMLINE A.S. (FS) |
| 11.8.96 | GRIMSBY & CLEETHORPES A.S. (PROV)(Y) |
| 11.8.96 | SALISBURY A.S. (FB) |
| 18.8.96 | PERTH A.S. (FS) |
| 25.8.96 | GLENROTHES A.S. (FS) |
| 1.9.96 | CRANLINGTON A.S. (FB) |
| 8.9.96 | NORTHERN CATFISH GROUP |
| 14.9.96 | HOUNSLOW A.S. (FB) |
| 15.9.96 | PLYMOUTH A.S. (FB) |
| 15.9.96 | MID SUSSEX A.S. (FB) |
| 15.9.96 | SILKTOWN A.S. (FN) |
| 15.9.96 | SOUTH SCOTLAND A.S. (FS) |
| 22.9.96 | GRAMPIAN A.S. (FS) |
| 28.9.96 | BRISTOL TROP. FC. (FB) |
| 28.9.96 | NORTHERN GOLDFISH PS. (I) |
| 6.10.96 | GRANGEMOUTH A.S. (FS) |
| 6.10.96 | HALIFAX A.S. (FN) |
| 13.10.96 | SOLWAY A.S. (FS) |
| 16.10.96 | WASHINGTON A.S. & P. (FB) |
| 20.10.96 | LEEDS A.S. (Y) |
| 20.10.96 | WEST CORNWALL F.K. (FB) |
| 25/27.10.96 | B.A.F. (BOWLERS) (FN) |
| 3.11.96 | SUPREME FESTIVAL OF FISHKEEPING (FB) |
| 10.11.96 | BRADFORD A.S. (Y) |

Note to Society Show Secretaries:

The above dates are provisional and are those available as FishWorld went to press. For the latest, most accurate dates and venue information (together with 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 Flamsted 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.

WATCH THIS

CD ROM Title: **The Fish of Mamirau Volumes 1-4**
Compiled by: **Peter Henderson & William Crampton, University of Oxford, England and Projecto Mamirau, Tefe, Brazil**
Price: **£25.00 per disk, £80.00 per set of four**

The Amazon basin holds the world's most diverse freshwater fish fauna (recently estimated at approximately 3,200 species) yet there is little knowledge about how this great assemblage is organised into communities and how water chemistry influences fish populations. The forest and its waters are becoming ever more damaged by human activity and there is a pressing need to understand factors that generate and maintain this diversity.

This study was initiated to obtain aquatic diversity and fish biomass data for the Reserva Mamirau management plan. Projecto Mamirau aims to create a reserve of the Rios Solimes and Japur floodplain that will enhance fish populations. In this region people get more than 80% of their protein requirements from fish. Unfortunately, there are now clear recent indications of over-exploitation of some fish species but there are presently no published accounts of the fish fauna of this floodplain.

This series of 4 CD ROMs, produced to increase knowledge and awareness of the fish fauna of the Amazon, presents photographs and background information on all the species of fish caught within the Mamirau Ecological Station and surrounding waters. The Mamirau Ecological Station is Brazil's largest conservation unit situated in an area of swamp forests in the state of Amazonas, between the Japur, Solimes and Auci-Paran rivers. The images are supplied in the Kodak photo-CD format and are of full photographic quality. They can be viewed using standard image viewing or editing software on an IBM or Apple Macintosh personal computer. The discs also hold text files which give you the name of the fish in each picture, its MVC accession number, details of specimen within the MVC, the name of the photographer, further details about the photograph and the local name, a recent paper about the fish fauna of the region and a full species list for the reserve. Obviously Cichlids, Characins and Catfish play major parts in the 'cast list' of around 400 fishes but other species not belonging to these predominant families are also featured.

Like many field studies, for practical reasons, it presents most of the species as preserved, or recently-caught, specimens with the latter mainly shown laying posed on a human hand. However, for the conservation-minded, the pictorial information together with location details and water quality parameters will do much to 'open up' knowledge of the area's rich aquatic fauna which, we sincerely hope, can be preserved for the benefit of all.

Purchasers of these CD ROMs will gain comfort in knowing that they are making a contribution to the establishment of the Mamirau Ecological Station and helping to conserve the fish of the Amazon. Further details can be obtained from:

**Animal Behaviour Research Group,
Department of Zoology,
University of Oxford, South Parks Road, Oxford OX1 3PS**

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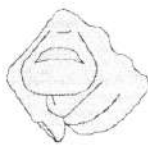
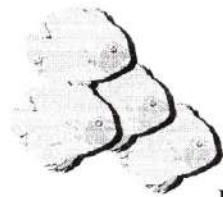
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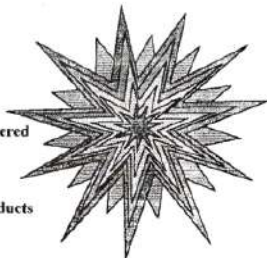
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News from

Down - Under



by Peter Cairn, Hounslow, A.S.

Having recently arrived back in England after eight weeks in Australia (yes, I did miss all the snow and cold weather — like a hole in the head!), I had to catch up with what had been going on fish-wise in *FishWorld Magazine*. It is very true that the aeroplane makes the world very small, i.e. only 24 hours to Melbourne, one of the articles I read was Jack Stillwell's reflection on the past by way of the Chairman and Secretary way back in the beginning of the FBAS and this brought back memories of events that occurred in Australia.

Whilst I was in Australia, I managed to contact the Eastern District Aquarist Society and one of their members took me to a meeting; it was held at a member's house mainly because the meeting was of a section with plants uppermost in their interest. Most of the evening was spent quizzing me about the hobby in England, some of the names mentioned were Dick Mills(!), Ray Leggatt — an ex-Hounslow member, plus one interested party who wanted to know if I knew a lady called Gina! This could only have been a reference to Gina Sandford. Also, I was asked by a member, who had left England some years ago, if I remembered the FBAS Secretary, Harold Dunbar (one up over Jack!).

During the meeting I was taken into the host's fish-house and to say I was 'gobsmacked' is putting it mildly! It was the size of a large garage with tanks around three sides and down the middle, with a pond underneath, plus trays of plants in front of the tanks.

Species of Rainbows were being bred (many of the members are members of the Australian & New Guinea Fishes Association, ANGFA, too) but I have never seen so much plant life in all my years keeping fish — only one person could walk around the tanks at a time due to the plant growth — it was like a mini-jungle! I do hope the photo comes out for you to see, but if it doesn't then all I can say is you should imagine a man holding a bucket waist high with what looks like an *Aspidistra* growing out of it hiding most of his chest. It wasn't an *Aspidistra*, it was a *Cryptocaryne!*

I could have stayed there for hours, unfortunately the plants were too big and my pockets too small for all the cutting and plantlets I would have dearly loved to bring back and all too soon I had to take my leave and get back to my brother's home where I was staying.

