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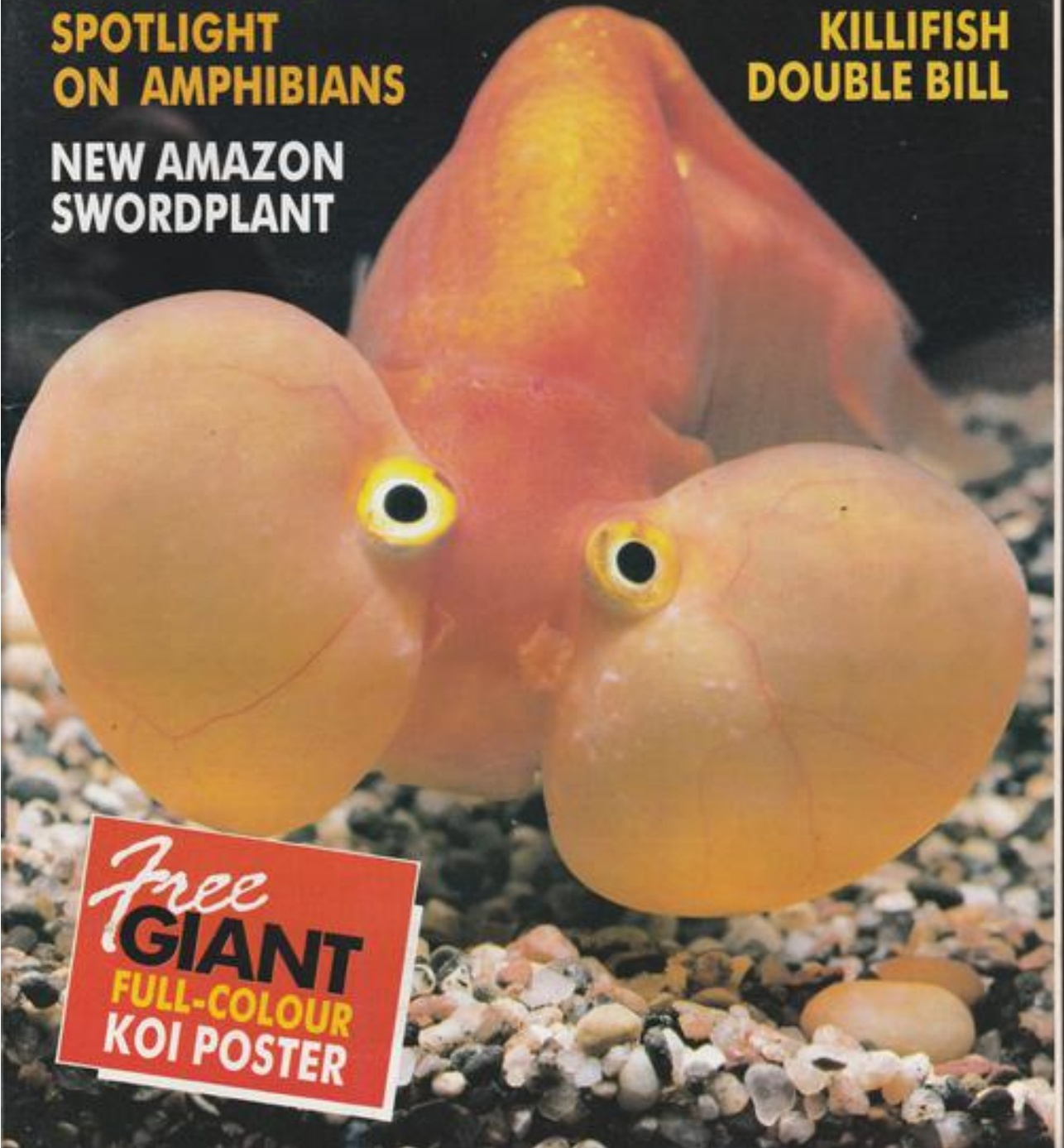
AQUARIST

AND PONDKEEPER

**SPOTLIGHT
ON AMPHIBIANS**

**KILLIFISH
DOUBLE BILL**

**NEW AMAZON
SWORDPLANT**



Free
GIANT
FULL-COLOUR
KOI POSTER

AQUARIST AND PONDKEEPER

MARCH 1989
VOL. 53 NO. 12

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COVER STORY

(Photograph: Harry Grier-Florida Tropical Fish Farms Association)

March is a very important month in the Florida fish farmers' calendar. It is the month when their association stages its annual competition/show of everything that is best in the Florida industry.

As we have shown over the past twelve months, some of the fish coming out of the Sunshine State are truly exceptional. The spectacular Bubble Eye shown on our cover was produced by Gordon Aquatics and is a prime example of the high quality of fish currently being brought into the UK by some of our keen-eyed importers.

Our editor, John Dawes, will once more be judging at this year's show, so keep an eye out for the latest, "new" Florida fish in coming issues of *A&P*.

COLOURED VIEWS ON PAINTED GLASSFISH

"If I manage to cross my Green and Red Glassfish, what will the offspring be like?" I was asked this question some three years ago by a hobbyist who had just obtained what, to him, appeared to be two very healthy attractively coloured specimens of *Chanda ranga*, the Indian Glassfish.

I have also had letters from readers concerned at the way the colours fade over a period of weeks, or months. What, they ask, should they feed their fish to keep them "healthy and colourful?"

Clearly, none of these hobbyists have been aware, at the time, that the fish have been injected with dyes which gradually fade.

I have often heard, and occasionally read, that the injection process results in quite a high mortality rate. However, I have yet to come across someone who has actually witnessed the injection process and can, therefore comment at first hand regarding mortalities. Whatever the number of deaths, though, the mere fact that the fish are handled and injected, has given rise to a certain degree of rejection of such fish by established aquarists. Many of these question the whole ethics of the operation; others surmise that such treatment can only lead to a massive dose of stress which, in turn, will result in weaker-than-normal fish, with reduced resistance to transportation, shortened lifespan... and so on.

Personally speaking, I am not a great fan of any of the colour-injected fish which are currently available — I think that the fish are more than sufficiently attractive in their natural state (I use the term "natural" loosely, since some injected fish are commercially produced albinos). Further, if any intervention, such as injecting a fish with a dye, leads to increased mortalities, suffering, reduced resistance to transportation, shortened lifespan, etc, that, too, gives me great cause for concern.

Imagine my total surprise, therefore, when I had some of my steadfastly-held beliefs brutally shattered during a recent visit to an importer in Singapore.

The dealer in question receives weekly shipments from a number of Far East countries and these always include at least four boxes (of 400 fish each) of "Painted Glassfish." During the high season, this can rise to eight boxes per week. I sat through the lengthy de-bagging of around 40 boxes of fish and... yes, contrary to all my expectations, the liveliest fish were the Glassfish! There wasn't a single mortality among the 1,600 specimens. Every fish was active, with all fins up within minutes of being put into the holding tanks... they were also highly colourful, of course! I couldn't believe my eyes... but I had to. The evidence was irrefutable.

So where does this leave the claim that Painted Glassfish don't travel well?

Based on (albeit limited) evidence, I can no longer vouch for the validity of such a statement with any degree of certainty. I may still object to Painted Glassfish on other grounds, of course, but, in terms of survival during shipment between the first two links in the transportation chain... well, I can't anymore. And, if some of my beliefs have been shaken in this respect, could others follow this same pattern?

Painted Glassfish are huge sellers, and the debate on the rights and wrongs of dye injections will, undoubtedly, go on. However, those who, like me, have invoked (presumed) reduced resistance to transportation as an argument, may well have to think again.

We live and learn... at least, some of us do.


John Dawes
Editor



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BACKGARDEN W

Creating a refuge for wildlife is nowhere as difficult as some people may think. School teacher Mike Roussel decided to take up the challenge and even ended up winning a prestigious prize in the process (*Photographs by the author*).

Why was I so determined to create a mini-wetland area in my garden?

Well a number of reasons led up to my decision to do so, one of the most important concerning the kind of world that we are leaving our children.

When I was a child I could remember meadows full of cowslips and other colourful wildflowers, of insects buzzing around, the fluttering butterflies, dancing damselflies and darting dragonflies, and the small streams and rivers full of tadpoles, minnows and sticklebacks meandering through the fields I played in. I would look in the cow trough and see the pondskaters and waterbeetles that lived in there. Wildlife was all around for us to see and experience nature in its natural environment.

Where is it all now? What has happened to all the ponds, meadows, wetlands? Many ponds have been filled in or neglected. Modern agricultural techniques have reduced the meadows to 5% of what they were 45 years ago. Field drainage, hedgerows taken out, wooded areas reduced with less native trees planted, have all left their mark.

It was in April 1987 that I decided to try, in a small way, to create a mini-wildlife area in my own back garden. The fact that it was the "European Year of the Environment" made it seem an ideal time to start. The area was to be my contribution to the conservation of wildlife.

The Planning

The garden was approximately 80ft long and 20ft wide. I negotiated with my wife for a small area at the far end of our mown grass. The intention was to start in a small way by first creating a wetland area consisting of a pond and marsh area. The site chosen was reasonably level and in a sunny position away from the trees. I did not want the pond clogged with leaves in the autumn.

The first decision was to select what materials to use in the pond construction. After taking advice and reading books, I decided to purchase a butyl rubber lining. The final decision was made after considering PVC, which can eventually crack at the edges from the sun's ultra-violet rays. Concrete is a permanent structure and cannot be punctured. It can, however, crack up due to frost. Butyl rubber has a long guarantee and can be repaired should it be pierced by an object. So butyl was to be the pond lining.

To get the correct amount of butyl rubber

lining for a pond 9ft x 6ft I had to add 3ft to length and width to allow for the depth of the pool. My liner measurements were therefore 12ft x 9ft.

The Construction Stage

The construction of the pond and marsh area took one day with the help of a family member.

First we pegged out an area 10ft x 7ft and then commenced to cut out the turf. The turf was placed carefully to one side of the excavation. One foot from the sides we marked out the shape of the pond and then the real digging began.

We placed the topsoil to one side of the excavation and put the sub-soil to the far end behind the planned marsh area. This was to be used later as the base for the landscaping.

We then cut out a gradual slope leading from the front and sides of the pond to the deepest part near the marsh area. The sloping sides allow wildlife an escape area should any animals fall in the pond. The marsh area ledge was dug out to a depth of one foot. The deepest area of the pond was two feet. It is important to remember to have a deep area of at least 18in to prevent the pond freezing completely in winter.

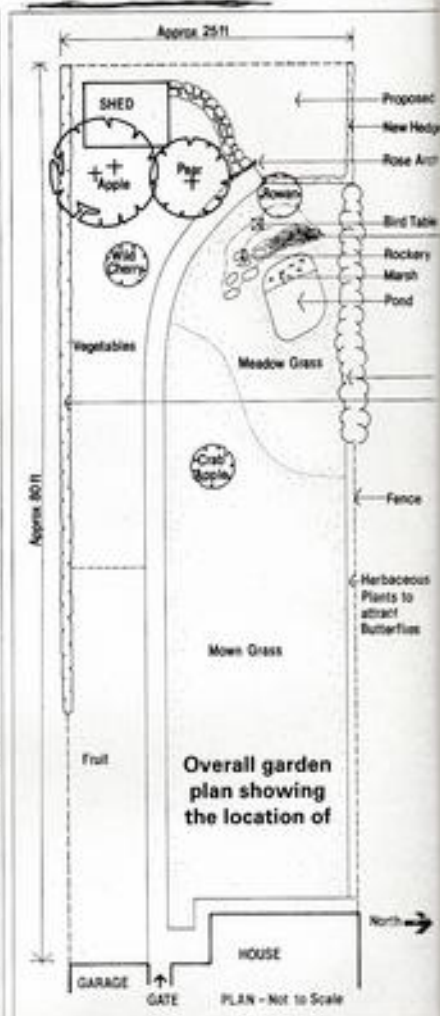
While excavating the pond, we had to check that we had the right levels. This was done by placing a piece of wood across the excavation and checking its "lie" regularly with a spirit level. It is important to check the levels all round the pond area, of course.

Next, we covered the pool excavation with newspapers and wetted them down with a watering can to cushion any sharp stones that could puncture the liner. The liner was then placed across the top of the excavation and some water hosed in to help weight and lower the liner into position. The liner also covered the marsh area while the edges were trimmed just inside the turf cuts.

To create the marsh area we placed upended turf at the front of the marsh excavation and infilled with topsoil. The water was then hosed in and the pond filled. Finally, turf was placed all around the pondside, carefully shaping it so as not to pierce the liner. By early afternoon the pond and marsh area was complete.

The Landscaping

The landscaping behind the pond and marsh area was completed by shaping the subsoil and creating a sloping bank to the rear. The topsoil was then put on the top and raked over. It was my intention to create as many habitats for wildlife as possible in the



area. At the front of the landscaping, and to one side, a small rockery was created leading to a small drystone wall. Above this, and falling away, was a grassed slope. Turves left over from the pond excavation were used to grass the slope. A number of logs were placed to create a "mini-beast" habitat.

Stocking the Pond

A tray of assorted oxygenating plants were bought which included: Starwort, Canadian Pondweed, Crowfoot and Parrot Feather. These were planted directly into the side of the marsh area and others to the bottom of the pond. Common Duckweed was introduced to the water surface with some pond snails and ramshorn snails. A bucket of mud and water from an established pond was then added to give the new pond a good start.

Herpetology matters



By Julian Sims

Crucifix toads

March not only welcomes the official start of British Summer Time (always an optimistic period for herpetologists) but also contains Easter Week. It is therefore, appropriate to consider the Crucifix Toad (*Notaden bennetti*) from Australia.

This amphibian, also known as the Catholic Frog and Holy Cross Toad, has obtained these common names from the distinctive cruciform pattern of red spots and black "warts" on its back. The Crucifix Toad inhabits southern Queensland and central New South Wales.

It is a burrowing animal, particularly abundant in the rich black soil of the flood plains of the large river systems

throughout its range. The Crucifix Toad is most commonly seen above ground after heavy rain when females spawn in the resulting temporary pools. Vocalisation is generally regarded to resemble the call of an owl. These toads feed on insects, especially ants and termites.

One final point of interest — the Crucifix Toad was depicted on the 70 cent definitive stamp first issued by the Australian Post Office on 2 February 1983.

Jesùs Christo lizards

The Basilisk (*Basiliscus basiliscus*) is a member of the Iguana family (see last month's "Dragon" features in *A&P*) living in the forests of Central and South America. This is a reptile with Eastertide connections. In South America the Basilisk is called the Jesùs Christo Lizard because of its ability to walk (in fact, run) on water.

This lizard runs on its powerful hind legs, body erect with long tail held out behind in a slight upward curve. This helps the reptile to balance and maintain its upright posture. The lizard can run at speeds in excess of 11 km/h (7 mph) over smooth water but, as its speed slackens, it drops into the water and continues its journey partly submerged. Basilisks are powerful swimmers. For this reason the reptile is known as the *paso-ris* in Mexico — the "river-crosser".

The original Basilisk in Greek mythology had a glance and breath fatal to all other living creatures, including other Basilisks. This mythical animal had a royal crown or crest on its head, and it is from this description that the real-life reptile gets its classical name — male Basilisks have impressive crests on their back and tail, and bony casques on the head.

As their name suggests, male Fin-tailed Water Lizards (*Hydrosaurus amboinensis*) from the rain forests of New Guinea and Sulawesi have similar dorsal crests. They, too, can run on their hind limbs when escaping from predators and are also good swimmers. Yet, *Hydrosaurus* belongs to the Agamid family of lizards — not the Iguanidae. This is an example of PARALLEL EVOLUTION where members of two different families in different parts of the world have developed a similar appearance and similar patterns of behaviour. In this way they can cope with the same environmental conditions.

Amphibian tunnels

Adult amphibians do not always spend the winter in or near the pond in which they spawn. Thus, in the spring, mass migration of toads in Europe and salamanders in North America are well known natural phenomena. Unfortunately, with increasing human demand for rapid transportation, busy roads sometimes

cross long established "amphibian highways", previously used by numerous generations of these creatures.

In Britain, more than 300 "toad crossing" sites have been officially recognised by the Department of Transport. From 1 March through to the end of May, red and white warning triangles are erected at these sites alerting motorists to the presence of migrating toads.

Even so, a motorist swerving to avoid a toad on a wet road or skidding on the squashed bodies of earlier road casualties could cause a serious accident.

To reduce the risk to toads and motorists, Britain's first "toad tunnel" was constructed under the busy A4155 near Henley-on-Thames at Hambleden, Buckinghamshire in the spring of 1987. In November of the same year, two tunnels were constructed for use by migrating North American Spotted Salamanders (*Ambystoma maculatum*) at Amherst, Massachusetts.

In both the USA and England these tunnels were sponsored by ACO Polymer Products Ltd — the tunnels are constructed of "polymer concrete". This material is not only resistant to deterioration and "powdering", but also ensures that amphibians do not become desiccated. Ordinary concrete would rapidly draw the water out of the body of a toad or salamander. Another important requirement is good ventilation. This regulates the temperature throughout the length of the tunnel.

In addition to these favourable design and construction techniques, migrating amphibians have to be "funnelled" towards a tunnel for it to be successful in reducing the number of road deaths. Firmly supported guiding barriers made of plastic up to 40cm (16in) high, perform this function.

