FISH WORLD

FBAS

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Dear Reader

"FISHWORLD" Magazine got it's name from the Federation's FISHWORLD '88 Show which was sponsored by TFH Publications Ltd. and held at Alexandra Palace in 1988.

FISHWORLD '93 is presented by the Federation of British Aquatic Societies in conjunction with the Aquarist & Pondkeeper and is to be held at Syon Park, Brentford, Middlesex. Syon Park is set in 55 acres of parkland and beautiful gardens, which includes the great conservatory and one of the most comprehensive horticultural garden centres in the country. There is ample free parking for both coaches and cars.

It is many years since the A & P and the FBAS have worked in close association on such an event and both parties are relishing the prospect of taking up again where they left off in the late 1970's. All those with fond memories of Ally Pally will be delighted at the resumption of this partnership in 1993.

Why not make plans now to bring the family — admission of only £1.50 for adults. Senior Citizens 0.50p. Accompanied children, admission FREE.

Peter A. Furze

Peter A. Furze, EDITOR

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FROM ... your Chairman

By the time this letter reaches you, plans will be well underway for ***FISHWORLD '93.***

It is many years since the Aquarist & Pondkeeper and the Federation have worked together in close association on such an event, and both parties are relishing the prospect of taking up again where they left off in the late 1970s. All those with fond memories of Ally Pally will be delighted at the resumption of the partnership in 1993. My grateful thanks to John Dawes for making this possible.

I would also like to take this opportunity to thank Sam Hardy of TFH Publications for allowing us to use the name "FISHWORLD". This name was given to the joint show in 1988 of the F.B.A.S. & TFH Publications.

This will be the finest show in the South set in 55 acres of parkland and gardens with ample parking space for both Cars and Coaches.

Please make a date in your diaries now ***12th and 13th of June*** *— a great day out for the family!*

Joe Rothwell

"Some Like it Hot ...!"

by Sue Okey, Founder of "PETZ"
and Lecturer at Sparsholt College, Winchester

HAVING SORTED OUT the basic living accommodation (Christmas issue of "FISHWORLD"), you then need to decide upon furnishings. These are obviously going to vary from species to species, but there are some basic requirements for all types of reptile.

Choice of substrate is important, as this must be both absorbent and non-toxic. Equally, it must not be obstructive to the gastro-intestinal tract if swallowed by mistake, as can often happen.

Probably the cheapest material is newspaper, but for the keeper who wishes to have a vivarium display that is pleasing to the eye, this is not going to be a first choice. Your pet may also choose to "read between the lines", which means that all you are likely to see of 'him' or 'her' is a mound beneath the paper!

From the decorative point of view, I have used "orchid bark" to a high degree of success. This is dust and insect free and comes in a range of grades from 'fine' to 'chunky' that will suit a variety of sizes of animals kept. Another safe alternative is dust-free wood-chip — the same 'gold' colour as the corn-chip but without the insect problem (see list below). I use this a lot with adult snakes but would be wary of housing baby snakes and lizards on it.

Some of the other substrates that I have tried but not been so successful with are as follows:-

Peat ●
tends to either be very dry and dusty or damp and mouldy, which in turn harbours insects well.

Cat Litter ●
again, even the dust-free type seems to revert to dust after it has absorbed any moisture and then dried out again.

Corn chip ●
looks really good, but has a tendency to "grow" tiny mites after a while. These do not harm the animals, but do seem to annoy them.

Sand ●
many keepers have used this medium successfully with adult lizards. Personally, I do not like to use it as it can be obstructive if swallowed internally. I have certainly witnessed problems with baby leopard geckos that have swalled grains by mistake whilst catching crickets.

Leaf Litter ●
if you collect these from the countryside then you must sift through the litter very carefully and remove any sharp objects, eg pine needles. You will then need to dry the substrate thoroughly and before us it is a good idea to pop a vapona block into the bag for about a week to make sure you are not introducing any creepy crawlies into your vivarium. (Do not forget to ventilate the litter well after treatment — before you use it).

For hatchling animals I still tend to use absorbant kitchen paper, which although labour intensive is a very safe medium for tiny people.

When deciding upon the depth of the substrate you are going to use make sure you consult the instructions on your vivarium heat pad, as this will tell you the maximum depth you can go to that will still allow your reptile the benefit of the heat. Quite a good tip, especially with lizards, is to place a flat stone on top of the pad, as this will absorb the heat and give a good basking spot.

The Blacknose Dace

Rhinichthys atratulus

by V.B. Hunt

IT IS WITH SOME SATISFACTION that I have been able to witness the breeding habits of this fascinating little minnow from the United States of America. Although I have had the species in my possession for a number of years, I had never been able to induce a spawning. Despite being fully aware of its preferred environment; my fishes were caught in fast-running streams with gravel bases; I never seriously considered providing my specimens with simulated conditions until I started to subject them to constant artificial aeration. This species will live quite well in still water but, as I was to realise, it is only with the introduction of some degree of turbulence that it will be induced into showing any sexual interest in its own kind. I had originally observed the male as just an attractively marked fish; brown on top with a white underside, divided by a jet-black lateral band going the full length of the body, superimposed by a thinner, yellow to reddish line. The upper half of the body was also marked with occasional black specks. The female was similar though without the colour intensity around the lateral band though of course the body was somewhat deeper. Although this species is very active at all times and very fast moving it never shows nervousness.

Last summer I observed a complete change of habit in this species after a lengthy spell of almost constant aeration. My specimens were well into adulthood, having reached a length of 70mm and the males had developed a high intensity of colour, their backs having changed from the usual dun brown to an irridescent golden-yellow and the sides were of a similar colouration with the lateral band, instead of being an intense black, was a golden brown superimposed with red. The pectoral fins were a deep orange. Two males were vigorously chasing just the one female; how she could stand such continuous attention I don't know.

She was naturally quite plump and had developed a short ovipositor about 2.5mm in length. The chasing went the full length of the heavily planted 3' x 15" x 15" tank but what appeared to be the actual spawning took place in the same spot; a clear area of gravel immediately in the front at one end. The larger, more dominant male was able to go through the normal actions of fertilizing the eggs; I assumed they were there though I couldn't see them. The dominant male, though not without some difficulty, was able to corner the female at frequent intervals, partially wrapping his tail around the caudal peduncle of the female with the sides of the fishes touching. There was a two-second trembling during which time the ovipositor was inserted into the gravel. This was repeated time and again over a period of three hours. Following up on each occasion were the remaining blacknose dace, as well as the less dominant male. In view of what I had read about their bad habits associated with their breeding procedure, I knew perfectly well that they were looking for a bonus feed; the eggs.

This denizen of the North American streams and rivers is an avid egg-eater and despite my frenzied efforts to syphon out what I assumed to be egg-laden gravel, (the intruders were not bothered with my attentions) I had scant reward. Yes, this rudimentary method of egg-collecting, (or should I say fish-breeding) was doomed to failure; one could hardly have expected anything else in the circumstances, and here I was, left with a 10" x 7" x 7" tank with 10mm depth of gravel and probably nothing in it. I made an effort to search for the eggs but in size they are apparently only 0.80mm in diameter, pale yellow in colour and transparent. I couldn't really hope to see any. I have no knowledge of the incubation period; my books tell me nothing and frustration was the end result. I placed the prospective nursery tank in a sunny position in the hope that the eggs, if they were there, might hatch, but no fry appeared.

The Blacknose Dace (continued)

There were a couple of occasions later on when the same two males sought the favours of yet another pregnant female and again I tried to save the eggs but the nett result was the same. The first of the spent females eventually died as a result of her exertions. It is incongruous I should allow this species to breed communally again. In the wild the blacknose dace obviously does breed in such a way and the dominant males are reputed to be territorial, fending off the attentions of all rivals. This may be successful in the open waters of the river but not in the confines of the home aquarium. It is obvious then I shall have to limit myself to one pair in a tank by themselves. Fortunately, as I said earlier, the blacknose is not generally nervous species.

For the record the water temperature was just touching 72 degrees F_2 the water was moderately hard with a pH value of 7.2. The gravel was fine with a heavy growth of Sagittaria subulata natans. Other fishes in the aquarium were red shiners, Cyprinella lutrensis and fall fish, Semotilus corporalis.

Rhinichthys atratulus is found along the Atlantic seaboard, west through the Great Lakes drainage to North and South Dakota and then southward on both sides of the Appalachian Mountains to Georgia, Alabama and Mississippi. In Canada this species inhabits the cool, clear streams from Nova Scotia to Manitoba and is occasionally found in brackish water.