15

Have You Tried This?

John Rundle takes up the baton in our relay of passing on ideas

We were very interested to read in March's *FishWorld* of the 'Win, Draw or Lose' type of activity as applied to fishkeeping, in fact our 'famous member' Bill Rundle told us about it after last year's Tyne-Tees Show.

Believing firmly in the principle 'You get out as much as you're prepared to put in' I would like to suggest to other Societies two activities which we have found to be very constructive and enjoyable at our own Society, **Plymouth & District Aquarist & Pondkeepers Society**.

We have two 'specialist groups' (for want of a better phrase) in the Society and these deal with Photography and Breeding — two subjects which most aquarists have a go at, at some time during their fishkeeping lives. At first, there was a little resistance to the idea on the grounds that setting up specialised groups within the Society might prove to be more divisive than integral, however, by making these sections form a regular part of the Society's proceedings, they soon repaid our faith in setting them up.

For instance, we expect each group to produce a regular report on their activities (nothing too formal) —

an occasional 'free' slide show is a bonus for us in any case, as is a display on recent breedings alongside our regular Table Shows. A written account of some of their trial and errors (yes, they do get some failures too — and have the courage to tell us about them) also makes good reading in the Society newsletter, especially for those unable to attend regularly. On a practical aspect, these groups tend to meet quarterly, in addition to the Society's regular meetings, so there's no danger of their interests taking over from or, taking away from, normal Society routine.

Obviously, such groups find their own interests but there would be nothing to prevent the Society as a whole putting forward tasks for them to focus on (no pun intended!) say, to try to breed a notoriously difficult (or threatened) species or to come up with pictures for a Society Calendar or Christmas cards. Any participation in fishkeeping can be made to benefit the whole if only you put your mind to it and are not afraid of the challenge so, as it says at the top, "Why not Try This?"

SPOT THE SIMILARITY

What have Gloucestershire A.S. and Thorpe & D.A.S. got in common? They both meet in licensed premises in the livestock market of their respective cities, Gloucester and Norwich!

Heard on Radio 5 recently

Name three fish whose names begin and end with 'K'.
Answers: Killer Shark, Kwik-Save Haddock, Kilmarnock (a place in Scotland).

16

Green Grow the Rushes

Marginal species

Most ponds, whether pre-formed or self-designed holes lined with a suitable water-retaining material, should have shallow water areas planned and have shelves around part (at least) of the pond's circumference. The shallow water and shelved areas serve an important purpose in the lives of any amphibian, insect or small animal that visits the pond, or temporarily makes it their home; the shallow water makes for an easy entrance and exit point into or from the pond and the marginal plants give cover from any predatory bird who might just fancy a waterborne treat for a quick snack.

One thing to bear in mind, is that marginal plants can become very invasive unless planted in growth-restricting baskets — yes, curved ones are available for fitting snugly around the pond's curves. Do watch out that any escaping root or runner doesn't get a hold in any sludge accumulated on the pond base, as once this occurs the plant will simply race across the pond in no time at all.

Having marginal plants is all very well, but you should select them with care. Tall species may look impressive but they do catch the wind and are prone to be blown into the pond, depending on prevailing wind directions. Apart from looking unsightly, they usually topple into deeper water, dragging their soil-filled containers with them! However, they have much to offer in the way of foliage and flowers, most of which last the whole season. Suitable species include the golden-yellow Marsh Marigold, *Caltha palustris*, and its varieties some of which have double flowers. Stocks can be extended from seed or by dividing up clumps. Everyone recognises the aquatic Irises and the blue-flowered species have been supplemented by white, violet and pink varieties from the *Iris laevigata* group. The Yellow Flag Iris will grow too fast for the average

Despite the ease with which a garden pond can be installed — dig a hole, line it and fill with water — the real trick lies in making it look not man-installed at all. One thing you can do at the outset is to make sure you install with a neutral or dark-coloured liner or something slightly less startling than a 'swimming-pool-blue' pre-formed pond.

Of the various shapes of pond, it is the strictly formal, straight-edged oblongs or squares that need 'softening' the most, whilst the more informal, wavy-edged designs, once sunk into the lawn are almost halfway there. Of course you mustn't go to such lengths that the pond is so well disguised that people don't realise it's there and so either miss its attractiveness on one hand — or fall into it on the other!

The best way to help the pond blend into the surrounds is by using plants, both in and around the pond. Such plants range from the truly aquatic species — easily identified by their floppy, or non-existent, stems (the water holds them up) to the marginal or bog plants; in the latter cases there might be some confusion as to what constitutes which. Marginals can be represented by those plants that tolerate standing permanently in a few inches of water; bog plants on the other hand, whilst genuinely appreciating a certain level of moistness, will not thrive if their bog conditions become permanently waterlogged or stagnant.

Although species such as Water-lilies certainly beautify the pond with their above-water flowers during summer and submerged aquatics do much to absorb nitrates and carbon dioxide directly from the water, their presence in the pond does nothing to help integrate the pond with its landscape surroundings.

17

Green Grow the Rushes

(continued)

pond is best not used in this context. The pink and white flowers of the Water Plantain, *Alisma plantago-aquatica*, become skeletons during Winter. Water Mint, *Mertha aquatica*, also has pink flowers, reddish stems and green-grey leaves. Water Forget-Me-Not, *Myosotis scorpioides*, is related to the garden's Forget-Me-Not and has light-blue flowers; a recently introduced variety, 'Maytime', has variegated leaves. Not all marginals are tall and the Bog Arum, *Calla palustris*, keeps low, ideal for disguising the actual pond edge in a most natural way. Whilst everyone thinks they know what a Bullrush look like (they think it's the brown seed-headed Reed Mace) the true Bullrush belongs to the *Scirpus* genus. Amongst the genus can be found the Zebra Rush with alternate bands of green and white on the stems.

Bog species

Whether the bog garden is an extension of the main pond or is simply another line-filled hole alongside but not connected to it, it must be kept permanently moist. This can be done by perforating the base of the liner (in the bog garden area!) so that any water can slowly drain away rather than stagnate; another way would be to bury a perforated hose or one of the new 'Soaker Hose' types found in garden irrigation systems; this could be filled from a tap from time to time to maintain the correct moisture level (check with a moisture meter or moisture indicating probe).

Plants for the bog garden may well include some of the previous species, providing their relative needs for water are observed, but there are others that perform excellently in their own right.

The *Astilbe* cultivated hybrids come in various heights between 1 and 4 feet and in many attractive colours.