Specially constructed tunnels have for many years helped to save the lives of migrating amphibians in Europe, particularly in Switzerland. Following the success of the Hambleden and Amherst projects, further tunnels are under construction in England and the USA.



The Crucifix Toad (featured on Australia's definitive 1983 70c stamp) showing the markings that give rise to its common name.

Seaview



by Gordon Kay

This edition of *Seaview* is dedicated, predominantly, to beginners, with a few tips picked up over the years to help make life easier. Obviously, aquarists of some years' standing could (hopefully) well pick up something useful — so don't turn the page yet.

POWERFUL TOXICS

Many people ask whether it is wise to keep Boxfishes and their relatives in a community tank in view of their potential toxicity. To escape their predators on the reef, the Boxfish family have the capacity to release a lethal toxin into the water and it is distinctly possible that they could do the same in the aquarium — killing everything in sight, including the Boxfish itself. This toxin is so powerful that just a trace could wipe out a large tank in next to no time. To make matters worse, skimmers, charcoal and Poly-filters have no effect and, even worse, is the fact that they can release the poison even when they die. The fishes usually associated with this problem are Cowfishes, Boxfishes and Hovercrafts.

USEFUL PRECAUTIONS

The best advice is to minimise the risk and try to eliminate the conditions which could spark off this poison release. The following precautions would be wise.

1. Do not introduce these fishes into a new aquarium where the water quality could be unstable.

2. Do not house them with bullies.

3. Check that temperature, pH and specific gravity are identical to those in the aquarium the fish came from. If not, spend a lot of time introducing the fish slowly (see later on this page).

Many people do keep these species without any problems but the choice has to rest with the individual — after all, they are very desirable and the risks are far outweighed by the pleasure they give.

ANGEL TRAPS

Catching fishes with nets in the aquarium — for whatever reason — not only miffs the aquarist but can also damage the fish, especially Angels, whose preopercular spines get caught and damaged.

A much better idea is to rig up some sort of trap which can be baited to entice the fish to enter it. Trap and fish can then be lifted out with the fish intact and nerves unfrayed. Just one thing, though. You do have to wait for the right fish to enter the trap!

"CAREFUL" INTRODUCTIONS

All new acquisitions should be introduced with care — especially the really delicate fishes

like Butterflies and potential "poisoners" like Boxfishes.

Most books advise floating the bag and fish in the aquarium and adding tank water over a period of half an hour. However, like me, you may have experienced all sorts of problems with this method — the bag caves in or sinks, the fish becomes distressed or, sometimes, the established fishes attack the bag and even tear it.

Nowadays, I use one of those small "goldfish" tanks, made of plastic with much better results. Ask the dealer to provide more water than usual and tip the fish, along with the water, into it.

Add water from the main tank over a period of 30-45 minutes, checking the specific gravity as you do so. While you are doing this, feed the other fishes in the tank and then turn off the lights. When the S.G. is the same in the small aquarium as in the main tank, lift out the fish with your hands and very carefully release it into the main tank.

Leave the lights off until the next day and you should find the new fish all settled in and ready to eat. DO NOT empty the contents of the small tank

Lionfish are often used to mature new aquaria... but the consequences of this choice are not always considered carefully in advance.



into the main aquarium; throw it away. The water lost will be so little that it can easily be made up. In fact, you could top up the aquarium with tap water with very little difference to the specific gravity.

FILTER WARNING

Never turn off power filters for any length of time (over an hour). Aerobic (oxygen-requiring) bacteria will colonise the filter during normal use and help in the denitrifying process. When water flow through the filter is stopped, however, anaerobic (non-oxygen-requiring) bacteria colonise it and reverse the process, with the result that noxious chemicals are released back into the water when it is re-started. If you do have to turn the filter off for any reason, always clean it thoroughly before starting it again.

TRUSTY MATURING AGENTS

Some dealers still advocate the use of hardy fishes to mature a filter. Others suggest using Fritzyme or, even, pieces of rotting meat.

Using fishes can cause all sorts of problems. Damsels are the usual choice for standard sized aquariums, but they become aggressive with age and that will dictate your choice of fishes later.

In larger tanks, it is no use expecting a 2in (5cm) Damsel to mature a 150 gallon (675 litre) aquarium and the job usually falls to Lionfishes or Groupers, which will, again, dictate your choice of fishes later on.

I have no experience of Fritzyme, and rotting meat (or even human urine!) is so unscientific, unreliable and potentially dangerous as to totally be out of place in the 1980's. I would always stick to one of the tried and trusted maturing agents. The results are always reliable, predictable (or as near to it as can be possible) and safe.

Well, that's all I have space for this time. Maybe next time I will have picked up some news to relate. If not, perhaps I will prattle on again like this.

Books

Turtles and Tortoises of the World

By: David Alderton

Published by: Blandford Press

ISBN: 0 7137 1970 2

Price: £14.95

If you want to learn about tortoises and turtles (as opposed to how to keep them in vivaria/terraria) then this book is certainly for you.

It will answer, quite admirably, virtually every question you could think of regarding the biology and distribution of these fascinating creatures. Ironically, though, the most basic question of all, regarding the distinguishing characteristics between tortoises, turtles and terrapins is not answered in the simple, infallible, all-embracing once-and-for-all way that some people might want. The reason for this apparent omission is, however, the most valid of all reasons: there just isn't a clear-cut answer... and the author, quite rightly, points this out as early as the opening lines of Chapter 1.

Wherever you look in this magnificent book, you'll find something to interest you, be that a top-quality photograph from Tony Tilford (who is responsible for the vast majority of the shots) or a bit of illuminating text from David Alderton.

The Chapter headings are as follows: Chelonians and Humans: Form and Function; Reproduction; The Evolution and Distribution of Chelonians; The Chelonian Families.

In addition, there is a very useful nine-page Appendix consisting of the most up-to-date scientific and common names of turtles and tortoises of the world, plus a glossary and a guide to further reading.

I enjoyed this book enormously from cover to cover. It's a labour of love that should find a home on the shelves of every herpetologist who regards him/herself as someone interested in more than just the upkeep or captive-breeding of this ancient and totally absorbing group of reptiles.

Hearty congratulations to the author, the photographer and the publisher for an impressive effort.

John Dawes

Bettas, Gouramis and Other Anabantoids (Labyrinthfishes of the World)

By: J Vierke

Published by: TFH Publications, Inc

Price: £11.95

ISBN 0-86622-897-7



The author of this highly recommended new book ought to know more about his subject than most. After all, he has described at least eight new species, separated the small Paradise Fish (*Parosphromenus*) from the large (*Macropodus*), as well as conducting a study of the behaviour of many species.

Characteristics, distribution, behaviour, ecology and aquarium maintenance are first explored, the last section being gaudily illustrated with a range of products, not all available in the UK. The species are arranged geographically. Thus we have the fish of Africa, India and SE Asia which separates the two species of Comb-tails inconveniently. At the head of the text dealing with each species, there is a line drawing with coded information on required temperatures, type of aquarium, difficulty of maintenance and breeding and, finally, availability. There follow notes on the systematics, description, distribution, maintenance and breeding of each species.

The outstanding merit of this publication is that it is smack up to date. The original German text has been extensively updated and includes Vierke's latest child, *Betta climacusa*. There is even an addenda section which highlights *Betta persephone*, the discovery in Sarawak of *Betta spec. aff. coccinea*, and Allan and Barbara Brown's two new Licorice Gouramis, first published in *Aquaria & Pondkeeper*. (However, he does not realise that the full descriptions await publication.)

This is the second book on anabantoids that TFH have published inside twelve months and the third now available in English, so two questions arise: why another, and which is best? It would be too glib to recommend Richter's book for the pictures, Pinter's for the text and this one for its up to date information. However, there is a strong case for having more than one book on the same subject in order to obtain a balanced view.

Vierke and Richter have different opinions on classification, particularly on the Bettas. Neither is right or wrong, but reading only one book might leave you with the impression that a point of view is hard fact. I also suspect that the cost of the books could be quickly recouped by the number of irreplaceable fish whose lives will be lengthened by applying the printed advice.

David Armitage

KENT KOI COLLECTION

KOHAKU

The Koi illustrated this month is a representative of the variety Kohaku, a classic type that must be found in almost every Koi-keeper's pond. According to the Japanese Koi enthusiasts, collecting Koi begins with the Kohaku, as it is one of the most readily available. But finding an exceptionally good example is rare and, hence, collecting also ends with Kohaku!

The Kohaku pictured here is an outstanding example of its variety. It has an absolutely classic body shape, which is beautifully proportioned; the head, back and volume are perfect for a Koi of this size. This Kohaku measures some 70 centimetres or 28 inches and qualifies for the title "Jumbo Koi".

The quality of the colour and pattern on this specimen are exceptional. The *ki* (or red) is very even in colour and the intensity is consistent throughout the pattern.

The contrast between the *hi* and the white skin is perfection, and the pattern is clearly delimited without a hint of smudging. The white skin is intense, without a single undesirable mark on it. The overall pattern is well-balanced on this Kohaku, with the *hi* covering the head symmetrically and without obscuring the white on the lateral surface.

No photograph could do justice to this beautiful example of the Kohaku variety.

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BACKGARDEN W

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We then cut out a gradual slope leading from the front and sides of the pond to the deepest part near the marsh area. The sloping sides allow wildlife an escape area should any animals fall in the pond. The marsh area ledge was dug out to a depth of one foot. The deepest area of the pond was two feet. It is important to remember to have a deep area of at least 18in to prevent the pond freezing completely in winter.

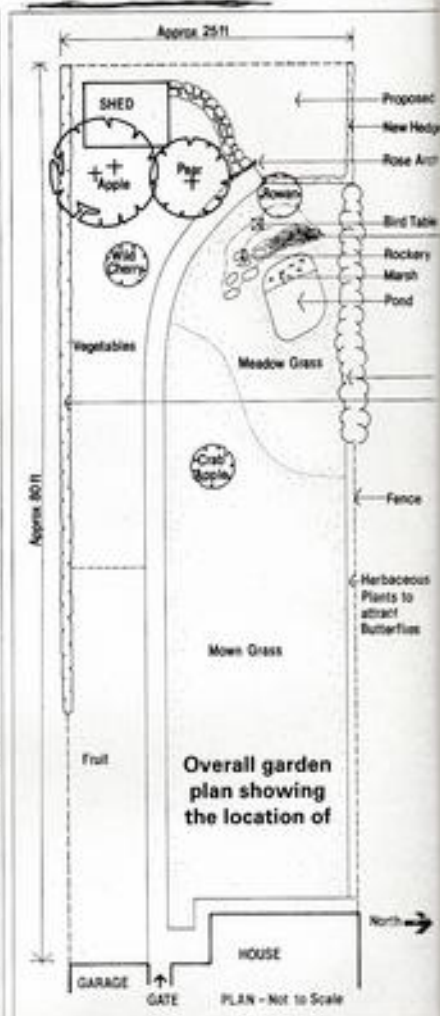
While excavating the pond, we had to check that we had the right levels. This was done by placing a piece of wood across the excavation and checking its "lie" regularly with a spirit level. It is important to check the levels all round the pond area, of course.

Next, we covered the pool excavation with newspapers and wetted them down with a watering can to cushion any sharp stones that could puncture the liner. The liner was then placed across the top of the excavation and some water hosed in to help weight and lower the liner into position. The liner also covered the marsh area while the edges were trimmed just inside the turf cuts.

To create the marsh area we placed upended turf at the front of the marsh excavation and infilled with topsoil. The water was then hosed in and the pond filled. Finally, turf was placed all around the pondside, carefully shaping it so as not to pierce the liner. By early afternoon the pond and marsh area was complete.

The Landscaping

The landscaping behind the pond and marsh area was completed by shaping the subsoil and creating a sloping bank to the rear. The topsoil was then put on the top and raked over. It was my intention to create as many habitats for wildlife as possible in the



area. At the front of the landscaping, and to one side, a small rockery was created leading to a small drystone wall. Above this, and falling away, was a grassed slope. Turves left over from the pond excavation were used to grass the slope. A number of logs were placed to create a "mini-beast" habitat.

Stocking the Pond

A tray of assorted oxygenating plants were bought which included: Starwort, Canadian Pondweed, Crowfoot and Parrot Feather. These were planted directly into the side of the marsh area and others to the bottom of the pond. Common Duckweed was introduced to the water surface with some pond snails and ramshorn snails. A bucket of mud and water from an established pond was then added to give the new pond a good start.

WILDLIFE REFUGE

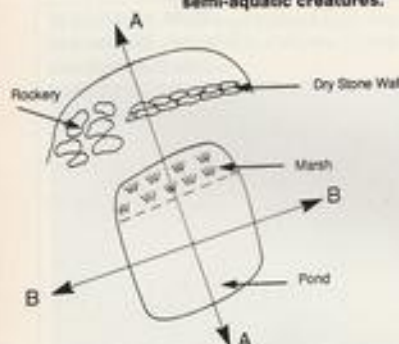
Wild Flower Meadow

Dry Stone Wall

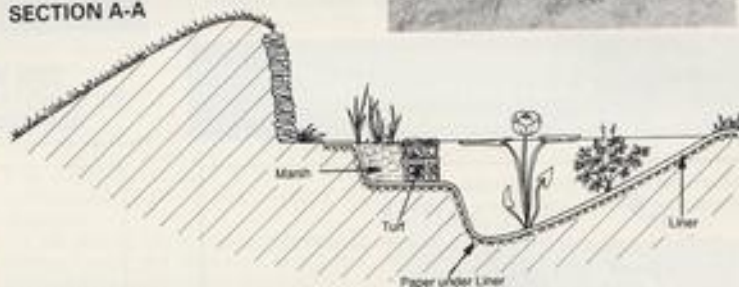
Existing Rose Hedge
Existing Privet Hedge



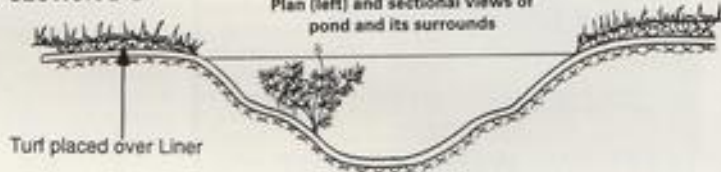
Above, the newly-established pond, while still cloudy, is already beginning to show the first signs of life. Right, once established the water clears, plants flower and the mini-wetland begins to act as a haven for all manner of aquatic and semi-aquatic creatures.



SECTION A-A



SECTION B-B



Plan (left) and sectional views of pond and its surrounds

Emergent and Marginal Plants

Marsh plants introduced were: Marsh Marigold, Iris, Dwarf Spearwort, Water Plantain, Sweet Flag, Ragged Robin, Purple Loosestrife, Bugle and Meadowsweet.

Plants around the Pond Area

In the rockery, drystone wall and area around the pond I planted: Butterfly Blue, Rock Poppy, Tansy, Heartsease, Harebell and Cowslip.

Other areas

To the front and side of the pond a mini-spring and summer meadow was created and some native trees planted. There were also some existing natural areas: rose

hedge, privet hedge and herbaceous plants to attract butterflies.

Life in the pond

Life was quickly established in the pond with the arrival of pondskaters, water boatmen and various larvae. Some tadpoles were introduced and the first froglet seen in June. Damselflies and dragonflies were soon visiting. In July, while lifting a toy car out of the pond with a net, I found that I had also caught two newts. Butterflies were soon to visit and it was exciting to see the first Meadowbrown land on the mini-meadow.

The birds were very quick to use the pond for bathing and drinking. (One was observed flying off with one of the pond snails!)

That year I entered the pond in the Surrey Wildlife Trust 1987 Wildlife Gardening

Competition and received a first prize in the wildlife feature. The prize money went to purchase more plants for the area.

The pond developed well during the next year and it was exciting to see how much the wildlife was attracted to this small area. My family and I got a lot of pleasure in watching the developing habitats. It was just a small contribution to the conservation of wildlife, and as an amateur, I was quite pleased with my effort.

My young son is already aware of the importance of conservation and has been able to watch wildlife at first hand in his little bit of countryside — just as I was able to do 45 years ago!

That's not all of the story, though ... Recently we moved house and I've started again.

"UNFINISHED" KOI

Nigel Caddock describes the "Tategoi Alternative" approach to Koi-keeping
(Photographs by the author)

Tategoi is a term much misunderstood throughout the world. It is true to say that it epitomises, more than other aspect of Koi keeping, the mystic and charisma that embodies a hobby that one can never truly understand fully. The Nishikigoi term "Tategoi" is given to an "unfinished" Koi with a potential for excellence.

In the pursuit of good-grade Koi production and rearing on a truly commercial scale, the Japanese have a couple of minor advantages over UK hobbyists, like 50 years' experience, the optimum Koi-rearing climate, hot natural spring water, incredibly mineral-rich natural water, and a nation wide culture that craves, demands and GETS ever-improving quality.

Even with all their advantages, only a small percentage of Japanese Koi production is of any value, and only a tiny proportion of those will develop into excellent Koi. An even smaller proportion of those will become champion Koi.