It has been known to grow to a length of 100mm but the largest specimens I have ever seen in the wild haven't exceeded 75mm. To describe the fish fully its body is elongate with the head triangular and broad in shape. The mouth is slightly inferior with an overhanging upper-lip and two small, fang-like barbels, one in each corner of the mouth. The snout is long. The dorsal fin is slightly posterior to the pelvic fins with the latter being relatively small. The caudal is shallowly forked with rounded lobes. The scales are cycloid and small and the lateral line is complete and straight. Dorsal fin ray count, 7-8; anal fin ray count, 7 and lateral line scale count, 53-70.

There is one particular feature of its anatomy which is sometimes seen though not desirable is the presence of an obscure nematode worm. Crassiphiala bulboglossa which was observed by a gentleman called House in 1964. this parasite causes a disease called black spot, a disease I have seen both in pond and stream in the United States and the fish afflicted were golden shiners, Notemigonus crysoleucas and creek chub, Semotilus atromaculatus. A batch of blacknose dace I had caught seemingly had the same problem. I showed them to a friend of mine in New Jersey, a certain Mr. John Brill, Jnr who assured me that the disease was no real problem. After a period of two months, he said, the parasites would drop off and the spots would just disappear. He proved to be right.

The blacknose dace is one of the commonest stream-dwelling fish in New Jersey, along with the creek club, and I was never at a loss in finding any. I can never understand why it is that such an easy to obtain little beauty such as this hasn't found its way into the fish tanks of that state. Yes, the Americans, like ourselves show little interest in their own native fishes but on the other hand most of our aquarists have kept sticklebacks at some time or other. I believe, in California, many an aquarist will give his right arm for a stickleback; you see, sticklebacks are quite rare over there. Lastly, now we've seen many importations of the celebrated redbelly dace, Phoxinus erythrogaster perhaps we can anticipate some mid-western blacknoses.

Aquatic Filtration

by Alan Benson, Aquavita

As a result of last issue's article on Biological Purification I have been pushed onto a subject which I have studiously avoided for a number of years.

The positive side is that some of the silent majority out there actually took the trouble to read the last article, whilst the negative side is that a considerable number of you raised queries regarding the use of "SIPOREX" in your systems!!

To be fair to the product we must initially isolate both the hype and the mystique that has been evident throughout the past couple of years in any correspondence referring to this product, this has I fear been encouraged by the emotive reaction of various *'Amateur Experts'* within the Hobby, who should know better.

I feel that three statements will establish ground rules for the article, these are:-

a) No one media, regardless of claimed sophistication, will do all things for all men.

b) You cannot changes the rules of nature instantaneously.

c) Regardless of the topic, *'Professional Specialists'* usually know the practicalities of their subject better than any *'Amateur Expert'*.

First and foremost, it should be firmly understood that SPIROEX is manufactured by a major international conglomerate who would never place a product on the market without considerable Research and Development and pre-release field trials, the product was well-established as an efficient and effective Biological Media in the aquarium sphere long before it was exposed to the UK KOI market.

Secondly, the current UK distributor of the product is a professional Marketing Specialist whose aim in life is to obtain maximum market exposure for his product. You can hardly blame him for taking maximum advantage of all the free publicity placed at his disposal by various elements of the Hobby reacting emotively rather than responding in a reasonable manner.

Whilst from the outset elements of the KOI Hobby chose to interpret scientific facts and statistics in such a way as to produce a magic elixir of life, more knowledgeable members of the Trade chose to dilute their interpretation with the facts of life remembering that the basic principle was little different from the coke we were utilising in the 70's or from the expanded clay aggregate that followed later or indeed the reticulated foam (and I reiterate the RETICULATED) pioneered by one of the major filter manufacturers over the same period — *Nature does not change that much in TWENTY YEARS!!!*

I know from my own experience that the majority of the Trade users in the early days were utilising the product in indoor holding tanks with little natural sunlight and stable temperatures, consistent with aquarium conditions under which the product had proven efficient. I have heard of few controlled experiments

to prove or disprove the numerous claims and counter claims that have been made. Most of the emotive reaction has resulted from situations whereby "Joe Bloggs" has introduced the product into the system at the same time as making numerous other changes, additions or withdrawals, thus proving NOTHING!! I have never personally seen a claim for the product which was not achievable ***in the right environment and under the right conditions.***

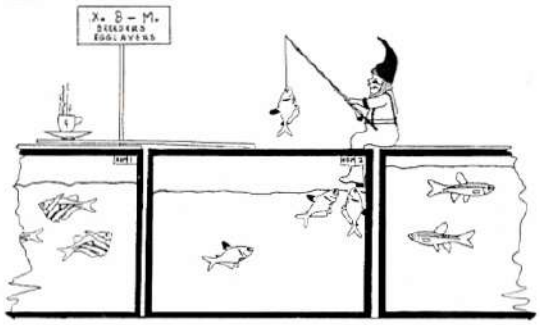
THAT IS NOT TO SAY THAT THEY WERE ALL ACHIEVABLE INSTANTANEOUSLY OR AT THE SAME TIME!!

In the final analysis it comes down to personal choice, in an aquarium type environment, I would suggest that the controlling factor is price, I personally would use the product where possible.

If you are looking for a compact and efficient biological media to enhance your pond filtration system and can afford the necessary expenditure, then again the product is for you.

If you are naive enough to believe that small quantities of ANY media are capable of saving you from carrying out all the routine tasks necessary to maintain the life support system and ensure the well being of your fish, then I would suggest that you do not belong in the Hobby in the first place.

In conclusion, if in doubt ASK — the Professional Specialist is there to help you — his livelihood is dependant upon you continuing and growing with the hobby. Similarly there are thousands of dedicated and experienced hobbyists out there only too willing to help if asked, without the glare of publicity aroused by the emotive reaction of the *Amateur Experts*.



Those bloody gnomes get in everywhere!!

UNDER GRAVEL FILTRATION

by Alan Benson, Aquavita

IN the early 70's, when KOI first became readily available in the UK, hobbyists were just as keen to see their little beauties as are their present day counterparts (with apologies to those of the pioneers still active!) and the obvious solution was to plagiarise the under-gravel aquarium filters in use at the time.

As with present day external "box filters" methods of design and construction were many and varied but the most popular consisted of a grid of 1¼" or 1½" domestic waste pipe, perforated with ¼" holes at 2" - 3" spacing placed in the bottom of the pond under an 8" - 10" layer of pea gravel with a pipe extended above the gravel from the centre of the grid.

This pipe was then connected to a pump, usually a domestic central heating circulator, which when switched on drew water down through the gravel, cleansing it of most physical debris and returning it to the pond via a waterfall or similar. Whilst not generally appreciated at the time, the gravel also provided a large biological bed once matured.

For very valid reasons such units gradually went out of favour in the KOI scene, being replaced with more sophisticated external units adopted from both the Aquarium and Commercial Fish Farming spheres. The concept was sound and I have personally run such systems in well stocked KOI ponds over considerable periods without trouble. In general, problems arouse due to lack of maintenance rather than any basic flaw in the system and with the rise in popularity of Water Gardening, should certainly be considered as an option when placing a semi-natural pond in the middle of a lawn or similar. It will enable you to maintain higher stocking levels of either natural or ornamental live stock without the necessity of camouflaging obtrusive "black boxes".

Whilst I have never found the need to experiment with it, common sense indicates that it would not be prudent to use such a system in conjunction with an Ultra Violet clarifier. If U.V. levels of clarity are required I would suggest reversing the flow of the system, put a small mechanical filter in line to remove flocculated algae from the circuit and pump the clarified water up through the gravel, which would now act as a large unobtrusive biological bed — the best of both worlds, perhaps!!

The objective of this short "in-fill" article is to indicate to the average water garden hobbyist that simplicity can sometimes provide the answer without recourse to the type and sophistication encouraged by the more specialised enthusiast.

The Private Importation of Fishes

by V.B. Hunt

THERE ARE CONSIDERABLE numbers of fishkeepers throughout the country; aquarists who study various different aspects of the hobby of fishkeeping, varying their interests from the finer points of cichlid, catfish and killifish specialisation to the simple living room refinement of the single, beautifully furnished aquarium with its generalised variety of highly-coloured tropical fishes. Yes, there are several specialists in the hobby who go to great pains in order to obtain rare fishes which, individually, cost a small fortune. One asks oneself, however, what is the frequency of their holidays abroad? Has any of them ever considered, depending upon the part of the world they intend to visit, the thought of having a holiday 'side-line' involving a day or two touring the local ponds and streams, with the wife's permission of course, and collecting some very desirable fishes for the home aquarium?