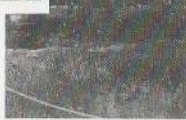
Most people associate the wet conditions of the bog garden with the *Hosta*, whose leaves come in many forms, colours and sizes; keeping slugs away can be a problem with these species but nothing a hungry frog or toad couldn't resolve. *Gunnera* is a majestic plant whose spiny stem can scratch and whose huge elephant-ears sized leaves need to be folded over the crown to protect it once frost occurs. It may become too large for most gardens. The *Iris*es — this time, *Iris kumleri*, provide extra colour which varies from variety to variety. Whilst everyone thinks they know what *Lobelia cardinalis* is a well-known plant with its scarlet flowers whilst the Himalayan Poppy, *Meconopsis sp.*, has a bright blue flower. *Mimulus*, *Primula*, *Rhazin* and *Saxifrage* — all popular garden flowers — can equally well be planted in the bog garden.



HOUTTUYNIA
This very attractive marginal can get invasive.



JUNCUS ENSIPULUS
A small variety with spherical seed heads.



18

Spawning Shubunkins

by Jim Day, Bristol A.S

My first job is to disinfect the breeding tanks, which I do using potash (potassium permanganate), just a weak, pink solution. I then start to look at the fish I am going to select for spawning and clean off the heavy mucus that they have built up over the winter months. I find the best way to do this is by putting them in salt water for a few days (again a weak solution will do — not full strength sea water!); the heavy mucus will come off and the fish will look nice and clean. Once the mucus has been removed, you can then clear the body and gill of any associated 'flukes' and other parasites by using a bath made up of one teaspoonful of 'Dettol' to three gallons of water. Put the fish in the bath and leave until they start to get agitated; take them out and put them back into some clean water for a few minutes to recover — they'll probably be all over the place for quite some time but don't worry about them, they'll soon be O.K. You can now put them into our cleaned tank (they still might look sick, and still take a couple of hours further to fully recover, but they will come right — I haven't lost one yet!).

To condition the fish for breeding, I increase the water temperature to about 50°F for a week or so, and start feeding lightly; increase the temperature by another 5° and feed a little heavier. Repeat this process once more, to get the temperature up to 65°F which I consider to be the ideal spawning temperature. I do this process over a period of about 4-5 weeks; any foster and the males don't seem to have much milt or if they do, it's weak and watery — I prefer to see it nice and thick and milky. You hear a lot of people say they have infertile spawnings, I feel the cause is because their male's milt is so weak. The female fish should have no trouble in forming their eggs if you fed them well during the previous year; to make the fish more comfortable put plenty of plants, or mops, in the tank.

Personally, I prefer to hand-spawn my fish; this leaves nothing to chance, as I can use the fishes I prefer for

their inherent characteristics — size, colour, finnage or whatever! without Mother Nature providing me with fry I would rather not have. For a spawning receptacle, I usually make use of a washing up bowl or ice-cream container filled with water from the fishes' tank; the males and females I keep in separate buckets until I'm ready for them.

I use the males first, which may seem a little odd to you, and gently milk their milt all over the surface of the water in the container; I then take the female and, gently stroking (never squeezing) at the vent expel the eggs so that they drop down through the milt into the water during which time they should (hopefully!) become fertilised. I think this is a more productive way than expecting the milt to fall down through the water to reach the eggs on the bottom of the container — I've always had a much better fertility rate this way. I leave the eggs for a couple of minutes in the milk/water for a couple of minutes before I rinse them off in clean water.

I float the containers in the tank and turn up the temperature to 70°F. Within 3-4 days the eggs should start to hatch out. After a further 24 hours, the fry will have used up their yolk sacs and will need some form of fine first food. Liquify No. 1 (for Egglayers) is given for the next 2-3 days after which they get started on Brine Shrimp. All this time you must be careful not to overdo the feeding which will pollute the water. If you follow this early procedure, the fry will get off to a good start and grow quite quickly.

After this it's up to you to continue the good work — then you've got the problems of what to do with the large number of, hopefully, healthy, well-fed young fishes!

Of course, there will be someone out there who does it all differently and has just as good results, but that's what it's all about isn't it? We can all learn from each other, but once you find your own recipe for success then my advice is stick to it no matter what anyone else says or does!

19

READ THESE

The Perfect Pond Recipe Book by Peter J. May is only a slim volume but contains all you need to know about the worst aspect of pond-keeping — the physical side!

It starts with guidelines to what you will need for various installations and then proceeds in a most delightful way not only to tell you how to go about things but, by using cartoon-style graphics, shows you as well. Whether it's a simple pond (either in-ground or raised) using a liner or a pre-formed unit, a stream, waterfall, linked ponds or even a water feature with a jetty, construction details are all here with every conceivable detail clearly illustrated. Throughout the book, important, money or labour-saving hints abound. Choosing a pump is something to get right if you are to have water movement other than just a simple fountain; making allowances for 'head', distance and width of waterfall lips are all easily explained. Looking at all the diagrams, from the most simple to the most complex, fills the reader with enough confidence and enthusiasm to go straight out and get digging! **The Perfect Pond Recipe Book** costs only £4.95 and is available from T.F.H. Publications.

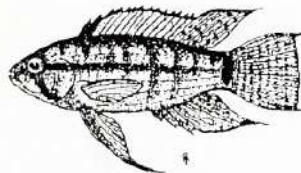
The Completely Illustrated Guide to KOI for YOU! by Dr Herbert R. Axelrod, with others, is a sumptuous book that is beautiful, informative, overwhelming interesting and most certainly extremely decorative.

The book provides a complete guide to KOI from every conceivable angle; there is the question of just what is a KOI? How do the Japanese judges evaluate the 'thousands of fish they see each year?' (Some Judges' comments make excellent reading). Filtration systems are explained with a clarity probably only surpassed by that of the water returning from some of the more complex systems. Pond plants, pond-visiting animals and birds are described (and warned against where necessary); suitable pond fish are listed and include basic KOI varieties. But then the book turns to KOI proper with the next 90 pages or so are simply filled with varieties of KOI ranging from the classic to the synthetic — if you think colour-injected tropical fish are bad enough, wait 'til you see the 'Sweetheart' KOI with transplanted heart-shaped scales! Concluding the 'culturing of KOI' section, a chapter 'Methods for improvement of Japanese ornamental (KOI) Carps' sheds much light on the development of KOI outside of Japan, especially in Israel.

However, the KOI's ancestor, the Common Carp is not forgotten nor left behind. Its place in history is fully documented as a food fish, especially in medieval Europe; the success and spread of the Roman Empire may well have been founded on the number of Danube carp available for food! The domestication of the Carp is compared to that of other food animals including the rabbit.

So you can see, there's more to KOI than what you see from any pond bridge or bank. The dedication page announced that this was to be the last Herbert Axelrod KOI book; having seen the wealth of information, marvelled at the depth of research and the quality of the presentation, I can well believe that HRA cannot better this creation and I think he would be reluctant even to try. The book costs £39.95 and is available from T.F.H. Publications.

Apistogramma ortmanni (Eigenmann).