In the UK, the few breeding programmes that do exist are still in their infancy and the ever-present British climate constantly leg-

A superb Sanke such as this one from Sakai in Hiroshima can be raised via the "Tategoi Alternative."



islates against production on a large-scale, simply because of the enormous costs of keeping large amounts of water at a reasonable temperature.

Therefore true commercial-scale Koi production in the UK is still many years away, even assuming that market needs develop to the stage where UK production, despite the inherent problems, becomes viable.

So where does this leave us? In general terms, if you want a good Koi, you have to pay the price — you get what you pay for! However, there is a possible alternative — Tategoi.

The Tategoi Alternative

Two and a half years ago I spent five hours going through 1200 baby Koromo in a Koi dealer's freezing premises in the middle of the night. The result of my endeavours was the selection of five baby Koromo, 3in (7.6cm) long. The baby Koi actually looked like Kohaku — virtually all red with a slightly smudged and grubby looking edging to their patterns. To the uninitiated, these Koi looked like "gone-off" Kohaku. In fact, the colouring was so poor that the whole body of each Koi looked a little out of focus and certainly NOT in the slightest bit attractive.

I was seeking the "Tategoi Alternative", hoping I could use what little skill I had developed, and select a Koi that was truly a Tategoi.

One of the five died, three developed into reasonable but unexciting Ai Goromos, but one of the five developed into a superb Goshiki, epitomising the essence of Tategoi.

When one buys Koi in Japan a selected Koi will often be greeted with a shaking of the head and "No sell — Tategoi". This is a total mystery to most Europeans as, usually, there is no clue whatsoever as to why this particular Koi should be so revered. In fact, often, the most memorable aspect is its total ordinariness.

However, a return visit four years on will leave one in no doubt that these guys know exactly what they are doing. They can, with the help of their mud ponds, turn a bland, thin, pale Kohaku, with the meekest hint of grey into a full-bodied superb 27in (68.5cm) Sanke like the five year Koi shown in one of the accompanying photographs.

For those of you who feel this is just luck, be assured good fortune plays no part in this process whatsoever; suffice to say that the more they practise, the more expert they become, and the "luckier" they get!

True Tategoi are simply, with the exception of key-breeding stock, the most valuable Koi in the world, and Japanese dealers know exactly what they've got and will never part with such fish until either all hope is gone, or

the Koi is fully developed.

My 3in (7.6cm) Koromo is now a 13in (33cm) Goshiki and is among the finest in its size in the UK, a truly excellent Koi. It has superb skin quality which, although Kawarimono appears almost metallic, has snow white base white and individually reticulated scaling and a charming head pattern. The most exciting aspect to this Koi is that it is still developing, changing all the time and, as it is a female, I have great hopes that it will continue its prolific (for the UK anyway) growth rate.

The truth is that, in the UK, we are only in a position to say we have a Tategoi AFTER the event, that is, after the Koi has developed into an excellent specimen. It is the pursuit of this quest, plus the hope that we, too, will some day, be able to recognise a true Tategoi at the proper time (ie) BEFORE it has become an excellent Koi, and most important, truly understand WHY, that we will be beginning to understand one of the most fascinating aspects of this amazing hobby. In the meantime, I, and many like me, must be content with that elusive lucky chance in a lifetime of actually getting it right.

My 13in Goshiki — my one and only "lucky strike" . . . so far, but a great case for the "Tategoi Alternative."





M. lacustris — Adult pair, courting male above, female below

TWO SPARKING NEW RAINBOWS

Andy Jackson of Ekkwill Tropical Fish Farm in Florida introduces two magnificent Rainbowfishes which have only recently started making a mark in the hobby
(Photographs by the author)

Two shimmering gems, turquoise and emerald, are normally found adorning the neck or fingers of those who can afford them. Now, however, these gorgeous gems can adorn your aquarium in the guise of two "new" Rainbowfish. *Melanotaenia lacustris*, the Turquoise Rainbow and *Glossolepis wanamensis*, the Emerald Rainbow, are two

Glossolepis wanamensis — Adult male



of the more recent additions to the roster of beautiful Rainbowfishes available to aquarium hobbyists.

Both species are natives of Papua New Guinea, *M. lacustris* being endemic to Lake Kurubu, and *G. wanamensis* found, not surprisingly, in Lake Wanam.

The Turquoise Rainbow is a lovely blue-green colour, with red edging on the dorsal

and anal fins. Horizontal gold and green stripes highlight the dark bar which emanates from the caudal peduncle. The female has essentially the same coloration as the male, except during courtship, when the males' colours intensify to an almost unbelievable brilliance.

The Emerald Rainbow, as you might suspect, is a beautiful metallic green fish. Males of the species show red in the unpaired fins and, in older specimens, a bright purple blotch along the caudal peduncle. Female Emerald Rainbows are more of a silvery-green colour and generally lack the intense coloration of the males. Perhaps the most spectacular characteristic of this fish is its elongated dorsal and anal fins. When compared to its popular cousin, the Red New Guinea Rainbow (*Glossolepis incisus*), *G. wanamensis* has much longer fins, almost giving the impression of a selectively bred mutation.

CARE AND BREEDING

The care and breeding of both species is virtually identical, the only major difference between the two being the Emerald Rainbow's much faster growing rate.

For general maintenance a roomy, well-planted tank with, preferably, a dark substrate, will allow these fish to show to their best. Good water quality should be maintained through proper filtration and weekly or bi-weekly water changes. Hardness and pH are not particularly critical, although



M. lacustris — Eggs attached to vegetation. The early stages of embryonic development are clearly visible.

both these species prefer slightly hard and alkaline conditions.

Feeding these rainbows is a simple matter, with virtually all standard aquarium foods taken with great relish. A good flake food, along with supplemental feedings of frozen or livefoods (especially insect larvae) will do nicely.

Both of these species will reach a length of around 10cm (3.9in) so potential tankmates should be chosen accordingly. Larger characins (such as *Phenacogrammus interruptus*, the Congo Tetra), danios (the Giant Danio *Danio malabaricus*) many livebearers (*Xiphophorus* and *Poecilia* species), most "scavenger" type fishes and, of course, other Rainbowfishes will make suitable cohabitants.

For breeding, best results will be obtained using an aquarium set-up specifically for that purpose. The tank bottom may be left bare to make it easier to siphon wastes and improve hygiene. Filtration can be as simple as an interior sponge filter with a small exterior or interior mechanical filter added if desired. Temperature should be maintained in the upper 70's to low 80's°F (about 25-27°C). Well washed acrylic yarn, or commercially available spawning grass, can be used as a receptacle for the eggs.

A well conditioned pair or trio of breeders is added to the spawning tank after it has been prepared. Spotting the breeders is not difficult, the Emerald Rainbow having a distinct colour difference between the sexes as well as a distinction in shape, with males

being deeper-bodied. Sex differences in the Turquoise Rainbow are not quite as distinct. Females have a much slimmer profile than the male; also the first dorsal fin of the male is larger than in the female and tends to overlap the second dorsal fin.

HATCHING EGGS/REARING FRY

Several eggs are laid daily, so the growing medium should be removed after a few days and placed in a clean container to allow the eggs to hatch. A fungus inhibitor, such as acriflavin, may be added if desired.

At this point additional spawning medium may be added to the breeding tank, or the breeders may be returned to display aquariums.

After removal from the spawning tank, the eggs will generally hatch in 5 to 7 days. The fry can be easily raised on newly-hatched Brine Shrimp, micro worms and/or fine dried food. As stated earlier, the young of *G. manamensis* will grow much faster than *M. lacustris*. Both species, however, will be fully mature within one year of so post-spawning.

Both of the species the Turquoise Rainbow and the Emerald Rainbow, are not only beautiful, but easy to keep and breed. Best of all is that both of these fish are now being raised in good numbers by commercial producers in Europe and the United States. Therefore, these highly desirable fish will soon be readily available to hobbyists on both sides of the Atlantic.

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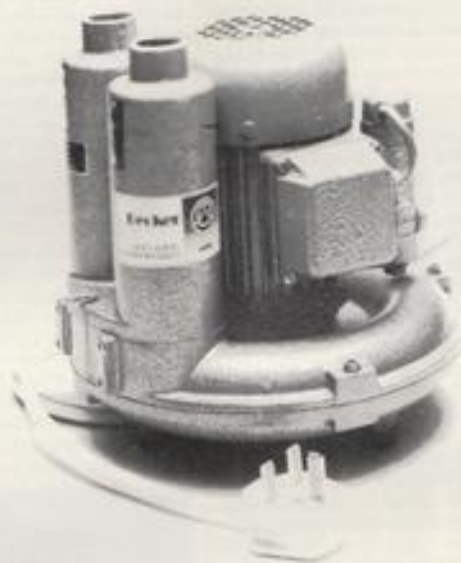
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Marine Essential u/g's?

Is it absolutely necessary to have undergravel filters in marine aquaria? Could I just make do with a power filter and protein skimmer?

Some form of undergravel filtration is, in my opinion, virtually essential if you are to keep a reasonably acceptable stocking level of fishes and invertebrates in your aquarium without having constant crises due to a recalcitrant level of toxic nitrites which won't go away and continually poison your creatures.

It is a well-known phenomenon among the professionals in the trade that some owners of non-undergravel filter systems deliberately do their nitrite testing with insensitive Nitrite Test Kits so that they appear to have no nitrites in their seawater — an amazing case of self-delusion at the creatures' expense!

As I have said many times in this magazine over the last two decades, no-one in my view will ever invent a filtration system which is as bio-chemically-efficient and cost-effective at rapidly removing toxic ammonia, nitrites, urea, tetramethylamine oxide, etc. (ie the creatures' own highly toxic waste products), as the good old-fashioned platform-type undergravel filter system.

You could certainly rely on just an external powerfilter and

protein skimmer — provided you limit the stocking of your 39 gallon (170 litre) tank to only 1in of fish to each 6 gallons of seawater ie only 6% inches of fish in total. However, if you aspire to the ultimate stocking ratio of 1in of fish to each 2 gallons of seawater, plus an attractive display of invertebrates and macro-algae (the latter to keep nitrites to an acceptably low level, then you will certainly need either an external powerfilter (100 gallons/gallons/hr capacity) driving a 3 inch deep coral gravel/coral sand u/g filter in reverse flow mode, or a self-contained modification of the above system such as the "Hockney System".

The reverse flow operated u/g system is the ultimate "belt-and-braces" system for the marine aquarist — and who can afford not be a "belt-and-braces" person in view of today's livestock prices?

With regard to a protein skimmer, if you adopt my advice above you will find that such a device will not prove

essential, so efficient is the water management system recommended. If you take your own advice and rely solely on an external powerfilter, then you will definitely need a protein skimmer in order to stand even a snowball in Hades' chance of keeping toxic excretory products within just tolerable limits.

Radiant success

I have kept various native sea anemones for many years (since 1962) and have found them easy. After turning to tropicals, three years ago I acquired a slender-tentacled, pink-tipped type of Radianthus anemone which I have just had to trade in because it had reached a ridiculous 2ft across the disc. It was too easy to feed, smacking any food (clam or squid) that came into contact with it.

The anemone I exchanged it for is a 12in-wide Stoichactis giganteum (or similar sp) and I am wondering how these sorts of anemones feed.

When feeding the Amphiprion ocellaris which have adopted it,

Most anemones, such as Cerianthus, are gross feeders while some, like Stoichactis, appear to rely on symbiotic algae for their nourishment.



CORAL WORLD TELAT

small pieces of clam and squid fall on the disc, but there is no visible reaction. Do these anemones eat only minute particles or rely solely on their zooxanthellae?

You have obviously developed "anemone-fingers". To be able to grow a Radianthus species anemone to over 24 inches in diameter across the oral disc is a great achievement, and I hope you are able to emulate this feat with the much more slow-growing Stoichactis species anemone.

All my observations of Stoichactis spp. anemones in captivity made over the last 27 years, lead me to believe that these anemones are not, generally speaking, gross feeders at all. Like you, I have never seen a Stoichactis anemone actually take solid food into its mouth in the way that occurs with Radianthus spp., Discosoma spp., Cerianthus anemones and many species of living corals.

Stoichactis spp. anemones appear to rely entirely on food-stuffs and vitamins which are photosynthesised for them by the millions of zooxanthellae algae which live embedded in the surface layers of the tissues of their oral disc's tentacles. For this reason, I strongly suggest that, once the Stoichactis has ceased to trundle around the aquarium and has firmly adhered its sticky "foot" in a position which suits it best, you locate a natural daylight fluorescent spot-light immediately above it and as close to the coverglass as is convenient.

It would be nice to hear from you again in a few years' time detailing how large your *Stochacis* has grown — but I don't think that you'll find its growth rate is nearly as spectacular as that which you enjoyed with your recently-departed *Radiatus* male.

Discus

Happy/healthy set-up

I would like you to advise and comment on my proposed aquarium set-up for my first-time attempt at keeping Discus.

I have purchased a 5ft x 18in x 18in aquarium. I am going to use reverse-flow filtration with an Eheim 2117 (1000 lph), running it through an Ocean System Mini Reef Wet/Dry filter; two heater/stats for keeping the tank at right temperature, and the appropriate lighting.

I would like to keep Jack Wootley's Turquoise Hi-fin Blue Discus in the tank.

I am slightly confused about the Eheim power filter you mention. Model no 2117 is the largest thermo-filter; its turnover is only about 840 litres (and not 1000) and also why install two (bi-metal) heater/stats when the filter contains a very reliable heating system with a very accurate electronic thermostat? If your power filter is the Eheim thermo-filter, the 210 watt heating system will keep your 300 litres of water always at the right temperature.

Although I am not familiar with the Ocean System Mini Reef Wet/Dry filter as such, wet/dry, or trickle filters, have become very fashionable and are a good system for any tank.

However, there are a few points you must remember when using wet/dry filters on a freshwater aquarium. They will only function properly if:

a) The flow-rate is correct; the flow of water must be adjusted to such a rate that the bacteria are not washed away (too strong a flow) or have a chance of drying out (too small a flow):

b) The pH of the water must be maintained within a value of pH 6.5 to pH 6.9. At any other pH values wet-dry filters do not tend to function correctly.

It is also essential that a good pre-filter is used so that only

"dissolved" matter in the water passes the dry or trickle part of the filter. By also installing an Oxylator, the wet part of your filter will become more effective.

I am sure you will be able to keep your Discus happy and healthy in such a set-up. Good luck!

Coldwater

Clear advice

Last year I had lots of problems with murky green/black water in my 800-gallon pond which refused to clear, despite advice from some "experts", one of whom said that I shouldn't have any plants in my pond! I obviously want to avoid the same situation developing this coming season and would, therefore, be grateful for your views.

Green water can be a constant problem for many pond owners, while others seem to have "got it just right", either by creating a balance within the pond between plants and fish, or by filtration, or combination of plants and filter.

Black water, however, is a definite sign that you are creating conditions within your pond which are far from good — a sure sign of pollution.

On the question of green water: There are many factors which stimulate algal growth; sunlight, high stocking levels, over-feeding are just a few. Some situations are easy to correct, while others cause a real problem.

In balanced, natural ponds, the problem does not usually last for long, for there will be an abundance of underwater plant growth which starves the algae of nutrients, while floating plants provide shade, cutting down the amount of sunlight entering the water.

Unfortunately, many pond owners who do not have the facility of an adequate filtration system, fail to establish enough underwater plants; a few bunches is just not enough. The lily, with its large leaves and beautiful flowers, should be made full use of and made to play its part in the important role of shading out light.

There is a very wide difference in opinion about types of filtration and materials used in them. The cost can vary from a few pounds into thousands, and each type will give varying

results in different situations.

The *Aquarist and Pondkeeper* magazine runs some excellent informative articles on the subject of pool filtration, and most ideas can be adapted to one's own set-up. Many water garden centres also have a selection of pools of varying sizes with filter systems in operation to give their customers an opportunity to see the results of each type of filter. It helps to enable pond owners to make a more positive decision within their price range.

One of my own ponds is of similar size to yours. I have chosen not to install a filter but, instead, operate a simple method of maintaining clear water and healthy fish. Once or (as in the bright days of summer) twice each week, I run a hose pipe into the opposite end of the pool to the overflow. The flow of water is quite a gentle one and runs for a couple of hours which does not make too much of a drastic change for the fish. My pond is well planted with oxygenators, marginals and lilies and not overstocked with fish. This method has been used very successfully since the pond was constructed several years ago, and I am perfectly happy with the trouble-free situation.

Over-stocking should be avoided because it is almost impossible to maintain healthy living conditions for very long if your pond has too many inhabitants. Over-feeding is another step to polluting your fishes' environment. One or two feeds a day during the summer months is quite adequate, because most pools which are not over-stocked have insects which supplement the diet of the fish. Offer enough food for the fish to eat within a few minutes; more, and it could be left by the fish only to turn bad and help pollute the water.

Another point to watch out for is soil washing into the pool, either from the surrounding garden or from planting baskets within the pond. Line all planting baskets with hessian and top with gravel to keep the soil in the containers. Raise the pump off the base of the pond so that mulch containing nutrients is not washed off the bottom.

Use several different types of media within the filter, (open cell foam, though not everlasting, is, in my opinion, especially effective in removing solid

waste). The pump should turn over about 50% of the water volume every hour. The best flow rate for your set-up will be determined by a matter of trial and error.