The importation of fishes into this country is not a difficult procedure. It is quite easy to obtain a temporary import license for little or no cost. On a number of occasions I have visited the United States of America and each time I have returned to England with a consignment of live fishes and provided one isn't greedy there might not necessarily be a freight charge. One polystyrene box 2' x 1' x 1' would be adequate to transport quite a number of specimens, 4-6 youngsters per polythene bag containing about 2" of water and charged with oxygen prior to sealing. Naturally, the size of the fishes have to be considered and provided the fishes are around 1" in length their safety in transit is assured for 24 hours. The larger the fishes the smaller the number allowed in a bag of course.

It is possible to take one's precious cargo of aquarium specimens on the 'plane with him but is easier for the box to go in with the general luggage. Passengers are always asked if they have any extra baggage for the flight and the fish box has to be declared. It is up to the chief stewardess as to whether one is allowed to take the fish into the aircraft's accommodation. On two occasions I have been able to do this, once with Laker and once with British Airways though I admit that this was several years ago. Some airlines have livestock licences, others haven't, a point worth bearing in mind, though I wouldn't imagine they would raise any objections to 'fishy hand-luggage'. On one occasion I made an inquiry at the offices of Virgin Cargo at Newark, New Jersey and I was informed they had no license for transporting livestock, however, they frequently consigned tropical fish to the U.K. It appears fishes come under a different category because they are boxed up; I don't know the details. At the same time, the point was that my fishes were in the clear and they would be travelling on the same 'plane as myself. On this occasion, you see, my colleague and I had over-stepped the mark and had five boxes between us and that would mean freight charges; fortunately they were not that steep when we reached Gatwick. We could have been refused and that would have meant seeking a cargo flight going to the same destination at near enough the same time. This did happen to me once; I arrived at Gatwick, my fish went to Heathrow. What a panic that created, but despite the time lapse I didn't lose one specimen. One box should present no problem.

On arrival in England the import license, which is in two copies, must be produced. One has to go through the red light barrier of the Customs and Excise and hand over the two copies of the license which are then stamped. One is retained by the customs officer and the other, which is returned, has to be forwarded to the Ministry of Agriculture, Fisheries and Food by the importer, yourself. The above quoted Ministry is, of course, the authority from which you

obtain the temporary license in the first place. This occurs in the case of the 'hand-luggage'. In the case of the consignment involving freight charges one has to go to another building, the one handling freight and it is here where one can lose upwards of one hour, depending on how many people there may be in front of you, topped by the paperwork and freight charges which have to be paid for. **Yes, as I shall repeat, bring only the one box into the country!!**

Returning to the initial application for the temporary import license the aquarist wishing to import fishes will be requested by the licensing authority to forward a list of the desired species, the number of each and their size. One can guarantee, however, that it is virtually impossible to rigidly comply with that list and the customs people can only assume the list tallies correctly with the imported specimens presented. To be fair to the customs officer, he would be unable to tell one fish from another and one should comply with the rule laid down by the Ministry of Agriculture that your new charges are for aquarium use only — not to be introduced into our own waters if they are of the coldwater variety. To do such a thing is a contravention of the ecological laws laid down by any country; indeed, it is a crime to do so. One must bear in mind the grey squirrel of the pond and river world, the pumpkinseed sunfish; this species has been successfuly introduced in a number of places in the United Kingdom. If one thinks on these lines no damage can be done and it doesn't matter then if one does bring in the wrong fishes.

Only once can I recall the customs officers ordering an examination of my fish containers and that was the occasion my fishes went to Heathrow separately. They were not interested in the contents as they stood; they were purely checking, I suppose, for drugs. I repeat yet again, if one wishes to import fish use only the one box of the dimensions I have already quoted or smaller, otherwise one will be subjected to all kinds of nausea, including freight charges than can be rather high.

I must confess I can only speak of my experiences with the United States of America; other parts of the world I cannot quote on, but I feel sure, with a few inquiries before hand one will probably find that few obstacles will be put in his or her way, provided the correct procedure is adopted and again, do not be greedy.

There is one great advantage about the U.S.A. of course, fishkeeping is a very popular hobby over there, indeed, it is one of the top hobbies and because of this facilities for 'bogging up' are easy to find. Any wholesaler will prepare your fish for a few dollars and it is best to get the job done properly, though one must ensure that only one container is used, as I keep on saying. This must be done en-route to your airport of departure, preferably 4-6 hours before take-off. That is why I said 24 hours earlier, talking strictly about imports from the States. Of course it is not always necessary to oxygenate one's fish I suppose, when one considers 'short-haul' trips from Spain, for example. I have spoken to a few aquarists who have been abroad for their holidays and either the importation of fishes has never entered their minds or they believed it to be prohibited, or maybe the fishes, if imported, had to be quarantined for six months. Imagine guppies being quarantined. It is quite easy no doubt to bring in fishes from a number of countries though checks would have to be made in the event of certain governments being conservation conscious and one knows what that means. Anyway it is worth a try and lets face it the aquarist in this case is killing two birds with one stone; enjoying the niceties of foreign climes with his family and at the same time adding to his fish collection at home with some species which are rarely seen, if at all, in this country.

A Tale of 2 Filters

There has been a continuing development on the filter front during the last year or so and some of the newer models not only look different but work in a different way too, when compared with the more conventional forms.

Two such filters are **Eheim PULS** and **Hagen's BIO-LIFE.** Both are internal "power filters and are approximately of the same size, with the Eheim being the larger but by not too much.

The Eheim is termed a 'breathing filter' and watching it in operation it is easy to see why: at regular intervals the two separate chambers stacked one above the other, empty and refill with the result that the upper chamber enjoys full atmospheric aeration to the benefit of its nitrifying bacteria. A simple, (and very obvious) ball-valve control prevents damage to the return pump. The returning, cleaned water can be directed as required by rotational nozzle. The emphasis of this model is on the optimum efficiency of its biological filtration potential, but there is a primitive protective inlet filter spong as well.

The Hagen unit is also designed to out-perform other biological types, but in addition to this it is also capable of giving total water-conditioning support to the aquarium. It starts with a built-in heater, and continues through a three section mechanical and chemical filtration area before passing the water to the pump for return to the main aquarium; however, not all the cleaned water finds its way back to the tank immediately; a proportion is diverted and drip-fed over ceramic blocks and 'hex-node' blocks for full biological filtration. The clever design and calculation of the pump's flow-rate means that this central chamber never fills up with water. By remaining 'dry' here gain atmospheric oxygen is used by the

By courtesy of Eheim and Rolf C. Hagen

nitrifying bacteria, so that the dissolved levels of oxygen are not depleted. Although this means that more fish can theoretically be kept, over-stocking is still not to be encouraged.

Working with the Hagen Helpline, we have encountered a few 'complaints' from hobbyists but we can offer the following hints. The perennial problems of suckers losing their grip can be avoided if these are put on according to the instruction manual. Drain the tank to below their position; clean and dry the glass area; moisten the suckers and apply as required: **LEAVE TO SETTLE FOR AT LEAST ONE HOUR.** Refilling the tank then means that extra pressure is put on the suckers by the water, helping to hold them on even more strongly. The final carbon/floss sandwich filter in the mechanical/chemical filtration unit is really a final polisher of the water; obviously it is going to get clogged up very quickly when first installed (especially if the tank water is really dirty); once the filter has cleaned up the water and become established biologically, this clogging will not occur to anything like the same extent. If it does become clogged, neglecting to change it will result in 'surges' occurring with the result that the central dry chamber will become flooded. It will do no harm to run the filter without this pad, should you not have a spare easily to hand and whilst running the filter without it entirely is also possible, it seems a shame to deny the filter its full operating efficiency by overlooking this regular maintenance task.

Incidentally, whilst the Eheim Puls comes in 1 size, the Hagen Bio-Life has 2 sizes (not physically, but only in pump sizes). The 35 delivers 320 litres/hour, the 55 430 litres/hour.

WATER GARDEN DESIGN

by Harry Hooper

For generations water has played a major role in garden design and if you think seriously about it many of our stately homes were built overlooking large natural lakes.

Creating charm ....

Architects of days gone-by incorporated impressive water features to enhance the elegance of some of our more artistic buildings. In early days of water gardening apart from vast water features many small courtyards or well landscaped gardens housed a formal lily pond including some form of fountain to emphasise the effect of water in the garden, all these different designs were installed to create their own individual charm. Nowadays modern day buildings such as shopping centres, office blocks or hotels, water features are a notable part of their design and on reflection the majority of exhibitors at horticulture shows use water in many different ways to compliment the design, planting and originality of their exhibit so "water" in the garden must have something to offer.