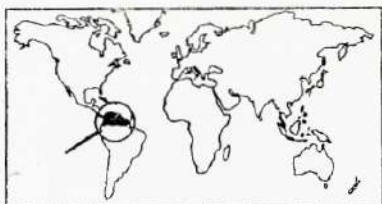


| | |
|-------------------------|--|
| Common Names: | Ortmann's Dwarf Cichlid. |
| Colours: | Basic body colour is extremely variable depending on the habitat, generally yellow-brown, shading to bright green towards the dorsal contour, light pinkish towards the belly, a black stripe runs laterally commencing on the snout, terminating in an oval blotch on the caudal peduncle. A number of indistinct dark bars cross the black stripe, while a few narrow lines are present mainly below the main stripe, a further short black line runs from below the eye across the cheek to the posterior of the operculum. Fins pale grayish blue or pale pink, dorsal and caudal with dark stippling on the posterior soft rays forming irregular bars, caudal with about 8 bars formed of dark marks between the rays, dorsal and anal with darkish margins, pelvics and pectorals clear without markings. |
| Characteristics: | Females are smaller, less colourful and do not carry the extended finnage of the males. |
| Remarks: | A species that may be kept in a community aquarium, but becomes of a bullying nature when spawning time approaches, it is then that they should be removed to a one species tank where, should the aquarist wish to, he or she will find them ready to breed. Exhibit in show class (B). |

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FEBS FISH GUIDE

0



Habitat: British Guyana and Central Amazonia in soft slightly acid water.

Temperature: 26°-28°C (79°-82°F).

Water: PH 5.4 - 5.8. Soft well aged slightly acid water. New water straight from the tap should be avoided.

Feeding: Will accept all types of foods, but the feeding of dried foods should be interspersed with live food.

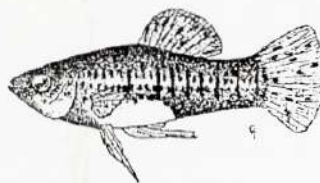
Breeding: Females fins become bright yellow at spawning time, and the female begins to clean and prepare a spawning site. Temperature is not critical 24 - 26 C (75 - 79 F) is fine. Spawning procedure and preparation is as outlined within the text for *Apistogramma agassizi*. A species that is very easy to spawn.

Comment: *Apistogramma* species are very difficult to identify, not only do individual species come from a fairly wide habitat, but single specimens are like chameleons changing their colour and markings to suit their mood. It therefore follows that the problems met in identifying newly acquired species may be insurmountable.

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FBAS FISH GUIDE.

Poecilia (Limia) VITTATA (Gutchenot).



Common Names: Banded or Cuban Limia.

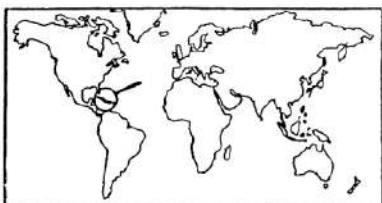
Colour: Basic body colour yellowish-brown shading to brown towards the dorsal contour, pale yellow on the belly, the flanks overlaid with a bluish sheen by reflected light, an indistinct light stripe runs from the operculum to the caudal peduncle flanked above and below by a series of dark markings, eight frequently indistinct dark bars are superimposed on the light stripe, the first anterior to the insert of the caudal fin, the last on the caudal peduncle, a few scattered dark blotches are present mainly above the lateral line. Dorsal and caudal fins bright yellow with scattered dark markings, pelvic and pectorals without markings. Females are less colourful than males and lack the dark markings on the caudal and anal fins but do display four indistinct rows of darkish spots which commence at the operculum and terminate on the caudal peduncle.

Characteristics: Body and finnage shape as illustrated. The males anal fins are modified to form a true copulatory organ, the gonopodium, which is formed from the third, fourth and fifth rays of the anal fin which are elongated and more or less tapering. The anal fin of the female remains unmodified.

Remarks: An active livebearing species ideal for communities of fish approximately its own size, but as with all livebearing species care should be taken to keep species within a genus apart to prevent accidental crossing. Hybridizing is undesirable unless carried out as part of a controlled experiment. It should always be the aquarists aim to maintain pure strains in the interest of conservation, science and the hobby. Exhibit in show class 1.

1

FBAS FISH GUIDE.



Habitat: Found in Cuba in small brooks with both fresh and brackish water, they have also been collected from the canal area near Havana.

Temperature: 20°-24°C (68°-75°F).

Water: PH 7 - 7.4. Neutral to alkaline, old water is preferable when introducing fish to the aquarium where the addition of a little sea salt would be beneficial.

Feeding: Adults are omnivorous accepting most types of live and dried foods but in order to maintain good health green vegetable matter should be included in their diet.

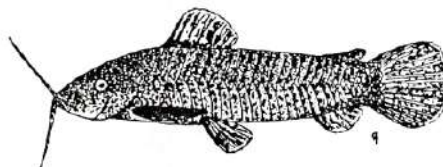
Breeding: This should be carried out either in well planted single species aquaria with floating cover where young can seek refuge, or ready to spawn females may be placed in suspended breeding cages where the young fry can escape being eaten. The young will eat almost immediately taking brine shrimp, micro worm and fine dried foods.

Comment: The fish presently known as *Poecilia vittata* has been incorrectly illustrated in aquarium literature and is in fact *Poecilia ornata*. *Poecilia vittata* displays rows of dots and indistinct vertical bars on the flanks, while *Poecilia ornata* has scattered blotches and is without rows of dots or bars.

FBAS FISH GUIDE.

1

Callichthys callichthys (Linnaeus).



Common Names: Armoured or Bubble-nest Catfish, *Callichthys* and Hassar.

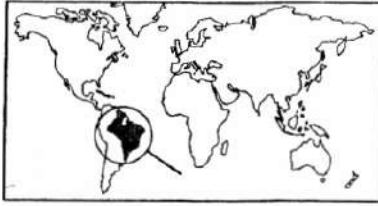
Colour: Basic body colour olive greenish brown to grey over which some specimens display a bluish or violet metallic sheen, underside of body bluish grey to brownish which takes on a reddish hue when the fish is in breeding condition, dark spotting is present on the body scutes forming broken lines. Fins grey with dark spots and in prime specimens orange or red margins, dorsal, pectoral and adipose spines orange brown. Due to the wide distribution of the species it will be found that some specimens display less pigmentation than illustrated, while in others the basic colour is so dark that it is difficult to distinguish the dark markings.

Characteristics: Body and finnage shape as illustrated, the rounded caudal assists when comparing *Callichthys* with members of the genus *Hoplosternum*, its eyes are small and two pairs of barbels are carried (it should be noted that the barbels on the lower lip sweep upwards and those on the upper lip sweep downwards). Females are larger and more rounded than males, but less colourful and with shorter pectoral fins and spines.