Tropical

Electric blue

*I recently purchased a pair of fish sold to me as *Haplochromis electrica*. I would appreciate some tips on looking after and breeding this species.*

Haplochromis electrica is one of the numerous Lake Malawi Cichlids. As such, it requires the usual hard, alkaline waters and a diet of both fleshy foods and vegetable foods.

The male is, indeed, the darker blue, and may be larger. Breeding is in the usual mouth-brooder method, but one male is able to spawn with several females. A sandy base is not essential but it does help the fish to dig a nest for egg-laying. The female scoops the eggs into her mouth and, in the absence of egg spots in the male, he vibrates the anal fin to attract the female's attention.

About 30 fry are bred per female, over approximately 20 days. The fry are large and easily raised on crushed flakes and Brine Shrimps.

Cloudy-eyed Oscar

After a recent drop in temperature, my Oscar (aged ten) has developed a cloudy eye with a red spot. Could you tell me what's gone wrong?

Temperature drops stress fish, and a stressed fish is more likely to develop diseases. However, chilling should not, in itself, cause clouding of the eye. This happens with ageing, and your Oscar is getting on a bit.

The red spot may or may not be significant; it could, for example, indicate inflammation from some developing major problem. The clouding may also be a cataract. This will only respond to surgery, of course, and that is impossible with fish.

Since the Oscar appears healthy, I suspect the latter problem, in which case, nothing can be done, except to maximise water quality.

If the eye becomes inflamed or swells, I recommend a trip to the local vet for antibiotic treatment for the fish.

Koi Talk



by John Cuvelier

You pays your money . . .

One of the more puzzling aspects of Koi-keeping, particularly for the novice, is the system of Koi pricing as it affects the hobbyist purchaser.

You walk into a dealer's premises perhaps with fifty or sixty pounds, intending to buy, say, three or four Koi with which to brighten up your pool, and what happens? All the fish that you find attractive and desirable, turn out to cost as much money as you have available, PER INCH, if not more! So what is this mystery element which seems to dog every Koi purchase?

The answer is very simple and most easily explained by a description of MY OWN Koi! Take the most popular and easily available varieties: Kohaku, Sanke, et al. Our collection includes several of each of the above varieties and we love them all. BUT, by no stretch of the imagination could our Koi be said to display the true colours of red, white and black! It would be more truthful to call the colours orange, dirty white and off-black!

That's it in a nut shell. What you are asked to pay is a reflection of true coloration, deep almost crimson red, dense brilliant white and almost jet blackness. Next time you visit a dealer, just take time to have a close look, and all will be revealed. It's not the dealer's fault that sky-high prices exist, but a matter of supply and demand. In other words, as long

as people are prepared to settle only for the absolute best as regards quality and perfection of colour, they'll just have to put up with it!

Having said all that, if I had the wherewithal to be more selective, I should be fighting for a place in the queue, because let's face it, what could be more beautiful than a Sanke with true coloration? In the meantime, like the great majority of my fellow hobbyists, I simply dream and make the most of the still magnificent Koi which swim around our pool, pale or not!

Cold snap problems

At the time of writing (late January), this very unseasonably mild winter is still reluctant to leave us. This has raised worries with a number of Koi-keepers, if the number of telephone calls received is anything to go by!

Of course your Koi are going to be swimming around more than usual. The poor things don't know whether they're coming or going, do they? Normally at this time of year, they are in semi-hibernation. Please don't be tempted to feed

them heavily with dried food, pellets, etc — except, perhaps, some sinking pellets or wheat-germ. Sure, they'll willingly eat food but, should a sudden cold snap hit as it inevitably will, your Koi could end up with a stomach full of undigested food, leading to all kinds of horrors! If your pool is not one of those (as I call them) clinical abominations, rest assured that your fish will find sufficient natural food around the walls to sustain them if an when they want it! Our Koi are hardy creatures, if only we'd leave them to it.

Heated arguments . . .

This brings another pet bobby horse of mine to the fore. In nature, all temperate creatures are accustomed to a hot(tish) and a cold(ish) season. This is known as winter and summer!

It has long been my opinion that if you start trying to alter THEIR climate by heating the pool water during the winter, you are simply flying in the face of nature by maladjusting your Koi's natural 'clock'. As long as your pool is deep enough and you've provided some sheltered

haven for them to rest in through the months of winter, your Koi will have no problems.

There are Koi swimming around in our pool which have been with us for eighteen years to prove the point! If you feel you must provide some cold weather improvements, then why not consider some form of removable roof over the pool? It'll cost you a lot less than extending your central heating system, never mind the additional fuel bills involved.

Update time

Update time on our baby Koi. We are now the proud parents of a brood ranging in size from 4 inches downwards. The largest, a Doitsu Ogon is literally eating us out of house and home. Talk about a gannet!

As it's such a long time until it can be transferred into the pool, I'm rather getting the wind up in case I need to buy another aquarium with which to spread the load a bit, otherwise I can see it turning cannibal.

Among the remaining members of the spawning are several Bekko things with beautiful markings especially the one with a yellow dot on its head!

Books *Continued from page 10*

Water Gardens and Aquaria

Leisure Intelligence Series, Volume 1, 1988
Published by: Mintel Publications Ltd.
Available from: KAE House, 7 Arundel Street, London, WC2R 3DR. Tel 01-836 1814 or 01-379 3536
Price: £245

Water Gardens and Aquaria is the report of a major survey carried out by Mintel Publications into the current state of aquatics. Coverage of the area is very thorough and the reporting and formulation of conclusions easy to follow and encouragingly optimistic.

Whereas some ten years ago the number of fishkeeping households in the UK stood at around the 10% level, this report confirms other findings from the Pet Food Manufac-

turers Association that the figure has now risen to around 14%, ie somewhere between 2.4 and 2.8 million households.

This is great news for us. It's especially encouraging to read that the coldwater hobby continues to expand at a very healthy rate and that this is reflected in an increase in pondownership which now stands at around 1.5 million households. This, in turn, means that somewhere in the region of 3.5 million adults, plus their children, have access to a pool or pond.

Other encouraging figures show that about 70% of all petshops stock fish. This is a much higher percentage than for any other pet (the nearest non-aquatic pet figure being 60% for hamsters).

In fact, virtually everywhere they looked, the survey team found reason for optimism.

Mintel, in fact, concluded

that the potential for further expansion is there and that if successful exploitation of the aquatic sectors continues, then the markets overall could be easily worth £200m by the end of 1989.

I've only picked out one or two of the more general comments and findings in this review since space so dictates. I would thoroughly recommend detailed examination of this report. The price, from the individual aquarist or pondkeeper's point of view, is without doubt prohibitive. However, I feel that every reference library should possess this mine of invaluable information.

I would therefore hope that anyone who reads the above will do the sensible thing and take all the relevant details to their nearest library and put in an official request for a copy.

John Dawes

News from the societies



International Cichlid Conference News (10-13 August, Orlando, Florida)

As promised in one of his earlier despatches, **Charley Grimes**, the Conference spokesman and Newsletter editor, has released further details of some of the outstanding internationally-recognised speakers that will be gracing the event. We quote:

John Kuhns

John will talk about how to make water chemistry work for us in our cichlid aquarium. It will be a technical talk but will be more "how to" than theory. Not only is John a chemist who operates his own research lab in Kansas City, but he has developed a couple of

aquarium products that are familiar to everyone: Novaqua and AmQuell.

Dr Robert Miller

If there is another ichthyologist that has been more supportive of the fish hobby, I don't know who it is. Dr Miller has introduced many nifty fish into the hobby, willingly shares his time and research with the hobby and, most importantly, appreciates that an observant hobbyist can make valuable contributions to science. Dr Miller has been recommended as "The Authority" on his subject, *The Cichlids of Central America* by a number of people whose opinion we respect.

Dr George Klontz

Cichlids as Food promises to be a very funny talk. I have it on good authority that Dr Klontz, in addition to being an authority in his field, is "more fun than a barrel of monkeys." I am sure the subject and presentation will appeal to everyone.

Marshall Myers

Regulatory concerns and the aquarium hobby is something we should all be aware of. This presentation may come under the

category of "doing what is good for you instead of what is fun".

Marshall Myers, as the General Counsel of the Pet Industry Joint Advisory Council (P.I.J.A.C.), is actively involved in protecting the pet industry's interests, as well as ours, from government "over-regulation".

For further information on ICC, write to **International Cichlid Conference, 419-A Hidden Brook Drive, Glen Burnie, MD21061, USA.**

Liverbearer Information Service

Viviparous — The **Liverbearer Information Service**, has had a phenomenally successful first year. Membership now stands at over 170 members throughout the world. Two technical information booklets have been published, together with four magazines, each containing two colour photographs and information sheets. The auction, in October '88, attracted over 70 people who enjoyed the pick of 63 wild liverbearer species, together with a dozen or so cultivated varieties.

Next year's plans include a Spring Auction and the launch-

ing of a Fancy Guppy Section. However, the most important event will be the first International Livebearer Convention. Two of America's top livebearer experts have been invited to lecture at the event. One is **James K Langhammer** who, while he was Curator at the Belle Isle Aquarium in Detroit, set up breeding colonies of three different species of live-bearing stingray and, over a period of 40 years, has made a significant contribution to the aquatic hobby, both as a writer and conservationist. The other American speaker is **Pat Hartman**, who is Chairman of the American Livebearer Association and a specialist in the family Goodeidae.

The convention will be held on **21-22 October '89** at the Midland Hotel in Derby. As usual, this is an open event with non-members welcome to attend. Sunday afternoon will be taken up with one of the largest livebearer auctions ever held in the UK. For further details about this event, please contact Nigel Hunter, 60 Barry Way, Brighton Hill, Basingstoke, Hants.

A Spring Auction is to be held on **2 April** at the Railway Inn, Heron Cross, nr Fenton, Stoke-on-Trent 1.00pm start. For further details please contact Alan Rothwell, 95 Emsworth Road, Blurton, Stoke-on-Trent, Staffs ST3 3EX. Tel: 0782 317741. Non-members welcome.

Tongham Aquarist Society

After many years in Ash, Tongham Aquarist Society have moved to a new hall in nearby Mychett. The venue change has also forced a change of meeting night. From **4 January 1989**, meetings have been held on the first and third Wednesday of the month, at Mychett Community Centre, 140 Mychett Road, Mychett, nr Camberley. The new venue is vastly superior in decor and facilities, and offers ample car parking and a fully licenced bar. All newcomers are assured of a warm welcome. For more information, contact Adrian Wesley, on Camberley 34268.

NEXT MONTH

Tune in in April for the next exciting and colourful instalment in our acclaimed series of **Supplements**.

We mark the official start of the cold-water season with a selection of the very best articles, by the very best authors.

Single-tailed, twin-tailed and a crop of new Fancy Goldfish varieties are highlighted in our **Colwater Favourites Supplement**, along with the top "other" fish, plus the best plants for coldwater aquaria — all given special treatment by our team of experts consisting of **Stephen Smith**, **Pauline Hodgkinson**, **Barry James** of Everglades Aquatic Nurseries, **Dr David Pool** of the Tetra Information Centre and **Dr David Ford** of the 'Aquarian' Advisory Service.

● We mark **National Pet Week** (10 April — 7 May) with an exciting free-to-enter competition with some super surprise prizes.

● **A Week in the Life** — our latest **NEW SERIES** — kicks off with **Jerzy Gawor's** fascinating insight into his exciting and constantly - changing world.

● Harlequins as you've never seen them before are the focus of a specially-commissioned colour feature from one of the top aquarists and photographers in the world — **Arend van den Nieuwenhuizen**.

● **Koi**, conservation, tropicals, marines, cartoons, herptiles — they are all there in our packed issue, along with our ever-popular and thought-provoking regulars.

Don't miss April's A&P. You won't find better value for money anywhere.

Diary dates

Skegness & District Aquarist Society

The 12th annual Open Show of Skegness & D.A.S. will be held at the Richmond Hotel, Richmond Drive, Skegness on 12 March. Full details from the Show Secretary, A. C. Patterson, 1 Brunswick Drive, Skegness, Lincs PE25 2QT.

Central Midlands Cichlid Group

The above group are holding their 10th annual aquatic auction at the Penkridge Memorial Hall, Penkridge, Staffs on Sunday 19 March starting at approx 12.00 noon. Doors open at 10.00 am, bookings of fish and aquatic items accepted on the day until 2.00pm. For further details ring (054 36) 76004.

Birtley Aquarist Society

The B.A.S. 6th Open Show will be held at Birtley Community Centre, Ravensworth Road, Birtley, Chester le Street, County Durham on Monday 20 March. For more details and

schedule contact Mr D Clark (Show Secretary), 85 Blyth Terrace, Birtley, Chester le Street, County Durham DH3 1DW. Tel: (091) 410 5000.

Malvern & District Aquarist Society

The 16th Annual Open Show of the above society will be held on



Easter Sunday, 26 March at The Malvern Youth Centre, Albert Road North. For further details, contact Frank Myatt (Hon Sec), 8 Willow Grove, Malvern Link, Worcestershire, WR14 2SE. Tel: (0684) 572 644.

Exeter and District Aquarist Society

The 5th Open Fish Show of the above society will be held at St Nicholas School, Matford Lane, Topsham Road, Exeter

on Sunday 26 March. More details and show schedule from Terry Stedman, 57 Redhills Close, Isca Heights, Exeter, Devon EX4 1SE. Tel: (0392) 433680.

Oldham & District Aquarist Society

The O.D.A.S. 1989 Open Show will be held at Werneth Park, Frederick Street, Oldham, on Easter Sunday, 27 March. All enquiries to A. Chadwick (Show Secretary), 9 Bronville Close, Chadderton, Oldham. Tel: (061) 652 6207.

Bishop Auckland Aquarist Society

The 21st Open Show of the above society will take place on Sunday 2 April. For full information, contact the Secretary at 44 Ridgeside, North Close, Spennymoor, Co Durham DL16 7HG. Tel: (0388) 816666.

Anabantoid Association of Great Britain

The Members' Weekend will take place, once more, at Ran-

moor Hall, Sheffield University on 1 and 2 April 1989 (Saturday and Sunday). As usual, there will be a closed show of anabantoids, lectures, the AGM and auction. For further details write, enclosing sae to Tim Groom, 44 Springswell Gardens, Balby, Doncaster.

Viviparous - Livebearer Information Service

A Spring Auction is to be held on 2 April at the Railway Inn, Heron Cross, nr Fenton, Stoke-on-Trent 1.00pm start. For further details please contact Alan Rothwell, 95 Emsworth Road, Blurton, Stoke-on-Trent, Staffs ST3 3EX. Tel: 0782 317741. Non-members welcome.

Merseyside Aquarist Society

The 1989 M.A.S. Open Show will be held at Rainhill Village Hall, Dane Court, Rainhill, Prescott, Merseyside on Sunday 23 April. Further information from J. Bailey (Hon Sec), 11 Auburn Road, Liverpool, L13 8BJ. Tel: (051) 228 8199.



Further information and advance tickets from:

Fishworld 89, Cliveden House, Priors Way, Bray, Maidenhead, Berks., SL6 2HP
Tel: 0628 38912 or 770500 Telex: 6848794 Fax: 0628 29942

FISHWORLD 89

ALEXANDRA PALACE & PARK
MAY 27 - 28 - 29TH 1989

The largest aquatic exhibition in the U.K. at one of the country's most attractive venues. Features include:

Tropical, marine & coldwater fish for sale and on display plus plants, equipment and accessories from many of the UK's leading suppliers.

Large lecture theatre with full programme of talks, seminars and demonstrations on many aspects of the hobby for both beginners and specialists.

- Open Show organised and judged by the F.B.A.S.
- Tableaux and specialist society displays.
- Bars, restaurants and free visitor parking.
- Supervised childrens' play area and creche.

Spotlight on

Amphibians

THE HORNED FROG

(*Ceratophrys cornuta*)

Not to be confused with the Horned Toad, this loud, burrowing amphibian can prove quite a handful as David Alderton explains.

(Photograph: David Allison)

Frog or toad? These amphibians form the Order Anura, which is comprised of over 2,000 species. The description of anuran refers to their lack of a tail when adults. There's actually no strict zoological distinction between these two groups of amphibians, although the description of 'frog' is often applied to predominantly aquatic species. Toads are more adapted to life on land, possessing drier skins, which often have a warty appearance. They also tend to be less agile when jumping than frogs.

By way of an introduction to the group, adult anurans breathe by means of lungs, inhaling air via their nostrils while their mouths are kept closed. Certain species can be quite vocal, however, with the call of the North American Bullfrog (*Rana catesbeiana*) being audible over a mile away. The hearing of most anuran is correspondingly sensitive, enabling females to distinguish the calls of potential mates of their own species at breeding time.

Anurans lack external ear flaps, relying instead on a thin area of skin, known as the tympanic membrane, to detect sound waves, and transmit them to the inner part of their ears. They also have a highly-developed sense of sight and rapid reflexes which enable them to hunt insects with great efficiency.

Mating takes place in the water, with the male clasping the female behind her forelegs, and the eggs are fertilised externally as they are laid. These, in turn, hatch into tadpoles, the characteristic larval stage in the life-cycle of amphibians. Tadpoles rely on the horizontal movements of their tails for swimming purposes and have gills evident on the sides of the head for respiration. They eat a variety of foodstuffs, and must have some animal matter present in their diet in order to complete their metamorphosis. Tadpoles gradually lose their external gills and their lungs become functional. As their limbs develop, so the tail is reabsorbed into the body.