Trickling water ...

During recent years water gardening has become increasingly popular even the use of small containers for growing a selection of aquatic plants on the patio has become extremely fashionable and with the smaller gardens of town houses self-contained fountains are becoming more popular due to their fascination and the soothing sound of trickling water they provide. But on the other hand, if you can as the saying goes "picture the scene" — imagine a lovely summer's day sitting by your garden pond watching the colourful goldfish swimming among the submerged aquatic plants or enjoying the beautiful waterlilies with their exquisite blooms floating on the water surface and all this is accompanied by a host of marginal and moisture loving plants growing at the water's edge — this is when a water garden can be fully appreciated.

Shape and size ...

Fortunately, with the modern methods of pond construction an attractive water garden can be created without too much effort. Obviously the shape and size of your garden will determine the design of your water feature. However, if you are fortunate enough that the designated site for the water garden has natural slopes, remember this will assist you in forming rock pools or water falls.

Before you undertake the task of constructing a water garden there are several other points that should be taken into account beforehand.

For example:

- A sunny site is absolutely essential for the aquatic plants to flourish properly.
- Do not install a pond too close to trees.
- Endeavour to make the pond as large as you possibly can, this will help the natural biological balance to perform properly and will also prevent the water temperature fluctuating too much.
- Try to include a bog garden adjoining the pond as this will not only create a natural appearance but will also give you a far wider choice of plants.
- If waterfalls or rockeries are to be included in the design of the water garden always try to use natural rockery stone — wherever possible the use of natural material will blend far better with the plants when the garden is established giving a natural overall appearance.
- You must also take into consideration that your water garden may well be the focal point in your garden, creating interest for all members of the family and for this reason careful planning should be contemplated beforehand.

WATER GARDEN DESIGN (continued)

Seek advice ...

It would be to your advantage at this stage to visit a reputable water garden centre for advice and to examine the wide range of materials available for pond construction. You will find an extensive range of pre-formed pools on the market, manufactured from either fibreglass or moulded plastic and most firms will also offer a range of cascades to form waterfalls etc. Although this type of pond is perfectly O.K. for the instant water garden you will probably find the size and shape is limited. The most popular method of water garden construction is the use of a flexible liner made from either butyl rubber or various types of PVC. Most good brands will carry some form of guarantee but it is adviseable to obtain a better quality liner. It always pays to pay a little extra because cheap is not always cheap in the long run. You should also budget for decent quality underlay, this will add to the life of your liner. It is also important when installing your pond to disguise the liner as much as possible, this will prevent the ultra violet rays of the sun damaging the edge of the liner.

Electricity ...

One more important factor to consider is electricity. If you decide to have lighting in or near your pond, or especially if you need to drive fountains or filtration systems, power is essential and should be near to hand incorporating a circuit breaker.

Finally ...

Last but not least, if you are fortunate enough to have a conservatory you could consider indoor water gardening — growing aquatic plants of a tropical nature from some of the most beautiful tropical waterlilies that are avaiable to the most unusual tropical marginal plant. Over the years of my involvement in water gardening, I have come across several ponds that look absolutely ridiculous. I personally appreciate a well planned water garden that has been designed to look as near to nature as possible!

— DIARY DATES FOR 1993 —

APRIL	3-4	KOI Show, NEC Birmingham
April	23-25	Fishkeeping Weekend, I.O.W.
June	12 -13	FISHWORLD 93 - SYON PARK
Aug	14-15	KOI Show Billing Aquadrome — Northampton
Nov	5-7	Weston-Super-Mare Weekend of Fishkeeping

Ilford and District Aquarists and Pondkeepers Society
in association with The Federation of British Aquatic Societies

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JEWELS OF THE ORIENT

by Geoff Rogers, New Elm Fish Farm

I started fishkeeping some 35 years ago. In those days to buy fish we had to take our own jam jars to bring the fish home. You see, these were the days before the plastic bag which we all take so much for granted now!

It has enabled us to import fish from all over the world. Together with fast jet aircraft we were beginning to see fish we had never seen before. One of these were a type of carp from Japan which had a strange sounding name of KOI. These were a bit like a goldfish but were more colourful and grew much bigger. So you see, they have been around quite some time!

Lets start from the beginning ...

The Japanese have been keeping KOI Carp for some 150 years, originally for food. This is a fish similar to the black KOI we see today known as 'Magoi', but as with everything the Japanese do, they have turned it into an art form. The colours and varieties bred from the original Magoi are almost beyond belief.

I suppose if I was asked, I would say there were four basic varieties for the beginner to learn. Single coloured KOI 'Ogon' probably one of the most popular variety, metallic gold, silver or yellow. In my opinion one of the most beautiful fish, in this variety, is pure white. In the pond this stands out with strong contrast in the depth of the water. Next would be a white fish with red markings, 'KOHAKU'. This is probably Japan's most favourite Koi. 'SANKE', white fish with red and black markings, clear fins and tail and no coloured markings going onto the face of the fish. 'SHOWA' which is basically a black fish with white and red markings, black over face and stripped or black fins and tail.

There are probably more than 100 varieties. Subtle differences that you would come to recognise with experience. These would fill the pages of the magazine.

Although KOI originated from Japan, they now come from other countries, such as Israel, America, China and Singapore, but I don't think anyone would argue that the best fish come from Japan.

This is where I return to the transportation of KOI. When we receive a consignment from Japan we know the fish have been in boxes for the best part of 2 days. When they are opened I am still amazed we receive them in such good condition, this is still a traumatic experience for the fish and a period of quarantine is essential at this stage. This gives them time to re-adjust, maybe take a little food, because they have been probably starved for a couple of weeks before transit. Also, quarantine enables us to treat for parasites and monitor their condition. It is essential when purchasing your fish that the dealer has fully quarantined his KOI.

When purchasing your KOI, never buy a fish that is either too fat or thin. It should have erect fins, clear eyes and generally be moving well. Never buy the fish that is hiding alone in the corner of the pond. Watch how the fish are handled by the dealer, is it being treated with care and respect?

As KOI live a very long time, maybe 30 or 40 years, it is only mishandling accidents or the human element which will cause it's death. I've never heard of a case of KOI dying of old age.

For those who already have a garden pond, we get asked by our customers *"Can we put Koi in with our goldfish?"* Yes you can. They are compatible, all part of the Carp family. Although together in a pond Koi will get most of the food, as they are faster and more aggressive feeders.

Probably we all kept goldfish in our younger days, in a round tank which was kept on the sideboard, and got a water change as the fish became difficult to see. But the goldfish living in these conditions thrived and grew. Not so with KOI. They do require much better water quality.

We see all to often people spending much time and money building ponds, shifting tons of earth, buying expensive pumps, liners, waterfalls, rocks and ornaments and the like — then putting a dustbin half filled with gravel on the side of the pond expecting this to provide good water quality. As much thought and indeed money should be put into the filter system if you expect to keep your KOI in good condition. Take advice from people with experience of KOI filteration, but remember, a system a dealer sells will always be the best on the market! Probably better to take advice from a filtration specialist, some of which advertise in this magazine.

Pond depth is important ... remember KOI do grow quite large. Personally I think four feet of water is ideal. Anything less seems to make the KOI uncomfortable.

We briefly have gone over the facts of KOI keeping, but it is a subject that would fill many books. It can be an all consuming hobby, as people search for perfection. It does appeal to the green people amongst us, as KOI are bred by man for his own enjoyment and gratification, nothing is taken from nature.

To say I was smitten by KOI Carp would be an understatement. Ever since I saw them all those years ago, it has been my one desire to keep and help others to keep these ***Jewels of the Orient.***

I Need A Bigger TANK!

PART I of a Series by M.R. Emerton of Northampton

This article is dedicated to all prospective Aquarists who are considering keeping large South American Catfish.

It's hard for me to believe that when I turned on the heater in my brand new 3' tank back in 1989, I would end up with a tank bigger than my original shed. In 1986 I built myself a large shed to house my motorcycle and I thought I could sneak a few fish in as well. The original tank was a 6' x 2' x 2', made of plywood, braced and insultated with a butyl line with the intention of raising small KOI at a temperature of 70°F over the winter period to go in the main pond in the Spring.

This worked well and after a few batches the pond was filling steadily. My friend George was into raising fry, spawned in his KOI pond. George was using small glass tanks in his conservatory and suffered from algae growth on the glass of his tanks. To combat this George introduced a couple of little fish affectionately known as "Plecs". George really didn't know what he had started!! The Plecs did a really great job of clearing the algae and I thought, "I must have some of these".