Remarks: *Callichthys callichthys* is the only species within the genus *Callichthys*, it is a medium sized fish and although normally peaceful is not adverse to consuming small fishes as a part of its diet therefore it is not a suitable as an inmate for a community of small fishes. Approximately 180mm standard length. Exhibited in show class G2.

G

FBAS FISH GUIDE.



Habitat: Eastern Brazil and Venezuela, some reports also indicate Trinidad. Found in shallow still waters, heavily overgrown with vegetation.

Temperature: 22° - 26° C (72° - 75°F)

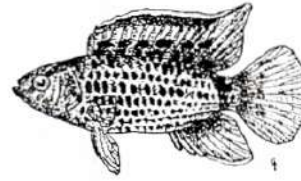
Water: P.H. 7 - 7.4. Neutral to alkaline, soft.

Feeding: A hearty eater, preferring live foods including small fishes, but will also consume dried foods.

Breeding: *Callichthys callichthys* is a difficult species to spawn and a large aquarium of at least 750 x 300 x 300mm should be provided with a water depth of about 125mm. The species is a Bubble-nest builder, the males (more than one may be used with each female) construct a nest of bubbles beneath a floating medium which is not critical and may range from *Riccia* to large floating leaves or even floating nylon mops, the nest is guarded by a male who may occasionally emit grunting noises whilst on duty. The eggs hatch in four to five days at which time the adults should be removed, the fry being left to fend for themselves. First food include infusoria and finely powdered dry foods, thereafter brine shrimp and grindle worm may be offered, the fry attaining a size of 25mm in three to four weeks.

Comment: *Callichthys callichthys* is a semi nocturnal species feeding at night, and should be provided with hiding places in order that it may seek privacy.

Badis burmanicus (Abl.)

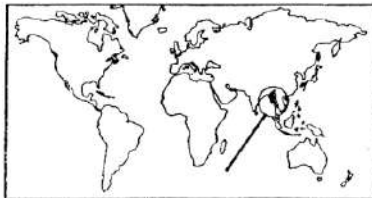


Common Name: Burmese or Red Badis.

Colour: Basic body colour varies from reddish brown to brownish white shading to dark reddish brown on the dorsal contour and dark brown on the head, belly yellowish below, eight rows of red spots run from the operculum, terminating on the caudal peduncle, on and above the lateral line the rows are interspersed with blue spots. A large dark blue blotch is present on the caudal peduncle, an oblique blackish bar runs from the snout to the insert of the dorsal fin, a further narrow dark line runs from below the eye to the chin. Dorsal with red rays and at the base approximately 9 greenish to black blotches, with white outer and black inner margins. Caudal, anal and pelvic with reddish brown rays, caudal with a red base and dark greenish black markings, anal with a red base, a white outer and a black inner margin, pectorals clear without markings.

Characteristics: Body and fin shape as illustrated. The female is similarly coloured to the male but her colours are less intense.

Remarks: *Badis burmanicus* is peaceful when kept in a community aquarium even if its own kind is included but is inclined to hide and if not kept well fed will eat small fish. Unfortunately when kept in a one species tank with its own kind it is inclined to become quarrelsome. Exhibit in show class M.



Habitat: Burma where it is widely distributed in standing fresh water.

Temperature: 16°-30°C (61°-86°F) Will tolerate this range of temperature, but 21°C (70°F) is preferred.

Water: PH 7 - 7.4. Neutral to alkaline, slightly hard.

Feeding: Live food only is taken, although it is possible with patience to get frozen food accepted, dried food seems to be totally ignored.

Breeding: The brooding of this species follows the same pattern as described for *Badis badis*.

Comments: Not a fish for the newcomer to the hobby, but if one can get used to its little foibles the interest gained will more than repay the patience required.

An In-depth look at *Corydoras* — *Corydoras barbatus*

by John Edwards, East Kent A.S.

This fish first described to science Quoy and Gaimard in 1824, was not the first *Corydoras* found by Man. We must thank Black for this who described *Corydoras punctatus* in 1794.

Let me try to put this into perspective by using what historic events were taking place in Europe at the time. A certain Frenchman, Maximilian Robespierre was keeping his head while all around others were losing theirs. England was being transformed into a land of great cities and factories of mass production, leading the World into the Industrial Revolution. In South America Brazil was still under the rule of the Portuguese.

This leads me back to *Corydoras barbatus*, which are found in the Coastal lagoons and rivers of Brazil around Rio de Janeiro, the most northern collection point. They extend south along the coastal plain to Sao Paulo and on to the most Southern collection point yet known which is Joinville.

I have selected *Corydoras barbatus* for my first in depth look at a particular species of *Corydoras*. Why this fish? Well I have found *barbatus* by far the most interesting *Corydoras* imported to date. The fact that it is classified as a *Corydoras* at all is so diverse in appearance one could be looking at more than one species of fish. In the extreme one could be forgiven for thinking it was a link between another species such as *Hoplosternum*. In this type, the pectoral fins are so elongated they reach down to caudal peduncle. If you take the species found in Rio de Janeiro, Sao Paulo and Joinville and place them side by side (which I have done for the purpose of this article) you will marvel at differences in both colour and colour pattern of all three fish. When you compare your observation with the colour differences of such fish as *Corydoras adolfi*.

C. duplicatus and *C. serratus* (the latter two being only discovered in 1992) you begin to wonder why *barbatus* is still described as one species. It may be due to one fact, they all have cheek-bristles — a feature not found in any other *Corydoras* yet described. I do not intend to go into great detail in explaining all the colour differences when a brief description will do.

Rio de Janeiro variety

This is the most beautiful, the most sought after of all *Corydoras*. Black and Gold are the basic colours from the tip of the snout back through the body to the dorsal fin these two colours form a crazed pattern fading down to a black band which runs along the lateral line to the base of the caudal fin. As if this was not enough, a deep Gold stripe runs from the tip of the snout along the edge of the head to the base of the dorsal fin. The female has far less colour (the Gold stripe is barely visible), she is also more robust and has less pronounced finnage.

These fish are rarely imported from the wild. I was lucky to be at Wholesale Tropicals when they arrived — I could only afford one male. I showed this fish a few times and won Best Fish in Show on two occasions. Tank-bred *barbatus* are not so colourful, so we may never see such jewels again.

Sao Paulo variety

Placing this fish second in no way demeans it; this is still a pretty fish. Whereas the Rio *barbatus* has a Gold stripe down its face this variety has a



WHAT'S IN A POND FILTER?

The short sharp answer to the above question is probably unprintable in a magazine of this quality but the polite version is 'dirr'. However, that simple statement makes for an equally short article giving no information about pond filtration at all — hardly a good start. Let's pose the question a little more constructively and ask 'Do ponds need filtration and what are the alternatives?'