Don't rely just on a common name when purchasing these amphibians. For example, there are Horned Frogs, sometimes advertised as toads, belonging to the genus *Craugastor*, which are found in South America and could possibly be confused with the

Asian Horned Toad *Megophrys monticola*. Horned Frogs often prove highly aggressive, however, and are likely to prove cannibalistic as well, particularly if frogs of various sizes are housed together.

Special characteristics

The Common Horned Frog (*Ceratophrys cornuta*) is a member of the family Leptodactylidae and is one of 13-14 species in this genus, which is represented across much of Tropical South America Leptodactylidae.

The unusual appearance of this species results from the raised areas of skin extending above the eyes, forming horn-like swellings, as well as a prominent rounded nose and a broad mouth beneath. Horned Frogs are predominantly mottled-grey in colour, and have relatively smooth skins. They attain a maximum size of about 20cm (8 inches), with males tending to be smaller than females.

General care and health matters

These frogs, coming from tropical areas, must be kept in heated vivaria, with the temperature not falling below 22°C (71.5°F) and the ideal being about 24°C (75°F). Their coloration enables them to blend in well with their background in the wild. They dislike bright light, and usually prove rather nocturnal in their habits. The floor of the vivarium should be covered with perhaps 15cm (6 inches) of moist peat, so that the toads can bury themselves if they wish. A smaller area of their enclosure should consist of water. You can create this quite easily by using a silicone aquarium sealer to construct an impenetrable barrier for the water on the floor of a converted aquarium, by fixing a piece of glass here at a suitable height.

Horned Frogs are not fastidious feeders, taking a wide range of invertebrate prey such as mealworms, crickets and even cockroaches. For much of the time, they will remain buried, with their horns protruding above. Horned Frogs ambush invertebrates as they pass by, while larger individuals will even prey on small rodents in the wild, and take pinkies in captivity.

Breeding

As the time for breeding approaches, males become more vocal. They have a call rather like a cow bellowing from afar. Spawning often takes place after heavy rains, in pools and similar areas of standing water. Recordings of rainfall (or a running shower) are said to help stimulate breeding behaviour in vivarium surroundings, although these frogs are not commonly bred in captivity.

The tadpoles present no special difficulties, however, and grow quickly, although like adults, they are carnivorous, and need suitable foods. Raw meat will pollute the water, however, so start them off on powdered flaked food, progressing to freeze-dried livefoods and similar products sold for aquarium fish.

Watch carefully for cannibalism, as this can become a problem if the tadpoles are underfed. They should grow rapidly. Several feeds daily are to be recommended, to avoid polluting the water unnecessarily.

In the wild, these toads may occur some distance away from water, and thus take advantage of tropical downpours, which create suitable puddles where their eggs can be laid. The tadpoles, in turn, have to develop before the water evaporates, leaving them stranded. They can often emerge as small toads with two weeks of hatching.

No diseases of significance are usually associated with these toads, but watch for any sign of bacterial infections which can cause 'red-leg'. This is usually a reflection of an unclean environment. But, in suitable surroundings, Horned Frogs may live for five years or more.

AN INTERPET GUIDE TO
REPTILES & AMPHIBIANS
David Alderton



David Alderton is the author of the popular *An Interpet Guide to Reptiles & Amphibians*, published by Salamander at £4.95 and available from most pet and aquatic stores.



Spotlight on

Amphibians

LONG LIVE KING NEWT

1966 will live in the memory of most English schoolboys as the year that Bobby Moore led England to their one World Cup victory. In our house it will always be known as the Year of the Newt. In fact, if only the English football team had remained as consistent as this extraordinary pet we might not have been reading the discouraging headlines that we regularly read in the sports pages. Back in 1966 I remember a drama teacher at school telling us of her husband's exotic job. This man, named Martin Marks, was responsible for importing animals from all over the world for places like London Zoo. It was a total surprise one day when my teacher said to expect him to call on us that evening. He was bringing round some creatures that had been left over from a "job lot" (of Animals, Assorted?) that he had brought over from the Orient.

It was about seven o'clock that night that I got my first glimpse of the Japanese Fire-bellied Newts. Two of them squirmed lazily in the bottom of the shoe box that Mr Marks opened up for us on the kitchen table. "We'll take them", said my mother as if she was buying a pound of carrots. Mr Marks told us that they ate "anything with lots of protein in", and that they were amphibious. Then he left.

King Canewt . . . and friend

My mother was more interested in getting this "wee things" to eat; I was more interested in naming them. By the end of the day I had hit upon King Canewt and Sir Isaac Newton (well, I was thirteen) and so, they were christened. The pair were kept in a fish tank which measured about 12 x 9 in and in about two inches of water. They spent most of their time motionless upon one of the little rocks that protruded from the water. As they were kept in the bathroom, the climate ranged from sub tropical (after a four-hour bath from my sister) to Lapland winter (we

Twenty two and a half . . . and still going strong. No . . . not Julian Wood — just one of his incredible newts!

had no central heating).

There they stayed, year in year out. As a teenager I soon grew tired of their beady, emotionless stare and their lizard-like basking. After a bit, the only time I remembered that they were there was when an unsuspecting guest would run screaming, wrapped only in a towel, out on to the landing outside the bathroom. Some visitors politely declined ever to bathe there again; some simply did not return.

Suction-toed climber

A further discovery was made by us only a few weeks after they took up residence. One day my sister — who seemed to live in the bathroom as far as I could tell — ran out screaming "It's escaped!" After she had been sedated it was, indeed, confirmed that King Canewt, the smaller of the two, had somehow got out.

In retrospect it was not difficult to imagine how a Fire Belly with its remarkable suction toes could scale a puny 3 in span of glass. It was a wonder it had not ventured before.

However, though undeterred by four flights of stairs, it had been unable to traverse the doorstep. There he was found as flat as a cartoon character which has been steam-rollered. With moist eyes my mother picked up the little, splayed "rug" and placed it in a cardboard box. I was just sensitive enough not to inquire too closely about its final resting place.

Shortly after, with cold-blooded efficiency of which only humans are truly capable, another newt was organised and King Can-

ewt II took his place upon the throne. A simple piece of chicken wire folded over the top of the tank secured their life's cell.

Short-sighted feeders

From then on it was merely a matter of feeding them every week or so. Their eyesight is not 20-20 so, presumably, they hunt by smell. Even so, to interest them at all the "prey" must be moving. In fact, anything from a matchstick to piece of ham waggled above the water will have them blindly snapping. Cheese slithers have been a staple over the years. So much so, that one of them now seems to consider itself a vegetarian. An absurd stance for a predator, I tell him vainly.

Cooked chicken is also a popular menu item, although it rots and pollutes the water if scraps are left in the tank. The real delicacy is the string of muscle peeled off the back of a cooked prawn (Aussie newts may eat the raw variety I suppose). This mildly fishy delicacy is something that even an octogenarian newt will kill for, so it has to be administered with caution. They have no teeth but, as the old joke goes, they can give you a pretty nasty suck.

If this was film there would now be a small caption at the bottom of the screen saying: "Twenty Years Later", because we come up to date. A lifetime of captive luxury later, the old bubble eyes are still with us.

I recently contacted an expert via the good auspices of *AGP*. He told me, in measured tones, that the newt "thrives on neglect". No doubt, they said the same about the Count of Monte Christo, but it certainly seems to be true for my Fire Bellies.

In twenty-odd years nothing more significant has happened to their environment than a deepening of the water by about three inches some five years ago.

Two years ago one of the newts made a half-hearted attempt to produce some milky white sperm pyramids. Imagine its desperate pride and then equal disappointment upon finding that his companion had remained resolutely butch and male!

My expert tells me that a small bump between the hind legs, which increases slightly in spring, is a sure sign of membership of the male sex. My expert also tells me that the record age for this remarkable little reptile is twenty-five years (in Britain, at least).

My hearty congratulations to the patient owner. But look out! Sir Isaac has an inscrutable and mean look on his face. He clearly intends to confound my neglect by sitting it out for a further five years. I wouldn't put it past him.



Spotlight on *Amphibians*

Toads of the genus *Bufo* (to which our own British species, immortalised in "Wind in the Willows", belongs) are almost synonymous with small "c" conservative "amphibian-ness." While other toads have developed off-beat methods of reproduction (like *Alytes obstetricans*, the Midwife Toad), become specialised desert dwelling burrowers (like the North American Spadefoots, *Scaphiopus*), or developed spectacular and elaborate cryptic colour schemes (like many of the "Horned Toad" species), *Bufo* remains the typical toad of our childhood.

In any family, however, there always seems to be at least one mould breaker, and one non-conformist; Mr Toad's kin are no exception. The Asian branch of this widespread family has spawned (forgive the pun) this singular rebel, *Bufo asper*.

Unrevealing exterior

Imported under a variety of rather fanciful names (Asian Giant Toad, Malayan Toad, Malay Cave Toad, the last after its habit of feeding on insects attracted into caves by bat guano, etc.), *Bufo asper* looks, on first inspection, anything but untypical of its group. In fact, it looks very reminiscent of a magnified British Toad, with its warty skin, and reddish or brownish coloration.

The first hint that this is not a middle-of-the-road amphibian comes from its size. While the majority of Bufonid toads are between 50-80mm (c. 2-3.2in) *B. asper* grows up to 215mm (8.5in), and is the largest Asian species. Giants are not otherwise unknown among these animals, the commonly encountered Marine Toad, *B. marinus*, reaching 200mm (c7.8in), and Blomberg's Toad, *B. blombergi*, at 250mm (c9.8in) being the largest of the genus. However, *asper*'s size does put it out of the common herd.

The main oddity of this species lies more in its behaviour than in its morphology. While most of its relatives are terrestrial or burrowers, this unusual creature climbs, neither as well as a tree frog, nor as a permanent way of life, but at least, moderately proficiently. As a forest dweller, this ability is perhaps not too surprising, but it is precisely this that contrasts so strongly with its rather clumsy ground-dwelling fellow counterparts, and makes it so fascinating as a vivarium subject.

Accommodation

The accommodation for this species must be spacious, and bearing in mind its tropical origins, should be heated to around 25°C (77°F), dropping somewhat at night. A floor covering of damp moss or peat and leaves will simulate its forest home, and a water container large enough for it to get into will prove a useful and popular feature — though

MR TOAD'S CLIMBING COUSIN

Tired of keeping Common Toads? If so, try *Bufo asper* for a change. Dr Gareth Evans did, and found the experience extremely rewarding



one in frequent need of cleaning and refilling.

It is essential, however, to provide adequate ventilation to prevent rapid fungal growth in so warm and humid an environment. In view of its climbing activities, stoutly secured low branches and rock-work will enable it to show off this facet of its behaviour.

There are three things to be considered when arranging this toady assault course: firstly, the materials must be stable and well secured, especially the rocks, or the animal may be injured either by falling or by crushing itself under loose stones. Secondly, none of these features should be of great height or of unduly steep gradient — it is a toad, not an iguana! Thirdly, the substrate should be sufficiently deep to help cushion any falls. These factors remembered, the climber should perform well.

Diet

To thrive, these toads must be properly fed, and they have an appetite commensurate with their size. Fortunately, almost anything small enough to be eaten, will be eaten; earthworms, insects and other invertebrates, as well as (for larger specimens) small amphibians. For this reason a mixed collection containing adult Asian Giants cannot be

recommended. It may look just like any other toad — but it has rather strange habits. This is *Bufo asper*, usually known as the Asian Giant Toad, the Malayan Toad or the Malay Cave Toad.

recommended.

Any of the common garden "crawlies" or of the traditional herpetologists' stand-bys will be welcome in the diet, which should be as varied as possible. Though convenient and accessible, mealworms should not be used as an exclusive foodstuff, particularly for sub-adult animals, as they are of low calcium content. They are an excellent item, however, used in conjunction with other foods.

Although the commonest forest species in its Asian home, this toad is not imported as frequently as a few years ago, but still turns up occasionally on dealers' lists.

An intelligent animal, it swiftly recognises the limits of its vivarium, and many come to recognise feeding time also. Certainly its purposeful, if rather deliberate, way of hopping around in search of food offers hours of potential interest for the keeper who obtains one of these engaging creatures. If you like the idea of a rather unusual example of a very usual family, *Bufo asper* could be just the toad for you.

Spotlight on *Amphibians*

AXOLOTLS — ETERNAL TADPOLES FROM MEXICO

If you fancy keeping tadpoles that never grow up . . . but breeds all the same, then look no further. Julian Sims explains . . . (Photographs by the author)

WHAT IS AN AXOLOTL?

Axolotls (*Ambystoma mexicanum*) are large tadpoles which can breed in this immature form — an occurrence known as Paedogenesis. This fact is reputed to have been discovered in 1865 when some (now famous) wild-caught Axolotls were put on public display in the Jardin des Plantes in Paris.

Axolotls are frequently described as the "Peter Pan" of the amphibian world because very few develop from their juvenile, aquatic lifestyle into adult salamanders capable of living on land. This persistence in the larval form is called Neoteny.

In the wild, Axolotls are only naturally found in high altitude, cold water lakes to



the south of Mexico City — particularly Lake Xochimilco and Lake Chalco. The name Axolotls is of local origin derived from the Aztec words *xolotl*, a god, which can take the form of a dog and *atl*, meaning water. Indeed, these large tadpoles are very well adapted to life in water, having a streamlined body with non-protruding eyes and three feathery external gills behind each side of the head. The limbs are short and, without the aid of buoyancy, are incapable of supporting the animal's body weight out of water.

The correct generic name of Axolotls, *Ambystoma*, refers to the "cup shaped" mouth. The floor of the mouth bulges downwards and contains a thick tongue which can only be moved a small amount. It

Below, a white Axolotls in typical hunting posture — searching for food (a piece of lean beef in this case). Above, olive-brown specimens such as this one are probably the most attractive patterned Axolotls available.



SOUTH AMERICAN PEARLS Part Four

John Skillcorn concludes his occasional series on South American Killifish with a detailed look at some of the best or challenging species currently known to exist in the Killifish hobby in the UK

This article is intended as a run-down on those species of *Cynolebias* currently in the hobby, but more especially, those which I, myself, find particularly interesting for one reason or another. By way of introduction to this section, we must go back some ten or twelve years, to an article by Bill Tomsey which appeared in *AGP* all that time ago.

The article concerned the Argentine Pearl

Fish, *Cynolebias bellotti*, and was an account of the author's search for this one-time common aquarium fish. Unfortunately, no-one seemed to stock it any longer, and only by good fortune was he able to obtain stocks. The remainder of the article dealt with the spectacular spawning habits of this beautiful fish, together with good-quality black and white photographs. On reading this I was spell-bound, and was determined to obtain some for myself.

I read all I could find on the family as a whole, and pestered local dealers here in the north of England unmercifully. Try as they might they could not obtain a pair for me. Imagine my surprise, therefore, when one day I walked into my local dealer's shop and spotted something in one of the tanks which seemed familiar to me. It was a pair of Black Finned Pearl Fish, *Cynolebias nigripinnis*, a fish even more attractive than the true Argentine Pearl. I bred from those fish, and from then on, I've been hooked!

Now then, having made the introduction, let's have a look at what species of S American Pearls one is likely to find in the UK, either from retail outlets or specialist hobbyists (and the British Killifish Association of course!)

Scientific name: *Cynolebias nigripinnis*
Common name: Black-finned Pearl Fish.
Availability: Sometimes from dealers, but rarely.

Comments: As you may have gathered, this is a gem of a fish, and you should try to obtain at least a pair if you possibly can. You will



A magnificent male *Cynolebias nigripinnis* in full breeding colours.

JOHN SKILLCORN

From researching nature.

DoroMin foodsticks

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Tetra



Tetra Fish Care, Mitchell House, Southampton Road, Eastleigh, Hants., SO5 5RY

r — A few of the species at present in the hobby



AQUARIAN FISH FOODS



Cynolebias constanciae (the male is the larger, longer-finned fish) is not uncommon within the B.K.A. but is endangered in the wild.

not be disappointed. One male only should be kept per tank. Incubation takes from three to five months, though I have had some hatch after almost a year. This species travels well in the post.

Scientific name: *Cynolebias bellottii*

Common name: Argentine Pearl Fish

Availability: Hardly at all, if ever.

Comments: A beautiful fish, which well deserves a place in any collection. Habits are similar to the Black-finned Pearl Fish, but it is larger and more robust. The species travels well, so do try to obtain wild or nearly wild

stock for breeding, because, as with many of these fish, they are now rather inbred. Incubation is about three months, but examine the eggs regularly after two.

Scientific name: *Cynolebias whitei*

Common name: White's Pearl Fish.

Availability: Most dealers could obtain supplies, but rarely seem to do so.

Comments: This is, perhaps, the commonest member of the family to be found in dealers' aquaria. It is available in albino form as well as the much more attractive wild form. I have not had outstanding success

with this species, but it is attractive enough to maintain without further excuse!

The body is much more slender than the two afore-mentioned species, and the unpaired fins are rather pointed. This body form is shared by a number of other species. Incubation takes about two months, but can be very variable. Females have a black spot on the mid-body region. I have seen specimens of this species in shows which were very large, but most specimens will reach about 3 inches (7.6cm) or so. *C. whitei* may require warmer water than most, and is reputed not to like too many water changes.