I didn't have any algae and I couldn't see them if I put them in with the KOI. That was it, the perfect excuse to set up a small tropical tank above my KOI tank. After building a platform above the KOI tank, I installed my glass tank 42" x 18" x 18".

With an Aquaclear 800 running a 3" deep gravel bed filter, I was soon ready for some of these little plecs. After the tank matured and a few visits round George's, I started noticing that his KOI fry tanks were hosting some other strange creatures, the like I had not seen before. He would explain that whilst on his travels he saw this and the other and duly brought them home to put in his tank. Well, it wasn't long before my tank also had some new additions to the solitary common plec *(all of two magnificent inches)* I thought he was a whopper as he was much bigger now than those left in the shop. Little did I know that he would turn into a 24" whopper. Lesson number 1 — always research the facts about the fish you intend to keep!!

I bought a synodontis nigrita and a blue eyed plec over the next few weeks. Whilst out with George one day we were in our local Tropical shop and George spotted a small Tiger shovelnose cat, he had to have it but having nowhere to put it immediately asked if I would look after it until he had prepared a larger tank *(and told his wife Jean about it!!)*. It was about 6" long and fed hungrily on whitebait, cockles and mussels. Well, in time, George had a tank ready and I had to say goodbye to the little shovelnose but how I had enjoyed the experience of looking after him. Lesson number II, Tiger shovelnose cats are probably the most difficult of all cats to move safely.

Whilst visiting the home of another dealer, I saw what was to become my catfish of all catfish. It was a Behemoth of a fish, an awesome sight swimming about dwarfing all around. After enquiring what it was I knew how George felt. I had to have one of these. The catfish was a Pseudodoras Niger and at over 3' in length I realised that I was letting my dreams run riot and for many weeks it remained a dream to have a system large enough for a fish of this size. In my fishkeeping protocol I firmly believe in providing the largest tank possible, within the constraints of my budget, room availability and my wife's tolerance. So I knew it was going to be a while before I could accommodate my dream fish. But that didn't stop me dreaming!

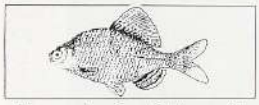
TO BE CONTINUED

Hagen 'Nutrafin' Christmas Party

Fishes of North-East Asia

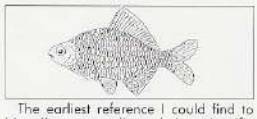
PART II of a Series by V.B. Hunt

I HAVE SEEN two Chinese species thus far and both of these are cloaked in controversy. The first one, which has found its way onto the F.B.A.S. size sheets as Acanthorhodeus microterus is estimated to be a 130mm fish. Where the scientific name came from nobody knows and the size was open to speculation but something had to be written down. Despite the considerable number of doubts aired such a scientific name does exist, but not for this particular species. The real Acanthorhodeus micropterus" has 3 spinous and 17-18 branched rays in the dorsal fin compared to 2 spinous and 12 branched rays in the dorsal fin of our 130mm specimen. In the anal fin there are 3 spinous rays and 12-13 branched as opposed to 2 spinous rays plus 12 branched. Also, the real A. micropterus is much larger, by all accounts a 275mm specimen was caught in the Yangtse River. The nearest identification I can make for this "Hong Kong" or "Chinese Bitterling" as we know it is Acanthorhodeus atranalis; the generic name means "appeartaining to black" and this species is the only bitterling I know with a black patch on its body. The intensity of this black pigmentation does vary, however, in some specimens it is well-pronounced, in others not. One specimen, at the Hounslow Open Show, had no black pigmentation on the body at all but it definitely was the same species. The mark is well defined on the sketch below, immediately beneath the first three rays of the dorsal fin.

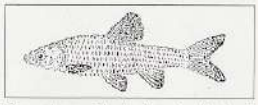


The second species, which I successfully spawned last year, was one I fortunately came across at a place where one would least expect to find it; a thoroughly cold-water species in a very tropical fish shop.

Again there was difficulty encountered in its identification, but after studying depth-length ratio of the body, eye in head ratio, dorsal and anal fin ray counts I came to the conclusion that this fish could only be Acanthorhodeus taenianalis, GUNTHER, synonym A. asmussi as seen in the Axelrod Atlas. One point bothers me, however, the picture of Acanthorhodeus asmussi, REEVES, as shown in the Atlas does not reveal a shoulder spot, my fish has one. The sketch below is 80% accurate.

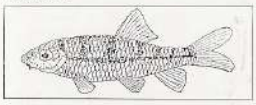


The earliest reference I could find to bitterling regarding their scientific classification was made by the Swiss naturalist Louis John Agassiz who placed them under the generic heading "Rhodeus" in 1835. The Dutch naturalist P. Bleeker sub-divided Pseudoperilampus in 1863 and finally, Acanthorhodeus in 1870. I believe there has been the occasional reclassification since, though I would be interested to know if there was ever a Perilampus, it rings a bell somewhere but I can't remember where.



The above illustration is that of Pseudorasbora parva parvula; I suggest, however, that those being sold on the open market as "Clicker Barbs" are likely to be Pseudorasbora parva depressirostris, though I cannot guarantee that fact.

Another carp, or more to the point, possibly, barb, or even as the trade name suggests, is the Chinese Gudgeon, see illustration.



It looks rather like a species called Barbus parallens, NICHOLS, sub-genus Lissochilichthys, OSHIMA. In the description there exists a serrate dorsal spine, with 10 branched dorsal fin rays and 7 branched rays in the anal fin. There are 4 barbels, seemingly though only 2 are apparent in my live specimen, but there could be another 2 with closer examination. The general behaviour of my particular fish is far from desirable, it objects to the presence of its own kind and other species in no uncertain terms. After quarantine I introduced it to a tank which housed both P. parva and Notemigonus crysoleucas (Golden Shiner). In each case the nature of injury inflicted on the above was identical. An ugly wound appeared immediately in front of the first dorsal fin ray and in the case of the "clicker barb" the "Chinese gudgeon" continually tormented it by striking from above and at the same wound. The victim was obviously seriously hurt because it made only half-hearted attempts to escape its tormentor. I immediately transferred the "gudgeon" to a tank where it could do far less damage and within a month both "barb" and shiner were fully recovered.

Another "gudgeon" is the "Peskar" or "Rainbow Gudgeon", Chilogobio czerskii, BERG, which appears to hail from the Amur Valley in eastern Siberia, see illustration.

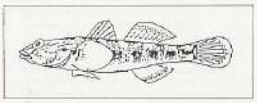
This fish has a lateral scale count of 43, the dorsal fin rays (branched only) number 9 and there are 10-11 branched rays in the anal fin. The ground colour, in accordance with live specimens I have seen, is bronze to golden-yellow with varying intensity of brown blotches and patches, there are, however, colour variants. Youngsters possess a single, dark, longitudinal stripe. Also I have seen a species of fish known to the trade as the Chinese Mountain Carp but at the moment what little information I have is inadequate to print.

The Marbled Carp or Bighead, Aristichthys nobilis, RICHARDSON, from central and southern China including Hong Kong, is another species of carp which has found its way on the British market. It is a largish species, growing to about 400mm in length and similar in appearance to the grass carp but smaller in size. One very interesting feature of this fish's anatomy is the formation of its gill rakers into a filtering mechanism with which it traps minute animals ever-present in the water. In consequence it swims with its mouth wide open, allowing a current of water to pass through, thus catching a goodly supply of zooplankton which is immediately swallowed.

In addition to the carps we have, as I mentioned earlier, the loaches. In China there are nearly 100 species, 19 genera. Some of them have appeared recently on the open market, sporting unfamiliar scientific names such as Leptobotia micronoemacheilus, Parabotia ligiangensis, Botis superciliaris, to mention but a few, some of these technical names might be suspect though B. superciliaris is listed. Much work has to be done in order to clarify these species and their individual identities. I have prepared, as the reader of this article will observe, a list of structural comparisons between species, for what its worth. One (possibly two) general of loach will have created a little interest, namely Gastromyzon and Pseudogastromyzon (Hemimyzon). One of these has been listed as a catfish, indeed it has been referred to as a "Hong Kong Plec".