The Needs

Unfortunately, just like the myth of the indoor balanced aquarium, the pond won't look after itself. There are very few cases where everything has been combined to provide a perfect internal, seasonal balance year in, year out. Again, like the aquarium, a pond is not a 'slice of underwater life' — well, it is but it's not going anywhere — and only in the most ambitious ponds, linked to genuine moving waterways, is anything like a self-cleaning process going to occur. In general then, we have a body of nearly stationary water, often overstocked (or underplanted), overfed and, sometimes, over-neglected. The upshot of it all is that some form of man-assisted, or man-provided, cleaning is required on a continuous basis. Thanks to the ever-increasing understanding of water quality control it is quite simple to install the correct filter for your pond in almost any manner you care to name.

THE MEAN

All filters work the same way — water passes through some device which either traps (mechanical), adsorbs — notice the 'd' — (chemical) or converts (biological) suspended solids or dissolved materials in the water before returning the water back to the pond. The actual manner in which these processes are used or housed is, on one hand a matter for the filter designers and, on the other, what suits the requirements of the fishkeeper.

IN-POND SYSTEM

Built-in filtration systems are commonplace in aquariums but not necessarily so in ponds. To the non-initiated, a pond's filter is the sponge on the submersible pump's inlet but genuine in-pond filters do exist. The biological type, where a matrix of

perforated pipework is buried beneath an area of pond substrate (usually behind a retaining wall and often 'fenced off from foraging fish) is often advocated but it can have a long-term maintenance drawback.

The submersible, pre-pump unit such as Interpet's Pond Worker does save the problem of having external pipework to something hidden in the rockery and it is easily raised (courtesy of a locating float indicator and attached nylon cord). It is now possible to use Ultra-violet Clarifiers under water for even less obtrusive water treatment. The problem of taking up valuable pond-space, particularly in the smaller ponds, can be counteracted by using something like Lotus's pump/filter combination where the pump is fitted with a container of space-saving filter medium such as Siparax. A further alternative (only just describable as in-pond) is to feature a filtration unit integrated into a pondside waterfall feature.

EXTERNAL SYSTEM

If ease of installation requirements, then external pond filters are the answer. These are connected by extra pipework in all cases and may be pump-fed (as in a remotely-sited filter box) or gravity-fed (where the filter chamber is sunk into the ground alongside the pond). In the first instance water returns to the pond by gravity usually down a water-course waterfall and in the second type the cleaned water is pumped back to the pond.

PUMP-FED

Pump fed systems (utilising a submersible pump in the pond itself) are quite simple devices, the latest ingenuity in design being not to make the units look like filters! Pondside

What's in a Pond Filter

(continued)

planters and even mini-towers camouflaged with hanging vegetation all make the acceptable face of external filtration more ... well, acceptable.

The main factor to be taken into consideration when installing external, pump-fed filters is the size of the pump required to give the now accepted flow-rate of complete pond volume every two hours; you must bear in mind three things — the height (or head) the water is to be raised, the extra resistance offered by long pipe runs and (last but by no means least) the resistance offered by the filter medium when doing its job, usually semi-clogged up!

When the water reaches these filters, it is usually fed through a spray-bar down through layers of differing grades of media and a final biological section before returning to the pond; alternatively, the water is fed into the bottom of the filter and allowed to rise up through the various media before 'overflowing' back to the pond.

A criticism of these filters is that the average fountain pump used to feed them is not capable of shifting all of the very materials (solids) you want the filter to trap. A sump type pump is better at doing this and it is always a good idea to incorporate a float switch to ensure that when you drain down the pond, the pump is automatically switched off when the water level reaches a certain minimum depth and is protected against overheating and eventual burn-out. Surface pumps can also be used to feed such filters but must be fitted with a non-return valve to preserve 'prime' in the event of power cessation through deliberate switch offs of inadvertent power cuts.

GRAVITY-FED

If you don't mind digging the hole, gravity-fed systems can be quite big, multi-chambered affairs ideal for providing excellent water treatment. Water flows into these systems quite automatically (the choice of bottom or midwater draw-off points of water is

up to you) and rises to the same level in the filter as the main water level in the pond. An often separate final chamber houses the pump to return the water to the pond; the pump can be of two types — submersible (but submerged in water in the final filter chamber) or surface (usually a central-heating pump housed in a dry, weatherproofed compartment). Of the two arrangements it is easier to isolate the pump in the usual manner with a stopcock on either side to facilitate pump cleaning or even necessary replacement.

The sequence of design of the chambers is as follows; the first chamber acts as a settlement area where suspended solids are trapped in brushes and the finest sediment falls to the base; the subsequent chamber can contain open-cell foam blocks of varying densities, if required with the final chamber going given over to biological media, usually a high surface area material such as Florac Siporax, Springflow, plastic rings, or even simply gravel.

Vortex filters work on a well of death principle: water enters at a tangent and as it is whirled round the cleaner, lighter water is flung by centrifugal force to the outside of the cylindrical cone-shaped chamber, with the heavier solids falling down the hole in the centre of the whirlpool to the base from where they can be easily flushed away later or hoovered out. These are usually sited ahead of the main filter unit to act as all initial solids removal agency; this results in less maintenance time being spent on the main unit.

UV CLARIFIER

These 'add-ons' are the management of green water and must be used in conjunction with a trapping filtration system. Some units come with the UV Clarifier integrated into the design but many are available to fit to an existing filtration system. One factor that affects UV performance is exposure time of the water to the UV light — the

WHAT'S IN A POND FILTER?

(continued)

larger the better. One way to achieve this is to arrange for only a small proportion of the circulating water to pass through the UV device (a simple 'T' piece and flow adjusting device will do this) at a slower rate than the main pump's capability. For those units using a quartz tube in the waterpocket design, this needs to be kept impeccably clean as any build up of algae, calcium or other debris will limit the lamp's efficiency, the lamp should be changed after every six months of use.

AN ADDITIONAL FORM OF WATER PURIFICATION

One of the products of filtration is that nitrates are produced by nitrifying bacteria in the biological sections of filters. In some cases, it has to be appreciated that these will be added to the high level of nitrates already in the water supply used to fill, or top up, the pond. Special trickle filters (working anaerobically) can be constructed too, simply arranging for the waterflow returning from the filter to pass down a water course fitted with watercress or some other fast-growing aquatic, you will have not only a ready consumer of nitrates but also something you can add to your salad table.

CONCLUSION

With such a diversity of designs on the market, there is absolutely no excuse for not fitting your pond with the exact filtration system for its needs. However, it should be appreciated that whilst a filter will make your fishes' life more comfortable, and even allow you to keep more fish, you still must maintain it.



Centrifugal Filter System showing main 4" 1/2" head pipe and 2" discharge pipes from each compartment.

The Green Guide To ...

'Amateurs need help too'

says Norah Green of Tameside A.S.