Scientific name: *Cynolebias constanciae*

Common name: None.

Availability: Not encountered outside the B.K.A.

Comments: Although an endangered species in the wild, there is nothing unusual about the species in the hobby of keeping killifish. It is maintained by many people. This is a very prolific species, and is quite attractive in a subtle sort of way, being mainly a chequered pattern of brown and fawn. The males may grow filaments to the tip of the dorsal fin. As far as incubation is concerned, I have had excellent results after three months.

Scientific name: *Cynopoma melanotaenia*

Common name: Fighting Gaucho.

...naturally better foods!

TetraRuby

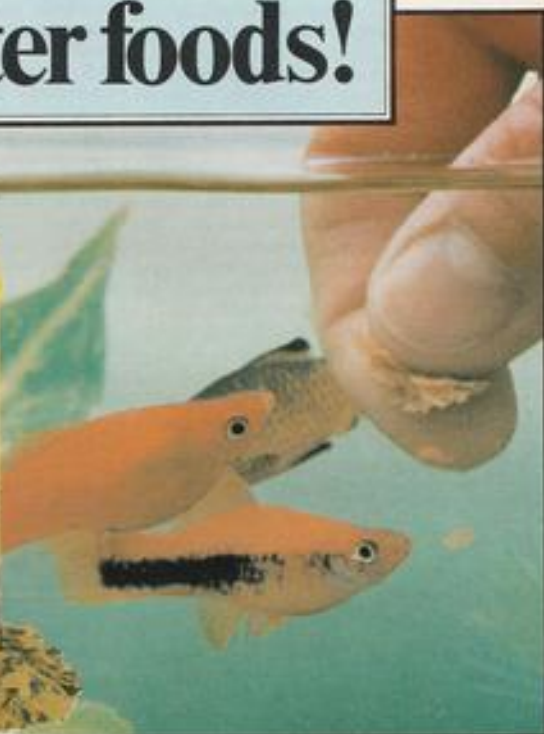
Enhances the colours of your fish... nature's way

Tropical fish in aquaria tend to lose the brilliance of their colours because essential naturally-occurring substances are absent from their diet. But TetraRuby actually contains those natural pigment-enhancers, and puts the colour back! Its regular use will restore and intensify the vibrant natural colours of your fish. TetraRuby is a complete diet too - based only on foods found in their normal habitat to provide all the vitamins and trace elements vital to keep your fish active and healthy.

It's yet another example of the intensive Tetra research and development programme that is unsurpassed in the world.

For further information, or assistance with any fishkeeping problems, contact the Tetra Information Centre, Lambert Court, Chestnut Avenue, Eastleigh, Hants, SO5 3ZQ.

Always ahead with the best ideas... naturally.





Centre: male Diamond Killifish — this species is the only member of its genus.

Top: adult Goldspotted Killifish are extremely uncommon, and fully-coloured males like this one are among the rarest American Killies.

Above right: *Cyprinodon variegatus*, the Sheephead Killifish, is the probable ancestor of all the Desert Pupfishes.

Above left: this is the original specimen of *Rivulus marmoratus* collected in Cozumel, Mexico. European stocks of this hermaphroditic species were probably all derived from this individual.

It is the second most heat-tolerant brackish killifish of the United States, based on my extensive sampling at hotwater discharges. The Sheephead Minnow is the ideal aquarium fish for tolerance of salinity, temperature and cleanliness conditions, and is the

total omnivore. It rarely develops any disease, but ages rapidly. Egg production can be manipulated by heavy feeding and water changes, and eggs are laid in abundance in floating or sunken mops, the latter preferred.

Goldspotted Killifish

Floridichthys carpio, the Goldspotted Killifish, has one of the strangest distributions of any killifish I know, but is not likely to ever become a popular aquarium fish. This fish occurs in great numbers in the hottest of all brackish water habitats, particularly where the water is about two-thirds or more strength sea water, shallow, and there is little competition. I have only found it in company with *Cyprinodon variegatus*, but more usually all alone in great numbers of immature fish. Adults are extremely uncommon, and males in full colour, perhaps

the rarest of all American killies.

It seeks out the hottest water in the area. In Florida, that means the shallowest shoreline waters, where the sun heats the water beyond what other fishes can tolerate. It is also abundant in power plant thermal discharge canals, and is perhaps the most abundant of all fishes in the 156-mile long cooling canal system for the Turkey Point Nuclear Power plant in southern Florida, a closed system that provides recirculated water for the plant's condensers, and far too hot near the discharge point for any other species of fish. This fish normally occurs in water in the high 90's°F (c37°C) range and above.

It sifts detritus for its food source, but cannot tolerate dirty water. Although it can survive in cooler water, it is difficult to grow and particularly difficult to raise from fry, although breeding is not difficult.

American Rivulus

Rivulus marmoratus, the American Rivulus, is probably the rarest of all American brackish water killies. This fish is the world's only vertebrate that doesn't exist as male and female. Instead, every specimen is of combined sex, laying fertilised eggs all alone. The gonad is an ovotestis, with eggs and sperm produced simultaneously. I have found this fish in Mexico, and in Florida, near the Homestead Missile Base. I provided stock to German aquarists about ten years ago, and I hope the fish is still alive in Europe.

Easily kept in gallon jars, it lays eggs in spawning mops and is totally undemanding. Unfortunately, it is devoid of colour and has only the 'Rivulus spot' for a pattern. Individuals are oblivious of one another. The American Rivulus is a brackish water fish. I have never tried to keep it in either straight fresh or straight sea water.

American Flagfish

Although I have occasionally collected this fish in areas of some salinity, that is not its typical habitat. The Flagfish (*Jordanella floridae*) prefers deeper water than other killies, typically quite fresh, always very heavily vegetated, and almost always over a mud bottom. It does not congregate in great numbers, but remains somewhat scattered.

I have found it typically in the dense but soft vegetation of steep banks of ponds, often where the water was darkly stained and somewhat stagnant. The average specimen is half-grown and very brightly coloured; large specimens showing signs of age are virtually non-existent in nature.

Although strictly Floridian in distribution, it has a narrow temperature preference for water, neither very cool (it is uncommon in northern Florida), nor very hot (avoiding hot shallows, and not found in hot discharges of freshwater based power plants). In aquaria, it only does well in heavily planted, small tanks. In nature I have found it with *Gambusia affinis*, occasionally with *Poecilia latipinna* juveniles, often with small specimens of *Lepomis* Sunfishes, and frequently in company with one other killifish, the Golden Topminnow.

Coldwater jottings



Stephen J. Smith

Plan against danger

General interest in keeping garden ponds would appear to have risen dramatically over the past decade. However, I know of many people who are reluctant to build a water feature in their garden simply because of the potential danger presented to children.

Such concern is perfectly understandable. Children will always be fascinated by water and the myriad life forms it holds: from *Daphnia* to dragonfly larvae, and from fish to frogs. However, with careful planning and selection of pond features, hazards can virtually be eliminated.

So, it may be advisable to build your pool with a raised design, such that the water-level is above ground level and so that children can naturally peer into the pond without having to lean down over it.

In addition, I would recommend avoiding the use of ornamental bridges, precipices, or platforms, which could serve only to invite curious — and adventurous — youngsters.

Current dangers

A word, too, about electricity. Hopefully, it won't be long before the last frosts subside and spring really does get well and truly underway. Installation of pond lighting, fountains, and patio decorations present a far more enjoyable task than spring-cleaning indoors (don't they?), but with

them, comes a further danger — electricity. *Water and sewage do not mix.*

Plan electrical installations very carefully and do use the services of a qualified electrician — buying in experience may cost you a few pounds but it will, without doubt, reduce the risks and could also save your life.

In addition, a number of excellent reference books are available which provide a great deal of practical information on pond construction, including installation of electricity for the pond. Again, these cost only a few pounds and will undoubtedly be of immense value in improving not only your own enjoyment of pondkeeping but also that of your children.

Research in the dark

A mild ticking-off for Fancy Goldfish specialists is called for

following my pleas last year, on behalf of fellow enthusiast **Mike Hutton**, for information and photographs on Fancy Goldfish. Mike has been researching the UK ornamental fish trade as part of his studies at Sparholt College, Hampshire.

He has since concluded his studies and, despite receiving no response from the coldwater scene, achieved some remarkable success with his work. Mike writes, "My project has been examined, and was awarded a mark of 90%. Although I did not receive any replies from my brief moments of 'fame' in **Coldwater Jottings**, I would like to thank you for your help and will try to let you see the work in the near future."

I look forward to your report with interest, Mike, and would hope to incorporate at least some of it in **Coldwater Jottings**. Does it, by any chance, comment on the apparent lack

of support provided by various sections of the hobby...?

On a lighter note

Having designed, built, and established your ornamental pond, the next item on the agenda may very well be... pond ornaments!

The accompanying photographs were taken at a trade exhibition last year and, for me at least, provided the perfect solution to the decoration of my own proposed Koi pool (when it happens...).

If only these photographs were in colour! The Buddha stands (I should say, sits) approximately three feet high and is a beautiful red hue; while the frog (that's the one that has all the warts!) is almost lifelike!

The one without the warts? None other than my coldwater colleague **Barry James** of Everglades Aquatic Nurseries, in Baunton, near Cirencester, Gloucestershire.



AN UNUSUAL PAIR





ROBIN STEWART ▼▼



Above, 'Batty'. A few weeks after capture it still showed the angular profile typical of juveniles. Left, several months later, the rounder shape of a more adult Batfish had been achieved. Above right, *Ostracion cubicus* — a typical 'Boxer'.

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New Zealand aquarist, teacher and one-time Marineland Superintendent

Robin Stewart, recalls his rewarding experiences with two rather unusual fish

The coral reefs around Sabah (North Borneo) are magnificent. Several American friends of mine assured me that they surpassed the reefs of Hawaii in clarity of water, ease of access and numbers and variety of species.

I loved the reefs. Consequently, when I lived in Kota Kinabalu (the capital of Sabah) a few years ago I spent as much time as I could fossicking about at low tide, seeing what I could see. The reefs never disappointed me — there was always something new to interest me. So much so, that it wasn't long before I just had to create my own little coral reef at home — a marine aquarium.

With a plentiful supply of good-quality sea water and no problems regarding temperature, it was only a matter of a few weeks before I had several tanks presenting ever-changing displays of some of the most beautiful living things imaginable. Butterfly fish of the brightest yellows and oranges fluttered delicately around, green and blue wrasses darted from corner to corner and buried themselves in the sand while a lion fish, with its bizarre quill-like fins floated menacingly by. Clownfish dashed to and fro, or simply lay in the protective arms of their accompanying anemone, while various damselfish hung, suspended midway between the water's surface and the bed of the tank.

Floating leaves & yellow boxes

But I had two favourites. Neither were particularly colourful but they turned out to be real characters. By chance they were both caught on the same expedition and within a few minutes of each other.

I had been out on the reef off Tanjong Aru, a beach just out of Kota Kinabalu. I was with a fellow enthusiast and we had just spent two or three hours inspecting the reef by night with the aid of a powerful pressure lamp which we carried between us. The water wasn't much more than knee-deep and we had added a few specimens to our collection, but had really spent most of the time just looking.

On our way back to the beach our attention was drawn to half a dozen "leaves" floating in a peculiar fashion only a few metres from the shore. On looking more closely we discovered that our "leaves" were, in fact, juvenile Batfish (*Platax orbicularis*) about 5cms (2in) from the tip of the dorsal fin to the tip of the ventral (anal) fin. They were swimming on their side and proved to be the easiest things in the world to catch. We took two only, one each, and left the rest where they were.

Before we moved off, another movement caught our eye. A small Boxfish (*Ostracion subrotundatus*), also about 5cms long, hovered into view. This odd-looking character — a

yellow box with black spots and fins — was also ridiculously easy to capture.

We rushed our prizes home and I placed my little boxfish and the batfish in a small tank together. They seemed to settle down remarkably quickly and I went off to bed well satisfied with the night's work. Next morning all still looked well and, by evening, I was feeling so confident I tried feeding them. To my amazement both fish readily accepted dried fish food. They ate as if they had been brought up on the stuff.

I fed them at the same time and in the same corner of the tank each day after that. Within a week, whenever I looked as if I was about to feed them the pair of them would crowd into the feeding corner and would push and shove each other like a couple of strange miniature sharks in a feeding frenzy. Very quickly both began to take food out of my hand. As well as dried food, they were fed finely chopped squid and, now and then, a treat of Tubifex worms.

After three or four weeks, I decided it was time to introduce the newcomers to a large (60 gallon-270 litre) community tank. This tank already housed several damselfish, two or three different butterfly fish, clownfish and one or two odds and ends. Altogether, it was a very colourful active environment.

"BOXER" and "BATTY"

The "boss" of the tank was a rather grouchy young Panther Fish (*Chromileptis altivelis*). He wandered over to check out the new inmates, quickly established that they were neither edible nor a threat, and sulked back into his favourite spot — a hollow in the sand between a stand of coral. The Batfish and the Boxfish inspected their new quarters from corner to corner. Seemingly

satisfied, they settled down and waited for the next feed.

I mentioned earlier that both fish were characters. "Batty", as it grew, began to feed more and more lying on its side, near the surface. As soon as I lifted the lid of the aquarium it would approach the feeding corner, flip over on its side and allow me to tickle its underside with my fingers. It seemed to love it and lay there as long as I was prepared to keep up the tickles.

"Boxer" would go one step further. If I placed my hand a few inches beneath the surface it would swim right up onto it and would allow me to lift it out of the water for a few seconds. The first time I did this it was rather by impulse and I felt quite ashamed of my actions. However, the next time I placed by hand underwater "Boxer" didn't hesitate, swimming directly onto my hand and lying there, seemingly waiting to be lifted out of the water. I don't think it believed it was a fish at all!

I kept these two "characters" for longer than most of the other fish I had. Living where I did, I had the luxury of being able to release specimens and catch others whenever I wished. This I did frequently — every few weeks or so — thus my collection was ever-changing and I had very few casualties. I finally released the Batfish when it simply got too big for the tank. It had grown from a 5cm "leaf" to a 25cm (10in from fin tip to fin tip, vertical measurement) fish.

The Boxfish didn't grow noticeably, but lived quite happily in the community for well over a year before it mysteriously died.

Many fish came and went during my two years in Sabah and a further four years in Singapore, but "Batty" and "Boxer" will always be remembered as being rather special.



PRODUCT ROUND-UP BY DICK MILLS



BILL TOMMEY

Lush vegetation requires very well judged lighting conditions, usually of a much higher intensity than used in average tanks.

Lighting for the freshwater aquarium is best planned so that the aquatic plants grow without any excessive overgrowing of green algae. In this way, the plants will fulfil their important photosynthesising role without being choked. A certain amount of trial and error may be needed to get the balance between brightness and duration exactly right: brown algae usually mean too little light, green algae too much; try choking out the algae by planting more plants. It will also pay to do some research into what intensities of light various types of plants need, so that only 'light compatible' types can be cultured.

In the marine aquarium, some extra thought has to be given depending on whether you want just enough light to see the fishes against the non-growing corals (again without

AQUARIUM LIGHTING

any excessive algal growth occurring) or whether you intend to keep some green and invertebrate life too.

For lush plant growth (in either freshwater or marine tanks) extra light levels will be required, and with this extra light also comes extra heat. Fluorescent tubes emit far less heat than tungsten lamps for comparable light output and, by combining tubes of different 'hues', the correct light balance both for plant growth and your aesthetic needs can be achieved.

In deep tanks, there will be a rapid fall-off in light intensity near to the bottom; the use of a submersible light-meter will show exactly what light is reaching the aquarium floor,

and the use of more powerful spotlights such as mercury-vapour or metal-halide types (now available in 'tube' formats) may be preferred. Obviously, in these cases, the tank will be of the 'open-top' type with the lamps suspended about half-a-metre above the cover glass.

Although the majority of tropical fishes and plants are used as a 'twelve hours on twelve hours off' lighting pattern, the tank does not have to be uniformly brilliantly lit. In nature many fishes move around their native habitat, keeping to the shade in order to avoid detection by predators; in our brightly-lit tanks, fishes may be intimidated into hiding in the plants unless

shady areas are provided. Such areas can be easily created by long-leaved plants, floating plants or, even, a combination of different strength spotlight lamps. Again, you may not want to sit by the aquarium in the full glare of your artificial tropical sun each evening; here the trick is to switch off some of the lamps for comfortable evening viewings — you will find that some of the twilight species will then 'come out to play' for you quite naturally.

Finally, do remember that a suddenly-switched-on (or off) tank can cause fishes to become stressed. Keep the room lights on for a few minutes after switching off the tank so that the fish can acclimatise themselves to the lower lighting levels and, similarly in the morning, light the room a few minutes before the aquarium.