A delightful little goby from Japan is now finding its way onto the show bench,

much to the chagrin of many a non-plussed judge. Yes, when there is little or no literature available new fish create many problems, many of which occur at open shows. I saw a number of these little fishes on sale in North London three months ago, I purchased four and within a few minutes of getting them home I was fortunate enough to identify them. I have an excellently illustrated book on Japanese fishes and although most of the text is in Japanese the common and scientific names are in Roman lettering and the numbers are Arabic. Though positive identification was possible the details were beyond my reach without a translation. I made enquiries but found such an operation to be too costly. The Natural History Museum, however, were more than helpful, indeed I am most grateful to Dr. Darrel J. Siebert of the Dept. of Zoology for supplying the information I needed.



The goby in question, see above sketch, is Rhinogobius brunneus, TEMMINCK et SCHLEGEL, the Japanese Common Freshwater Goby, "Yoshinobori", of which there are 7 variants, some of which are anadromous and some fully land-locked. The most likely variant to be seen on sale is what is referred to as the Orange Type. Colouration differs greatly between male and female, the latter seemingly larger and more dominant in behaviour. The female has distinct dark-brown blotches on the side of the body as shown in the illustration. The body of the male is comparitively dark and the blotches indistinct, frequently non-existent. The colour of the caudal fin of the male is orange and its first dorsal fin is higher than that of the female. Rhinogobious brunneus is an omnivorous species which occurs in rivers and lakes where it breeds, the young, on hatching, proceed downstream and, with access available, eventually reach the sea. Others remain land-locked, dwelling in streams that run into lakes and no further. After several months the young fishes return to their rivers and streams. The dorsal and anal fin ray counts are as follows:-

D VI-I, 8-9; A 1, 8-9.

The species reaches 100mm TL.

Another unusual species from China is the Chinese Perch, Siniperca chuatsi, BASILEWSKI, which is well illustrated in Dr. Herbert R. Axelrod's Atlas. Again, like the Peskar, also illustrated in the same book, it comes from the Amur Valley and, in consequence, very cold. This fish too has found its way onto the British market, along with an interesting catfish, Pseudobagrus fulvidraco, RICHARDSON, the Tawny Dragon Catfish.

Fishkeepers can rest assured that these fishes from the Amur Valley will withstand our winters outside, despite the popular belief of many people in the fishkeeping world that this is the coldest country in creation. Southern England is the warmest part of the globe on its particular line of latitude in winter. Siberia, as we all know is a very cold place. Thus I conclude this brief look at the new arrivals from the Far East.

FURTHER INFORMATION REGARDING THE SPECIFICATIONS OF CHINESE LOACHES MAY BE OBTAINED BY SENDING A S.A.E. TO THE EDITOR

The Pathogens of Fishes

PART I of a Series by Dr. David Ford, Aquarian Advisory Service

THE DICTIONARY DEFINITION of pathogens is 'a micro-organism or substance causing disease'. Hence a pathogen does include toxins in the water but does not include the large parasites. Pathogenic bacteria are always present in aquarium water, but healthy fish can resist them. If the water quality is poor, the fish become stressed and lose the ability to resist the pathogens. Parasites are tolerated at low levels, but the confines of the aquarium means the parasites overwhelm the fish and again the will to resist disease is lost.

Micro-organism

These fish pathogens deserve the name micro-organisms because the majority are less than 1 micron in size. A micron (symbol u) is one thousandth of a millimeter, or one millionth of a metre. A tablespoonful of bacteria would contain about 10,000,000,000,000 (ten trillion) individuals. A microscope is needed to see them and even then most require staining to make them visible. This staining makes pictures of bacteria, protozoans and higher animals just black spots or blobs. This does not do justice to the organisms, with biologists referring to them as 'primitive' or 'lower animals'. They are in fact complex creatures that have survived millions of years and evolved to perfection for survival in their own special environment. The problem is that some of the survival methods involve killing the host via symptoms we call disease.

Here are the major fish pathogenic micro-organisms in order of size.

Viruses

These are so small they are not measured in microns but in mu, a millionth of a millimetre. They are a collection of molecules, often as a crystal, and are at the borderline between life and non-life. they cannot be seen under a light microscope and their form can only be studied with an electron microscope. They do not self-reproduce, not even asexually, but require the reproduction method of the host cell that the virus takes over, to duplicate its molecular structure.

That structure is complex, however, with crystals of protein designed to fool the cell of its host to absorb the virus. They also contain the molecule of life DNA (deoxyribonucleic acid) and the RNA (ribonucleic acid) used to duplicate the DNA chains that contain the genetic information of the virus.

Without a cell wall or means of mobility, the viruses are unstable and readily destroyed by a fish's natural defence systems, but a weakened fish may allow the virus to gain a hold on its cells where the virus can reproduce until it overwhelms the fish. Some viruses remain in the skin giving tumours, others migrate to a particular organ causing death when the organ fails ... some even remain living within the host like a parasite so the fish becomes a carrier to infect others. Parallels with humans are the common cold or the terrible Aids virus.

There are no cures, the antimicrobial agents (e.g. antibiotics) are not effective against viruses. Even antiviral agents like Interferon have proved less effective than scientists hoped. The only cure is to alleviate the symptoms so the fish can develop its own immunity — just like we do with a common cold or 'flu. Hence a fish with viral problems (Carp Pox in Koi or Lymphocystis in Marines for example) can only be treated by maximising the water quality and giving perfect husbandry for the particular species.

The antiviral agency that the fish produces can be induced by immersing the fish in a culture of the virus that has been

modified in some way to make it inactive, such as heating or irradiation. It is even possible to inject the fish, just as we use vaccination for human viral diseases. Experimental work is underway in several countries to produce fish vaccines for the Salmon, Trout and Catfish farmed fish. Some success has been reported in the scientific literature for certain diseases, even for parasitic problems like White Spot. It can only be a matter of time before these vaccines are available to the hobbyist.

Bacteria

The next size up from Viruses are the Bacteria, single celled organisms that form into colonies. Some are round, others cylindrical or spiral and the colonies are chains or clumps. They reproduce by transverse division, that means a cell wall forms that divides the original cell into two with the DNA dividing into identical forms in each of the new cells. Hence, one cell becomes two, then four, eight, sixteen and so on; this doubling giving astronomical numbers of identical bacteria in just a few hours.

The danger for fish is that many of these bacteria are motile, that is they have cilia, little whip-like structures, that gives the bacteria the ability to move around in the water looking for hosts. Also many can form spores. When conditions are unsuitable, the cytoplasm (the chemicals of life within the cell) form into an egg-like shape that bursts from the cell wall and remains in suspended animation until conditions improve. Then the spore germinates like a seed and the cell reforms to start reproducing again. The spore can resist heat, freezing, dehydration and many toxic chemicals (such as disinfectants). Bacterial spores in soil samples have been found to be alive after storage since the 17th Century.

Of coûrse most bacteria are not pathogenic ... in fact some are beneficial or even essential to the life of fishes. The best known example is the *Nitromonas* bacteria that convert the ammonia fish excrete to nitrite and the *Nitrobacter* that convert that nitrite into nitrate. Another example is the Goldfish which has gut bacteria that break down vegetable cells so they can digest material such as cellulose, in fact the Goldfish and its Carp cousins have been called 'underwater cows' by nutritionists.

The major pathogenic bacteria in water are *Aeromonas and Pseudomonas spp* which cause diseases such as Dropsy and Body Rot. These bacteria are always found, even with healthy fish in a clean tank, but cause no trouble at normal levels. If the tank is overcrowded, the filter gets dirty (especially undergravel filters — that keep all the dirt within the tank!) or partial water changes are neglected, the *Aeromonas* levels double and double again until they overwhelm the fish's natural resistance and start to eat away the edges of the fish (Fin Rot).

Cleanliness is the answer to bacteria. In emergency, however, antibiotics are remarkable effective, but it is a waste of time and money if the water quality is not improved at the same time. The pool of bacteria just develop again, possibly with resistance to the antibiotic chosen, so the second infection leads to the fish's death despite treatment.

Protozoans

Another leap in size of pathogen gives the Protozoans. Much larger than bacteria but still needing a microscope for identification, Protozoans are complex life-forms that feed on organic material. If that material needs to be alive, then the Protozoans are parasitic and the damage they do leads to disease.

The most common Protozoan is freshwater White Spot, *Ichthyophthyrius* or its Marine fish equivalent, *Oodinium* or *Cryptocaryon*. These are Sporozoans, all of which are obligatory parasites. They are spore-like

with strong cell walls to protect themselves against the fish's natural defenses. They reproduce both sexually and asexually.