Can you remember when you first started to keep fish, were you like us, completely stupid? Before we got the fish we bought and read books, even though most of them were too complicated to understand. We did everything right, yet our fish kept dying. We were on the point of giving up when we saw an advert for a local fish club.

We went along and were made welcome, they were helpful, yet we felt out of place. The reason was in our tank we had Angel Fish and Golden Gouramis while other members had *Heterophyllum scalare* and *Trichogaster trichopterus*. But we stuck with it, helped by the fact that I've never been shy of asking stupid questions, even if it meant almost bringing a brooders lecture to a premature end by asking what was a 'gonopodium'. I'd followed the lecture without difficulty until left and right hand threads were mentioned!

I've no wish to become an expert fish keeper, all I ask is that my pet fish (all four tanks) are happy and healthy. I am learning because I'm not afraid to ask, however not everyone is like me. They set up a tank and fill it with fish which die after a few weeks. Because fish aren't very expensive they buy more; fish don't live long anyway!

If you look in the small ads, column of any local paper you'll see at least half a dozen fish tanks for sale. Has anyone ever tried to find out why? The reason is this: for the first few months every time a fish dies they replace it, after a while they realise it's costing too much to keep replacing dying fish so they sell everything.

I was recently interviewed by a local paper and although I wasn't altogether happy with the result, part of the message got across and I've been inundated with calls for help like, "Are my fish dying because I'm overfeeding?" and "I've got this big blue thing, it was only two inches when I got it!"

I was able to put them in touch with people who could help and recommend reading matter I had found useful.

I've found fish people the most helpful people you could meet. Looking into tanks at shows I've turned to total strangers, asked and have been given advice. One instance, a few years ago, an eight/nine year old kid was peering into a tank of drab little catfish which were marked up at some incredible price. "Why are they so expensive?" I asked. Incredulously the kid answered, "They're Red Tailed Cats!" After making sure I wasn't going away he ran off and returned a few minutes later with a picture of this beautiful fish.

Less than 1% of the people who keep fish attend clubs or buy magazines. They are the people I'm trying to reach, those who buy the tank for decoration and fill it with fish they liked the look of. It didn't occur to them to ask about the fish they were buying.

How many clubs have a nucleus of half a dozen or so permanent members while others come and go? One reason is if you get new fish keepers into a club everyone appears to be so knowledgeable. They can't believe that perhaps once those knowledgeable people knew as little as them. Others are just generally lazy because any fool can keep a few fish. What is there to know about fish anyway? They live in water, you can even win them at fairs. I am getting encouragement, yet I feel I'm fighting a lone battle to bring fish-keeping down to street level and the fact lies with you the magazine editors! Please cater for the general public and show them that Aquatic Societies aren't for the elite, knowledgeable fishkeeper, but also people I spoke to would begin with "This may sound like a stupid question ..."

The Green Guide To ...

(continued)

Once I'd assured them I'm famous for asking stupid questions their problems would pour forth, yet they were still reluctant to come to our Club. In the meantime there are an awful lot of fish needlessly dying out there, isn't it time we did something about it?

Chester Zoo's Mike Crumpler, came down to my level to help me with an article on conservation, particularly their Lake Victoria breeding programme. From that meeting came another article which I

passed around workmates, some who in the past had kept fish, they were amazed. Cherry Barbs were an endangered species, "Bloody Hell", we always bought them 'cos they were cheap enough to replace when they died!" I was told, while someone else said, "Fish only live a few months anyway!" This is our average fish keeper who we have to educate while there are still some fish left.

If a real expert can come down to street level, so can the rest of you ...

The Relative Miniature Reef Aquarium Gary Wells April '92

If Jean Luc Picard is able to keep marines at speeds in excess of the speed of light, i.e. 185,000 msec or 659,600,000 metres/sec, what are the difficulties he is likely to encounter and what measures will be needed to overcome said difficulties?

The power supply used on a Galaxy Class Star Ship is derived from the mix of anti-matter and matter channelled through a di-lithium crystal matrix. The introduction of sodium ions (in the salt) into the di-lithium will cause breakdown of all co-valent bonds causing an imbalance in the matter/anti-matter resulting in all matter being converted to energy, sove for one atom, not too healthy! The light timer will have to be linked up to the ship's computers to de-synchronise the photo period in the jump to Warp speed. If the light isn't in before a jump to Warp speed, the photons from the lamp will never catch up with the ship. So a 30,000 parsec jump could mean no light for the zooanthellae algae.

As the star ship approaches light speed, according to the specialized theories of relativity, it will attain infinite mass; therefore the tank support will need to be very substantial, no 2" x 1" here, I think a bit of 3" x 2" will be called for, just to be on the safe side! In the general theories of relativity, Einstein states that

as a ship approaches the speed of light time is dilated for those on board or, in other words, slows down. This may have far-reaching conservation implications. Imagine Picard's reef whizzing away at the speed of light, if there is a discontinuity in the space-time continuum. He gets back to Earth in a couple of years, so he thinks little realizing that while bugging around in his holo-deck zapping aliens and generally being macho, 50,000 years have passed on Earth. He has got the only remaining bit of reef anywhere, or for that matter any when, relatively speaking that is.

And finally, Dianna Troi can read my mind any day. And finally, finally J-L Picard started down the road of marine keeping when a fault in the transporter time lock interface circuit beamed up a bod from the Twentieth Century, who dumped two cut of Tropic Marine on Commander Ryker's foot and hollered 'get your salt here!' Automatic circuitry beamed him back, with salt, so fast he didn't realize what had happened, unfortunately that same bug in the TL circuit beamed him back a week out of time; he found himself in a meeting of the Morley Pigeon Throttlers and Goose Goosers Club instead of the WYMAG meeting a week later, or that week, which was actually a week later ... or forward, relatively speaking.

Reprinted with acknowledgements from the West Yorkshire Marine Aquarists Group Journal



Hampton Court Palace Flower Show Preview



The Aquatics Village has become a popular attraction for visitors to the Flower Show, partly because of its location alongside the Long Water where picnic lunches can be taken, but also it's where the water garden displays can be found. Here, exhibitors well-known both in gardening and fishkeeping circles combine to bring the best in water garden design and fishkeeping expertise. This year's line up will include the following exhibitors who have kindly given FishWorld a few words about their plans.

Anglo Aquarium Plant Company are obviously on a conservation kick for their display having given it the title "**Re-cycled**" although, with the subject matter being how a neglected small area of water can be transformed into an attractive feature, is there a chance that any 'before' section might feature a rusty bike or a supermarket trolley? Whatever the outcome, you can be assured of a fantastic display of aquatic plants for in or around the pond.

Countryside Wildflowers are hoping to present the quintessential English garden with "**The House at Pooh Corner**", Marney Hall told FishWorld that they can intend to feature all the waterside, wetland and meadow plants that they can — along with Piglet's House and Wal's House (they particularly asked the Organisers for a plot with a large tree!) For any Christopher Robin diehards, yes, you will have access to the entire garden and perhaps play a round of 'Pooh-Sticks' with your friends on the bridge.