DAYLIGHT STUDIOS

Finding the correct hue of lighting can take a little time before an acceptable balance is obtained. A recent addition to lamps available are those from DAYLIGHT STUDIOS. These are tungsten lamps of 60, 75 and 100 watt sizes, and their particular colour output is due to a blue tinting on the glass envelope. This gives a daylight effect, simulating northlight (light from a north-facing window) to the highest degree and can be effective in 'cooling down' the colours omitted by more warmer-hued lamps when used in conjunction with them. Without wishing to detract too much from their potential use, the fact that they are tungsten types may preclude their use in aquarium hoods due to the excessive heat produced (especially at higher wattages);

NEW PRODUCTS



Porsof floating lily guard

they might be more favourable considered if mounted in separate reflectors hung above tanks or used in vivariums where their heat output can be put to a more constructive use. All sizes have bayonet fittings, with Edison Screw fittings being available in the two larger sizes

only. Full details from: DAYLIGHT STUDIOS, (Dept AQ), 223a Portobello Road, London W11 1LU. (Tel: 01-229 7812).

PORSOF

The single word, "porsof", if

shouted strenuously at any cat lingering near the edge of your pond just might have the desired effect, but fitting a PORSOF FLOATING LILY GUARD itself definitely will have. The idea is simplicity itself — float a thin guard on the water surface that is not cat-supporting (or any other predator for this matter). Naturally, any guard should not, if at all possible, be too conspicuous as an artificial aid when seen against the natural settings of the pond, and here the inventors have been very clever in disguising the guard as floating Lily leaves. Each panel of 'leaves' measures 500mm x 250mm (20 inches x 10 inches) is made from high-quality, non-toxic plastic, but you are not duty-bound to use them in panel-multiples. Groups of 'Lily-pads' can be assembled to

suit individual tastes (and pond shapes) by the use of plastic rivets, plastic arms and stainless steel rods. As can be seen from the accompanying photograph, the visual effect is more acceptable than other conventional guards such as nets. Little or no maintenance is required and sections are easily removed for pond-maintenance purposes.

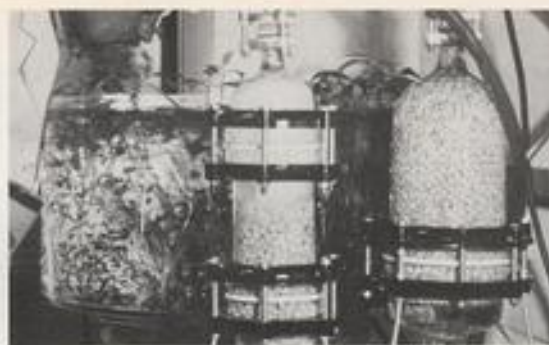
In addition to acting as a guard against would-be feline fish-poachers, Porsof has many other advantages; being very light in weight, it will easily submerge under the weight of any leaping fish, thus returning it to the safety of the water and not leaving it 'high and dry' for very long; ponds can be shaded to the exact degree, Koi pools can be given a pleasing cover without the use of natural Lilies which otherwise might be uprooted to produce discoloured water conditions; frogs and the other amphibians can use the "pads" as stepping stones or resting places in steep sided ponds. It has been reported during early tests that a certain degree of Heron-deterrence might also be expected. Porsof will be marketed in 5 ft, 10 ft, 20 ft and 40 ft packs (containing instructions and all the necessary fittings) at a retail price of £2.00 per linear foot — ie, the 10 ft pack costs £20.00. Full details from:

'PORSOF' 24-26 Station Road, Crayford, Kent, DA1 3QA. (Tel 0322 25328)

SCHOTT GLASS

"Sintered glass" is a term often used to describe the composition of airstones. According to the dictionary, sinter means "to make a coherent mass by melting, but not completely so." The most obvious advantage of the process is that any mass thus formed will have great porosity. If the material used is also glass, a completely inert substance which will not affect water composition, then you have the ideal material in both shape and form for an aquarium filtration medium.

SCHOTT GLASS have used open-pored sintered glass to form **SIPORAX**, a product which they are about to introduce into the English Market. This material has around 1sq metre of surface area per gram weight. Siporax is moulded into the familiarly-shaped rings found as a prefilter medium in power filters. The pores occupy



Latest "sintered glass" products from Schott Glass.

NEW PRODUCTS

around 70% of each ring and are of varying "depths" (from 40-400 micrometres). This means that any bacteria lodged in the deepest pore will not be easily rinsed away during washing, thus preserving the "seeding" of the filter medium. Another advantage of the ring shape is that while oxygen-carrying water flows easily around the outside giving beneficial aerobic conditions for nitrifying bacterial culture, conditions inside the ring are almost completely anaerobic by comparison, and here, denitrifying bacteria process nitrate further into free nitrogen.

Tests have shown that, although partial water changes are not now a thing of the past, they can be spaced further apart as the water quality is maintained over a much longer period. Compared to the performance of conventional materials, Siporax reduces nitrite completely and nitrate levels drop by 85-95%. Research is progressing on the use of Siporax as a substrate medium and this should really be of value particularly to marine fishkeepers. Further details from:

SCHOTT GLASS LTD., Drummond Road, Astonfields Industrial Estate, Stafford ST16 3EL. Tel. (0785) 223166. Fax: (0785) 223 522.

ROLF C HAGEN

For those hobbyists wanting to start off in a relatively big way, **HAGEN** have added a large-size kit to their already successful 5 aquarium Starter Kits. The latest addition is a 48 x 12 inches tank accompanied by all that is necessary, except for water, gravel, plants and fish. The impressive array of equipment (split into three boxes for ease of handling) costs £159.99 including VAT and includes: a 48 inches x 12 inches x 20

inches Marina Aquarium; a Marina fluorescent canopy complete with Aqua Glo tube; AquaClear Powerhead 301, Powerhead Stem Sat, 12 Under-gravel Filter Grids, Cable Control Unit, Two 200 watt Thermal compact Submersible heater/stat, Digital Thermometer, 6 inches Nylon Net, Nutrafin Staple Food, Fin Care Aquarium Conditioner, an aquarium Ornament, an Hagen's basic Aquarium Guide Booklet.

If you're looking for a power filter for your aquarium and are a little unsure as to what size you need, then Hagen's new range of **FLUVAL** filters will not only solve your needs but fit your requirements exactly. Named the Fluval 1, 2, 3 and 4 Models they are designed to fit — guess what? yes, aquariums 1 ft and over, 2 ft and over, 3 ft and over and 4 ft and over, making selection easy for shop assistant and customer alike. A primary feature of all these filters is increased outputs, but their appeal does not stop there: being of simple design, beginners will have no problems in understanding their operation or in carrying out the equally easy, low-level maintenance; sealed-in motor units, self-cleaning impellers, and easily-cleaned foam inserts will hardly test the most novice of hobbyists. Advanced design techniques have produced probably the most modern filtration systems currently available, coupled with very good value for money. Models 2, 3 and 4 have adjustable directional flow, adapter kits for spraybar kits; Models 3 and 4 have flow controls to regulate water flow rate. Speaking of which, flow rates for the new filters are as follows: Fluval 1 — 180 litres/hour; Fluval 2 — 360 litres/hour; Fluval 3 — 540 litres/hour; Fluval 4 — 1,000 litres/hour. Suggested prices

are £10.99, £14.99, £19.99 and £26.99 for models 1-4 respectively.

Details to all Hagen aquarium products from:

ROLF C HAGEN (UK) LTD., California Drive, Whitwood Industrial Estate, Castleford, West Yorkshire WF10 5QH. Tel: (0977) 556622, Fax: (0977) 513465.

RENA

RENA have introduced two novel filtration accessories for use with their range of internal filters.

The **RENACARB** is a carbon-impregnated sponge stick to be inserted inside the normal sponge to give added filtration properties.

RENASIN is a resin filtration material which, it is claimed, will:

1. Give efficient filtration for up to 4 months — Marine/Freshwater.
2. Can be used without carbon or glass fibre.
3. Control the pH in the water.
4. Remove bacteria and organic matter.
5. Act as a remedy for algae.
6. Absorb nitrates.

Renasin comes packed complete with three plastic containers which can be used in conjunction with all **RENA** internal filters.

RRP (inc. VAT)

RENACARB 1 (Fifty) £1.81

RENACARB 2 (R225) £2.07

RENACARB 3

(R245/R325) £2.32

RENASIN £5.35

Further details from **RENA UK LTD., Bury Farm, Pednor Road, Chesham, Bucks., HP5 2JU. Tel. (0494) 786759; Telex 837058 PETPRO G; Fax: (0494) 791617.**

SOONESS MENDED!

We have been informed by **HILLIAN INTERLOG LTD** that the telephone number for information should be (0691) 654273 and not as published in January's **Product Round-up**.

We would also direct readers' attention to the diagram which appeared in the advertisement for **LAHAINA AQUARIUM SYSTEMS LTD** (page 53, January *A & P*).

We apologise that the information shown was misleading; a corrected form appears in the Company's advertisement in this issue.

News

Fishworld '89

Meet Britain's Champion Fish at Fishworld '89

For many years, the various Aquatic Society organisations throughout the UK have staged their own versions of a Champion Fish Category (Champion of Champions, Fish of Fishes, Supreme Championship, etc) at major aquatic exhibitions such as Alexandra Palace, Doncaster, Motherwell, G-Mex, etc. Each has its own qualifying Rules of Entry: some are based on 'Best in Shows', others go for Championship Class winners, some only admit fishes pointed above a certain standard.

at Fishworld '89 there will be an opportunity for all these winning fishes to compete against each other in a truly definitive final - the British Open Fish Championship.

All fishes that were eligible for such competitions in 1988, together with any other 'Best in Show' winners (whose particular area may not have staged such an event) are welcome to be put forward for this event. It does not matter what entry qualifications the original Competitions required, nor whether or not the fish actually got to the Showbench.

Entries from 'Best in Shows' (or equivalent Categories) gained at Aquatic Exhibitions abroad will also be warmly welcomed.

Here is the first chance for the whole range of the country's true champion fishes to be seen, without any restrictive entry rules: the only real entitlement for entry is quality, and this will have already been proven in 1988 events. So now fishes can join British Open Champion.

Full details of Fishworld '89 from: Terry Waller, 32 Hamilton Road, Heath Park, Romford, Essex RM2 5SD.

The organisers of Fishworld '89 have released their first Newsletter concerning the show which, like last year, is being run in association with the Federation of British Aquatic Societies (F.B.A.S.) at Alexandra Palace on 27-29 May.

The attractions include (quote):

"*Thousands of tropical, marine and coldwater fish on sale and display.

*Plants, equipment and all accessories.

*The largest ever Open Show staged by the F.B.A.S.

*Visits by guest celebrities and personalities from the fishkeeping hobby.

*Lecture theatre for talks and seminars on all aspects of fishkeeping.

*Supervised children's play area/crèche.

*Bars, restaurants and FREE visitor parking.

Alexandra Palace is set in some 200 acres of parkland which contains a children's playground, nature walk and boating lake and a popular garden centre. An additional attraction for visitors over the Spring Bank Holiday is the Funfair which is held in the park."

Opening Times:

Saturday 27 May

Press and Trade Preview:

10.00am-11.00am

Open to public: 11.00am-

6.00pm

Sunday 28 May

Open to public: 10.00am-

6.00pm

Monday 29 May

Open to public: 10.00am-

5.00pm

Admission Prices

Adults £2.50

Senior Citizens £2.00

Children under 14 £1.00



Family Ticket (2 adults/2 children) £6.00

Further information available from: Fishworld '89, Cliveden House, Priors Way, Maidenhead, Berks SL6 2HP. Tel: (0628) 38912/770500; Fax: (0628) 29942; Telex: 848794.

Pet Week (30 April-7 May '89)

With just over one month to go before the first-ever United Kingdom National Pet Week, many organisations are busy planning the events and activities they will be running or co-ordinating as their effort to the Week.

Plans started in earnest following the launch of National Pet Week at a Press Briefing on 25 October '88 at the Roof Gardens. Over 80 people attended representing the press, television and the many participating organisations. All agree it was an interesting and enjoyable day.

Since then, over 250 press packs have been distributed to those keen to get involved in National Pet Week.

For this, or further details of activities in the various regions, including sponsored walks, pet shows, question/answer meetings, photographic competition, etc, contact Christina Thomas 01-436 8750 (enquiries from organisations) or, for general/public enquiries: National Pet Week, PO Box 4, Westend, Southampton SO3 3N7.

Aqua-Soil and the National Waterlily Collection

The National Waterlily Collection at Wycliffe Hall Botanical Gardens near Barnard Castle, Co. Durham will be making all their preliminary plantings of water lilies this spring using Aqua-Soil growing medium.

In announcing this arrangement, Barry Read of Aqua-Soil Ltd. said that the company was very pleased to be actively involved in supporting the collection. He added that the National Collection would not only help the trade by providing an opportunity to develop new varieties, but would hopefully enable some long-forgotten water lilies to be re-introduced.

Philip Swindells, the Director of Wycliffe Hall Botanical Gardens, and occasional ACP contributor, said that he was very pleased with the support provided by Aqua-Soil Ltd. for the new National Collection which has been designated to



Barry Read, Managing Director Aqua-Soil Ltd. (left) and Philip Swindells, Director, Wycliffe Hall Botanical Gardens, at Wycliffe where the association between Aqua-Soil and the National Waterlily Collection was formerly agreed.

Wycliffe by the National Council for the Conservation of Plants and Gardens based at Wisley.

For further information contact Barry Read (054) 882592, Aqua-Soil Ltd or Caroline Kirby-Welch (0423) 771026, National Waterlily Collection.

Letters

Tetra splashes out at Marwell

Spring visitors will be able to see a brand new feature at Marwell Zoo, near Winchester; a large garden pond stocked with expensive Koi, orfe, carp and goldfish. The pond will also act as a moat around two islands which will house a colony of Golden Tamarins.

Tetra, the local Eastleigh-based fish food and treatments company, have sponsored the fish in the pond and will make an annual contribution to the zoo. Seen here presenting Tetra's cheque to John Knowles (Curator and founder of Marwell) is Maureen Beart (Marketing Assistant - Tetra). Maureen commented that "As a local company we are well aware of Marwell and its 'Living Ark' philosophy. Animal sponsorship has become an impor-



tant activity for Marwell to help fund their conservation work. As fish are our 'consumers' it is rather apt that we can sponsor a beautiful pond and help Marwell at the same time."

Marwell operates as a registered charity and is one of Britain's biggest and most important zoos. It is world renowned as a wildlife conservation and breeding centre. Only threatened or endangered species of animals are housed at the zoo and its Curator, John Knowles, is considered one of the leading and most active wildlife conservationists in the world today. His zoo boasts many breeding groups of rare animals, but probably most famous, is the spectacular breeding colony of Siberian Tigers.

Northern Ireland Update

I feel that I should answer Ken Denham's criticism of a remark which I made in my article **Keeping a Brackish Aquarium** (*A&P* August '88), regarding the unhappy lot of the Northern Irish fishkeeper, which he referred to through the letters page of *A&P* in December '88.

Firstly, the context in which the remark was made referred merely to the choice, quality and frequency of certain types of fish offered to the majority of fishkeepers living in N. Ireland. Having lived here all my life and been involved for many years with keeping and selling fish both as a hobby and, for some of that time, professionally, I feel that my observation was quite justified.

Secondly, I would not argue for a moment that N. Ireland has, perhaps, more than its fair share of active aquarists, many of whom belong to one or more of the excellent clubs and societies which exist in the Province.

Ken Denham gives his address as Ballywater, Co Down, and refers to a certain Belfast establishment, some twenty miles away as his "local shop". This illustrates the reason why N. Irish fishkeepers are at a severe disadvantage compared to their mainland British counterparts. At the time of writing my article, there were (to the best of my knowledge) only two specialist aquatic shops in the whole of N. Ireland! Of these two, only one sold a small selection of marine fish and the range of slightly unusual fish, be they brackish, Rift Valley, catfish etc., was

very limited and sporadic in relative terms to specialist shops on the other side of the water.

It is true that they offered a selection of locally-bred fish on occasions, including Discus. However, I know of a few people who have had perfectly healthy and saleable home-bred fish rejected by a shopkeeper for no apparent reason. Not very encouraging for the first-time breeder, I know.

Another particular complaint of mine, and one which I have heard echoed by others elsewhere in the fishkeeping world, is that some particular shops are very "cliquey" — that is, any unusual fish which do appear for sale, seem to have been offered first to personal friends and favourite customers of the proprietor concerned, and this tends to be borne out by the fact that the same old names may seem to appear on the numerous "Sold" stickers which grace such shops' tanks. I may, of course, be mistaken.

Anyway, I am pleased to be able to say that, during the last year or so, a number of aquatic "superstores" have opened in the Province. These are finally offering Ulster's fishkeepers an excellent selection of marine fish and invertebrates, African and S. American cichlids and a very wide array of hitherto unseen species at very reasonable prices. Live food is also becoming readily available for the first time. Things are definitely getting better and it would appear that maybe "The Land That Fishkeeping Forgot" is at last featuring on Fishkeeping's Christmas card list!

Patric Baird
Belfast



Gyrinocheilus aymonieri (The Sucking Loach) can obviously live for many years in aquaria — as E. Boden's remarkable specimen emphatically.

Record-breaking Sucking Loach?

For the last two years, I have been in contact with a Mr Gerald L. Wood (Guinness Book of Records) over a Sucking Loach which I have in a mixed aquarium tank.

My loach is now 19 years 8 months old, about 9in long, about 1 1/2in across its head, and very active. I wrote to the Daily Mirror for information, but they said they had no record of a fish like mine living that long, so Mr Wood wrote back to me and suggested that I contact you for advice.