Velvet Disease

Other Protozoans are the Flagellates, single celled animals with a flagellate or whip-like structue that whips the animal through the water. You can see them whirling around under the microscope if a swab is taken from a fish with characteristic scratching or flashing behaviour. These Protozoans bury themselves in the mucus of the fish that normally is just a thin slimy coat to allow the fish to slide through the water when swimming. If the water is toxic (overcrowding, dirty, ammonia or nitrite present etc.) the fish reacts by forming extra mucus ... sometimes so much it is visible (hence Velvet disease). The organic matter this supplies to the Protozoans encourages reproduction and the fish becomes covered in 'ectoparasites'. The irritation gives more mucus and the fish is on the downward spiral.

Antibiotics are not effective against Protozoans ... they need powerful chemicals to kill them. This is why treatments such as Copper (for example 'Aquarian' No. 8 White Spot Cure is a Copper compound) are used. Another method suitable for large fish such as Koi is to immerse the fish in a salt solution. This doesn't kill Protozoans but they do not like the change in water chemistry (water physics actually because it is the osmotic pressure changes that do the trick) and so 'let go' and drop off the fish. This is why Salt Baths for Pond fish must be carried out in a separate tank and the bathing water discarded ... there is no point in treating the pond.

Ciliates

Still single celled animals, the Ciliates are larger and more complex. They usually have a fixed shape with tough cell walls striated with troughs carrying tiny hairs (cilia) that wave together to propel the animal through the water. Unlike Flagellates that whip around randomly, the Ciliates can move with purpose, to find a fish to parasitise, or another Ciliate to conjugate (reproduce sexually), However they can still reproduce asexually, so one Ciliate can become many if conditions suit them.

Helminths

The next stage in size is for creatures that can grow to be visible with the naked eye. These are the worm-like pathogens and many are gut parasites introduced via live aquatic foods such as Daphnia and Tubifex. Others lay eggs that are eaten by fish and develop internally into Tape Worms longer than the fish itself, or can be seen protruding from the anus of fish such as *Camallanus* in Guppies.

The Helminths are tough ... anything that will kill them would also kill the fish. There are several compounds, however, that they do not like, called the Anthelmintics, which make the worms let go of their host and get passed through the gut. Veterinarians can prescribe the most powerful Anthelmintis and some non-prescriptive forms are available as 'Worming Powders' for dogs and cats. These are mixed with the fish's food as a one dose treatment and 24 hours later the base of the tank is thoroughly cleaned to remove any shed parasites (better still, use a medicine tank and move the fish out after treatment).

Helminths are pathogens although they may not produce disease symptoms themselves. Most wild fish carry some parasites of this group throughout their lives. The problem is that the damage the parasitic feeding may do to the gut lining can allow pathogenic bacteria to enter the fish and then disease does occur.

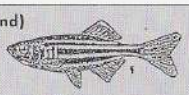
THIS SERIES WILL BE CONTINUED IN OUR NEXT ISSUE

What's the difference?

by C.A.T. (Cyril) Brown
Riverside A.S. & Judges and Standards Member

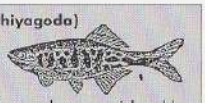
THIS ARTICLE OF "What's the Difference" is different, as I have taken this opportunity to present DANIO PATHIRANA, a species that was a newcomer to the showbench during 1992 and providing it continues to be imported, will I feel be a must with aquarists in 1993 and ad infinitum. To accompany the newcomer, I have opted for an old friend DANIO AEQUIPINNATUS who has been with us for many years although not always under that name.

DANIO AEQUIPINNATUS (McClellend)
Size 100mm



A blue and gold coloured species which has the colours alternating as horizontal stripes running almost the whole length of the body from the posterior of the operculum finally terminating on the caudal peduncle, behind the operculum the centre stripes are replaced by short vertical bars. In breeding condition the male becomes a deep orange red, especially on the lower flanks. Dorsal fin bluish green with a white outer margin, caudal, anal and pelvics orange red with the caudal displaying bluish centre rays.

DANIO PATHIRANA (Kottelat & Pethiyagoda)
Size 75mm



An attractive species with a colouration unlike any other of the known Danios, having large bluish black blotches superimposed upon a rich golden brown background, which covers the centre third of the length of the body, the upper and lower thirds brownish, the upper shading darker towards the dorsal contour, the lower lighter towards the belly. All fins brownish orange with the caudal with a bluish black blotch on the base of the centre rays intruding from the caudal peduncle.

The above fishes together with others in the series will be featured in a new series of books to be shortly published by the FBAS. These will not only identify fishes and highlight the differences between them, but will also cover Temperature, PH, Ecology, etc., as well as compatibility with other fishes and breeding procedures. The above sizes are taken from the current FBAS No. 6 Booklet entitled National Show Fish Sizes and Technical Information.
C.A.T. Brown 1992

CLUB NEWS

EAST KENT A.S.G.

Due to dates clashing with Grocklemania on the Isle of Wight, the East Kent A.S.G. Open Show has been deferred until later in the year. In order for the trophies to be overhauled will all winners from last year's Show please return them at the forthcoming Assembly or return them to: **D. Bridgeman, 150 Greenhill Road, Greenhill, Herne Bay, Kent CT6 7RS.**

REIGATE AND REDHILL AQUARIST SOCIETY.

The main Committee Members of the above Society, as elected at our Annual General Meeting on 4th January 1993, are as follows:

Chairman —	Mr. Sid Fewtrell	Tel: 0293 786078
Secretary —	Mr. Ivor Stemp	Tel: 0293 783249
Treasurer —	Mr. Dick Gush	Tel: 0737 765152
P.R.O. —	Mr. Jeremy Spence	Tel: 0293 512932

★ *Bring and Buy Sale* ★
19th April 1993
Strawson Hall · Albert Road · Horley · Surrey
★ **Doors open 7.30pm** ★ **Sales commences 8.00pm** ★ **Refreshments 9.30pm** ★
★ **Non Club Members welcome** ★

SOUTHEND, LEIGH & DISTRICT Aquarist Society.

At Southend we have, for a few years now, been holding an **Open Auction** in November, this being open to all Clubs within travelling distance. Last November the usual invitations went out but the response was amazing ... with over 100 people present, about half from Southend and the rest from Walthamstow, SELAS, Strood, Erith and BKA Kent. With a very short teabreak the Lots were completed at 11.30pm with two very sore-throated auctioneers. Southend would like to thank the members of the other societies for bringing goods to auction and money to spend, there were some good bargains.

This year's Open Auction will be on **Tuesday 2nd November** at our usual venue. More details in the next issue.

Ilford, Southend, Romford, Thames and Walthamstow held a five legged Interclub Quiz and Tableshow in 1992 that allowed members of the various clubs to meet others in friendly rivalry. The quiz standards were generally high, with Ilford's version of Snakes & Ladders being a highlight. Last year was also a highlight in culinary expertise and I thik that we will soon need to put this in as a category for club excellence!!!

The Quiz was won overall by Ilford (which means they have the pleasure of organising the 1993 event) and the Table Shows were won by Thames. Well done! We at Southend look forward to the entertainment in 1993. Also thanks to John Rowney and John Amos for the judging.

CARDIFF & DISTRICT Fishkeepers Society

Wish to draw readers' attention to the new date for our OPEN SHOW — **23rd May 1993.** Sincere thanks to the judges, sponsors, exhibitors and members for making OPEN SHOW 1992 such a success.

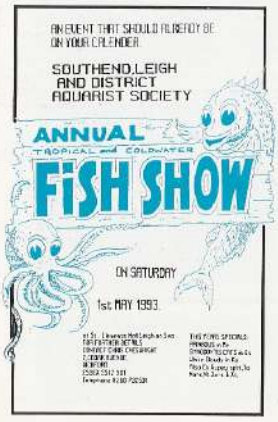
We now meet in the Gower Hotel, Gwennyth St Cathays, Cardiff and further information may be obtained from Mrs Paula Gray Tel: 0222 491077.

Judges Corner

by Peter W. Cottle,
Chairman, Judges and Standards Committee

Please note that the new address of Gordon Wm. Churchill is as below:-

21 Cabot Close
Azalea Park
YATE
BS17 4NN



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by Dr. David Ford
Senior Consultant

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Q. Would it be possible for you to send me any information you have about breeding Livebearers? R.M. of S.Wales

A. *Swordtails, Mollies and Guppies are typical Livebearers and as such are impregnated by the male very early in life, leaving a packet of sperm to slowly dissolve — this makes the female permanently pregnant. It also means subsequent matings with selected males are a waste of time!*

It is best to isolate the female because the fry are eaten as soon as they are born in the traditional community aquarium. Do not use a 'Breeding Trap', it stresses the female and crowds the fry. It is far better to have a separate breeding tank (18" or 24") with mature water from the main tank, bunches of plants for a natural environment, and a simple filter system ... a bubble-up foam collar is best. More powerful systems may suck the fry into the pipes etc. Use mature tapwater plus some of the main tank's water but the addition of a tablespoon of Cooking Salt is beneficial.