Ebb and Flow will combine high-tech with natural processes in their presentation "**The Flowform Water and Herb Garden**". The collecting and distributing units in the water flow are designed to optimise the natural processes in their handling of water; water remains for the maximum amount of time (whilst still flowing) within the bowls and thus become aerated and deoxygenated in the computer-designed flow patterns which aids the self-scouring action. The adjacent herb garden should ensure that there will be a scent in the air too.

The **Federation of British Aquatic Societies'** Exhibit has a long standing reputation amongst regular Show visitors for reliable, practical advice on all manner of aquatic and water-gardening matters. This year, its exhibit is entitled "**Pool of Information**" and reflects the wealth of advice available from its associates including **The Aquarist & Pondkeeper** magazine whose Editor Dick Mills, will be on hand throughout the Show. The Association of Professional Landscape Gardeners (Alan Sargent showing how to install pre-formed ponds), O'Clear (Aqua Company's Clare Stewart with advice on Pond Management, clearing Green Water and offering on-the-spot pond-water tests), and Bill Eundle, the FBAS' President and Plant Expert. Also featured are decorative contributions by Chenies Aquatics and Anglo Aquarion Plant Company.

LWL Landscapes, winners of last year's Gold medal, are determined not to rest on their laurels and will be defending their title with vigour. A 12ft high Waterfall, overlooking not only a grotto and large pool, ought to offer a magnificent vantage point from which to obtain a superb view of the Long Water. Unfortunately, mindful of the problems appreciative, but loitering, visitors would cause, LWL regrets that this display, entitled "**High Waters**" will not be open for access to the public.

You'll be able to see "**King of the Pond**" on the Tetra exhibit. This regal offering will feature some large and expensive Koi, some over 2ft long and valued at several thousand pounds each. Keith Siddle, the renowned Koi Artist, will be treating another striking study of the Koi during the Preview Day (9th July) which will be the prize (worth around £1,500) in a Prize Draw, visitors can enter the Draw by making

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Hampton Court Palace Flower Show Preview

(continued)

a donation to Tetra's nominated Charity, the Whale and Dolphin Conservation Society, a cause already well-supported by the Company's promotions in their products. You could also win a £3,000 holiday in the TetraPond Scratchcard Competition or buy a delightful 'Fine Art' Limited Edition Koi Calendar for 1997. Add to these attractions, the Tetra team of experts on hand throughout the Show to answer all your aquatic queries (indoors and out) and you'll find it difficult to go away empty-handed.

The sights and sounds of water running wild is the theme of the '**Rock and Water Garden**' presented by Peter Tinsley. Despite its natural look, much time and care have been taken to get just the right blend of stones, plants and water movement to make it look as if it wasn't man-made at all.

You shouldn't be too surprised to learn that the **Water Gardener** in association with **Hadlow College**, has come up with something quite artistic for this year's event. The aptly titled "**Water Colours**" sets out both water and a multitude of colour in an imaginative design with the flower beds and pond based on an artist's palette.

Having a Company name of **World of Water** might be a drawback when designing a feature for public viewing as the possibilities for design appear to be endless, and knowing where to start or finish a debatable subject. John Went's '**World of Water Feature**' should appeal to everyone as the design featuring twin waterfalls backed up by moisture-loving plants including Lilies and can be installed both by professional landscape gardeners on one hand or alternatively by the DIY gardener using readily available components.

Finally, what is the water garden without the movement of water? Each year, the thing that brings the Show really to life is the constant movement of water in all directions, in every conceivable amount and in ever-increasing displays — whether in the Aquatic Village or not. This has been made possible by the generous support and sponsorship of **Gould Pumps** who are, literally, providing the moving force behind any water displays throughout the whole Show.

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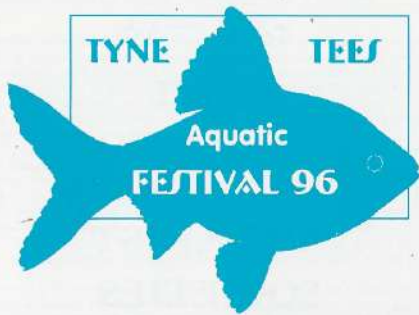
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HAMPTON COURT PALACE
Flower Show
 10th - 14th July 1996

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by **Dr. David Ford**
 Senior Consultant

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 ADVISORY SERVICE

Q. I've been collecting *Synodontis catfish* for several years now and have a good collection. At the moment I'm trying to breed *Synodontis multipunctatus*. I've got a 6lt tank with 9 in it. If there is any little thing you can suggest to help me, I would be very grateful.

J.B., London

A. Thank you for your letter. I have never bred *Synodontis multipunctatus*, nor met anyone who has. It is commonly called the Cuckoo *Synodontis* since it is reported that the Cichlid *Cyrtocara multipunctatus* take up the eggs of the Catfish and mouthbroods them (hence the Cuckoo name) in its African streams.

The ideal water needs to be hard but low in nitrates with some salt added (1 level teaspoon per 10 litres). There are no obvious sex differences so pairing will be pure luck.

If you succeed, do photograph and record it all for publication in FishWorld.

Q. Can your Advisory Service tell me why Tetras are called Tetras?

D.R.H., Herefordshire

A. The class of fish that have a squared fin were called *tetragonopterus* meaning 'squared fins' in Latin. These were the South American fishes belonging to the Family Characidae. Just as the Characidae became Characins in everyday hobby language, so the *Tetragonopterus* became Tetras.

All this was many years ago and since then the Characins have been reclassified into various genera, but the common name remained e.g. Blue Tetra *Mimigoniates barberi*, Green Tetra *Bryconalstes chappi*, Yellow Tetra *Hypheosbrycon bifasciatus* and the famous Neon Tetra *Paracheirodon innesi* (the most popular fish in the hobby after Goldfish).

There are still some *Tetragonopterus* Characins around, such as *Tetragonopterus chalcus* the Catoyant Tetra.

GROCKLEMANIA WINNERS

We had some fun picking out the winners of this competition! Although the answers looked straight forward, most people got them wrong. O.K., we admit we printed one question slightly wrong (the 1965 date should have read 1995, but most people assumed that and we allowed for it when judging) but most people fell down over the last question - a case of wrong association I suppose.

Here are the Qs and As:

1. Who sponsored the 1995 Supreme Festival of Fishkeeping?
2. Where is the Yorkshire Aquarists Festival held?
3. What do the initials B.A.F. stand for?

1. Rolf C. Hagen
2. Doncaster
3. British Aquarists Festival (not, as most put, British Aquarists Federation)

The happy winner was Mr. John Collinson of Matlock.

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