I have kept tropical fish now for a period of 25 years and am very proud of my Sucking Loach, and the way it has kept so active in the same original tank (30x15x15in). I have only taken it out once to re-seal the tank.

Trusting you can help in this matter

E. Boden
Derbyshire

Editor's Note

What a loach! What a fishkeeper! Can any A & P readers help Mr Boden out? Drop us a line if you can.

John Dawes

FRED THE PIRANHA.



© '88 PETER McGOUGH.



Coral reefs can yield considerable numbers of fish on a long-term basis — as long as they are carefully and sensibly exploited.

CONSERVING FISH SPECIES

(Threatened Tropical Environments)

Part 2

In last month's article Dr Chris Andrews of London Zoo Aquarium looked at some of the ways in which habitat alteration and over-exploitation can affect fish populations. This month he examines the problems currently facing three tropical environments in particular.

THREATENED AQUATIC ENVIRONMENTS: SOME CURRENT EXAMPLES

An indication of the problems currently facing three tropical aquatic environments are discussed briefly below. These environments are:

- African Lakes (particularly Lake Victoria and Lake Malawi)
- Coral Reefs
- Rivers and Streams (in Tropical Forests)

AFRICAN LAKES

The fish faunas of many African lakes are unique and important from a scientific, social and economic viewpoint. They often contain unique fish faunas which may form important local fisheries. However, they are now under intense and increasing pressure. For example, Lake Victoria is a very large, comparatively shallow lake in East Africa, and its fish fauna is characterised by a group of around 250 species of largely unique haplochromine cichlids. These fish are of

particular interest as a result of their rapid and explosive adaptive evolution and specialisation and because they now form an important fishery that provides food to the local population.

Against advice from a number of fisheries scientists, around 1000 Nile Perch were introduced into the lake during the late 1950's and some concern has been recently expressed on the effects that this predatory alien species might be having on the local cichlid populations. While the Nile Perch is now established (and reproducing) in Lake Victoria, and some marked changes have occurred within the cichlid fauna, the situation may not be as disastrous as was originally thought. According to a recent (1988) British Museum (Natural History) expedition to the lake, the overall reduction in the haplochromine population during the last twenty years or so is unlikely to be solely the result of predation by Nile Perch, but over-fishing is also an important contributory factor.

Lake Malawi is a smaller, much deeper, East African lake, with an even greater number of unique cichlids. These often colourful species are currently very popular with the ornamental fish trade, and many species are being bred in captivity. This lake also supports a commercial fishery, the catches of which have undergone quite dramatic changes in recent years, showing marked signs of over-exploitation. The problems in Lake Malawi (and some other African lakes too) is compounded by various pollution sources in the lakes and their catchment areas. Such pollution sources include the use of insecticides and recent oil exploration activities.

The creation of National Parks, like the 1000 hectare reserve in the region of the Nankumba Peninsula in Lake Malawi, is to be welcomed, although much needs to be done to regulate fisheries and prevent further, potentially devastating introductions of alien species and pollution in all of these unique lakes.

It is interesting to compare the current status of African lakes like Lake Victoria and Lake Malawi, with what happened to the North American Great Lakes a century ago. Commercial fishing developed during the 1800's, with a coincident increase in habitat destruction and pollution. During the early 1900's, these problems were compounded by the introduction and establishment of several alien fish species. Subsequently, as a result of the combined effects of over-fishing, habitat alteration and the introduc-



JOHN DAVIES



CHRIS ANDRWS

tion of alien species, several local fish species became extinct between 1950 and 1975.

CORAL REEFS

Coral reefs are among the richest and most diverse habitats known, and of immeasurable scientific, economic and aesthetic value. However, like so many other aquatic environments, they are now subject to pressures which threaten their very existence. Pollution (including siltation), reef mining (to supply lime for building) and exploitation of fish (and invertebrates) for food, for the ornamental fish trade, and as dead specimens for the tourist souvenir trade, are among the most obvious threats.

Considerable attention has been focussed on the collection of live coral fish for the ornamental fish trade, and it has been estimated that, for example, at least 200,000 coral fish (from 139 species) are exported from Sri Lanka each year. Other countries with an active role in the export of live coral fish include Singapore, Philippines, Indonesia, USA and Kenya.

The mortality rates among these fish may be high, with an average of 15% dying during export and the first few days thereafter. A number of coral fish species are clearly unsuitable as aquarium specimens (e.g. some butterfly fish feed exclusively on live coral polyps), and a survey has indicated that nearly 70% of coral fish die within a year of purchase. However, although the figures for fish production on coral reefs appear to vary widely, with yields of 0.5 to over 40 tonnes per square kilometre per year quoted by one researcher, their production is generally high in relation to the biomass of fish

removed for the ornamental fish trade, and it has been estimated that the coral fish exported from Sri Lanka each year may only account for the annual production of less than one square kilometre of its coral reef.

Nonetheless, some particularly desirable species may be fished for in a very selective fashion, and there is some circumstantial evidence to suggest that certain species may be decreasing in abundance in some areas. Local reserves and/or close seasons on collecting may be required, and some species should not be collected at all. Overall, greater monitoring and controls are needed on the reef fisheries, although over-restrictive bans on their exploitation (even if possible) may be antagonistic to their conservation.

The development of sustainable yield fisheries to supply live fish to the ornamental fish trade could play a very important part in coral reef conservation. If such fisheries can be shown to be of long-term benefit to local people, it is less likely that they will be destroyed or over-exploited for short-term gain. In fact, it is the considerable economic value of coral reefs, particularly in relation to tourism that will encourage the long-term management of these habitats on a sustainable basis.

RIVERS AND STREAMS IN TROPICAL FORESTS

The present rate of destruction of the world's tropical rain forests, and its far-reaching consequences, is of grave concern. The possible effects on global climatic conditions, and the fact that many animals and plants are being driven to extinction before

Left, Destruction of rainforests has a marked influence not only on fish fauna, but also on climatic conditions — if deforestation is on a large enough scale.

Left, below, Lake Malawi, like other similar bodies elsewhere, is home to a large, and predominantly unique fish fauna.

their usefulness to Man can be investigated, are among the most disturbing aspects of the deforestation that is taking place in Tropical America, Central and West Africa and South East Asia.

The fate of the fish in the rivers and streams that flow through these forests has not attracted a great deal of attention, despite the fact that large scale deforestation has major effects on the chemical and physical conditions in the surrounding water courses, which, in turn, may influence (among other things) the migration routes, breeding success and feeding habits of local fish species.

The relationship between the fish and the forest above them is a particularly close one, and the destruction of the rain forest of the floodplain regions of the Amazon Basin will result in a reduction in the biomass of many of the fish and the disappearance of the fish fauna in its present form. This will have serious consequences for the local human population, who rely on the floodplain rivers as a major source of inexpensive protein.

Many of the smaller species of tropical forest fish are, of course, very popular among amateur aquarists. A large and economically very important aquacultural industry has developed in places like Singapore and South East USA (notably Florida), where fish from South and Central America, Africa and South East Asia are produced for the ornamental fish trade.

Perhaps as a result of the (now) large scale of this aquacultural industry, less concern has been voiced over the effects that this aspect of the ornamental fish trade may be having on wild populations (as compared to the trade in marine coral fish). Nonetheless, there is a need for controls in the ornamental trade in adult or juveniles of certain species that are utilised as local food fish, unless the fish were produced on fish farms. This is particularly pertinent to South America, which still exports large numbers of juvenile characoids and catfish some of which are not only important food fish in their country of origin, but frequently grow too large as adults for most amateur aquarists to house adequately. The fact that between ten and twenty million wild-caught fish (primarily of one species, the Cardinal Tetra, *Parachanna axelrodi*) are exported from Brazil each year is also of some concern (although it is thought that this species may now be entering the "captive-bred" arena on a small scale).

Clearly, rain forest conservation measures must take into account the needs and problems facing the local fish fauna, and the human population that depends on it as a source of protein and/or income.

Part 3 of this series will examine the role which zoos and aquaria can play in fish conservation.



Emersed leaves of *Echinodorus multiflorus*.



8-day old flowers; even after this time the petals have not dropped off.



As this photograph shows, flowers are not pure white.

NEW AMAZON SWORDPLANT

Czechoslovakian botanist and author, **Dr Karel Rataj** presents a detailed introduction to an Amazon Sword hybrid first described scientifically by him last year.
(Photographs by the author)

In 1982 I imported an unknown species of the genus *Echinodorus* from the botanical garden of Moscow. The plant originated from the botanical garden of Leningrad, where it has, supposedly, been bred for the last 50-60

years and is, therefore, known as *Echinodorus* "Leningradskij" in Moscow.

In 1986 and 1987 the plants began to flower regularly, as a result of which the first experience of breeding the species underwater in an aquarium was gained. It

showed that this *Echinodorus* has potential for the aquarium hobby.

Emersed leaves are 25-35 cm (10-14 in) in length, the petiole (leafstalk) is longer than the lamina (blade) and is 18-22 cm (7-8.6 in) long. The petiole is smooth and



Right, Emerged plant with (staked) inflorescence. Left, top view of submersed plant grown in an aquarium.

cylindrical, and has indistinct veins/ribs on the base. The leafblades are wide, ovate (eggshaped), and are widest in their lower third; seldom in the middle. On the base, the lamina runs down abruptly, while the basal lobes are usually turned upwards. The ends of the lamina taper gradually and end in a short but pronounced point. They average 12 cm (4.7 in) in length and 7-8 cm (2.75-3.2 in) in width. The lamina is parallel with the petiole; sometimes they are turned backwards (recurved) and form an angle of 75° with the leafstalk. They are lush green with very inconspicuous secondary veins. There are about 3-7 leaves on each plant.

High flowerhead

In comparison to the size of the leaf, the inflorescence (flowerhead) is extraordinarily high and will attain a length of 100-120 cm (39-48 in). The lower whorl (verticil) is always wide and branched out in a typical panicle (bunch). The main axis of the inflorescence is 60 cm (24 in) long from the lowest verticil and has 6-7 whorls composed of around nine blooms. Sideshoots are 45 cm-50 cm (17.7-19.7 in) in length and generally have four widely spaced out whorls. The lower part of the stalk is cylindrical, but between the whorls, it is triangular. The bracts (floral leaves) are linear and around 4-6 mm (0.2-0.24 in) long. The flower stalks measure 1-2 cm (0.4-0.8 in). Every whorl has some flowers which bloom at the same time, something which is typical for this species.

E. multiflorus differs from other species in the following characteristics. The flower is on average only 15-17 mm (0.6-0.7 in) across; the petals cover each other only in the lower third, but are wider than long, so that the crown looks round in shape. The

petals are 6-7 mm (0.24-0.25 in) long, 13-14 mm (0.5-0.55 in) wide and are not snow-white — they have a yellow/green tinge; more noticeable on the bases, both on lower and upper sides. The petal edges are irregular.

Each inflorescence has up to 180 flowers. The second day after the flowers open the petals go brown but do not wither as is the case with other species. They will, in fact, remain for 14 days in a horizontal position with curved brown edges; the bases will keep their yellow/green for a long time.

The pistil (female organs) are numerous while the stamens (male organs) consist of around 20-22 anthers which are yellow/green when the flower opens but will become brown after the second day. The fruits are 1.9-2.1 mm (0.02 in) long, relatively narrow lengthwise and carinated (keeled). They have 1-3 side glands and a very short "beak".

Growing difficulties

Plants which have been grown and bred submersed in the aquarium are small to medium-sized, attain a maximum height of 15-25 cm (6-9.8 in) and differ very markedly from the emerged kind. In a room aquarium the plants regularly have 12-15 leaves and generally reach a length of only 10-15 cm (3.9-6 in). The petiole (leafstalk) is as short as the lamina (blade) along the base and pointed at the top, measuring 5-6 cm (2-2.4 in) wide maximum, and 8-8.85 cm (3.2-3.3 in) along the middle vein. The leafblades are almost leathery, olive/green with 7-8 conspicuous dark main veins, while the secondary veins are very nearly olive/brown.

E. multiflorus is not self-pollinating and depends on cross fertilisation from other

plants. It is therefore sterile, although it flowers often and profusely. It has a chromosome number of $2n = 22$, but fruits can only be obtained through pollination by a species from a different genus. *E. multiflorus* does not produce multiple fruits by the basketful; in fact, from the large number of ovaries only a few fruits will ripen. The plants produced from the seed obtained in this way, will obviously not be genetically pure, but intermediate hybrids. In later generations fission/division will occur. Multiplication is possible from the plantlets which form on the whorl (verticil) of the inflorescence, but this type of reproduction is not very productive either, since, although there are around 20 whorls on each inflorescence, only 1-5 plantlets will develop. Further, it is necessary to leave the inflorescence on the plant for up to two months, as the plantlets form mostly on the old, dying, brown stalks. *E. multiflorus* represents a very attractive novelty, with its many dark, densely veined and wide heart-shaped laminae on short petioles.

If grown submerged the plants will not grow above the water surface and will not form floating leaves. In the aquarium, this species will form a "rich, abundant" and wide plant with many leaves whose characteristics will remain stable throughout the year. *E. multiflorus* is as undemanding as all other *Echinodorus* species, requiring a pH of 6-6.8 (over pH7 it will only grow with difficulty). It is recommended to grow plantlets emerged until these have about 4-5 leaves; only then should they be put into the aquarium. *E. multiflorus*, with its modest size, is recommended as a solitary plant in a small aquarium, or as a front or middle subject in larger tanks.

OUT AND ABOUT

For a long time members of the aquatic trade have been telling us that the supply and variety of tropical fish is best obtained during the winter and spring months. This was, therefore, one of the leading factors which persuaded the Yorkshire Aquarist Festival Committee to bring the Yorkshire Festival forward to April.

Having carefully considered these comments, and the fact that there is a strong influence on the return to "The Racecourse" at Doncaster, the Committee approached The Exhibition Hall Management to find that there were just two available dates, one being the weekend of the 15 and 16 April, 1989. They, consequently, took the fish by the barbels and the 1989 Yorkshire Aquarist Festival was on its way.

An April date should be beneficial both to the tropical enthusiast and the coldwater hobbyist as spring is the start of the coldwater season, when hopefully, with the help of the Trade, good stocks of both will be available.

Yorkshire is famed for having a very friendly Festival, and all who have been associated with the show will agree. Build-up days are fun days and as this will be the first Festival of 1989, we could be in for quite a time. Already we have had reports of frantic tableaux building operations, and although the actual details of the tableaux are a jealously guarded secret, from what we have managed to glean, we could be in for a surprise or two.

The grapevine is working well, and from what we hear the Show People are already "wet nursing" their prized possessions, so that they will be in prime condition for the prestigious "Fish of the Year" award. Perhaps we will even have to extend the show to incorporate all the exhibits; we hope so.

To date, interest from all the traders has been excellent, and many enquiries have been received for trade stands. Therefore, at the end of the day, all aspects of the fishkeeping hobby should be well and truly covered, together with other trade stands of general interest.

1989 YORKSHIRE AQUARIST FESTIVAL

THE EXHIBITION CENTRE
DONCASTER RACECOURSE
LEGER WAY, DONCASTER
15th & 16th APRIL 1989

Marie Harrop — Y.A.F. Secretary



A familiar "pre-show" scene — scheduled to make a welcome return this April.

The Exhibition Hall is, at the moment, undergoing massive alterations and refurbishment, and we understand that this will leave us with a much improved floor space with no obstacles

such as the Tote Block. An announcement has already been sent out to the trade, so any trader who has not received details from us, inviting them to join us, should contact our

Trade Manager, Sandra Stansfield (address and telephone number listed below).

Stalwart Dr David Ford has promised a lecture (or two). Where that man finds the time and energy we just don't know; what we are sure of is that the lecture will be excellent, and very well attended. John Dawes, the other "old" favourite, will unfortunately, be out of the country, and therefore unable to attend (your timing is great, John! We all think you should suffer in some way, and I am working on this!) We are also hoping to call on the services of another popular and well-known personality. More news of this later.

Good news for all: It was decided to reduce the entrance fee this year. This will now be £1.50 for adults and 80p for children and Senior Citizens, and we are sincerely hoping that the trade will play their part and put on some really special offers which cannot be obtained anywhere else, other than at the Festival.

One other point to remember: there is ample free car parking adjoining, and in front of, the Hall (so no grumbles there) and the Caravan Park will be open for anyone who would like to use it. It's not the greatest Caravan Park, but all the facilities are there, and it is cheap.

Useful names and addresses and telephone numbers for enquiries:

Chairman — Raymond Stansfield, 16 Hope View, Windhill, Shipley BD18 2NG. Tel: Bradford 595097.

Finance Manager — Derek L. Harrop, "Croft View", Oldfield, Honley, Huddersfield HD7 2RL. Tel: and Ansaphone (0484) 666591.

Secretary — as above, Marie L. Harrop.

Trade Manager — Sandra Stansfield, 16 Hope View, Windhill, Shipley BD18 2NG. Tel: Bradford 595097.

Show Secretary & Trophy Steward — Mick Tomkinson, 54 Helston Walk, Middleton, Leeds. Tel: (0532) 711703.

Marie Harrop
Y.A.F. Secretary