Feed crumbled Vegetable Flake from birth. Remove the female after all the young are dropped. Separate males as soon as a sword and/or gynopodium (male anal fin) develop or the females will be inseminated and you do not want brother x sister matings.

Q. I only keep five goldfish in a tank 36" x 12" x 12" as over the years I have lost many fish.

The tank now seems to be settled as the fish I have now have been OK for ten months.

My problem is one fish after feeding has problems swimming. It floats on the top of the water and when it tries to swim down it just pops up again, after several hours it seems to be OK again. I have tended to miss a day of feeding when this problem appears to give the fish time to digest the food (flake).

I hope you can offer me some advise as I do not like to see the fish suffer.

B.P. of Bradford

A. *Sorry to read of the Goldfish's balance problems. This is due to the swimbladder not functioning properly.*

If the problem comes and goes it is nothing more than indigestion, corrected by laxative treatment.

If the problem is permanent it could be a genetic fault or disease. All you can do then is make the fish more comfortable by having a special tank for it with a very low water level. This will keep it upright.

The fish is not in pain and if feeding normally it can live to a ripe old age, despite the problem.

Q. I wonder if you can help me. I have got an 8" long weather loach. I have heard that they do have a tendency to be slightly manic-depressive. I have had two others in the past and they have been alright, but the present one is totally crazy.

He suddenly jumps out of the water for no apparent reason, then just swims aimlessly backwards and forwards afterwards. He is also very anti-social towards the other fish.

A couple of weeks ago he leapt out of the tank with such force that he lifted the lid off the tank and ended up on the floor. Luckily I was standing near to the tank so I put him back in. I was so worried that he may do the same at night or if I am out that I have put parcel tape around the lid to stop it moving! Is there anything I can do to keep him calm?

N.N. of Worcestershire

A. *The Weather Loach Misgurnus fossilis is a European fish (but not found in UK) which is actually peaceful, nocternal and sedentary.*

They have an intestinal respiratory system to give them oxygen in poor waters. However, this reacts to changes in air pressure and so the fish gets restless when the pressure is low (hence its name because it seems to forecast storms).

You may have a farmed specimen (they breed in Springtime in mud ponds) where in-breeding emphasises the restless nature giving 'crazy' fish. Since this is in the genes, nothing can be done.

It may also be that the fish just does not like your aquarium and is trying to move on. Give it a home (plastic pipe siliconed to a slate) or better still a tank with a mud bottom for it to bury into. If the behaviour is stress related that is something you can deal with ...

Q. How do I get rid of black algae from plastic plants? M.F.G. London

A. *To remove algae from plastic plants do not scrub clean ... this leaves tiny scratches on the surface in which the next lot grows. To retain the shiny smooth plastic surface (on which algae has a problem to grow) clean in bleach.*

Fill an old bucket with worm water and add a cup of domestic bleach. Add all the plastic plants from the aquarium and sink with a stone over them. Place outdoors (to avoid the fumes) and leave several days. Then rinse until all the chlorine smell has gone and use again.

I have 2 sets of plastic plants and rocks for each aquarium and rotate them via the bleach bucket ... aquarium cleaning made easy!

Q. I have six goldfish in my pond and at present one of them is very fat and the others are chasing it and trying to turn it on its side. I cannot see anything else wrong apart from it being very fat.

E.C. Tyne & Wear

A. *The Goldfish's method of spawning is that females swell with eggs ... this attracts the males who squeeze and bump the eggs out of her. If you have a round-bodied variety of Goldfish this will cause spawning attempts whether the fish is female or not. The only solution is to replace the fat fish with a normal bodied type. These round-bodied fish should be kept in aquaria anyway. They may not survive outdoors in Winter.*

Q. Could you please give me some advice on the following — I am having a problem with tiny flies in the lid of my cold water fish tank. S. D. of Norfolk

A. *The flies are harmless and would even be eaten by surface feeding fish such as Gouramies and Guppies, but these cannot be added to a coldwater aquarium.*

The flies themselves feed on surplus fish food ... so to starve them out cut back on the fish's diet and make sure no surplus flakes are floating around.

Do not use any fly-killers, they are more deadly to the fish than the flies. Being clean and carefull will remove them all.

Q. I started keeping goldfish 8 months ago and the two fish I have had for this period seem to have remained in good health. Unfortunately, I cannot say the same for the plants which I put into my tank when I set-up. I think I had 5 species to start with but only 2 of these took hold and rooted, the others decayed and I had to throw them out. D.B. Leeds

A. *Always try to recreate the natural conditions under which the original plant lives. If it is a temporate zone plant then it will have a seasonal growth and die-back, but a true tropical plant has no seasons and should grow continuously.*

In the tropics there are about 12 hours sunshine and 12 hours darkness, so again make sure your lighting is the same (use a timer if necessary). Do not change the sequence once set or the plant will get our equivalent of 'jet lag'.

Plants have their roots in still anaerobic mud so do not expect them to flourish in gravel, especially if an under-gravel filter is used. Pot them in loam (better than peat). You can buy prepatted plants now ... look for a good root system. If the roots are good any poor leaves can be cut off, but a bushy plant with poor roots won't survive long. Yellow leaves are not necessarily a disease or poor lighting, but certainly indicate poor roots.

If you must use gravel, blend it 50/50 with river sand. 100% river sand looks attractive (all good aquarium shop sell suitable sand, do not use builder's sand) and the roots grow better (good roots will grow out of the pot too).

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We ALL have to start Somewhere!

Part IV of a continuing saga by Shorty of Corby

Disaster Mark III ...

Immediately after the great MARINE slaughter, all things aquatic had to be looked at in a different light.

The cabinet was dismantled, the tank stripped and everything was removed to the garden for de-toxifying, bleaching, rinsing and left to the rigours of the English weather for a few months!

My morale was at a low ebb and I still had not come to terms with the loss — even though there were hundreds of fish still in my collection in the fish room.

Oh..Oh...

The blank space on the lounge wall was a stark reminder of something special which was now no more. I was like Romeo without his Juliet, Tarzan without his Jane, Joe without his 'phone — I was lost. But one day, I was shaken out of the mood of lethargy when I thought there was something strange about the room. The 5' space was gone and in its place was a heavy dining table. I was assured by the wife of the moment, that it was there only temporarily until the tank was put back. But things like dining tables tend to be a fixture ... I reasoned very quickly that the tank had to go back as soon as possible.

At the weekend the table was out and the tank and the cabinet were back in again. Dozens of fresh plants were then purchased, the tank was dressed and filled on Sunday and on Monday morning sixty gallons of water were on the carpet and the plants were as dry as tinder ...!

An odd fish or two had managed to find a bit of a puddle and managed to survive. The Holocaust Mark III was on us!... Where was it all going to end? ... Was this punishment from the Almighty himself who was trying to tell me something??

Another day without reporting for work was ahead. I telephoned in "sick" because I was ... heartily sick. The job ahead was momentous this time! To move the carpet I had to unscrew the cabinet, remove 3cwt of rock and gravel and take out the tank. Then I saw the reason for the leak.

I had not only forgotten to replace the polystyrene tiles but there was the head of a screw nail in the plywood base on which the tank lay!

The crack in the base ran from front to back. I learned something new about my wife at the same time too. I did not know that she studied Shakespeare at school.

"OUT ..out..damned whatsit!", she cried.

With the tank and cabinet out again three large wall units had to be emptied and moved to the other half of the room. The carpet was rolled back, the sodden underlay cut out and dumped.

Mopping up operations commenced and lathes of wood were placed under the carpet to let the air help dry it out.

Windows were open all day and the gas fire was on overtime. We warmed the street — it was March and it was *COLD*.

When the carpet dried out it stank to high heaven! It was wet again and shampooed and dried a further three times. Then days later all was well —— nearly.

It was relaid — the only problem was the fact that it was 3" shorter than it had been before! Still, not to worry — the tank and cabinet when replaced covered the deficiency. There was no way a dining table would look right in that space now!

Who said fishkeeping was a Joy?

RECOMMENDED BY TOP AQUARISTS

The 'Aquarian' Advisory Service supports the fishkeeping hobby in many ways with lectures at exhibitions and of course with its renowned free advisory service. If you have any questions on any aspects of fishkeeping, write to: The 'Aquarian' Advisory Service, P.O. Box 67, Elland, West Yorkshire, HX5 0SJ.

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